# show access-group mode interface

To display the ACL configuration on a Layer 2 interface, use the **show access-group mode interface** command.

**show access-group mode interface** [*interface interface-number*]

**Syntax Description**

| | |
|---|---|
| *interface* | (Optional) Interface type; valid values are **ethernet**, **fastethernet**, **gigabitethernet**, **tengigabitethernet**, and **port-channel**. |
| *interface-number* | (Optional) Interface number. |

**Defaults**        This command has no default settings.

**Command Modes**        Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(19)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.2(25)EW | Support for the 10-Gigabit Ethernet interface was introduced on the Catalyst 4500 series switch. |

**Usage Guidelines**        The valid values for the port number depend on the chassis used.

**Examples**        This example shows how to display the ACL configuration on the Fast Ethernet interface 6/1:

```
Switch# show access-group mode interface fa6/1
Interface FastEthernet6/1:
   Access group mode is: merge
Switch#
```

**Related Commands**        **access-group mode**

# show adjacency

To display information about the Layer 3 switching adjacency table, use the **show adjacency** command.

**show adjacency** [{*interface interface-number*} | {**null** *interface-number*} | {**port-channel** *number*} | {**vlan** *vlan-id*} | **detail** | **internal** | **summary**]

| Syntax Description | | |
|---|---|---|
| *interface* | (Optional) Interface type; possible valid values are **ethernet**, **fastethernet**, **gigabitethernet**, **tengigabitethernet**, **pos**, **ge-wan**, and **atm**. |
| *interface-number* | (Optional) Module and port number; see the "Usage Guidelines" section for valid values. |
| **null** *interface-number* | (Optional) Specifies the null interface; the valid value is **0**. |
| **port-channel** *number* | (Optional) Specifies the channel interface; valid values are a maximum of 64 values ranging from 1 to 256. |
| **vlan** *vlan-id* | (Optional) Specifies the VLAN; valid values are from 1 to 4094. |
| **detail** | (Optional) Displays the information about the protocol detail and timer. |
| **internal** | (Optional) Displays the information about the internal data structure. |
| **summary** | (Optional) Displays a summary of CEF-adjacency information. |

**Defaults**        This command has no default settings.

**Command Modes**        EXEC

| Command History | Release | Modification |
|---|---|---|
| | 12.2(25)EW | Extended to include the 10-Gigabit Ethernet interface. |

**Usage Guidelines**        The *interface-number* argument designates the module and port number. Valid values for *interface-number* depend on the specified interface type and the chassis and module that are used. For example, if you specify a Gigabit Ethernet interface and have a 48-port 10/100BASE-T Ethernet module that is installed in a 13-slot chassis, valid values for the module number are from 1 to 13, and valid values for the port number are from 1 to 48.

Hardware Layer 3 switching adjacency statistics are updated every 60 seconds.

The following information is contained in the **show adjacency** command:

- Protocol interface.
- Type of routing protocol that is configured on the interface.
- Interface address.
- Method of adjacency that was learned.
- MAC address of the adjacent router.

- Time left before the adjacency rolls out of the adjacency table. After it rolls out, a packet must use the same next hop to the destination.

**Examples**

This example shows how to display adjacency information:

```
Switch# show adjacency
Protocol Interface           Address
IP      FastEthernet2/3      172.20.52.1(3045)
IP      FastEthernet2/3      172.20.52.22(11)
Switch#
```

This example shows how to display a summary of adjacency information:

```
Switch# show adjacency summary
Adjacency Table has 2 adjacencies
  Interface              Adjacency Count
  FastEthernet2/3        2
Switch#
```

This example shows how to display protocol detail and timer information:

```
Switch# show adjacency detail
Protocol Interface           Address
IP      FastEthernet2/3      172.20.52.1(3045)
                             0 packets, 0 bytes
                             000000000FF920000380000000000000
                             00000000000000000000000000000000
                             00605C865B2800D0BB0F980B0800
                             ARP        03:58:12
IP      FastEthernet2/3      172.20.52.22(11)
                             0 packets, 0 bytes
                             000000000FF920000380000000000000
                             00000000000000000000000000000000
                             00801C93804000D0BB0F980B0800
                             ARP        03:58:06
Switch#
```

This example shows how to display adjacency information for a specific interface:

```
Switch# show adjacency fastethernet2/3
Protocol Interface           Address
IP      FastEthernet2/3      172.20.52.1(3045)
IP      FastEthernet2/3      172.20.52.22(11)
Switch#
```

**Related Commands**      **debug adjacency**

# show arp access-list

To display detailed information on an ARP access list, use the **show arp** command.

**show arp access-list**

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

**Defaults**    This command has no default settings.

**Command Modes**    EXEC

**Command History**

| Release | Modification |
| --- | --- |
| 12.1(19)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Examples**    This example shows how to display the ARP ACL information for a switch:

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

**Related Commands**    **access-group mode**
**arp access-list**
**ip arp inspection filter vlan**

# show auto install status

To display the status of an automatic installation, use the **show auto install status** command.

**show auto install status**

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

**Defaults**    This command has no default settings.

**Command Modes**    Privileged EXEC

**Command History**

| Release | Modification |
|---------|-------------|
| 12.2(20)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Examples**    This example shows how to display the IP address of the TFTP server and to display whether or not the switch is currently acquiring the configuration file on the TFTP server:

```
Switch# show auto install status

Status             : Downloading config file
DHCP Server        : 20.0.0.1
TFTP Server        : 30.0.0.3
Config File Fetched : Undetermined
```

The first IP address in the display indicates the server that is used for the automatic installation. The second IP address indicates the TFTP server that provided the configuration file.

# show auto qos

To display the automatic quality of service (auto-QoS) configuration that is applied, use the **show auto qos** user EXEC command.

**show auto qos** [**interface** [*interface-id*]] [{**begin** | **exclude** | **include**} *expression*]

| Syntax Description | | |
|---|---|---|
| **interface** *interface-id* | (Optional) Displays auto-QoS information for the specified interface or for all interfaces. Valid interfaces include physical ports. | |
| **begin** | (Optional) Begins with the line that matches the expression. | |
| **exclude** | (Optional) Excludes lines that match the expression. | |
| **include** | (Optional) Includes lines that match the specified expression. | |
| *expression* | (Optional) Expression in the output to use as a reference point. | |

**Command Modes**    Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(19)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Usage Guidelines**    The **show auto qos interface** *interface-id* command displays the auto-QoS configuration; it does not display any user changes to the configuration that might be in effect.

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

- **show qos**
- **show qos map**
- **show qos interface** *interface-id*
- **show running-config**

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 output from the **show auto qos** command when auto-QoS is enabled:

```
Switch# show auto qos
00:00:55:qos
00:00:56:qos map cos 3 to dscp 26
00:00:57:qos map cos 5 to dscp 46
00:00:58:qos map dscp 16 to tx-queue 1
00:00:58:qos map dscp 32 to tx-queue 1
00:00:58:qos dbl
00:00:59:policy-map autoqos-voip-policy
00:00:59:  class class-default
00:00:59:    dbl
00:00:59:interface GigabitEthernet1/1
```

```
00:00:59: qos trust device cisco-phone
00:00:59: qos trust cos
00:00:59: tx-queue 3
00:00:59:  priority high
00:00:59:  shape percent 70
00:00:59:  service-policy output autoqos-voip-policyend
```

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

```
Switch# show auto qos interface
Initial configuration applied by AutoQoS:
!
interface GigabitEthernet1/1
qos trust device cisco-phone
qos trust cos
tx-queue 3
priority high
shape percent 70
service-policy output autoqos-voip-policy
!
interface GigabitEthernet1/2
qos trust device cisco-phone
qos trust cos
tx-queue 3
priority high
shape percent 70
service-policy output autoqos-voip-policy
```

This example shows output from the **show auto qos interface gigabitethernet1/1** command when the **auto qos voip cisco-phone** interface configuration command is entered:

```
Switch# show auto qos interface gigabitethernet1/1
Initial configuration applied by AutoQoS:
!
interface GigabitEthernet1/1
qos trust device cisco-phone
qos trust cos
tx-queue 3
priority high
shape percent 70
service-policy output autoqos-voip-policy
```

This example shows output from the **show auto qos** command when auto-QoS is disabled:

```
Switch# show auto qos
AutoQoS is disabled
```

**Related Commands**    **auto qos voip**

# show bootflash:

To display information about the bootflash: file system, use the **show bootflash:** command.

**show bootflash:** [**all** | **chips** | **filesys**]

**Syntax Description**

| | |
|---|---|
| **all** | (Optional) Displays all possible Flash information. |
| **chips** | (Optional) Displays Flash chip information. |
| **filesys** | (Optional) Displays file system information. |

**Defaults**          This command has no default settings.

**Command Modes**       EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Examples**          This example shows how to display file system status information:

```
Switch> show bootflash: filesys

-------- F I L E   S Y S T E M   S T A T U S --------
  Device Number = 0
DEVICE INFO BLOCK: bootflash
  Magic Number          = 6887635   File System Vers = 10000    (1.0)
  Length                = 1000000   Sector Size      = 40000
  Programming Algorithm = 39        Erased State     = FFFFFFFF
  File System Offset    = 40000     Length = F40000
  MONLIB Offset         = 100       Length = C628
  Bad Sector Map Offset = 3FFF8     Length = 8
  Squeeze Log Offset    = F80000    Length = 40000
  Squeeze Buffer Offset = FC0000    Length = 40000
  Num Spare Sectors     = 0
    Spares:
STATUS INFO:
  Writable
  NO File Open for Write
  Complete Stats
  No Unrecovered Errors
  No Squeeze in progress
USAGE INFO:
  Bytes Used    = 917CE8  Bytes Available = 628318
  Bad Sectors   = 0       Spared Sectors  = 0
  OK Files      = 2       Bytes = 917BE8
  Deleted Files = 0       Bytes = 0
  Files w/Errors = 0      Bytes = 0
Switch>
```

This example shows how to display system image information:

```
Switch> show bootflash:
-# - ED --type-- --crc--- -seek-- nlen -length- -----date/time------ name
1   .. image    8C5A393A  237E3C   14  2063804 Aug 23 1999 16:18:45 c4-boot-mz
2   .. image    D86EE0AD  957CE8    9  7470636 Sep 20 1999 13:48:49 rp.halley
Switch>
```

This example shows how to display all bootflash information:

```
Switch> show bootflash: all
-# - ED --type-- --crc--- -seek-- nlen -length- -----date/time------ name
1   .. image    8C5A393A  237E3C   14  2063804 Aug 23 1999 16:18:45 c4-boot-
mz
2   .. image    D86EE0AD  957CE8    9  7470636 Sep 20 1999 13:48:49 rp.halley

6456088 bytes available (9534696 bytes used)

-------- F I L E   S Y S T E M   S T A T U S --------
  Device Number = 0
DEVICE INFO BLOCK: bootflash
  Magic Number        = 6887635    File System Vers = 10000    (1.0)
  Length              = 1000000    Sector Size      = 40000
  Programming Algorithm = 39       Erased State     = FFFFFFFF
  File System Offset  = 40000      Length = F40000
  MONLIB Offset       = 100        Length = C628
  Bad Sector Map Offset = 3FFF8    Length = 8
  Squeeze Log Offset  = F80000     Length = 40000
  Squeeze Buffer Offset = FC0000   Length = 40000
  Num Spare Sectors   = 0
    Spares:
STATUS INFO:
  Writable
  NO File Open for Write
  Complete Stats
  No Unrecovered Errors
  No Squeeze in progress
USAGE INFO:
  Bytes Used    = 917CE8  Bytes Available = 628318
  Bad Sectors   = 0       Spared Sectors  = 0
  OK Files      = 2       Bytes = 917BE8
  Deleted Files = 0       Bytes = 0
  Files w/Errors = 0      Bytes = 0
Switch>
```

# show bootvar

To display BOOT environment variable information, use the **show bootvar** command.

**show bootvar**

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

**Defaults**     This command has no default settings.

**Command Modes**     Privileged EXEC

**Command History**

| Release | Modification |
|---------|-------------|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Examples**     This example shows how to display BOOT environment variable information:

```
Switch# show bootvar
BOOT variable = sup:1;
CONFIG_FILE variable does not exist
BOOTLDR variable does not exist
Configuration register is 0x0
Switch#
```

# show cdp neighbors

To display detailed information about the neighboring devices that are discovered through CDP, use the **show cdp neighbors** command.

**show cdp neighbors** [*type number*] [**detail**]

<table>
<tr>
<td rowspan="3"><strong>Syntax Description</strong></td>
<td><em>type</em></td>
<td>(Optional) Interface type that is connected to the neighbors about which you want information; possible valid values are <strong>ethernet</strong>, <strong>fastethernet</strong>, <strong>gigabitethernet</strong>, <strong>tengigabitethernet</strong>, <strong>port-channel</strong>, and <strong>vlan</strong>.</td>
</tr>
<tr>
<td><em>number</em></td>
<td>(Optional) Interface number that is connected to the neighbors about which you want information.</td>
</tr>
<tr>
<td><strong>detail</strong></td>
<td>(Optional) Displays detailed information about a neighbor (or neighbors) including network address, enabled protocols, hold time, and software version.</td>
</tr>
</table>

**Defaults**    This command has no default settings.

**Command Modes**    Privileged EXEC

**Command History**

| Release | Modification |
|---------|--------------|
| 12.2(25)EW | Extended to include the 10-Gigabit Ethernet interface. |

**Usage Guidelines**    The **vlan** keyword is supported in Catalyst 4500 series switches that are configured with a Supervisor Engine II.

The **port-channel** values are from 0 to 282; values from 257 to 282 are supported on the CSM and the FWSM only.

**Examples**    This example shows how to display the information about the CDP neighbors:

```
Switch# show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone
Device ID       Local Intrfce    Holdtme    Capability  Platform  Port ID
lab-7206        Eth 0            157          R          7206VXR   Fas 0/0/0
lab-as5300-1    Eth 0            163          R          AS5300    Fas 0
lab-as5300-2    Eth 0            159          R          AS5300    Eth 0
lab-as5300-3    Eth 0            122          R          AS5300    Eth 0
lab-as5300-4    Eth 0            132          R          AS5300    Fas 0/0
lab-3621        Eth 0            140          R S        3631-telcoFas 0/0
008024 2758E0   Eth 0            132          T          CAT3000   1/2
Switch#
```

Table 2-13 describes the fields that are shown in the example.

*Table 2-13   show cdp neighbors Field Descriptions*

| Field | Definition |
|-------|------------|
| Device ID | Configured ID (name), MAC address, or serial number of the neighbor device. |
| Local Intrfce | (Local Interface) The protocol that is used by the connectivity media. |
| Holdtme | (Holdtime) Remaining amount of time, in seconds, that the current device holds the CDP advertisement from a transmitting router before discarding it. |
| Capability | Capability code that is discovered on the device. This device type is listed in the CDP Neighbors table. Possible values are as follows:<br><br>R—Router<br><br>T—Transparent bridge<br><br>B—Source-routing bridge<br><br>S—Switch<br><br>H—Host<br><br>I—IGMP device<br><br>r—Repeater<br><br>P—Phone |
| Platform | Product number of the device. |
| Port ID | Protocol and port number of the device. |

This example shows how to display detailed information about your CDP neighbors:

```
Switch# show cdp neighbors detail
-------------------------
Device ID: lab-7206
Entry address(es):
  IP address: 172.19.169.83
Platform: cisco 7206VXR,  Capabilities: Router
Interface: Ethernet0,  Port ID (outgoing port): FastEthernet0/0/0
Holdtime : 123 sec

Version :
Cisco Internetwork Operating System Software
IOS (tm) 5800 Software (C5800-P4-M), Version 12.1(2)
Copyright (c) 1986-2002 by Cisco Systems, Inc.

advertisement version: 2
Duplex: half


-------------------------
Device ID: lab-as5300-1
Entry address(es):
  IP address: 172.19.169.87
.
.
.
Switch#
```

Table 2-14 describes the fields that are shown in the example.

***Table 2-14   show cdp neighbors detail Field Descriptions***

| Field | Definition |
|---|---|
| Device ID | Name of the neighbor device and either the MAC address or the serial number of this device. |
| Entry address(es) | List of network addresses of neighbor devices. |
| [network protocol] address | Network address of the neighbor device. The address can be in IP, IPX, AppleTalk, DECnet, or CLNS protocol conventions. |
| Platform | Product name and number of the neighbor device. |
| Capabilities | Device type of the neighbor. This device can be a router, a bridge, a transparent bridge, a source-routing bridge, a switch, a host, an IGMP device, or a repeater. |
| Interface | Protocol and port number of the port on the current device. |
| Holdtime | Remaining amount of time, in seconds, that the current device holds the CDP advertisement from a transmitting router before discarding it. |
| Version: | Software version running on the neighbor device. |
| advertisement version: | Version of CDP that is being used for CDP advertisements. |
| Duplex: | Duplex state of connection between the current device and the neighbor device. |

**Related Commands**   **show cdp** (refer to Cisco IOS documentation)
**show cdp entry** (refer to Cisco IOS documentation)
**show cdp interface** (refer to Cisco IOS documentation)
**show cdp traffic** (refer to Cisco IOS documentation)

# show class-map

To display class map information, use the **show class-map** command.

> **show class-map** *class_name*

**Syntax Description**

| | |
|---|---|
| *class_name* | Name of the class map. |

**Defaults**    This command has no default settings.

**Command Modes**    Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Examples**    This example shows how to display class map information for all class maps:

```
Switch# show class-map
 Class Map match-any class-default (id 0)
   Match any
 Class Map match-any class-simple (id 2)
   Match any
 Class Map match-all ipp5 (id 1)
   Match ip precedence 5
 Class Map match-all agg-2 (id 3)
Switch#
```

This example shows how to display class map information for a specific class map:

```
Switch# show class-map ipp5
 Class Map match-all ipp5 (id 1)
   Match ip precedence 5
Switch#
```

**Related Commands**    **class-map**
**show policy-map**
**show policy-map interface**

# show diagnostic content

To display test information about the test ID, test attributes, and supported coverage test levels for each test and for all modules, use the **show diagnostic content** command.

show diagnostic content module {**all** | *num*}

**Syntax Description**

| | |
|---|---|
| **all** | Displays all the modules on the chassis. |
| *num* | Module number |

**Defaults**

This command has no default settings.

**Command Modes**

EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.2(20)EWA | Support for this command was introduced on the Catalyst 4500 series switch. |

**Examples**

This example shows how to display the test suite, monitoring interval, and test attributes for all the modules of the chassis:

```
Switch# show diagnostic content module all

module 1:

 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
    m/* - Mandatory bootup test, can't be bypassed / NA
    o/* - Ongoing test, always active / NA

                                                    Testing Interval
 ID   Test Name                                  Attributes  (day hh:mm:ss.ms)
 ==== ========================================== =========== =================
   1) supervisor-bootup ----------------------> **D****I**   not configured
   2) packet-memory-bootup -------------------> **D****I**   not configured
   3) packet-memory-ongoing ------------------> **N****I*o   not configured
```

```
module 6:

 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
     m/* - Mandatory bootup test, can't be bypassed / NA
     o/* - Ongoing test, always active / NA


                                                Testing Interval
 ID   Test Name                           Attributes  (day hh:mm:ss.ms)
 ==== ======================================== ============ =================
   1) linecard-online-diag --------------------> **D****I**   not configured


Switch#
```

**Related Commands**    **show diagnostic result module**
**show diagnostic result module test 2**
**show diagnostic result module test 3**

# show diagnostic result module

To display the module-based diagnostic test results, use the **show diagnostic result module** command.

**show diagnostic result module** [*slot-num* | **all**] [**test** [*test-id* | *test-id-range* | **all**]] [**detail**]

**Syntax Description**

| | |
|---|---|
| *slot-num* | (Optional) Specifies the slot on which diagnostics are displayed. |
| **all** | (Optional) Displays the diagnostics for all slots. |
| **test** | (Optional) Displays selected tests on the specified module. |
| *test-id* | (Optional) Specifies a single test ID. |
| *test-id-range* | (Optional) Specifies a range of test IDs. |
| **all** | (Optional) Displays the diagnostics for all tests. |
| **detail** | (Optional) Displays the complete test results. |

**Defaults**

A summary of the test results for all modules in the chassis is displayed.

**Command Modes**

Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.2(18)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Examples**

This example shows how to display the summary results for all modules in the chassis:

```
Switch# show diagnostic result module

Current bootup diagnostic level: minimal

module 1:

  Overall diagnostic result: PASS
  Diagnostic level at card bootup: bypass

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

    1) supervisor-bootup ----------------------> U
    2) packet-memory-bootup --------------------> U
    3) packet-memory-ongoing -------------------> U


module 4:

  Overall diagnostic result: PASS
  Diagnostic level at card bootup: minimal

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

    1) linecard-online-diag --------------------> .
```

```
module 5:

  Overall diagnostic result: PASS
  Diagnostic level at card bootup: minimal

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

    1) linecard-online-diag --------------------> .


module 6:

  Overall diagnostic result: PASS
  Diagnostic level at card bootup: minimal

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

    1) linecard-online-diag --------------------> .
```

This example shows how to display the online diagnostics for module 1:

```
Switch# show diagnostic result module 1 detail

Current bootup diagnostic level: minimal

module 1:

 Overall diagnostic result: PASS
 Diagnostic level at card bootup: minimal

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


_____

   1) supervisor-bootup ----------------------> .

           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

Power-On-Self-Test Results for ACTIVE Supervisor


Power-on-self-test for Module 1:  WS-X4014
Port/Test Status: (. = Pass, F = Fail)
Reset Reason: PowerUp Software/User


Port Traffic: L2 Serdes Loopback ...
0: . 1: . 2: . 3: . 4: . 5: . 6: . 7: . 8: . 9: . 10: . 11: .
12: . 13: . 14: . 15: . 16: . 17: . 18: . 19: . 20: . 21: . 22: . 23: .
24: . 25: . 26: . 27: . 28: . 29: . 30: . 31: .
```

```
Port Traffic: L2 Asic Loopback ...
0: .  1: .  2: .  3: .  4: .  5: .  6: .  7: .  8: .  9: . 10: . 11: .
12: . 13: . 14: . 15: . 16: . 17: . 18: . 19: . 20: . 21: . 22: . 23: .
24: . 25: . 26: . 27: . 28: . 29: . 30: . 31: .


Port Traffic: L3 Asic Loopback ...
0: .  1: .  2: .  3: .  4: .  5: .  6: .  7: .  8: .  9: . 10: . 11: .
12: . 13: . 14: . 15: . 16: . 17: . 18: . 19: . 20: . 21: . 22: . 23: .
24: . 25: . 26: . 27: . 28: . 29: . 30: . 31: . au: .


Switch Subsystem Memory ...
1: .  2: .  3: .  4: .  5: .  6: .  7: .  8: .  9: . 10: . 11: . 12: .
13: . 14: . 15: . 16: . 17: . 18: . 19: . 20: . 21: . 22: . 23: . 24: .
25: . 26: . 27: . 28: . 29: . 30: . 31: . 32: . 33: . 34: . 35: . 36: .
37: . 38: . 39: . 40: . 41: . 42: . 43: . 44: . 45: . 46: . 47: . 48: .
49: . 50: . 51: . 52: . 53: . 54: .


Module 1 Passed


_____

    2) packet-memory-bootup -------------------> .

            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
packet buffers on free list: 64557 bad: 0 used for ongoing tests: 979


Number of errors found: 0
Cells with hard errors (failed two or more tests): 0
Cells with soft errors (failed one test, includes hard): 0
Suspect bad cells (uses a block that tested bad): 0
total buffers: 65536
bad buffers: 0 (0.0%)
good buffers: 65536 (100.0%)
Bootup test results:1
No  errors.


_____

    3) packet-memory-ongoing -------------------> 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
packet buffers on free list: 64557 bad: 0 used for ongoing tests: 979
```

```
Packet memory errors: 0 0
Current alert level: green
Per 5 seconds in the last minute:
   0 0 0 0 0 0 0 0 0
   0 0
Per minute in the last hour:
   0 0 0 0 0 0 0 0 0
   0 0 0 0 0 0 0 0 0
   0 0 0 0 0 0 0 0 0
   0 0 0 0 0 0 0 0 0
   0 0 0 0 0 0 0 0 0
   0 0 0 0 0 0 0 0 0
Per hour in the last day:
   0 0 0 0 0 0 0 0 0
   0 0 0 0 0 0 0 0 0
   0 0 0 0
Per day in the last 30 days:
   0 0 0 0 0 0 0 0 0
   0 0 0 0 0 0 0 0 0
   0 0 0 0 0 0 0 0 0
Direct memory test failures per minute in the last hour:
   0 0 0 0 0 0 0 0 0
   0 0 0 0 0 0 0 0 0
   0 0 0 0 0 0 0 0 0
   0 0 0 0 0 0 0 0 0
   0 0 0 0 0 0 0 0 0
   0 0 0 0 0 0 0 0 0
Potential false positives: 0 0
 Ignored because of rx errors: 0 0
 Ignored because of cdm fifo overrun: 0 0
 Ignored because of oir: 0 0
 Ignored because isl frames received: 0 0
 Ignored during boot: 0 0
 Ignored after writing hw stats: 0 0
 Ignored on high gigaport: 0
Ongoing diag action mode: Normal
Last 1000 Memory Test Failures:
Last 1000 Packet Memory errors:
First 1000 Packet Memory errors:


_____

Switch#
```

# show diagnostic result module test 2

To display the results of the bootup packet memory test, use the **show diagnostic result module test 2** command. The output indicates whether the test passed, failed, or was not run.

**show diagnostic result module** *N* **test 2** [**detail**]

**Syntax Description**

| | |
|---|---|
| *N* | Specifies the module number. |
| **detail** | (Optional) Specifies the display of detailed information for analysis. |

**Defaults**    Non-detailed results

**Command Modes**    EXEC mode

**Command History**

| Release | Modification |
|---|---|
| 12.2(18)EW | This command was introduced on the Catalyst 4500 series switch. |

**Usage Guidelines**    The **detail** keyword is intended for use by Cisco support personnel when analyzing failures.

**Examples**    This example shows how to display the results of the bootup packet memory tests:

```
Switch# show diagnostic result module 1 test 2

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

    2) packet-memory-bootup ------------> .
```

This example shows how to display detailed results from the bootup packet memory tests:

```
Switch# show diagnostic result module 2 test 2 detail

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


_____


    2) packet-memory-bootup ------------> .

            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
packet buffers on free list: 64557 bad: 0 used for ongoing tests: 979
```

```
Number of errors found: 0
Cells with hard errors (failed two or more tests): 0
Cells with soft errors (failed one test, includes hard): 0
Suspect bad cells (uses a block that tested bad): 0
total buffers: 65536
bad buffers: 0 (0.0%)
good buffers: 65536 (100.0%)
Bootup test results:
No errors.
```

**Related Commands**  **diagnostic monitor action**
**show diagnostic result module test 3**

# show diagnostic result module test 3

To display the results from the ongoing packet memory test, use the **show diagnostic result module test 3** command. The output indicates whether the test passed, failed, or was not run.

**show diagnostic result module** *N* **test 3** [**detail**]

| Syntax Description | *N* | Module number. |
| --- | --- | --- |
| | **detail** | (Optional) Specifies the display of detailed information for analysis. |

**Defaults**  Non-detailed results

**Command Modes**  EXEC mode

**Command History**

| Release | Modification |
| --- | --- |
| 12.2(18)EW | This command was introduced on the Catalyst 4500 series switch. |

**Usage Guidelines**  The **detail** keyword is intended for use by Cisco support personnel when analyzing failures.

**Examples**  This example shows how to display the results from the ongoing packet memory tests:

```
Switch# show diagnostic result module 1 test 3

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

    3) packet-memory-ongoing -----------> .
```

This example shows how to display the detailed results from the ongoing packet memory tests:

```
Switch# show diagnostic result module 1 test 3 detail

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


_____

    3) packet-memory-ongoing -----------> .

        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
packet buffers on free list: 64557 bad: 0 used for ongoing tests: 979
```

```
Packet memory errors: 0 0
Current alert level: green
Per 5 seconds in the last minute:
    0 0 0 0 0 0 0 0 0
    0 0
Per minute in the last hour:
    0 0 0 0 0 0 0 0 0 0
    0 0 0 0 0 0 0 0 0 0
    0 0 0 0 0 0 0 0 0 0
    0 0 0 0 0 0 0 0 0 0
    0 0 0 0 0 0 0 0 0 0
    0 0 0 0 0 0 0 0 0 0
Per hour in the last day:
    0 0 0 0 0 0 0 0 0 0
    0 0 0 0 0 0 0 0 0 0
    0 0 0 0
Per day in the last 30 days:
    0 0 0 0 0 0 0 0 0 0
    0 0 0 0 0 0 0 0 0 0
    0 0 0 0 0 0 0 0 0 0
Direct memory test failures per minute in the last hour:
    0 0 0 0 0 0 0 0 0 0
    0 0 0 0 0 0 0 0 0 0
    0 0 0 0 0 0 0 0 0 0
    0 0 0 0 0 0 0 0 0 0
    0 0 0 0 0 0 0 0 0 0
    0 0 0 0 0 0 0 0 0 0
Potential false positives: 0 0
  Ignored because of rx errors: 0 0
  Ignored because of cdm fifo overrun: 0 0
  Ignored because of oir: 0 0
  Ignored because isl frames received: 0 0
  Ignored during boot: 0 0
  Ignored after writing hw stats: 0 0
  Ignored on high gigaport: 0
Ongoing diag action mode: Normal
Last 1000 Memory Test Failures: v
Last 1000 Packet Memory errors:
First 1000 Packet Memory errors:
```

**Related Commands**      **diagnostic monitor action**
                          **show diagnostic result module test 2**

# show dot1x

To display the 802.1X statistics and operational status for the entire switch or for a specified interface, use the **show dot1x** command.

**show dot1x** [**interface** *interface-id*] | [**statistics** [**interface** *interface-id*]] | [**all**]

**Syntax Description**

| | |
|---|---|
| **interface** *interface-id* | (Optional) Displays the 802.1X status for the specified port. |
| **statistics** | (Optional) Displays 802.1X statistics for the switch or the specified interface. |
| **all** | (Optional) Displays per-interface 802.1X configuration information for all interfaces with a non-default 802.1X configuration. |

**Defaults**

This command has no default settings.

**Command Modes**

Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(12c)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.1(19)EW | Display enhanced to show the guest-VLAN value. |
| 12.2(25)EW | Support for the 10-Gigabit Ethernet interface was introduced on the Catalyst 4500 series switch. |
| 12.2(25)EWA | Support for currently-assigned reauthentication timer (if the timer is configured to honor the Session-Timeout value) was added. |

**Usage Guidelines**

If you do not specify an interface, the global parameters and a summary are displayed. If you specify an interface, the details for that interface are displayed.

If you specify the **statistics** keyword without the **interface** option, the statistics are displayed for all interfaces. If you specify the **statistics** keyword with the **interface** option, the statistics are displayed for the specified interface.

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

The **show dot1x** command displays the currently-assigned reauthentication timer and time remaining before reauthentication, if reauthentication is enabled.

**Examples**

This example shows how to display the output from the **show dot1x** command:

```
Switch# show dot1x
Sysauthcontrol = Disabled
Dot1x Protocol Version = 1
Dot1x Oper Controlled Directions = Both
Dot1x Admin Controlled Directions = Both
Switch#
```

This example shows how to display the 802.1X statistics for a specific port:

```
Switch# show dot1x interface fa6/1
Supplicant MAC <Not Applicable>
   AuthSM State     = N/A
   BendSM State     = N/A
   ReAuthPeriod     = 3600 Seconds (Locally Configured)
   ReAuthAction     = Reauthenticate
   TimeToNextReauth = N/A
PortStatus         = N/A
MaxReq             = 2
MaxAuthReq         = 2
HostMode           = Single
PortControl        = Auto
QuietPeriod        = 60 Seconds
Re-authentication  = Enabled
ReAuthPeriod       = 3600 Seconds
ServerTimeout      = 30 Seconds
SuppTimeout        = 30 Seconds
TxPeriod           = 30 Seconds
Guest-Vlan         = 0
Switch#
```

**Note**  Table 2-15 provides a partial list of the displayed fields. The remaining fields in the display show internal state information. For a detailed description of these state machines and their settings, refer to the 802.1X specification.

*Table 2-15  show dot1x interface Field Description*

| Field | Description |
|-------|-------------|
| PortStatus | Status of the port (authorized or unauthorized). The status of a port is displayed as authorized if the **dot1x port-control** interface configuration command is set to **auto** and has successfully completed authentication. |
| Port Control | Setting of the **dot1x port-control** interface configuration command. |
| MultiHosts | Setting of the **dot1x multiple-hosts** interface configuration command (allowed or disallowed). |

This is an example of output from the **show dot1x statistics interface gigabitethernet1/1** command. Table 2-16 describes the fields in the display.

```
Switch# show dot1x statistics interface gigabitethernet1/1

PortStatistics Parameters for Dot1x
-------------------------------------------
TxReqId = 0    TxReq = 0     TxTotal = 0
RxStart = 0    RxLogoff = 0  RxRespId = 0   RxResp = 0
RxInvalid = 0  RxLenErr = 0  RxTotal= 0
RxVersion = 0  LastRxSrcMac 0000.0000.0000
Switch#
```

*Table 2-16  show dot1x statistics Field Descriptions*

| Field | Description |
|-------|-------------|
| TxReq/TxReqId | Number of EAP-request/identity frames that have been sent. |
| TxTotal | Number of EAPOL frames of any type that have been sent. |

*Table 2-16    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 | Protocol version number carried in the most recently received EAPOL frame. |
| LastRxSrcMac | Source MAC address carried in the most recently received EAPOL frame. |

**Related Commands**    **dot1x guest-vlan**
**dot1x max-reauth-req**
**dot1x port-control**

# show environment

To display the environment alarm, operational status, and current reading for the chassis, use the **show environment** command.

**show environment** [**alarm**] | [**status** [**chassis** | **fantray** | **powersupply** | **supervisor**]] | [**temperature**]

## Syntax Description

| | |
|---|---|
| **alarm** | (Optional) Specifies the alarm status of the chassis. |
| **status** | (Optional) Specifies the operational status information. |
| **chassis** | (Optional) Specifies the operational status of the chassis. |
| **fantray** | (Optional) Specifies the status of the fan tray, and shows fan tray power consumption. |
| **powersupply** | (Optional) Specifies the status of the power supply. |
| **supervisor** | (Optional) Specifies the status of the supervisor engine. |
| **temperature** | (Optional) Specifies the current chassis temperature readings. |

## Defaults

This command has no default settings.

## Command Modes

Privileged EXEC

## Command History

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.1(12c)EW | Support for the ability to display generic environment information with the **show environment** command was added. |

## Examples

This example shows how to display information about the environment alarms, operational status, and current temperature readings for the chassis:

```
Switch# show environment
no alarm

Chassis Temperature                    = 32 degrees Celsius
Chassis Over Temperature Threshold     = 75 degrees Celsius
Chassis Critical Temperature Threshold = 95 degrees Celsius

Power                          Fan
Supply  Model No        Type     Status       Sensor
------  ---------------  ---------  -----------  ------
PS1     PWR-C45-1400AC  AC 1400W  good         good
PS2     none            --        --           --

Power Supply    Max    Min    Max    Min    Absolute
(Nos in Watts)  Inline Inline System System Maximum
--------------  ------ ------ ------ ------ --------
PS1               0      0    1360   1360   1400
PS2              --     --     --     --     --
```

```
Power supplies needed by system : 1

Chassis Type : WS-C4507R

Supervisor Led Color : Green

Fantray : good

Power consumed by Fantray : 50 Watts
```

This example shows how to display information about the environment alarms:

```
Switch# show environment alarm
no alarm
Switch#
```

This example shows how to display information about the power supplies, chassis type, and fan trays:

```
Switch# show environment status
Power                                     Fan
Supply   Model No         Type       Status      Sensor
------   ---------------  ---------  ----------- ------
PS1      PWR-C45-1400AC   AC 1400W   good         good
PS2      none             --         --           --

Power Supply     Max     Min    Max     Min    Absolute
(Nos in Watts)   Inline  Inline System  System Maximum
--------------   ------  ------ ------  ------ --------
PS1                  0        0   1360    1360   1400
PS2                 --       --     --      --     --

Power supplies needed by system : 1

Chassis Type : WS-C4507R

Supervisor Led Color : Green

Fantray : good

Power consumed by Fantray : 50 Watts

Switch#
```

This example shows how to display information about the chassis:

```
Switch# show environment status chassis
Chassis Type :WS-C4006
Switch#
```

This example shows how to display information about the fan tray:

```
Switch# show environment status fantray
Fantray : good
Power consumed by Fantray : 50 Watts
Switch#
```

This example shows how to display information about the power supply:

```
Switch# show environment status powersupply
Power                                            Fan
Supply  Model No        Type      Status  Sensor
------  --------------  ---------  -------  ------
PS1     WS-X4008        AC 400W   good     good
PS2     WS-X4008        AC 400W   good     good
PS3     none            --        --       --
Switch#
```

This example shows how to display information about the supervisor engine:

```
Switch# show environment status supervisor
Supervisor Led Color :Green
Switch#
```

This example shows how to display information about the temperature of the chassis:

```
Switch# show environment temperature
Chassis Temperature                    = 32 degrees Celsius
Chassis Over Temperature Threshold     = 75 degrees Celsius
Chassis Critical Temperature Threshold = 95 degrees Celsius
Switch#
```

# show errdisable detect

To display the error disable detection status, use the **show errdisable detect** command.

**show errdisable detect**

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

**Defaults**    This command has no default settings.

**Command Modes**    Privileged EXEC

**Command History**

| Release | Modification |
|---------|-------------|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.1(19)EW | Display includes the status of storm control. |

**Examples**    This example shows how to display the error disable detection status:

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

**Related Commands**    **errdisable detect**
**errdisable recovery**
**show interfaces status**

# show errdisable recovery

To display error disable recovery timer information, use the **show errdisable recovery** command.

**show errdisable recovery**

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

**Defaults**    This command has no default settings.

**Command Modes**    Privileged EXEC

**Command History**

| Release | Modification |
|---------|-------------|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.1(19)EW | Display includes the status of storm control. |

**Examples**    This example shows how to display recovery timer information for error disable:

```
Switch# show errdisable recovery
ErrDisable Reason    Timer Status
-----------------    --------------
udld                 Disabled
bpduguard            Disabled
security-violatio    Disabled
channel-misconfig    Disabled
vmps                 Disabled
pagp-flap            Disabled
dtp-flap             Disabled
link-flap            Disabled
l2ptguard            Disabled
psecure-violation    Disabled
gbic-invalid         Disabled
dhcp-rate-limit      Disabled
unicast-flood        Disabled
storm-control        Disabled
arp-inspection       Disabled


Timer interval:30 seconds


Interfaces that will be enabled at the next timeout:


Interface     Errdisable reason     Time left(sec)
---------     -----------------     --------------
 Fa7/32         arp-inspect            13
```

**Related Commands**    **errdisable detect**
**errdisable recovery**
**show interfaces status**

# show etherchannel

To display EtherChannel information for a channel, use the **show etherchannel** command.

> **show etherchannel** [*channel-group*] {**port-channel** | **brief** | **detail** | **summary** | **port** | **load-balance** | **protocol**}

**Syntax Description**

| | |
|---|---|
| *channel-group* | (Optional) Number of the channel group; valid values are from 1 to 64. |
| **port-channel** | Displays port-channel information. |
| **brief** | Displays a summary of EtherChannel information. |
| **detail** | Displays detailed EtherChannel information. |
| **summary** | Displays a one-line summary per channel group. |
| **port** | Displays EtherChannel port information. |
| **load-balance** | Displays load-balance information. |
| **protocol** | Displays the enabled protocol. |

**Defaults**    This command has no default settings.

**Command Modes**    Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.1(13)EW | Support for LACP was added to this command. |

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

In the output below, the Passive port list field is displayed for Layer 3 port channels only. This field means that the physical interface, 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).

**Examples**    This example shows how to display port-channel information for a specific group:

```
Switch# show etherchannel 1 port-channel
                Port-channels in the group:
                ----------------------
Port-channel: Po1
------------
Age of the Port-channel  = 02h:35m:26s
Logical slot/port   = 10/1          Number of ports in agport = 0
GC                  = 0x00000000      HotStandBy port = null
Passive port list   = Fa5/4 Fa5/5
Port state          = Port-channel L3-Ag Ag-Not-Inuse
```

```
Ports in the Port-channel:
Index   Load    Port
-------------------
Switch#
```

This example shows how to display load-balancing information:

```
Switch# show etherchannel load-balance
Source XOR Destination mac address
Switch#
```

This example shows how to display a summary of information for a specific group:

```
Switch# show etherchannel 1 brief
Group state = L3
Ports: 2   Maxports = 8
port-channels: 1 Max port-channels = 1
Switch#
```

This example shows how to display detailed information for a specific group:

```
Switch# show etherchannel 1 detail
Group state = L3
Ports: 2   Maxports = 8
Port-channels: 1 Max Port-channels = 1
              Ports in the group:
              -------------------
Port: Fa5/4
------------

Port state     = EC-Enbld Down Not-in-Bndl Usr-Config
Channel group = 1           Mode = Desirable    Gcchange = 0
Port-channel  = null        GC   = 0x00000000   Psudo-agport = Po1
Port indx     = 0           Load = 0x00

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.
Timers: H - Hello timer is running.        Q - Quit timer is running.
        S - Switching timer is running.    I - Interface timer is running.

Local information:
                            Hello    Partner  PAgP     Learning  Group
Port        Flags State   Timers  Interval Count    Priority  Method Ifindex
Fa5/4       d     U1/S1           1s       0        128       Any    0

Age of the port in the current state: 02h:33m:14s
Port: Fa5/5
------------

Port state     = EC-Enbld Down Not-in-Bndl Usr-Config
Channel group = 1           Mode = Desirable    Gcchange = 0
Port-channel  = null        GC   = 0x00000000   Psudo-agport = Po1
Port indx     = 0           Load = 0x00

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.
Timers: H - Hello timer is running.        Q - Quit timer is running.
        S - Switching timer is running.    I - Interface timer is running.

Local information:
                            Hello    Partner  PAgP     Learning  Group
Port        Flags State   Timers  Interval Count    Priority  Method Ifindex
Fa5/5       d     U1/S1           1s       0        128       Any    0
```

```
                Age of the port in the current state: 02h:33m:17s
                            Port-channels in the group:
                            ----------------------


Port-channel: Po1
------------
Age of the Port-channel   = 02h:33m:52s
Logical slot/port   = 10/1            Number of ports in agport = 0
GC                  = 0x00000000      HotStandBy port = null
Passive port list   = Fa5/4 Fa5/5
Port state          = Port-channel L3-Ag Ag-Not-Inuse


Ports in the Port-channel:

Index   Load   Port
------------------
Switch#
```

This example shows how to display a one-line summary per channel group:

```
Switch# show etherchannel summary
U-in use  I-in port-channel   S-suspended   D-down   i-stand-alone   d-default

Group Port-channel  Ports
----- ------------  ------------------------------------------------------------
1     Po1(U)        Fa5/4(I)  Fa5/5(I)
2     Po2(U)        Fa5/6(I)  Fa5/7(I)
Switch#
```

This example shows how to display EtherChannel port information for all ports and all groups:

```
Switch# show etherchannel port
                Channel-group listing:
                ----------------------


Group: 1
----------
                Ports in the group:
                -------------------
Port: Fa5/4
------------
Port state    = EC-Enbld Down Not-in-Bndl Usr-Config
Channel group = 1            Mode = Desirable    Gcchange = 0
Port-channel  = null         GC   = 0x00000000   Psudo-agport = Po1
Port indx     = 0            Load = 0x00

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.
Timers: H - Hello timer is running.        Q - Quit timer is running.
        S - Switching timer is running.    I - Interface timer is running.

Local information:
                             Hello    Partner  PAgP     Learning Group
Port      Flags State   Timers Interval Count   Priority Method  Ifindex
Fa5/4     d     U1/S1          1s      0        128      Any      0

Age of the port in the current state: 02h:40m:35s
Port: Fa5/5
------------

Port state    = EC-Enbld Down Not-in-Bndl Usr-Config
Channel group = 1            Mode = Desirable    Gcchange = 0
Port-channel  = null         GC   = 0x00000000   Psudo-agport = Po1
Port indx     = 0            Load = 0x00
```

```
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.
Timers: H - Hello timer is running.         Q - Quit timer is running.
        S - Switching timer is running.     I - Interface timer is running.

<...output truncated...>

Switch#
```

This example shows how to display the protocol enabled:

```
Switch# show etherchannel protocol
              Channel-group listing:
              ----------------------

Group: 12
----------
Protocol:  PAgP

Group: 24
----------
Protocol:  -  (Mode ON)
Switch#
```

**Related Commands**    channel-group
                        interface port-channel

# show flowcontrol

To display the per-interface status and statistics related to flow control, use the **show flowcontrol** command.

**show flowcontrol** [**module** *slot* | **interface** *interface*]

**Syntax Description**

| module *slot* | (Optional) Limits the display to interfaces on a specific module. |
|---|---|
| **interface** *interface* | (Optional) Displays the status on a specific interface. |

**Defaults**

This command has no default settings.

**Command Modes**

Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.2(25)EW | Support for the 10-Gigabit Ethernet interface was introduced on the Catalyst 4500 series switch. |

**Usage Guidelines**

Table 2-17 describes the fields in the **show flowcontrol** command output.

*Table 2-17    show flowcontrol Command Output*

| Field | Description |
|---|---|
| Port | Module and port number. |
| Send-Flowcontrol-Admin | Flow-control administration. Possible settings: **on** indicates the local port sends flow control to the far end; **off** indicates the local port does not send flow control to the far end; **desired** indicates the local end sends flow control to the far end if the far end supports it. |
| Send-Flowcontrol-Oper | Flow-control operation. Possible setting: **disagree** indicates the two ports could not agree on a link protocol. |
| Receive-Flowcontrol-Admin | Flow-control administration. Possible settings: **on** indicates the local port requires the far end to send flow control; **off** indicates the local port does not allow the far end to send flow control; **desired** indicates the local end allows the far end to send flow control. |
| Receive-Flowcontrol-Oper | Flow-control operation. Possible setting: **disagree** indicates the two ports could not agree on a link protocol. |
| RxPause | Number of pause frames received. |
| TxPause | Number of pause frames transmitted. |

**Examples**     This example shows how to display the flow control status on all the Gigabit Ethernet interfaces:

```
Switch# show flowcontrol
Port      Send FlowControl  Receive FlowControl  RxPause TxPause
          admin    oper     admin    oper

--------- -------- -------- -------- --------    ------- -------
Te1/1     off      off      on       off         0       0
Te1/2     off      off      on       off         0       0
Gi1/3     off      off      desired  on          0       0
Gi1/4     off      off      desired  on          0       0
Gi1/5     off      off      desired  on          0       0
Gi1/6     off      off      desired  on          0       0
Gi3/1     off      off      desired  off         0       0
Gi3/2     off      off      desired  off         0       0
Gi3/3     off      off      desired  off         0       0
Gi3/4     off      off      desired  off         0       0
Gi3/5     off      off      desired  off         0       0
Gi3/6     off      off      desired  off         0       0
Switch#
```

This example shows how to display the flow control status on module 1:

```
Switch# show flowcontrol module 1
Port   Send FlowControl  Receive FlowControl  RxPause TxPause
       admin    oper     admin    oper

-----  -------- -------- -------- --------    ------- -------
Gi1/1  desired  off      off      off         0       0
Gi1/2  on       disagree on       on          0       0
Switch#
```

This example shows how to display the flow control status on Gigabit Ethernet interface 3/4:

```
Switch# show flowcontrol interface gigabitethernet3/4
Port   Send FlowControl  Receive FlowControl  RxPause TxPause
       admin    oper     admin    oper

-----  -------- -------- -------- --------    ------- -------
Gi3/4  off      off      on       on          0       0
Switch#
```

This example shows how to display the flow control status on 10-Gigabit Ethernet interface 1/1:

```
Switch# show flowcontrol interface tengigabitethernet1/1
Port       Send FlowControl  Receive FlowControl  RxPause TxPause
           admin    oper     admin    oper

---------  -------- -------- -------- --------    ------- -------
Te1/1      off      off      on       off         0       0
Switch#
```

**Related Commands**     **flowcontrol**
**show interfaces status**

# show hw-module uplink

To display the current uplink mode, use the **show hw-module uplink** command.

**show hw-module uplink**

**Defaults**
None

**Command Modes**
Privileged EXEC

**Command History**

| Release | Modification |
|---------|--------------|
| 12.2(25)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Usage Guidelines**
If the active uplink mode is different than configured mode, the output displays the change.

By default, the current (operational) uplink selection is displayed.

**Examples**
This example shows the output displaying the current (active) uplinks:

```
Switch# show hw-module uplink
Active uplink configuration is TenGigabitEthernet
```

This example shows the output for redundant systems in SSO mode if the 10-Gigabit Ethernet uplinks are active, and the Gigabit Ethernet uplinks are selected:

```
Switch# show hw-module uplink
Active uplink configuration is TenGigabitEthernet
(will be GigabitEthernet after next reload)
A 'redundancy reload shelf' or power-cycle of chassis is required to
apply the new configuration
```

This example shows the output for redundant systems in RPR mode if the 10-Gigabit Ethernet uplinks are active, and the Gigabit Ethernet uplinks are selected:

```
Switch# show hw-module uplink
Active uplink configuration is TenGigabitEthernet
(will be GigabitEthernet after next reload)
A reload of active supervisor is required to apply the new configuration.
```

**Related Commands**
**hw-module uplink select**

# show idprom

To display the IDPROMs for the chassis, supervisor engine, module, power supplies, fan trays, clock module, and multiplexer (mux) buffer, use the **show idprom** command.

**show idprom** {**all** | **chassis** | **module** [*mod*] | **interface** *int_name* | **supervisor** | **power-supply** *number* | **fan-tray**}

**Syntax Description**

| | |
|---|---|
| **all** | Displays information for all IDPROMs. |
| **chassis** | Displays information for the chassis IDPROMs. |
| **module** | Displays information for the module IDPROMs. |
| *mod* | (Optional) Specifies the module name. |
| **interface** *int_name* | Displays information for the GBIC or SFP IDPROMs. |
| **supervisor** | Displays information for the supervisor engine IDPROMs. |
| **power-supply** *number* | Displays information for the power supply IDPROMs. |
| **fan-tray** | Displays information for the fan tray IDPROMs. |

**Defaults**

This command has no default settings.

**Command Modes**

Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.1(12c)EW | Support for the **power-supply**, **fan-tray**, **clock-module**, and **mux-buffer** keywords was added. |
| 12.1(13)EW | Support for **interface** keyword was added. |
| 12.2(18)EW | Enhanced the **show idprom interface** output to include the hexadecimal display of the GBIC/SFP SEEPROM contents. |
| 12.2(25)EW | Support for the 10-Gigabit Ethernet interface was introduced on the Catalyst 4500 series switch. |

**Usage Guidelines**

When you enter the **show idprom interface** command, the output lines for Calibration type and Rx (receive) power measurement may not be displayed for all GBICs.

**Examples**

This example shows how to display IDPROM information for module 4:

```
Switch# show idprom module 4
Module 4 Idprom:
 Common Block Signature = 0xABAB
 Common Block Version = 1
 Common Block Length = 144
```

```
                        Common Block Checksum = 4199
                        Idprom Size = 256
                        Block Count = 2
                        FRU Major Type = 0x4201
                        FRU Minor Type = 303
                        OEM String = Cisco Systems, Inc.
                        Product Number = WS-X4306
                        Serial Number = 00000135
                        Part Number = <tbd>
                        Hardware Revision = 0.2
                        Manufacturing Bits = 0x0000
                        Engineering Bits = 0x0000
                        Snmp OID = 0.0.0.0.0.0.0.0
                        Power Consumption = 0
                        RMA Failure Code = 0 0 0 0
                        Linecard Block Signature = 0x4201
                        Linecard Block Version = 1
                        Linecard Block Length = 24
                        Linecard Block Checksum = 658
                        Feature Bits = 0x0000000000000000
                        Card Feature Index = 50
                        MAC Base = 0010.7bab.9830
                        MAC Count = 6
                        Switch#
```

This example shows how to display IDPROM information for the GBICs on the Gigabit Ethernet
interface 1/2:

```
Switch# show idprom interface gigabitethernet1/2
GBIC Serial EEPROM Contents:
Common Block:
 Identifier        = GBIC [0x1]
 Extended Id       = Not specified/compliant with defined MOD_DEF [0x0]
 Connector         = SC connector [0x1]
 Transceiver
  Speed            = Not available [0x0]
  Media            = Not available [0x0]
  Technology       = Not available [0x0]
  Link Length      = Not available [0x0]
  GE Comp Codes    = Not available [0x0]
  SONET Comp Codes = Not available [0x0]
 Encoding          = 8B10B  [0x1]
 BR, Nominal       = 1300000000 MHz
 Length(9u) in km  = GBIC does not support single mode fibre, or the length
                     must be determined from the transceiver technology.
 Length(9u)        = > 25.4 km
 Length(50u)       = GBIC does not support 50 micron multi-mode fibre, or the
                     length must be determined from the transceiver technology.
 Length(62.5u)     = GBIC does not support 62.5 micron multi-mode fibre, or
                     the length must be determined from transceiver technology.
 Length(Copper)    = GBIC does not support copper cables, or the length must
                     be determined from the transceiver technology.
 Vendor name       = CISCO-FINISAR
 Vendor OUI        = 36965
 Vendor Part No.   = FTR-0119-CSC
 Vendor Part Rev.  = B
 Wavelength        = Not available
 CC_BASE           = 0x1A

Extended ID Fields
 Options           = Loss of Signal implemented TX_FAULT signal implemented TX_DISABLE is
implemented and disables the serial output  [0x1A]
 BR, max           = Unspecified
 BR, min           = Unspecified
```

```
       Vendor Serial No. = K1273DH
       Date code        = 030409
       Diag monitoring  = Implemented
       Calibration type = Internal
       Rx pwr measuremnt = Optical Modulation Amplitude (OMA)
       Address change   = Required
       CC_EXT           = 0xB2

Vendor Specific ID Fields:
20944D30  29 00 02 80 22 33 38 3D C7 67 83 E8 DF 65 6A AF   )..."38=Gg^Ch_ej/
20944D40  1A 80 ED 00 00 00 00 00 00 00 00 00 38 23 3C 1B   ............8#<.


        SEEPROM contents (hex) size 128:
0x0000  01 00 01 00 00 00 00 00 00 00 00 01 0D 00 00 FF   ................
0x0010  00 00 00 00 43 49 53 43 4F 2D 46 49 4E 49 53 41   ....CISCO-FINISA
0x0020  52 20 20 20 00 00 90 65 46 54 52 2D 30 31 31 39   R   ..^PeFTR-0119
0x0030  2D 43 53 43 20 20 20 20 42 20 20 20 00 00 00 1A   -CSC    B    ....
0x0040  00 1A 00 00 4B 31 32 37 33 44 48 20 20 20 20 20   ....K1273DH
0x0050  20 20 20 20 30 33 30 34 30 39 20 20 64 00 00 B2    030409  d..2
0x0060  29 00 02 80 22 33 38 3D C7 67 83 E8 DF 65 6A AF   )..^@"38=Gg^C._ej.
0x0070  1A 80 ED 00 00 00 00 00 00 00 00 00 38 23 3C 1B   .^@m.........8#<.
Switch#
```

This example shows how to display IDPROM information for the 10-Gigabit Ethernet interface 1/1:

```
Switch# show idprom interface tengigabitethernet1/1
X2 Serial EEPROM Contents:
Non-Volatile Register (NVR) Fields
 X2 MSA Version supported          :0xA
 NVR Size in bytes                 :0x100
 Number of bytes used              :0xD0
 Basic Field Address               :0xB
 Customer Field Address            :0x77
 Vendor Field Address              :0xA7
 Extended Vendor Field Address     :0x100
 Reserved                          :0x0
 Transceiver type                  :0x2 =X2
 Optical connector type            :0x1 =SC
 Bit encoding                      :0x1 =NRZ
 Normal BitRate in multiple of 1M b/s :0x2848
 Protocol Type                     :0x1 =10GgE

Standards Compliance Codes :
 10GbE Code Byte 0                 :0x2 =10GBASE-LR
 10GbE Code Byte 1                 :0x0
 SONET/SDH Code Byte 0             :0x0
 SONET/SDH Code Byte 1             :0x0
 SONET/SDH Code Byte 2             :0x0
 SONET/SDH Code Byte 3             :0x0
 10GFC Code Byte 0                 :0x0
 10GFC Code Byte 1                 :0x0
 10GFC Code Byte 2                 :0x0
 10GFC Code Byte 3                 :0x0
 Transmission range in 10m         :0x3E8
Fibre Type :
 Fibre Type Byte 0                 :0x40 =NDSF only
 Fibre Type Byte 1                 :0x0 =Unspecified

 Centre Optical Wavelength in 0.01nm steps - Channel 0 :0x1 0xFF 0xB8
 Centre Optical Wavelength in 0.01nm steps - Channel 1 :0x0 0x0 0x0
 Centre Optical Wavelength in 0.01nm steps - Channel 2 :0x0 0x0 0x0
 Centre Optical Wavelength in 0.01nm steps - Channel 3 :0x0 0x0 0x0
 Package Identifier OUI  :0xC09820
```

```
       Transceiver Vendor OUI  :0x3400800
       Transceiver vendor name :CISCO-OPNEXT,INC
       Part number provided by transceiver vendor        :TRT5021EN-SMC-W
       Revision level of part number provided by vendor :00
       Vendor serial number            :ONJ08290041
       Vendor manufacturing date code :2004072000

       Reserved1 : 00 02 02 20 D1 00 00
       Basic Field Checksum :0x10

       Customer Writable Area :
        0x00: 58 32 2D 31 30 47 42 2D 4C 52 20 20 20 20 20 20
        0x10: 20 20 20 20 20 4F 4E 4A 30 38 32 39 30 30 34 31
        0x20: 31 30 2D 32 30 33 36 2D 30 31 20 20 41 30 31 20

       Vendor Specific :
        0x00: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
        0x10: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
        0x20: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
        0x30: 00 00 00 00 11 E2 69 A9 2F 95 C6 EE D2 DA B3 FD
        0x40: 9A 34 4A 24 CB 00 00 00 00 00 00 00 00 00 EF FC
        0x50: F4 AC 1A D7 11 08 01 36 00
Switch#
```

This example shows how to display IDPROM information for the supervisor engine:

```
Switch# show idprom supervisor
Supervisor Idprom:
 Common Block Signature = 0xABAB
 Common Block Version = 1
 Common Block Length = 144
 Common Block Checksum = 4153
 Idprom Size = 256
 Block Count = 2
 FRU Major Type = 0x4101
 FRU Minor Type = 333
 OEM String = Cisco Systems, Inc.
 Product Number = WS-X4014
 Serial Number = JAB05320CCE
 Part Number = 73-6854-04
 Part Revision = 05
 Manufacturing Deviation String = 0
 Hardware Revision = 0.4
 Manufacturing Bits = 0x0000
 Engineering Bits = 0x0000
 Snmp OID = 0.0.0.0.0.0.0.0
 Power Consumption = 0
 RMA Failure Code = 0 0 0 0
 Supervisor Block Signature = 0x4101
 Supervisor Block Version = 1
 Supervisor Block Length = 24
 Supervisor Block Checksum = 548
 Feature Bits = 0x0000000000000000
 Card Feature Index = 95
 MAC Base = 0007.0ee5.2a44
 MAC Count = 2
Switch#
```

This example shows how to display IDPROM information for the chassis:

```
Switch# show idprom chassis
Chassis Idprom:
 Common Block Signature = 0xABAB
 Common Block Version = 1
```

```
            Common Block Length = 144
            Common Block Checksum = 4285
            Idprom Size = 256
            Block Count = 2
            FRU Major Type = 0x4001
            FRU Minor Type = 24
            OEM String = Cisco Systems, Inc.
            Product Number = WS-C4006
            Serial Number = FOX04473737
            Part Number = 73-4289-02
            Part Revision = 02
            Manufacturing Deviation String = 0x00
            Hardware Revision = 0.2
            Manufacturing Bits = 0x0000
            Engineering Bits = 0x0000
            Snmp OID = 0.0.0.0.0.0.0.0
            Chassis Block Signature = 0x4001
            Chassis Block Version = 1
            Chassis Block Length = 22
            Chassis Block Checksum = 421
            Feature Bits = 0x0000000000000000
            MAC Base = 0004.dd42.2600
            MAC Count = 1024
    Switch#
```

This example shows how to display IDPROM information for power supply 1:

```
Switch# show idprom power-supply 1
Power Supply 0 Idprom:
 Common Block Signature = 0xABAB
 Common Block Version = 1
 Common Block Length = 144
 Common Block Checksum = 10207
 Idprom Size = 256
 Block Count = 1
 FRU Major Type = 0xAB01
 FRU Minor Type = 8224
 OEM String = Cisco Systems, Inc.
 Product Number = WS-CAC-1440W
 Serial Number = ACP05180002
 Part Number = 34-XXXX-01
 Part Revision = A0
 Manufacturing Deviation String =
 Hardware Revision = 1.1
 Manufacturing Bits = 0x0000
 Engineering Bits = 0x3031
 Snmp OID = 9.12.3.65535.65535.65535.65535.65535
 Power Consumption = -1
 RMA Failure Code = 255 255 255 255
 Power Supply Block Signature = 0xFFFF
 PowerSupply Block Version = 255
 PowerSupply Block Length = 255
 PowerSupply Block Checksum = 65535
 Feature Bits = 0x00000000FFFFFFFF
 Current @ 110V = -1
 Current @ 220V = -1
 StackMIB OID = 65535
Switch#
```

This example shows how to display IDPROM information for the fan tray:

```
Switch# show idprom fan-tray
Fan Tray Idprom :
 Common Block Signature = 0xABAB
 Common Block Version = 1
 Common Block Length = 144
 Common Block Checksum = 19781
 Idprom Size = 256
 Block Count = 1
 FRU Major Type = 0x4002
 FRU Minor Type = 0
 OEM String = "Cisco Systems"
 Product Number = WS-X4502-fan
 Serial Number =
 Part Number =
 Part Revision =
 Manufacturing Deviation String =
 Hardware Revision = 0.1
 Manufacturing Bits = 0xFFFF
 Engineering Bits = 0xFFFF
 Snmp OID = 65535.65535.65535.65535.65535.65535.65535.65535
 Power Consumption = -1
 RMA Failure Code = 255 255 255 255
Switch#
```

# show interfaces

To display traffic on a specific interface, use the **show interfaces** command.

**show interfaces** [{{**fastethernet** *mod/interface-number*} | {**gigabitethernet**
*mod/interface-number*} | {**tengigabitethernet** *mod/interface-number*} | {**null**
*interface-number*} | **vlan** *vlan_id*} | **status**}]

**Syntax Description**

| | |
|---|---|
| **fastethernet** *mod/interface-number* | (Optional) Specifies the Fast Ethernet module and interface. |
| **gigabitethernet** *mod/interface-number* | (Optional) Specifies the Gigabit Ethernet module and interface. |
| **tengigabitethernet** *mod/interface-number* | (Optional) Specifies the 10-Gigabit Ethernet module and interface. |
| **null** *interface-number* | (Optional) Specifies the null interface; the valid value is 0. |
| **vlan** *vlan_id* | (Optional) Specifies the VLAN; valid values are from 1 to 4094. |
| **status** | (Optional) Displays status information. |

**Defaults**          This command has no default settings.

**Command Modes**     Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.1(12c)EW | Support for extended VLAN addresses was added. |
| 12.2(25)EW | Support for the 10-Gigabit Ethernet interface was introduced on the Catalyst 4500 series switch. |

**Usage Guidelines**    The statistics are collected on a per-VLAN basis for Layer 2-switched packets and Layer 3-switched packets. The statistics are available for both unicast and multicast. The Layer 3-switched packet counts are available for both the ingress and egress directions. The per-VLAN statistics are updated every 5 seconds.

In some cases, you might see a difference in the duplex mode that is displayed between the **show interfaces** command and the **show running-config** commands. The duplex mode that is displayed in the **show interfaces** command is the actual duplex mode that the interface is running. The **show interfaces** command shows the operating mode for an interface, while the **show running-config** command shows the configured mode for an interface.

If you do not enter any keywords, all counters for all modules are displayed.

**Examples**

This example shows how to display traffic for a Gigabit Ethernet interface 2/5:

```
Switch# show interfaces gigabitethernet2/5
GigabitEthernet9/5 is up, line protocol is up
Hardware is C4k 1000Mb 802.3, address is 0001.64f8.3fa5 (bia 0001.64f8.3fa5)
Internet address is 172.20.20.20/24
MTU 1500 bytes, BW 1000000 Kbit, DLY 10 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation ARPA, loopback not set
Keepalive set (10 sec)
Full-duplex, 1000Mb/s
ARP type: ARPA, ARP Timeout 04:00:00
Last input 00:00:00, output never, output hang never
Last clearing of "show interface" counters never
Queueing strategy: fifo
Output queue 0/40, 0 drops; input queue 0/75, 0 drops
5 minute input rate 1000 bits/sec, 2 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
L2 Switched: ucast: 8199 pkt, 1362060 bytes - mcast: 6980 pkt, 371952 bytes
L3 in Switched: ucast: 0 pkt, 0 bytes - mcast: 0 pkt, 0 bytes mcast
L3 out Switched: ucast: 0 pkt, 0 bytes - mcast: 0 pkt, 0 bytes
300114 packets input, 27301436 bytes, 0 no buffer
Received 43458 broadcasts, 0 runts, 0 giants, 0 throttles
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
0 input packets with dribble condition detected
15181 packets output, 1955836 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 output buffer failures, 0 output buffers swapped out
Switch#
```

This example shows how to display traffic for a 10-Gigabit Ethernet interface 1/1:

```
Switch# show interfaces tengigabitethernet1/1
TenGigabitEthernet1/1 is up, line protocol is up (connected)
  Hardware is Ten Gigabit Ethernet Port, address is 0004.dd46.7700 (bia 0004.dd46.7700)
  MTU 1500 bytes, BW 10000000 Kbit, DLY 10 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Full-duplex, 10Gb/s, link type is auto, media type is 10GBaseL
  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: 0/2000/0/0 (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
     0 packets input, 0 bytes, 0 no buffer
     Received 0 broadcasts (0 multicast)
     0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
     0 input packets with dribble condition detected
     0 packets output, 0 bytes, 0 underruns
     0 output errors, 0 collisions, 0 interface resets
     0 babbles, 0 late collision, 0 deferred
     0 lost carrier, 0 no carrier
     0 output buffer failures, 0 output buffers swapped out
Switch#
```

This example shows how to display status information for Gigabit Ethernet interface 1/2:

```
Switch# show interfaces gigabitethernet1/2 status
Port        Name        Status      Vlan        Duplex  Speed Type
Gi1/2                   notconnect  1           auto    1000 1000-XWDM-RXONLY
Switch#
```

This example shows how to display status information for the interfaces on the supervisor engine:

```
Switch# show interfaces status

Port        Name            Status      Vlan      Duplex  Speed Type
Te1/1                       connected   1         full     10G 10GBase-LR
Te1/2                       connected   1         full     10G 10GBase-LR
Switch#
```

# show interfaces capabilities

To display the interface capabilities for an interface or for all the interfaces on a switch, use the **show interfaces capabilities** command.

> **show interfaces capabilities** [{**module** *mod*}]

> **show interfaces** [*interface interface-number*] **capabilities**

## Syntax Description

| | |
|---|---|
| **module** *mod* | (Optional) Display information for the specified module only. |
| *interface* | (Optional) Interface type; valid values are **fastethernet**, **gigabitethernet**, **tengigabitethernet**, and **port-channel**. |
| *interface-number* | (Optional) Port number. |

## Defaults

This command has no default settings.

## Command Modes

Privileged EXEC

## Command History

| Release | Modification |
|---|---|
| 12.1(19)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.2(25)EW | Support for the 10-Gigabit Ethernet interface was introduced on the Catalyst 4500 series switch. |

## Usage Guidelines

The *interface-number* argument designates the module and port number. Valid values for *interface-number* depend on the chassis and module used. For example, if you have a 48-port 10/100-Mbps Fast Ethernet RJ-21 (telco connector) switching module installed in a Catalyst 4507 chassis, valid values for the slot number are from 2 to 13 and valid values for the port number are 1 to 48.

## Examples

This example shows how to display the interface capabilities for a module:

```
Switch# show interfaces capabilities module 1
GigabitEthernet1/1
  Model:                WS-X4516-Gbic
  Type:                 Unsupported GBIC
  Speed:                1000
  Duplex:               full
  Trunk encap. type:    802.1Q,ISL
  Trunk mode:           on,off,desirable,nonegotiate
  Channel:              yes
  Broadcast suppression:percentage(0-100), hw
  Flowcontrol:          rx-(off,on,desired),tx-(off,on,desired)
  VLAN Membership:      static, dynamic
  Fast Start:           yes
  Queuing:              rx-(N/A), tx-(4q1t, Sharing/Shaping)
```

```
    CoS rewrite:          yes
    ToS rewrite:          yes
    Inline power:         no
    SPAN:                 source/destination
    UDLD                   yes
    Link Debounce:        no
    Link Debounce Time:   no
    Port Security          yes
    Dot1x                  yes
GigabitEthernet1/2
    Model:                WS-X4516-Gbic
    Type:                 Unsupported GBIC
    Speed:                1000
    Duplex:               full
    Trunk encap. type:    802.1Q,ISL
    Trunk mode:           on,off,desirable,nonegotiate
    Channel:              yes
    Broadcast suppression:percentage(0-100), hw
    Flowcontrol:          rx-(off,on,desired),tx-(off,on,desired)
    VLAN Membership:      static, dynamic
    Fast Start:           yes
    Queuing:              rx-(N/A), tx-(4q1t, Sharing/Shaping)
    CoS rewrite:          yes
    ToS rewrite:          yes
    Inline power:         no
    SPAN:                 source/destination
    UDLD                   yes
    Link Debounce:        no
    Link Debounce Time:   no
    Port Security          yes
    Dot1x                  yes
Switch#
```

This example shows how to display the interface capabilities for the 10-Gigabit Ethernet interface 1/1:

```
Switch# show interfaces tengigabitethernet1/1 capabilities
TenGigabitEthernet1/1
    Model:                WS-X4517-X2
    Type:                 10GBase-LR
    Speed:                10000
    Duplex:               full
    Trunk encap. type:    802.1Q,ISL
    Trunk mode:           on,off,desirable,nonegotiate
    Channel:              yes
    Broadcast suppression: percentage(0-100), hw
    Flowcontrol:          rx-(off,on),tx-(off,on)
    VLAN Membership:      static, dynamic
    Fast Start:           yes
    Queuing:              rx-(N/A), tx-(1p3q1t, Sharing/Shaping)
    CoS rewrite:          yes
    ToS rewrite:          yes
    Inline power:         no
    SPAN:                 source/destination
    UDLD:                 yes
    Link Debounce:        no
    Link Debounce Time:   no
    Port Security:        yes
    Dot1x:                yes
    Maximum MTU:          9198 bytes (Jumbo Frames)
    Multiple Media Types: no
    Diagnostic Monitoring: N/A
Switch#
```

This example shows how to display the interface capabilities for Gigabit Ethernet interface 1/1:

```
Switch# show interfaces gigabitethernet1/1 capabilities
GigabitEthernet1/1
  Model:                WS-X4014-Gbic
  Type:                 No Gbic
  Speed:                1000
  Duplex:               full
  Trunk encap. type:    802.1Q,ISL
  Trunk mode:           on,off,desirable,nonegotiate
  Channel:              yes
  Broadcast suppression:percentage(0-100), hw
  Flowcontrol:          rx-(off,on,desired),tx-(off,on,desired)
  VLAN Membership:      static, dynamic
  Fast Start:           yes
  Queuing:              rx-(N/A), tx-(4q1t, Sharing/Shaping)
  CoS rewrite:          yes
  ToS rewrite:          yes
  Inline power:         no
  SPAN:                 source/destination
  UDLD:                 yes
  Link Debounce:        no
  Link Debounce Time:   no
  Port Security:        yes
  Dot1x:                yes
  MTU Supported:        jumbo frames, baby giants
Switch#
```

This example shows how to display the interface capabilities for Fast Ethernet interface 3/1:

```
Switch# show interfaces fastethernet3/1 capabilities
FastEthernet3/1
  Model:                WS-X4148-RJ-RJ-45
  Type:                 10/100BaseTX
  Speed:                10,100,auto
  Duplex:               half,full,auto
  Trunk encap. type:    802.1Q,ISL
  Trunk mode:           on,off,desirable,nonegotiate
  Channel:              yes
  Broadcast suppression:percentage(0-100), sw
  Flowcontrol:          rx-(none),tx-(none)
  VLAN Membership:      static, dynamic
  Fast Start:           yes
  Queuing:              rx-(N/A), tx-(4q1t, Shaping)
  CoS rewrite:          yes
  ToS rewrite:          yes
  Inline power:         no
  SPAN:                 source/destination
  UDLD:                 yes
  Link Debounce:        no
  Link Debounce Time:   no
  Port Security:        yes
  Dot1x:                yes
  MTU Supported:        no jumbo frames, baby giants
Switch#
```

**Related Commands**     show interfaces counters

# show interfaces counters

To display the traffic on the physical interface, use the **show interfaces counters** command.

**show interfaces counters** [**all** | **detail** | **errors** | **storm-control** | **trunk**]  [**module** *mod*]

**Syntax Description**

| | |
|---|---|
| **all** | (Optional) Displays all the interface counters including errors, trunk, and detail. |
| **detail** | (Optional) Displays the detailed interface counters. |
| **errors** | (Optional) Displays the interface error counters. |
| **storm-control** | (Optional) Displays the number of packets discarded due to suppression on the interface. |
| **trunk** | (Optional) Displays the interface trunk counters. |
| **module** *mod* | (Optional) Limits the display to interfaces on a specific module. |

**Defaults**

This command has no default settings.

**Command Modes**

Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.1(19)EW | Support for storm control. |
| 12.2(18)EW | Support for the display of total suppression discards. |

**Usage Guidelines**

If you do not enter any keywords, all the counters for all modules are displayed.

The display for the **storm-control** keyword includes the suppressed multicast bytes.

**Examples**

This example shows how to display the error counters for a specific module:

```
Switch# show interfaces counters errors module 1

Port         Align-Err      FCS-Err    Xmit-Err     Rcv-Err UnderSize
Gi1/1                0            0           0           0         0
Gi1/2                0            0           0           0         0

Port       Single-Col Multi-Col  Late-Col Excess-Col Carri-Sen     Runts     Giants
Gi1/1               0         0         0          0         0         0         0
Gi1/2               0         0         0          0         0         0         0
Switch#
```

This example shows how to display the traffic that is seen by a specific module:

```
Switch# show interfaces counters module 1

Port            InOctets    InUcastPkts    InMcastPkts    InBcastPkts
Gi1/1                  0              0              0              0
Gi1/2                  0              0              0              0

Port           OutOctets   OutUcastPkts   OutMcastPkts   OutBcastPkts
Gi1/1                  0              0              0              0
Gi1/2                  0              0              0              0
Switch#
```

This example shows how to display the trunk counters for a specific module:

```
Switch# show interfaces counters trunk module 1

Port         TrunkFramesTx   TrunkFramesRx   WrongEncap
Gi1/1                    0               0            0
Gi1/2                    0               0            0
Switch#
```

This example shows how to display the number of packets that are discarded due to suppression:

```
Switch# show interfaces counters storm-control

Multicast Suppression : Enabled

Port        BcastSuppLevel   TotalSuppressionDiscards
Fa5/35             10.00%                    6278550
Switch#
```

**Related Commands**    **show interfaces capabilities**

# show interfaces description

To display a description and status of an interface, use the **show interfaces description** command.

**show interfaces** [*interface*] **description**

**Syntax Description**

| *interface* | (Optional) Type of interface. |
|---|---|

**Defaults**

This command has no default settings.

**Command Modes**

Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Examples**

This example shows how to display information for all interfaces:

```
Switch# show interfaces description
 Interface Status        Protocol Description
 PO0/0     admin down    down     First interface
 PO0/1     admin down    down
 Gi1/1     up            up       GigE to server farm
Switch#
```

**Related Commands**

**description** (refer to Cisco IOS documentation)

# show interfaces link

To display how long a cable has been disconnected from an interface, use the **show interfaces link** command:

**show interfaces link** [**module** *mod_num*]

**Syntax Description**

| | |
|---|---|
| **module** *mod_num* | (Optional) Limits the display to interfaces on a module. |

**Defaults**    This command has no default settings.

**Command Modes**    Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.2(18)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Usage Guidelines**    If the interface state is up, the command displays 0:00. If the interface state is down, the time (in hours, minutes, and seconds) is displayed.

**Examples**    This example shows how to display active link-level information:

```
Switch# show interfaces link

Port    Name            Down Time
Gi1/1                    00:00:00
Gi1/2                    00:00:00
Gi3/1            00:00:00
Gi3/2            00:00:00
Fa4/1                    00:00:00
Fa4/2                    00:00:00
Fa4/3                    00:00:00
Fa4/4                    00:00:00
```

This example shows how to display inactive link-level information:

```
Switch# show interfaces link

Port    Name        Down Time
Gi3/4               1 minute 28 secs
Gi3/5               1 minute 28 secs
Gi3/6               1 minute 28 secs
Gi4/1               1 minute 28 secs
```

In this example, the cable has been disconnected from the port for 1 minute and 28 seconds.

# show interfaces mtu

To display the maximum transmission unit (MTU) size of all the physical interfaces and SVIs on the switch, use the **show interfaces mtu** command.

**show interfaces mtu** [**module** *mod*]

**Syntax Description**

| | |
|---|---|
| **module** *mod* | (Optional) Limits the display to interfaces on a specific module. |

**Defaults**          This command has no default settings.

**Command Modes**     EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(13)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Examples**          This example shows how to display the MTU size for all interfaces on module 1:

```
Switch> show interfaces mtu module 1

Port    Name              MTU
Gi1/1                     1500
Gi1/2                     1500
Switch>
```

**Related Commands**   mtu

# show interfaces private-vlan mapping

To display PVLAN mapping information for VLAN SVIs, use the **show interfaces private-vlan mapping** command.

**show interfaces private-vlan mapping** [**active**]

| Syntax Description | active | (Optional) Displays active interfaces only. |
|---|---|---|

**Defaults**  This command has no default settings.

**Command Modes**  Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Usage Guidelines**  This command displays SVI information only.

**Examples**  This example shows how to display PVLAN mapping information:

```
Switch# show interfaces private-vlan mapping
Interface Secondary VLAN Type
--------- -------------- -----------------
vlan2     301            isolated
vlan2     302            isolated
Switch#
```

**Related Commands**  **private-vlan**
**private-vlan mapping**

# show interfaces status

To display the interface status or a list of interfaces in error-disabled state, use the **show interfaces status** command.

> **show interfaces status** [**err-disabled**]

**Syntax Description**

| err-disabled | (Optional) Displays interfaces in error-disabled state. |
|---|---|

**Defaults**

This command has no default settings.

**Command Modes**

Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Examples**

This example shows how to display the status of all interfaces:

```
Switch# show interfaces status

Port    Name              Status      Vlan      Duplex Speed Type
Gi1/1                     disabled    routed      full  1000 missing
Gi1/2                     notconnect 1            full  1000 unknown (4)
Fa5/1                     disabled    routed      auto  auto 10/100BaseTX
Fa5/2                     disabled    routed      auto  auto 10/100BaseTX
Fa5/3                     disabled    routed      auto  auto 10/100BaseTX
Fa5/4                     disabled    routed      auto  auto 10/100BaseTX
...
Fa5/15                    disabled    routed      auto  auto 10/100BaseTX
Fa5/16                    disabled    routed      auto  auto 10/100BaseTX
Fa5/17                    disabled    routed      auto  auto 10/100BaseTX
Switch#
```

This example shows how to display the status of interfaces in an error-disabled state:

```
Switch# show interfaces status err-disabled

Port    Name              Status      Reason
Fa9/4                     notconnect  link-flap

informational error message when the timer expires on a cause
---------------------------------------------------------------

5d04h:%PM-SP-4-ERR_RECOVER:Attempting to recover from link-flap err-disable state on Fa9/4
Switch#
```

**Related Commands**

**errdisable detect**
**show errdisable recovery**

# show interfaces switchport

To display the administrative and operational status of a switching (nonrouting) port, use the **show interfaces switchport** command.

**show interfaces** [*interface-id*] **switchport** [**module** *mod*]

## Syntax Description

| | |
|---|---|
| *interface-id* | (Optional) Interface ID for the physical port. |
| **module** *mod* | (Optional) Limits the display to interfaces on the specified module; valid values are from 1 to 6. |

## Defaults

This command has no default settings.

## Command Modes

Privileged EXEC

## Command History

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.1(19)EW | Support for per-interface display. |
| 12.2(18)EW | Support for displaying the status of native VLAN tagging in the command output. |

## Examples

This example shows how to display switch-port information using the **begin** output modifier:

```
Switch# show interfaces switchport | include VLAN
Name: Fa5/6
Access Mode VLAN: 200 (VLAN0200)
Trunking Native Mode VLAN: 1 (default)
Trunking VLANs Enabled: ALL
Pruning VLANs Enabled: ALL
Switch#
```

This example shows how to display switch-port information for module 1:

```
Switch# show interfaces switchport module 1
Name:Gi1/1
Switchport:Enabled
Administrative Mode:dynamic auto
Operational Mode:down
Administrative Trunking Encapsulation:negotiate
Negotiation of Trunking:On
Access Mode VLAN:1 (default)
Trunking Native Mode VLAN:1 (default)
Administrative private-vlan host-association:none
Administrative private-vlan mapping:none
Operational private-vlan:none
Trunking VLANs Enabled:ALL
Pruning VLANs Enabled:2-1001

Name:Gi1/2
Switchport:Enabled
```

```
Administrative Mode:dynamic auto
Operational Mode:down
Administrative Trunking Encapsulation:negotiate
Negotiation of Trunking:On
Access Mode VLAN:1 (default)
Trunking Native Mode VLAN:1 (default)
Administrative private-vlan host-association:none
Administrative private-vlan mapping:none
Operational private-vlan:none
Trunking VLANs Enabled:ALL
Pruning VLANs Enabled:2-1001
Switch#
```

This example shows how to display the status of native VLAN tagging on the port:

```
Switch# show interfaces g1/2 switchport
Name: Gi1/2
Switchport: Enabled
Administrative Mode: dynamic auto
Operational Mode: static access
Administrative Trunking Encapsulation: negotiate
Operational Trunking Encapsulation: native
Negotiation of Trunking: On
Access Mode VLAN: 1 (default)
Trunking Native Mode VLAN: 1 (default)
Native VLAN tagging: Disabled **
Voice VLAN: none
Administrative private-vlan host-association: none
Administrative private-vlan mapping: none
Administrative private-vlan trunk native VLAN: none
Administrative private-vlan trunk encapsulation: dot1q
Administrative private-vlan trunk normal VLANs: none
Administrative private-vlan trunk private VLANs: none
Administrative private-vlan trunk Native VLAN tagging: Disabled
Operational private-vlan: none
Trunking VLANs Enabled: ALL
Pruning VLANs Enabled: 2-1001
Capture Mode Disabled
Capture VLANs Allowed: ALL
Unknown unicast blocked: disabled
Unknown multicast blocked: disabled
```

**Related Commands**    **show interfaces capabilities**
                        **show interfaces counters**

# show interfaces transceiver

To display diagnostic-monitoring data for all interfaces that have transceivers installed, use the **show interfaces transceiver** command.

> **show interfaces** {{[*int_name*] **transceiver** {[**detail**]} | {**transceiver** [**module** *mod*] | **detail** [**module** *mod*]}}

| Syntax Description | | |
|---|---|---|
| | *int_name* | (Optional) Interface. |
| | **detail** | (Optional) Displays the calibrated values and the A2D readouts if the readout values differ from the calibrated values. Also displays the high-alarm, high-warning, low-warning, and low-alarm thresholds. |
| | **module** *mod* | (Optional) Limits the display to interfaces on a specific module. |

**Defaults**

The noninterface-specific versions of the **show interfaces transceiver** command are enabled by default.

The interface-specific versions of these commands are enabled by default if the specified interface has a transceiver (GBIC or SFP) that is configured for diagnostic monitoring, and the transceiver is in a module that supports diagnostic monitoring.

**Command Modes**

Privileged EXEC

| Command History | Release | Modification |
|---|---|---|
| | 12.1(20)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| | 12.2(18)EW | Support for the **calibration** keyword was withdrawn. |

**Usage Guidelines**

The **show interfaces transceiver** command provides useful information under the following conditions:

- At least one transceiver is installed on a chassis that is configured for diagnostic monitoring.
- The transceiver is in a module that supports diagnostic monitoring.

If you notice that the alarm and warning flags have been set on a transceiver, reenter the command to confirm.

**Examples**

This example shows how to display diagnostic monitoring data for all interfaces with transceivers installed on the switch:

```
Switch# show interfaces transceiver
   If device is externally calibrated, only calibrated values are printed.
   ++ : high alarm, +  : high warning, -  : low warning, -- : low alarm.
   NA or N/A: not applicable, Tx: transmit, Rx: receive.
   mA: milliamperes, dBm: decibels (milliwatts).
                                      Optical   Optical
            Temperature  Voltage  Current  Tx Power  Rx Power
   Port     (Celsius)    (Volts)  (mA)     (dBm)     (dBm)
```

```
------- ----------- ------- -------- -------- --------
Gi1/1     48.1       3.30     0.0       8.1 ++  N/A
Gi1/2     33.0       3.30     1.8     -10.0    -36.9
Gi2/1     43.7       5.03    50.6 +   -16.7 -- N/A
Gi2/2     39.2       5.02    25.7       0.8    N/A
Switch#
```

**Note** The value for the Optical Tx Power (in dBm) equals ten times log (Tx Power in mW). If the Tx Power value is 3 mW, then the Optical Tx Power value equals 10 * log (3), which equals 10 * .477 or 4.77 dBm. The Optical Rx Power value behaves similarly. If the Tx Power or the Rx Power is zero, then its dBm value is undefined and is shown as N/A (not applicable).

This example shows how to display detailed diagnostic monitoring data, including calibrated values, alarm and warning thresholds, A2D readouts, and alarm and warning flags. The A2D readouts are reported separately in parentheses only if they differ from the calibrated values:

```
Switch# show interfaces transceiver detail
   mA: milliamperes, dBm: decibels (milliwatts), NA or 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 calibrated.

                                High Alarm High Warn Low Warn  Low Alarm
          Temperature           Threshold  Threshold Threshold Threshold
   Port   (Celsius)             (Celsius)  (Celsius) (Celsius) (Celsius)
   ------- ------------------   ---------- --------- --------- ---------
   Gi1/1    48.1                 100.0      100.0      0.0       0.0
   Gi1/2    34.9                 100.0      100.0      0.0       0.0
   Gi2/1    43.5                  70.0       60.0      5.0       0.0
   Gi2/2    39.1                  70.0       60.0      5.0       0.0

                                High Alarm High Warn Low Warn  Low Alarm
          Voltage               Threshold  Threshold Threshold Threshold
   Port   (Volts)               (Volts)    (Volts)   (Volts)   (Volts)
   ------- ----------------     ---------- --------- --------- ---------
   Gi1/1   3.30                  6.50       6.50      N/A       N/A
   Gi1/2   3.30                  6.50       6.50      N/A       N/A
   Gi2/1   5.03                  5.50       5.25      4.75      4.50
   Gi2/2   5.02                  5.50       5.25      4.75      4.50

                                High Alarm High Warn Low Warn  Low Alarm
          Current               Threshold  Threshold Threshold Threshold
   Port   (milliamperes)        (mA)       (mA)      (mA)      (mA)
   ------- -----------------    ---------- --------- --------- ---------
   Gi1/1    0.0                  130.0      130.0     N/A       N/A
   Gi1/2    1.7                  130.0      130.0     N/A       N/A
   Gi2/1   50.6          +        60.0       40.0     10.0      5.0
   Gi2/2   25.8                   60.0       40.0     10.0      5.0

          Optical               High Alarm High Warn Low Warn  Low Alarm
          Transmit Power        Threshold  Threshold Threshold Threshold
   Port   (dBm)                 (dBm)      (dBm)     (dBm)     (dBm)
   ------- -----------------    ---------- --------- --------- ---------
   Gi1/1    8.1          ++      8.1        8.1       N/A       N/A
   Gi1/2   -9.8                  8.1        8.1       N/A       N/A
   Gi2/1  -16.7 (-13.0) --       3.4        3.2      -0.3      -0.5
   Gi2/2    0.8 (  5.1)          3.4        3.2      -0.3      -0.5

          Optical               High Alarm High Warn Low Warn  Low Alarm
          Receive Power         Threshold  Threshold Threshold Threshold
   Port   (dBm)                 (dBm)      (dBm)     (dBm)     (dBm)
```

```
      -------  ----------------  ----------  ---------  ---------  ---------
      Gi1/1    N/A                   8.1        8.1        N/A        N/A
      Gi1/2    -30.9                 8.1        8.1        N/A        N/A
      Gi2/1    N/A   (-28.5)         5.9       -6.7      -28.5      -28.5
      Gi2/2    N/A   (-19.5)         5.9       -6.7      -28.5      -28.5
Switch#
```

This example shows how to display the monitoring data for the interfaces that have transceivers installed on module 2:

```
Switch# show interfaces transceiver module 2
    If device is externally calibrated, only calibrated values are printed.
    ++ : high alarm, +  : high warning, -  : low warning, -- : low alarm.
    NA or N/A: not applicable, Tx: transmit, Rx: receive.
    mA: milliamperes, dBm: decibels (milliwatts).

                                              Optical   Optical
              Temperature  Voltage  Current   Tx Power  Rx Power
      Port    (Celsius)    (Volts)  (mA)      (dBm)     (dBm)
      -------  ----------  -------  --------  --------  --------
      Gi2/1     43.7        5.03      50.6 +   -16.7 --  N/A
      Gi2/2     39.2        5.02      25.7      0.8      N/A
Switch#
```

This example shows how to display the detailed monitoring data for the interfaces that have transceivers installed on module 2:

```
Switch# show interfaces transceiver detail module 2
    mA: milliamperes, dBm: decibels (milliwatts), NA or 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 calibrated.

                                High Alarm  High Warn  Low Warn   Low Alarm
              Temperature       Threshold   Threshold  Threshold  Threshold
      Port    (Celsius)         (Celsius)   (Celsius)  (Celsius)  (Celsius)
      -------  ----------------  ----------  ---------  ---------  ---------
      Gi2/1    43.5                70.0        60.0        5.0        0.0
      Gi2/2    39.1                70.0        60.0        5.0        0.0

                                High Alarm  High Warn  Low Warn   Low Alarm
              Voltage           Threshold   Threshold  Threshold  Threshold
      Port    (Volts)           (Volts)     (Volts)    (Volts)    (Volts)
      -------  ----------------  ----------  ---------  ---------  ---------
      Gi2/1    5.03                5.50        5.25       4.75       4.50
      Gi2/2    5.02                5.50        5.25       4.75       4.50

                                High Alarm  High Warn  Low Warn   Low Alarm
              Current           Threshold   Threshold  Threshold  Threshold
      Port    (milliamperes)    (mA)        (mA)       (mA)       (mA)
      -------  ----------------  ----------  ---------  ---------  ---------
      Gi2/1    50.6          +     60.0        40.0       10.0        5.0
      Gi2/2    25.8                60.0        40.0       10.0        5.0

              Optical           High Alarm  High Warn  Low Warn   Low Alarm
              Transmit Power    Threshold   Threshold  Threshold  Threshold
      Port    (dBm)             (dBm)       (dBm)      (dBm)      (dBm)
      -------  ----------------  ----------  ---------  ---------  ---------
      Gi2/1    -16.7 (-13.0) --    3.4         3.2       -0.3       -0.5
      Gi2/2     0.8 (  5.1)        3.4         3.2       -0.3       -0.5

              Optical           High Alarm  High Warn  Low Warn   Low Alarm
              Receive Power     Threshold   Threshold  Threshold  Threshold
      Port    (dBm)             (dBm)       (dBm)      (dBm)      (dBm)
```

```
       -------  -----------------  ----------  ---------  ---------  ---------
       Gi2/1    N/A  (-28.5)         5.9         -6.7      -28.5      -28.5
       Gi2/2    N/A  (-19.5)         5.9         -6.7      -28.5      -28.5
Switch#
```

This example shows how to display the monitoring data for the transceivers on interface Gi1/2:

```
Switch# show interfaces g1/2 transceiver
    ITU Channel 23 (1558.98 nm),
    Transceiver is externally calibrated.
    If device is externally calibrated, only calibrated values are printed.
    ++ : high alarm, +  : high warning, -  : low warning, -- : low alarm.
    NA or N/A: not applicable, Tx: transmit, Rx: receive.
    mA: milliamperes, dBm: decibels (milliwatts).

                                               Optical   Optical
             Temperature  Voltage  Current  Tx Power  Rx Power
      Port   (Celsius)    (Volts)  (mA)     (dBm)     (dBm)
      -------  -----------  -------  --------  --------  --------
      Gi2/1    43.7         5.03      50.6 +   -16.7 --   N/A
Switch#
```

This example shows how to display detailed the monitoring data for the transceivers on interface Gi1/2:

```
Switch# show interfaces g1/2 transceiver detail
    ITU Channel 23 (1558.98 nm),
    Transceiver is externally calibrated.
    mA: milliamperes, dBm: decibels (milliwatts), NA or 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 calibrated.

                             High Alarm  High Warn  Low Warn   Low Alarm
             Temperature     Threshold   Threshold  Threshold  Threshold
      Port   (Celsius)       (Celsius)   (Celsius)  (Celsius)  (Celsius)
      -------  ----------------  ----------  ---------  ---------  ---------
      Gi2/1    43.5             70.0        60.0        5.0        0.0

                             High Alarm  High Warn  Low Warn   Low Alarm
             Voltage          Threshold   Threshold  Threshold  Threshold
      Port   (Volts)          (Volts)     (Volts)    (Volts)    (Volts)
      -------  ----------------  ----------  ---------  ---------  ---------
      Gi2/1    5.03             5.50        5.25        4.75       4.50

                             High Alarm  High Warn  Low Warn   Low Alarm
             Current          Threshold   Threshold  Threshold  Threshold
      Port   (milliamperes)   (mA)        (mA)       (mA)       (mA)
      -------  ----------------  ----------  ---------  ---------  ---------
      Gi2/1    50.6          +   60.0        40.0       10.0        5.0

             Optical          High Alarm  High Warn  Low Warn   Low Alarm
             Transmit Power   Threshold   Threshold  Threshold  Threshold
      Port   (dBm)            (dBm)       (dBm)      (dBm)      (dBm)
      -------  ----------------  ----------  ---------  ---------  ---------
      Gi2/1    -16.7 (-13.0) --   3.4         3.2        -0.3       -0.5

             Optical          High Alarm  High Warn  Low Warn   Low Alarm
             Receive Power    Threshold   Threshold  Threshold  Threshold
      Port   (dBm)            (dBm)       (dBm)      (dBm)      (dBm)
      -------  ----------------  ----------  ---------  ---------  ---------
      Gi2/1    N/A  (-28.5)      5.9         -6.7      -28.5      -28.5
Switch#
```

**Related Commands**    show idprom
show interfaces status

# show interfaces trunk

To display port and module interface-trunk information, use the **show interfaces trunk** command.

**show interfaces trunk** [**module** *mod*]

**Syntax Description**

| | |
|---|---|
| **module** *mod* | (Optional) Limits the display to interfaces on the specified module; valid values are from 1 to 6. |

**Defaults**

This command has no default settings.

**Command Modes**

Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Usage Guidelines**

If you do not specify a keyword, only information for trunking ports is displayed.

**Examples**

This example shows how to display interface-trunk information for module 5:

```
Switch# show interfaces trunk module 5

Port      Mode        Encapsulation  Status       Native vlan
Fa5/1     routed      negotiate      routed       1
Fa5/2     routed      negotiate      routed       1
Fa5/3     routed      negotiate      routed       1
Fa5/4     routed      negotiate      routed       1
Fa5/5     routed      negotiate      routed       1
Fa5/6     off         negotiate      not-trunking 10
Fa5/7     off         negotiate      not-trunking 10
Fa5/8     off         negotiate      not-trunking 1
Fa5/9     desirable   n-isl          trunking     1
Fa5/10    desirable   negotiate      not-trunking 1
Fa5/11    routed      negotiate      routed       1
Fa5/12    routed      negotiate      routed       1
...
Fa5/48    routed      negotiate      routed       1


Port      Vlans allowed on trunk
Fa5/1     none
Fa5/2     none
Fa5/3     none
Fa5/4     none
Fa5/5     none
Fa5/6     none
Fa5/7     none
Fa5/8     200
Fa5/9     1-1005
```

```
Fa5/10     none
Fa5/11     none
Fa5/12     none

Fa5/48     none

Port       Vlans allowed and active in management domain
Fa5/1      none
Fa5/2      none
Fa5/3      none
Fa5/4      none
Fa5/5      none
Fa5/6      none
Fa5/7      none
Fa5/8      200
Fa5/9      1-6,10,20,50,100,152,200,300,303-305,349-351,400,500,521,524,570,801-8
02,850,917,999,1002-1005
Fa5/10     none
Fa5/11     none
Fa5/12     none

Fa5/48     none

Port       Vlans in spanning tree forwarding state and not pruned
Fa5/1      none
Fa5/2      none
Fa5/3      none
Fa5/4      none
Fa5/5      none
Fa5/6      none
Fa5/7      none
Fa5/8      200
Fa5/9      1-6,10,20,50,100,152,200,300,303-305,349-351,400,500,521,524,570,801-8
02,850,917,999,1002-1005
Fa5/10     none
Fa5/11     none

Fa5/48     none
Switch#
```

This example shows how to display trunking information for active trunking ports:

```
Switch# show interfaces trunk

Port       Mode          Encapsulation  Status       Native vlan
Fa5/9      desirable     n-isl          trunking     1

Port       Vlans allowed on trunk
Fa5/9      1-1005

Port       Vlans allowed and active in management domain
Fa5/9      1-6,10,20,50,100,152,200,300,303-305,349-351,400,500,521,524,570,801-8
02,850,917,999,1002-1005

Port       Vlans in spanning tree forwarding state and not pruned
Fa5/9      1-6,10,20,50,100,152,200,300,303-305,349-351,400,500,521,524,570,801-8
02,850,917,999,1002-1005
Switch#
```

# show ip arp inspection

To show the status of dynamic ARP inspection for a specific range of VLANs, use the **show ip arp inspection** command.

**show ip arp inspection** {[**statistics**] **vlan** *vlan-range* | **interfaces** [*interface-name*]}

| Syntax Description | | |
|---|---|---|
| | **statistics** | (Optional) Displays statistics for the following types of packets that have been processed by this feature: forwarded, dropped, MAC validation failure, and IP validation failure. |
| | **vlan** *vlan-range* | (Optional) When used with the **statistics** keyword, displays the statistics for the selected range of VLANs. Without the **statistics** keyword, displays the configuration and operating state of DAI for the selected range of VLANs. |
| | **interfaces** *interface-name* | (Optional) Displays the trust state and the rate limit of ARP packets for the provided interface. When the interface name is not specified, the command displays the trust state and rate limit for all applicable interfaces in the system. |

**Defaults**       This command has no default settings.

**Command Modes**       Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(19)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Examples**       This example shows how to display the statistics of packets that have been processed by DAI for VLAN 3:

```
Switch# show ip arp inspection statistics vlan 3

Vlan       Forwarded         Dropped      DHCP Drops     ACL Drops
----       ---------         -------      ----------     ----------
   3          31753          102407          102407              0

Vlan    DHCP Permits    ACL Permits    Source MAC Failures
----    ------------    -----------    -------------------
   3          31753              0                      0

Vlan    Dest MAC Failures    IP Validation Failures
----    -----------------    ----------------------
   3                    0                         0
Switch#
```

This example shows how to display the statistics of packets that have been processed by DAI for all active VLANs:

```
Switch# show ip arp inspection statistics

Vlan      Forwarded       Dropped     DHCP Drops     ACL Drops
----      ---------       -------     ----------     ----------
   1              0             0              0              0
   2              0             0              0              0
   3          68322        220356         220356              0
   4              0             0              0              0
 100              0             0              0              0
 101              0             0              0              0
1006              0             0              0              0
1007              0             0              0              0


Vlan   DHCP Permits    ACL Permits    Source MAC Failures
----   ------------    -----------    -------------------
   1              0              0                      0
   2              0              0                      0
   3          68322              0                      0
   4              0              0                      0
 100              0              0                      0
 101              0              0                      0
1006              0              0                      0
1007              0              0                      0


Vlan   Dest MAC Failures   IP Validation Failures
----   -----------------   ----------------------
   1                   0                        0
   2                   0                        0
   3                   0                        0
   4                   0                        0
 100                   0                        0
 101                   0                        0
1006                   0                        0
1007                   0                        0
Switch#
```

This example shows how to display the configuration and operating state of DAI for VLAN 1:

```
Switch# show ip arp inspection vlan 1
Source Mac Validation      : Disabled
Destination Mac Validation : Disabled
IP Address Validation      : Disabled

Vlan    Configuration    Operation   ACL Match          Static ACL
----    -------------    ---------   ---------          ----------
   1    Enabled          Active

Vlan    ACL Logging      DHCP Logging
----    -----------      ------------
   1    Deny             Deny
Switch#
```

This example shows how to display the trust state of interface Fa6/3:

```
Switch# show ip arp inspection interfaces fastEthernet 6/3
Interface        Trust State     Rate (pps)    Burst Interval
---------------  -----------     ----------    --------------
Fa6/1            Untrusted               20                 5
Switch#
```

This example shows how to display the trust state of the interfaces on the switch:

```
Switch# show ip arp inspection interfaces
Interface        Trust State     Rate (pps)
---------------  -----------     ----------
Gi1/1            Untrusted               15
Gi1/2            Untrusted               15
Gi3/1            Untrusted               15
Gi3/2            Untrusted               15
Fa3/3            Trusted               None
Fa3/4            Untrusted               15
Fa3/5            Untrusted               15
Fa3/6            Untrusted               15
Fa3/7            Untrusted               15
Switch#
```

**Related Commands**

**arp access-list**
**clear ip arp inspection log**
**show ip arp inspection**

# show ip arp inspection log

To show the status of the log buffer, use the **show ip arp inspection log** command.

> **show ip arp inspection log**

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

**Defaults**               This command has no default settings.

**Command Modes**          Privileged EXEC

**Command History**

| Release | Modification |
|---------|-------------|
| 12.1(19)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Examples**     This example shows how to display the current contents of the log buffer before and after the buffers are cleared:

```
Switch# show ip arp inspection log
Total Log Buffer Size : 10
Syslog rate : 0 entries per 10 seconds.

 Interface       Vlan   Sender MAC        Sender IP        Num of Pkts
 --------------  -----  ----------------  ---------------  -----------
Fa6/3           1      0002.0002.0002  1.1.1.2          1(12:02:52 UTC Fri Apr 25 2003)
Fa6/3           1      0002.0002.0002  1.1.1.3          1(12:02:52 UTC Fri Apr 25 2003)
Fa6/3           1      0002.0002.0002  1.1.1.4          1(12:02:52 UTC Fri Apr 25 2003)
Fa6/3           1      0002.0002.0002  1.1.1.5          1(12:02:52 UTC Fri Apr 25 2003)
Fa6/3           1      0002.0002.0002  1.1.1.6          1(12:02:52 UTC Fri Apr 25 2003)
Fa6/3           1      0002.0002.0002  1.1.1.7          1(12:02:52 UTC Fri Apr 25 2003)
Fa6/3           1      0002.0002.0002  1.1.1.8          1(12:02:52 UTC Fri Apr 25 2003)
Fa6/3           1      0002.0002.0002  1.1.1.9          1(12:02:52 UTC Fri Apr 25 2003)
Fa6/3           1      0002.0002.0002  1.1.1.10         1(12:02:52 UTC Fri Apr 25 2003)
Fa6/3           1      0002.0002.0002  1.1.1.11         1(12:02:52 UTC Fri Apr 25 2003)
   --            --       --            --              5(12:02:52 UTC Fri Apr 25 2003)
Switch#
```

This example shows how to clear the buffer with the **clear ip arp inspection log** command:

```
Switch# clear ip arp inspection log
Switch# show ip arp inspection log
Total Log Buffer Size : 10
Syslog rate : 0 entries per 10 seconds.
No entries in log buffer.
Switch#
```

**Related Commands**     **arp access-list**
**clear ip arp inspection log**

# show ip cef vlan

To view IP CEF VLAN interface status and configuration information and display the prefixes for a specific interface, use the **show ip cef vlan** command.

>**show ip cef vlan** *vlan_num* [**detail**]

**Syntax Description**

| | |
|---|---|
| *vlan_num* | Number of the VLAN. |
| **detail** | (Optional) Displays detailed information. |

**Defaults**        This command has no default settings.

**Command Modes**   Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Examples**        This example shows how to display the prefixes for a specific VLAN:

```
Switch# show ip cef vlan 1003
Prefix            Next Hop            Interface
0.0.0.0/0         172.20.52.1         FastEthernet3/3
0.0.0.0/32        receive
10.7.0.0/16       172.20.52.1         FastEthernet3/3
10.16.18.0/23     172.20.52.1         FastEthernet3/3
Switch#
```

This example shows how to display detailed IP CEF information for a specific VLAN:

```
Switch# show ip cef vlan 1003 detail
IP Distributed CEF with switching (Table Version 2364), flags=0x0
  1383 routes, 0 reresolve, 0 unresolved (0 old, 0 new)
  1383 leaves, 201 nodes, 380532 bytes, 2372 inserts, 989 invalidations
  0 load sharing elements, 0 bytes, 0 references
  universal per-destination load sharing algorithm, id 9B6C9823
  3 CEF resets, 0 revisions of existing leaves
  refcounts:  54276 leaf, 51712 node

Adjacency Table has 5 adjacencies
Switch#
```

# show ip dhcp snooping

To display the DHCP snooping configuration, use the **show ip dhcp snooping** command.

**show ip dhcp snooping**

## Syntax Description

This command has no arguments or keywords.

## Defaults

This command has no default settings.

## Command Modes

Privileged EXEC

## Command History

| Release | Modification |
| --- | --- |
| 12.1(12c)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.2(25)EWA | Support for option 82 on untrusted ports was added. |

## Examples

This example shows how to display the DHCP snooping configuration:

```
Switch# show ip dhcp snooping
Switch DHCP snooping is enabled
DHCP snooping is configured on the following VLANs:
5 10
Insertion of option 82 is enabled
Option82 on untrusted port is not allowed
Verification of hwaddr field is enabled
Interface            Trusted     Rate limit (pps)
-------------------  -------     ----------------
FastEthernet6/11     no          10
FastEthernet6/36     yes         50
Switch#
```

## Related Commands

**ip dhcp snooping**
**ip dhcp snooping information option**
**ip dhcp snooping limit rate**
**ip dhcp snooping trust**
**ip dhcp snooping vlan**

# show ip dhcp snooping binding

To display the DHCP snooping binding entries, use the **show ip dhcp snooping binding** command.

**show ip dhcp snooping binding** [*ip-address*] [*mac-address*] [**vlan** *vlan_num*] [**interface** *interface_num*]

## Syntax Description

| | |
|---|---|
| *ip-address* | (Optional) IP address for the binding entries. |
| *mac-address* | (Optional) MAC address for the binding entries. |
| **vlan** *vlan_num* | (Optional) Specifies a VLAN. |
| **interface** *interface_num* | (Optional) Specifies an interface. |

## Defaults

If no argument is specified, the switch will display the entire DHCP snooping binding table.

## Command Modes

Privileged EXEC

## Command History

| Release | Modification |
|---|---|
| 12.1(12c)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

## Usage Guidelines

DHCP snooping is enabled on a VLAN only if both the global snooping and the VLAN snooping are enabled.

To configure a range of VLANs, use the optional *last_vlan* argument to specify the end of the VLAN range.

## Examples

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

```
Switch# show ip dhcp snooping binding

MacAddress       IP Address     Lease (seconds)    Type             VLAN     Interface
-----------      -----------    ----------------   -------------    -----    ------------
0000.0100.0201   10.0.0.1       1600               dhcp-snooping    100      FastEthernet3/1
Switch#
```

This example shows how to display an IP address for DHCP snooping binding entries:

```
Switch# show ip dhcp snooping binding 172.100.101.102

MacAddress       IP Address       Lease (seconds)    Type             VLAN     Interface
-----------      -----------      ----------------   -------------    -----    ------------
0000.0100.0201   172.100.101.102  1600               dhcp-snooping    100      FastEthernet3/1
Switch#
```

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

```
Switch# show ip dhcp snooping binding 55.5.5.2 0002.b33f.3d5f

MacAddress         IpAddress        Lease(sec)  Type          VLAN  Interface
------------------ --------------- ----------  ------------  ----  --------------------
00:02:B3:3F:3D:5F  55.5.5.2         492         dhcp-snooping  99 FastEthernet6/36
Switch#
```

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

```
Switch# show ip dhcp snooping binding 55.5.5.2 0002.b33f.3d5f vlan 99

MacAddress         IpAddress        Lease(sec)  Type          VLAN  Interface
------------------ --------------- ----------  ------------  ----  --------------------
00:02:B3:3F:3D:5F  55.5.5.2         479         dhcp-snooping  99   FastEthernet6/36
Switch#
```

This example shows how to display the dynamic DHCP snooping binding entries:

```
Switch# show ip dhcp snooping binding dynamic

MacAddress      IP Address   Lease (seconds)    Type          VLAN    Interface
-----------     -----------  ---------------    ------------   -----   ------------
0000.0100.0201  10.0.0.1     1600               dhcp-snooping  100     FastEthernet3/1
Switch#
```

This example shows how to display the DHCP snooping binding entries on VLAN 100:

```
Switch# show ip dhcp snooping binding vlan 100'

MacAddress      IP Address   Lease (seconds)    Type          VLAN    Interface
-----------     -----------  ---------------    ------------   -----   ------------
0000.0100.0201  10.0.0.1     1600               dhcp-snooping  100     FastEthernet3/1
Switch#
```

This example shows how to display the DHCP snooping binding entries on Ethernet interface 0/1:

```
Switch# show ip dhcp snooping binding interface fastethernet3/1

MacAddress      IP Address   Lease (seconds)    Type          VLAN    Interface
-----------     -----------  ---------------    ------------   -----   ------------
0000.0100.0201  10.0.0.1     1600               dhcp-snooping  100     FastEthernet3/1
Switch#
```

Table 2-18 describes the fields in the **show ip dhcp snooping** command output.

*Table 2-18    show ip dhcp snooping Command Output*

| Field | Description |
|---|---|
| Mac Address | Client hardware MAC address. |
| IP Address | Client IP address assigned from the DHCP server. |
| Lease (seconds) | IP address lease time. |
| Type | Binding type; statically configured from CLI or dynamically learned. |
| VLAN | VLAN number of the client interface. |
| Interface | Interface that connects to the DHCP client host. |

**Related Commands**    ip dhcp snooping information option
ip dhcp snooping limit rate
ip dhcp snooping trust
ip igmp snooping
ip igmp snooping vlan

# show ip dhcp snooping database

To display the status of the DHCP snooping database agent, use the **show ip dhcp snooping database** command.

> **show ip dhcp snooping database** [**detail**]

**Syntax Description**

| **detail** | (Optional) Provides additional operating state and statistics information. |

**Defaults**

This command has no default settings.

**Command Modes**

Privileged EXEC

**Command History**

| Release | Modification |
| --- | --- |
| 12.1(12c)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.1(19)EW | Added support of state and statistics information. |

**Examples**

This example shows how to display the DHCP snooping database:

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

Switch#
```

This example shows how to view additional operating statistics:

```
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
Successful Transfers :        0  Failed Transfers :       21
Successful Reads      :        0  Failed Reads      :        0
Successful Writes     :        0  Failed Writes     :       21
Media Failures        :        0

First successful access: Read

Last ignored bindings counters :
Binding Collisions    :        0  Expired leases     :        0
Invalid interfaces    :        0  Unsupported vlans :        0
Parse failures        :        0
Last Ignored Time : None

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

Switch#
```

**Related Commands**

**ip dhcp snooping**
**ip dhcp snooping database**
**ip dhcp snooping information option**
**ip dhcp snooping limit rate**
**ip dhcp snooping trust**
**ip dhcp snooping vlan**

# show ip igmp interface

To view IP IGMP interface status and configuration information, use the **show ip igmp interface** command.

> **show ip igmp interface** [**fastethernet** *slot/port* | **gigabitethernet** *slot/port* |
> **tengigabitethernet** *slot/port* | **null** *interface-number* | **vlan** *vlan_id*]

| Syntax Description | | |
|---|---|---|
| **fastethernet** *slot/port* | (Optional) Specifies the Fast Ethernet interface and the number of the slot and port. | |
| **gigabitethernet** *slot/port* | (Optional) Specifies the Gigabit Ethernet interface and the number of the slot and port; valid values are from 1 to 9. | |
| **tengigabitethernet** *slot/port* | (Optional) Specifies the 10-Gigabit Ethernet interface and the number of the slot and port; valid values are from 1 to 2. | |
| **null** *interface-number* | (Optional) Specifies the null interface and the number of the interface; the only valid value is **0**. | |
| **vlan** *vlan_id* | (Optional) Specifies the VLAN and the number of the VLAN; valid values are from 1 to 4094. | |

**Defaults**    If you do not specify a VLAN, information for VLAN 1 is shown.

**Command Modes**    Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.1(12c)EW | Added support for extended VLAN addresses. |
| 12.2(25)EW | Added support for the 10-Gigabit Ethernet interface. |

**Usage Guidelines**    If you omit the optional arguments, the **show ip igmp interface** command displays information about all interfaces.

**Examples**    This example shows how to view IGMP information for VLAN 200:

```
Switch# show ip igmp interface vlan 200
IGMP snooping is globally enabled
IGMP snooping is enabled on this Vlan
IGMP snooping immediate-leave is disabled on this Vlan
IGMP snooping mrouter learn mode is pim-dvmrp on this Vlan
IGMP snooping is running in IGMP-ONLY mode on this VLAN
Switch#
```

**Related Commands**      clear ip igmp group
show ip igmp snooping mrouter

# show ip igmp profile

To view all configured IGMP profiles or a specified IGMP profile, use the **show ip igmp profile** privileged EXEC command.

> **show ip igmp profile** [*profile number*]

**Syntax Description**

| | |
|---|---|
| *profile number* | (Optional) IGMP profile number to be displayed; valid ranges are from 1 to 4294967295. |

**Defaults**    This command has no default settings.

**Command Modes**    Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(11b)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Usage Guidelines**    If no profile number is entered, all IGMP profiles are displayed.

**Examples**    This example shows how to display IGMP profile 40:

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

This example shows how to display all IGMP profiles:

```
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
Switch#
```

**Related Commands**    **ip igmp profile**

# show ip igmp snooping

To display information on dynamically learned and manually configured VLAN switch interfaces, use the **show ip igmp snooping** command.

**show ip igmp snooping** [**querier** | **groups** | **mrouter**] [**vlan** *vlan_id*] *a.b.c.d* [*summary* | *sources* | *hosts*] [*count*]

**Syntax Description**

| | |
|---|---|
| **querier** | (Optional) Specifies that the display will contain IP address and version information. |
| **groups** | (Optional) Specifies that the display will list VLAN members sorted by group IP addresses. |
| **mrouter** | (Optional) Specifies that the display will contain information on dynamically learned and manually configured multicast switch interfaces. |
| **vlan** *vlan_id* | (Optional) Specifies a VLAN; valid values are from 1 to 1001 and from 1006 to 4094. |
| *a.b.c.d* | Group or multicast IP address. |
| **summary** | (Optional) Specifies a display of detailed information for a v2 or v3 group. |
| **sources** | (Optional) Specifies a list of the source IPs for the specified group. |
| **hosts** | (Optional) Specifies a list of the host IPs for the specified group. |
| **count** | (Optional) Specifies a display of the total number of group addresses learned by the system on a global or per-VLAN basis. |

**Defaults**    This command has no default settings.

**Command Modes**    EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.1(19)EW | Support for extended addressing was added. |
| 12.1(20)EW | Added support to display configuration state for IGMPv3 explicit host tracking. |

**Usage Guidelines**    You can also use the **show mac-address-table multicast** command to display the entries in the MAC address table for a VLAN that has IGMP snooping enabled.

You can display IGMP snooping information for VLAN interfaces by entering the **show ip igmp snooping** command.

**Examples**

This example shows how to display the global snooping information on the switch:

```
Switch# show ip igmp snooping
Global IGMP Snooping configuration:
-----------------------------------
IGMP snooping            : Enabled
IGMPv3 snooping          : Enabled
Report suppression       : Enabled
TCN solicit query        : Disabled
TCN flood query count    : 2

Vlan 1:
--------
IGMP snooping                 : Enabled
IGMPv2 immediate leave        : Disabled
Explicit host tracking        : Enabled
Multicast router learning mode : pim-dvmrp
CGMP interoperability mode     : IGMP_ONLY

Vlan 2:
--------
IGMP snooping                 : Enabled
IGMPv2 immediate leave        : Disabled
Explicit host tracking        : Enabled
Multicast router learning mode : pim-dvmrp
CGMP interoperability mode     : IGMP_ONLY
Switch>
```

This example shows how to display the snooping information on VLAN 2:

```
Switch# show ip igmp snooping vlan 2
Global IGMP Snooping configuration:
-----------------------------------
IGMP snooping            : Enabled
IGMPv3 snooping          : Enabled
Report suppression       : Enabled
TCN solicit query        : Disabled
TCN flood query count    : 2

Vlan 2:
--------
IGMP snooping                 : Enabled
IGMPv2 immediate leave        : Disabled
Explicit host tracking        : Enabled
Multicast router learning mode : pim-dvmrp
CGMP interoperability mode     : IGMP_ONLY
Switch>
```

This example shows how to display IGMP querier information for all VLANs on a switch:

```
Switch# show ip igmp snooping querier
Vlan     IP Address     IGMP Version       Port
---------------------------------------------------
2        10.10.10.1     v2                 Router
3        172.20.50.22   v3                 Fa3/15
Switch>
```

This example shows how to display IGMP querier information for VLAN 5 when running IGMPv2:

```
Switch# show ip igmp snooping querier vlan 5
IP address              :5.5.5.10
IGMP version            :v2
Port                    :Fa3/1
Max response time       :10s
Switch>
```

This example shows how to display IGMP querier information for VLAN 5 when running IGMPv3:

```
Switch# show ip igmp snooping querier vlan 5
IP address              :5.5.5.10
IGMP version            :v3
Port                    :Fa3/1
Max response time       :10s
Query interval          :60s
Robustness variable     :2
Switch>
```

This example shows how to display snooping information for a specific group:

```
Switch# show ip igmp snooping group

Vlan       Group        Version     Ports
-----------------------------------------------------------
2          224.0.1.40   v3          Router
2          224.2.2.2    v3          Fa6/2
Switch>
```

This example shows how to display the group's host types and ports in VLAN 1:

```
Switch# show ip igmp snooping group vlan 1
Vlan       Group        Host Type   Ports
-----------------------------------------------------------
1          229.2.3.4    v3          fa2/1 fa2/3
1          224.2.2.2    v3          Fa6/2
Switch>
```

This example shows how to display the group's host types and ports in VLAN 1:

```
Switch# show ip igmp snooping group vlan 10 226.6.6.7
Vlan       Group        Version     Ports
-----------------------------------------------------------
10         226.6.6.7    v3          Fa7/13, Fa7/14
Switch>
```

This example shows how to display the current state of a group with respect to a source IP address:

```
Switch# show ip igmp snooping group vlan 10 226.6.6.7 sources
Source information for group 226.6.6.7:
Timers: Expired sources are deleted on next IGMP General Query

SourceIP     Expires   Uptime    Inc Hosts Exc Hosts
--------------------------------------------------------
2.0.0.1      00:03:04  00:03:48  2         0
2.0.0.2      00:03:04  00:02:07  2         0
Switch>
```

This example shows how to display the current state of a group with respect to a host MAC address:

```
Switch# show ip igmp snooping group vlan 10 226.6.6.7 hosts
IGMPv3 host information for group 226.6.6.7
Timers: Expired hosts are deleted on next IGMP General Query

Host (MAC/IP)   Filter mode    Expires    Uptime    # Sources
---------------------------------------------------------------
175.1.0.29      INCLUDE        stopped    00:00:51      2
175.2.0.30      INCLUDE        stopped    00:04:14      2
Switch>
```

This example shows how to display summary information for a v3 group:

```
Switch# show ip igmp snooping group vlan 10 226.6.6.7 summary
Group Address (Vlan 10)     : 226.6.6.7
Host type                   : v3
Member Ports                : Fa7/13, Fa7/14
Filter mode                 : INCLUDE
Expires                     : stopped
Sources                     : 2
Reporters (Include/Exclude) : 2/0
Switch>
```

This example shows how to display multicast router information for VLAN 1:

```
Switch# show ip igmp snooping mrouter vlan 1
vlan          ports
-----+---------------------------------------
  1          Gi1/1,Gi2/1,Fa3/48,Router
Switch#
```

This example shows how to display the total number of group addresses learned by the system globally:

```
Switch# show ip igmp snooping group count
Total number of groups:   54
Switch>
```

This example shows how to display the total number of group addresses learned on VLAN 5:

```
Switch# show ip igmp snooping group vlan 5 count
Total number of groups:   30
Switch>
```

**Related Commands**

**ip igmp snooping**
**ip igmp snooping vlan immediate-leave**
**ip igmp snooping vlan mrouter**
**ip igmp snooping vlan static**
**show ip igmp interface**
**show ip igmp snooping mrouter**
**show mac-address-table multicast**

# show ip igmp snooping membership

To display host membership information, use the **show ip igmp snooping membership** command.

**show ip igmp snooping membership** [**interface** *interface_num*] [**vlan** *vlan_id*]
[**reporter** *a.b.c.d*] [**source** *a.b.c.d* **group** *a.b.c.d*]

**Syntax Description**

| | |
|---|---|
| **interface** *interface_num* | (Optional) Displays IP address and version information of an interface. |
| **vlan** *vlan_id* | (Optional) Displays VLAN members sorted by group IP address of a VLAN; valid values are from 1 to 1001 and from 1006 to 4094. |
| **reporter** *a.b.c.d* | (Optional) Displays membership information for a specified reporter. |
| **source** *a.b.c.d* | (Optional) Specifies a reporter, source, or group IP address. |
| **group** *a.b.c.d* | (Optional) Displays all members of a channel (source, group), sorted by interface or VLAN. |

**Defaults**

This command has no default settings.

**Command Modes**

Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(20)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.2(25)EW | Added support for the 10-Gigabit Ethernet interface. |

**Usage Guidelines**

This command is valid only if explicit host tracking is enabled on the switch.

**Examples**

This example shows how to display host membership for the Gigabit Ethernet interface 4/1:

```
Switch# show ip igmp snooping membership interface gigabitethernet4/1
#channels: 5
#hosts : 1
Source/Group Interface Reporter Uptime Last-Join Last-Leave

40.40.40.2/224.10.10.10 Gi4/1 20.20.20.20 00:23:37 00:06:50 00:20:30
40.40.40.4/224.10.10.10Gi4/1 20.20.20.20 00:39:42 00:09:17 -
Switch#
```

This example shows how to display host membership for VLAN 20 and group 224.10.10.10:

```
Switch# show ip igmp snooping membership vlan 20 source 40.40.40.2 group 224.10.10.10
#channels: 5
#hosts : 1
Source/Group Interface Reporter Uptime Last-Join Last-Leave

40.40.40.2/224.10.10.10 Gi4/1 20.20.20.20 00:23:37 00:06:50 00:20:30
Switch#
```

This example shows how to display host membership information for VLAN 20 and to delete the explicit host tracking:

```
Switch# show ip igmp snooping membership vlan 20
Snooping Membership Summary for Vlan 20
----------------------------------------
Total number of channels:5
Total number of hosts   :4

Source/Group                    Interface   Reporter          Uptime   Last-Join/
                                                                                    Last-Leave
-------------------------------------------------------------------------------------------------

40.0.0.1/224.1.1.1              Fa7/37     0002.4ba0.a4f6   00:00:04 00:00:04 /
                                                                                  -

40.0.0.2/224.1.1.1              Fa7/37     0002.fd80.f770   00:00:17 00:00:17 /
                                                                                  -

40.0.0.3/224.1.1.1              Fa7/36     20.20.20.20       00:00:04 00:00:04 /
                                                                                  -

40.0.0.4/224.1.1.1              Fa7/35     20.20.20.210      00:00:17 00:00:17 /
                                                                                  -

40.0.0.5/224.1.1.1              Fa7/37     0002.fd80.f770   00:00:17 00:00:17 /
                                                                                  -

Switch# clear ip igmp snooping membership vlan 20
Switch#
```

**Related Commands**  clear ip igmp snooping membership
ip igmp snooping vlan explicit-tracking
show ip igmp snooping vlan

# show ip igmp snooping mrouter

To display information on the dynamically learned and manually configured multicast switch interfaces, use the **show ip igmp snooping mrouter** command.

**show ip igmp snooping mrouter** [{**vlan** *vlan-id*}]

**Syntax Description**

| | |
|---|---|
| **vlan** *vlan-id* | (Optional) Specifies a VLAN; valid values are from 1 to 1001 and from 1006 to 4094. |

**Defaults**

This command has no default settings.

**Command Modes**

Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.1(19)EW | Added support for extended VLAN addresses. |

**Usage Guidelines**

You can also use the **show mac-address-table multicast** command to display entries in the MAC address table for a VLAN that has IGMP snooping enabled.

You can display IGMP snooping information for the VLAN interfaces by entering the **show ip igmp interface vlan** *vlan-num* command.

**Examples**

This example shows how to display snooping information for a specific VLAN:

```
Switch# show ip igmp snooping mrouter vlan 1
vlan          ports
-----+--------------------------------------
  1          Gi1/1,Gi2/1,Fa3/48,Switch
Switch#
```

**Related Commands**

**ip igmp snooping vlan mrouter**
**show ip igmp interface**
**show mac-address-table multicast**

# show ip igmp snooping vlan

To display information on the dynamically learned and manually configured VLAN switch interfaces, use the **show ip igmp snooping vlan** command.

**show ip igmp snooping vlan** *vlan_num*

**Syntax Description**

| | |
|---|---|
| *vlan_num* | Number of the VLAN; valid values are from 1 to 1001 and from 1006 to 4094. |

**Defaults**

This command has no default settings.

**Command Modes**

Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.1(12c)EW | Support for extended addressing was added. |

**Usage Guidelines**

You can also use the **show mac-address-table multicast** command to display the entries in the MAC address table for a VLAN that has IGMP snooping enabled.

**Examples**

This example shows how to display snooping information for a specific VLAN:

```
Switch# show ip igmp snooping vlan 2
vlan 2
----------
IGMP snooping is globally enabled
IGMP snooping TCN solicit query is globally enabled
IGMP snooping global TCN flood query count is 2
IGMP snooping is enabled on this Vlan
IGMP snooping immediate-leave is disabled on this Vlan
IGMP snooping mrouter learn mode is pim-dvmrp on this Vlan
IGMP snooping is running in IGMP_ONLY mode on this Vlan
Switch#
```

**Related Commands**

**ip igmp snooping**
**ip igmp snooping vlan immediate-leave**
**ip igmp snooping vlan mrouter**
**ip igmp snooping vlan static**
**show ip igmp interface**
**show ip igmp snooping mrouter**
**show mac-address-table multicast**

# show ip interface

To display the usability status of interfaces that are configured for IP, use the **show ip interface** command.

> **show ip interface** [*type number*]

**Syntax Description**

| | |
|---|---|
| *type* | (Optional) Interface type. |
| *number* | (Optional) Interface number. |

**Defaults**  This command has no default settings.

**Command Modes**  EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.2(25)EW | Extended to include the 10-Gigabit Ethernet interface. |

**Usage Guidelines**  The Cisco IOS software automatically enters a directly connected route in the routing table if the interface is usable. A usable interface is one through which the software can send and receive packets. If the software determines that an interface is not usable, it removes the directly connected routing entry from the routing table. Removing the entry allows the software to use dynamic routing protocols to determine backup routes to the network, if any.

If the interface can provide two-way communication, the line protocol is marked "up." If the interface hardware is usable, the interface is marked "up."

If you specify an optional interface type, you see information only on that specific interface.

If you specify no optional arguments, you see information on all the interfaces.

When an asynchronous interface is encapsulated with PPP or Serial Line Internet Protocol (SLIP), IP fast switching is enabled. The **show ip interface** command on an asynchronous interface that is encapsulated with PPP or SLIP displays a message indicating that IP fast switching is enabled.

**Examples**  This example shows how to display the usability status for a specific VLAN:

```
Switch# show ip interface vlan 1
Vlan1 is up, line protocol is up
  Internet address is 10.6.58.4/24
  Broadcast address is 255.255.255.255
  Address determined by non-volatile memory
  MTU is 1500 bytes
  Helper address is not set
  Directed broadcast forwarding is disabled
  Outgoing access list is not set
  Inbound  access list is not set
  Proxy ARP is enabled
```

```
        Local Proxy ARP is disabled
        Security level is default
        Split horizon is enabled
        ICMP redirects are always sent
        ICMP unreachables are always sent
        ICMP mask replies are never sent
        IP fast switching is enabled
        IP fast switching on the same interface is disabled
        IP Flow switching is disabled
        IP CEF switching is enabled
        IP Fast switching turbo vector
        IP Normal CEF switching turbo vector
        IP multicast fast switching is enabled
        IP multicast distributed fast switching is disabled
        IP route-cache flags are Fast, CEF
        Router Discovery is disabled
        IP output packet accounting is disabled
        IP access violation accounting is disabled
        TCP/IP header compression is disabled
        RTP/IP header compression is disabled
        Probe proxy name replies are disabled
        Policy routing is disabled
        Network address translation is disabled
        WCCP Redirect outbound is disabled
        WCCP Redirect inbound is disabled
        WCCP Redirect exclude is disabled
        BGP Policy Mapping is disabled
        Sampled Netflow is disabled
        IP multicast multilayer switching is disabled
        Netflow Data Export (hardware) is enabled
Switch#
```

Table 2-19 describes the fields that are shown in the example.

*Table 2-19   show ip interface Field Descriptions*

| Field | Description |
|---|---|
| Ethernet0 is up | If the interface hardware is usable, the interface is marked "up." For an interface to be usable, both the interface hardware and line protocol must be up. |
| line protocol is up | If the interface can provide two-way communication, the line protocol is marked "up." For an interface to be usable, both the interface hardware and line protocol must be up. |
| Internet address and subnet mask | IP address and subnet mask of the interface. |
| Broadcast address | Broadcast address. |
| Address determined by... | Status of how the IP address of the interface was determined. |
| MTU | MTU value that is set on the interface. |
| Helper address | Helper address, if one has been set. |
| Secondary address | Secondary address, if one has been set. |
| Directed broadcast forwarding | Status of directed broadcast forwarding. |
| Multicast groups joined | Multicast groups to which this interface belongs. |
| Outgoing access list | Status of whether the interface has an outgoing access list set. |
| Inbound access list | Status of whether the interface has an incoming access list set. |

*Table 2-19   show ip interface Field Descriptions (continued)*

| Field | Description |
|-------|-------------|
| Proxy ARP | Status of whether Proxy Address Resolution Protocol (ARP) is enabled for the interface. |
| Security level | IP Security Option (IPSO) security level set for this interface. |
| Split horizon | Status of split horizon. |
| ICMP redirects | Status of the redirect messages on this interface. |
| ICMP unreachables | Status of the unreachable messages on this interface. |
| ICMP mask replies | Status of the mask replies on this interface. |
| IP fast switching | Status of whether fast switching has been enabled for this interface. Fast switching is typically enabled on serial interfaces, such as this one. |
| IP SSE switching | Status of the IP silicon switching engine (SSE). |
| Router Discovery | Status of the discovery process for this interface. It is typically disabled on serial interfaces. |
| IP output packet accounting | Status of IP accounting for this interface and the threshold (maximum number of entries). |
| TCP/IP header compression | Status of compression. |
| Probe proxy name | Status of whether the HP Probe proxy name replies are generated. |
| WCCP Redirect outbound is enabled | Status of whether packets that are received on an interface are redirected to a cache engine. |
| WCCP Redirect exclude is disabled | Status of whether packets that are targeted for an interface are excluded from being redirected to a cache engine. |
| Netflow Data Export (hardware) is enabled | NDE hardware flow status on the interface. |

# show ip mfib

To display all active Multicast Forwarding Information Base (MFIB) routes, use the **show ip mfib** command.

**show ip mfib** [**all** | **counters** | **log** [*n*]]

| Syntax Description | | |
|---|---|---|
| **all** | (Optional) Specifies all routes in the MFIB, including those routes that are used to accelerate fast switching but that are not necessarily in the upper-layer routing protocol table. | |
| **counters** | (Optional) Specifies the counts of MFIB-related events. Only nonzero counters are shown. | |
| **log** | (Optional) Specifies a log of the most recent number of MFIB-related events. The most recent event is first. | |
| *n* | (Optional) Number of events. | |

**Defaults**    This command has no default settings.

**Command Modes**    Privileged EXEC

| Command History | Release | Modification |
|---|---|---|
| | 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Usage Guidelines**    The MFIB table contains a set of IP multicast routes; each route in the MFIB table contains several flags that associate to the route.

The route flags indicate how a packet that matches a route is forwarded. For example, the IC flag on an MFIB route indicates that some process on the switch needs to receive a copy of the packet. These flags are associated with MFIB routes:

- Internal Copy (IC) flag—Set on a route when a process on the switch needs to receive a copy of all packets matching the specified route.
- Signaling (S) flag—Set on a route when a switch process needs notification that a packet matching the route is received. In the expected behavior, the protocol code updates the MFIB state in response to having received a packet on a signaling interface.
- Connected (C) flag—When set on a route, the C flag has the same meaning as the S flag, except that the C flag indicates that only packets sent by directly connected hosts to the route should be signaled to a protocol process.

A route can also have a set of flags associated with one or more interfaces. For an (S,G) route, the flags on interface 1 indicate how the ingress packets should be treated and whether packets matching the route should be forwarded onto interface 1. These per-interface flags are associated with the MFIB routes:

- Accepting (A)—Set on the RPF interface when a packet that arrives on the interface and that is marked as Accepting (A) is forwarded to all Forwarding (F) interfaces.

- Forwarding (F)—Used with the A flag as described above. The set of forwarding interfaces together form a multicast olist or output interface list.

- Signaling (S)—Set on an interface when a multicast routing protocol process in Cisco IOS needs to be notified of ingress packets on that interface.

- Not Platform (NP) fast-switched—Used with the F flag. A forwarding interface is also marked as Not Platform fast-switched whenever that output interface cannot be fast-switched by the platform hardware and requires software forwarding.

    For example, the Catalyst 4006 switch with Supervisor Engine III cannot switch tunnel interfaces in hardware so these interfaces are marked with the NP flag. When an NP interface is associated with a route, a copy of every ingress packet arriving on an Accepting interface is sent to the switch software forwarding path for software replication and then forwarded to the NP interface.

**Examples**    This example shows how to display all active MFIB routes:

```
Switch# show ip mfib
IP Multicast Forwarding Information Base
Entry Flags: C - Directly Connected, S - Signal,
             IC - Internal Copy
Interface Flags: A - Accept, F - Forward, NS - Signal,
             NP - Not platform switched
Packets: Fast/Partial/Slow Bytes: Fast/Partial/Slow:
(171.69.10.13, 224.0.1.40), flags (IC)
   Packets: 2292/2292/0, Bytes: 518803/0/518803
   Vlan7 (A)
   Vlan100 (F NS)
   Vlan105 (F NS)
(*, 224.0.1.60), flags ()
   Packets: 2292/0/0, Bytes: 518803/0/0
   Vlan7 (A NS)
(*, 224.0.1.75), flags ()
   Vlan7 (A NS)
(10.34.2.92, 239.192.128.80), flags ()
   Packets: 24579/100/0, 2113788/15000/0 bytes
   Vlan7 (F NS)
   Vlan100 (A)
(*, 239.193.100.70), flags ()
   Packets: 1/0/0, 1500/0/0 bytes
   Vlan7 (A)
Switch#
```

**Related Commands**    **clear ip mfib counters**

# show ip mfib fastdrop

To show all currently active fast-drop entries and to show whether fast drop is enabled, use the **show ip mfib fastdrop** command.

> **show ip mfib fastdrop**

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

**Defaults**    This command has no default settings.

**Command Modes**    Privileged EXEC

**Command History**

| Release | Modification |
|---------|--------------|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Examples**    This example shows how to display all currently active fast-drop entries and whether fast drop is enabled.

```
Switch# show ip mfib fasttdrop
MFIB fastdrop is enabled.
MFIB fast-dropped flows:
(10.0.0.1, 224.1.2.3, Vlan9 ) 00:01:32
(10.1.0.2, 224.1.2.3, Vlan9 ) 00:02:30
(1.2.3.4, 225.6.7.8, Vlan3) 00:01:50
Switch#
```

**Related Commands**    **clear ip mfib fastdrop**

# show ip mroute

To display IP multicast routing table information, use the **show ip mroute** command.

**show ip mroute** [*interface_type slot/port* | *host_name* | *host_address* [*source*] | **active** [*kbps* | *interface_type num*] | **count** | **pruned** | **static** | **summary**]

| Syntax Description | | |
|---|---|---|
| *interface_type slot/port* | (Optional) Interface type and number of the slot and port; valid values for *interface type* are **fastethernet**, **gigabitethernet**, **tengigabitethernet**, **null**, and **vlan**. |
| *host_name* | (Optional) Name or IP address as defined in the DNS hosts table. |
| *host_address source* | (Optional) IP address or name of a multicast source. |
| **active** | (Optional) Displays the rate that active sources are sending to multicast groups. |
| *kbps interface_type num* | (Optional) Minimum rate at which active sources are sending to multicast groups; active sources sending at this rate or greater will be displayed. Valid values are from 1 to 4294967295 kbps. |
| **count** | (Optional) Displays the route and packet count information. |
| **pruned** | (Optional) Displays the pruned routes. |
| **static** | (Optional) Displays the static multicast routes. |
| **summary** | (Optional) Displays a one-line, abbreviated summary of each entry in the IP multicast routing table. |

**Defaults**    This command has no default settings.

**Command Modes**    Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.2(25)EW | Added support for the 10-Gigabit Ethernet interface. |

**Usage Guidelines**    If you omit all the optional arguments and keywords, the **show ip mroute** command displays all the entries in the IP multicast routing table.

The **show ip mroute active** *kbps* command displays all the sources sending at a rate greater than or equal to *kbps*.

The multicast routing table is populated by creating source, group (S,G) entries from star, group (*,G) entries. The star refers to all source addresses, the "S" refers to a single source address, and the "G" refers to the destination multicast group address. In creating (S,G) entries, the software uses the best path to that destination group found in the unicast routing table (through Reverse Path Forwarding (RPF).

**Examples**

This example shows how to display all the entries in the IP multicast routing table:

```
Switch# show ip mroute

IP Multicast Routing Table
Flags:D - Dense, S - Sparse, s - SSM Group, C - Connected, L - Local,
       P - Pruned, R - RP-bit set, F - Register flag, T - SPT-bit set,
       J - Join SPT, M - MSDP created entry, X - Proxy Join Timer Running
       A - Advertised via MSDP, U - URD, I - Received Source Specific Host
           Report
Outgoing interface flags:H - Hardware switched
Timers:Uptime/Expires
Interface state:Interface, Next-Hop or VCD, State/Mode

(*, 230.13.13.1), 00:16:41/00:00:00, RP 10.15.1.20, flags:SJC
  Incoming interface:GigabitEthernet4/8, RPF nbr 10.15.1.20
  Outgoing interface list:

 GigabitEthernet4/9, Forward/Sparse-Dense, 00:16:41/00:00:00, H

(*, 230.13.13.2), 00:16:41/00:00:00, RP 10.15.1.20, flags:SJC

 Incoming interface:GigabitEthernet4/8, RPF nbr 10.15.1.20, RPF-MFD
  Outgoing interface list:
    GigabitEthernet4/9, Forward/Sparse-Dense, 00:16:41/00:00:00, H

(10.20.1.15, 230.13.13.1), 00:14:31/00:01:40, flags:CJT

 Incoming interface:GigabitEthernet4/8, RPF nbr 10.15.1.20, RPF-MFD
  Outgoing interface list:
    GigabitEthernet4/9, Forward/Sparse-Dense, 00:14:31/00:00:00, H
(132.206.72.28, 224.2.136.89), 00:14:31/00:01:40, flags:CJT
  Incoming interface:GigabitEthernet4/8, RPF nbr 10.15.1.20, RPF-MFD

 Outgoing interface list:Null
Switch#
```

This example shows how to display the rate that the active sources are sending to the multicast groups and to display only the active sources that are sending at greater than the default rate:

```
Switch# show ip mroute active

Active IP Multicast Sources - sending > = 4 kbps

Group: 224.2.127.254, (sdr.cisco.com)
   Source: 146.137.28.69 (mbone.ipd.anl.gov)
     Rate: 1 pps/4 kbps(1sec), 4 kbps(last 1 secs), 4 kbps(life avg)

Group: 224.2.201.241, ACM 97
   Source: 130.129.52.160 (webcast3-e1.acm97.interop.net)
     Rate: 9 pps/93 kbps(1sec), 145 kbps(last 20 secs), 85 kbps(life avg)

Group: 224.2.207.215, ACM 97
   Source: 130.129.52.160 (webcast3-e1.acm97.interop.net)
     Rate: 3 pps/31 kbps(1sec), 63 kbps(last 19 secs), 65 kbps(life avg)
Switch#
```

This example shows how to display route and packet count information:

```
Switch# show ip mroute count
IP Multicast Statistics
56 routes using 28552 bytes of memory
13 groups, 3.30 average sources per group
Forwarding Counts:Pkt Count/Pkts per second/Avg Pkt Size/Kilobits per second
```

```
Other counts:Total/RPF failed/Other drops(OIF-null, rate-limit etc)

Group:224.2.136.89, Source count:1, Group pkt count:29051
  Source:132.206.72.28/32, Forwarding:29051/-278/1186/0, Other:85724/8/56665
Switch#
```

This example shows how to display summary information:

```
Switch# show ip mroute summary
IP Multicast Routing Table
Flags: D - Dense, S - Sparse, s - SSM Group, C - Connected, L - Local,
       P - Pruned, R - RP-bit set, F - Register flag, T - SPT-bit set,
       J - Join SPT, M - MSDP created entry, X - Proxy Join Timer Running
       A - Advertised via MSDP, U - URD, I - Received Source Specific Host
           Report
Outgoing interface flags: H - Hardware switched
Timers: Uptime/Expires
Interface state: Interface, Next-Hop or VCD, State/Mode

Switch#
```

Table 2-20 describes the fields shown in the output.

*Table 2-20   show ip mroute Field Descriptions*

| Field | Description |
|-------|-------------|
| Flags: | Information about the entry. |
| D - Dense | Entry is operating in dense mode. |
| S - Sparse | Entry is operating in sparse mode. |
| s - SSM Group | Entry is a member of an SSM group. |
| C - Connected | Member of the multicast group is present on the directly connected interface. |
| L - Local | Switch is a member of the multicast group. |
| P - Pruned | Route has been pruned. This information is retained in case a downstream member wants to join the source. |
| R - Rp-bit set | Status of the (S,G) entry; is the (S,G) entry pointing toward the RP. The R - Rp-bit set is typically a prune state along the shared tree for a particular source. |
| F - Register flag | Status of the software; indicates if the software is registered for a multicast source. |
| T - SPT-bit set | Status of the packets; indicates if the packets been received on the shortest path source tree. |

***Table 2-20    show ip mroute Field Descriptions (continued)***

| Field | Description |
|-------|-------------|
| J - Join SPT | For (*, G) entries, indicates that the rate of traffic flowing down the shared tree is exceeding the SPT-Threshold set for the group. (The default SPT-Threshold setting is 0 kbps.) When the J - Join SPT flag is set, the next (S,G) packet received down the shared tree triggers an (S,G) join in the direction of the source causing the switch to join the source tree. |
| | For (S, G) entries, indicates that the entry was created because the SPT-Threshold for the group was exceeded. When the J - Join SPT flag is set for (S,G) entries, the switch monitors the traffic rate on the source tree and attempts to switch back to the shared tree for this source if the traffic rate on the source tree falls below the group's SPT-Threshold for more than one minute. |
| | The switch measures the traffic rate on the shared tree and compares the measured rate to the group's SPT-Threshold once every second. If the traffic rate exceeds the SPT-Threshold, the J- Join SPT flag is set on the (*, G) entry until the next measurement of the traffic rate. The flag is cleared when the next packet arrives on the shared tree and a new measurement interval is started. |
| | If the default SPT-Threshold value of 0 Kbps is used for the group, the J- Join SPT flag is always set on (*, G) entries and is never cleared. When the default SPT-Threshold value is used, the switch immediately switches to the shortest-path tree when traffic from a new source is received. |
| Outgoing interface flag: | Information about the outgoing entry. |
| H - Hardware switched | Entry is hardware switched. |
| Timer: | Uptime/Expires. |
| Interface state: | Interface, Next-Hop or VCD, State/Mode. |
| (*, 224.0.255.1) (198.92.37.100/32, 224.0.255.1) | Entry in the IP multicast routing table. The entry consists of the IP address of the source switch followed by the IP address of the multicast group. An asterisk (*) in place of the source switch indicates all sources. |
| | Entries in the first format are referred to as (*,G) or "star comma G" entries. Entries in the second format are referred to as (S,G) or "S comma G" entries. (*,G) entries are used to build (S,G) entries. |
| uptime | How long (in hours, minutes, and seconds) the entry has been in the IP multicast routing table. |
| expires | How long (in hours, minutes, and seconds) until the entry is removed from the IP multicast routing table on the outgoing interface. |

*Table 2-20   show ip mroute Field Descriptions (continued)*

| Field | Description |
|---|---|
| RP | Address of the RP switch. For switches and access servers operating in sparse mode, this address is always 0.0.0.0. |
| flags: | Information about the entry. |
| Incoming interface | Expected interface for a multicast packet from the source. If the packet is not received on this interface, it is discarded. |
| RPF neighbor | IP address of the upstream switch to the source. "Tunneling" indicates that this switch is sending data to the RP encapsulated in Register packets. The hexadecimal number in parentheses indicates to which RP it is registering. Each bit indicates a different RP if multiple RPs per group are used. |
| DVMRP or Mroute | Status of whether the RPF information is obtained from the DVMRP routing table or the static mroutes configuration. |
| Outgoing interface list | Interfaces through which packets are forwarded. When the **ip pim nbma-mode** command is enabled on the interface, the IP address of the PIM neighbor is also displayed. |
| Ethernet0 | Name and number of the outgoing interface. |
| Next hop or VCD | Next hop specifies downstream neighbor's IP address. VCD specifies the virtual circuit descriptor number. VCD0 indicates that the group is using the static-map virtual circuit. |
| Forward/Dense | Status of the packets; indicates if they are they forwarded on the interface if there are no restrictions due to access lists or the TTL threshold. Following the slash (/), mode in which the interface is operating (dense or sparse). |
| Forward/Sparse | Sparse mode interface is in forward mode. |
| time/time (uptime/expiration time) | Per interface, how long (in hours, minutes, and seconds) the entry has been in the IP multicast routing table. Following the slash (/), how long (in hours, minutes, and seconds) until the entry is removed from the IP multicast routing table. |

**Related Commands**   **ip multicast-routing** (refer to Cisco IOS documentation)
**ip pim** (refer to Cisco IOS documentation)

# show ip source binding

To display IP source bindings that are configured on the system, use the **show ip source binding** EXEC command.

> **show ip source binding** [*ip-address*] [*mac-address*] [**dhcp-snooping** | **static**] [**vlan** *vlan-id*]
> [**interface** *interface-name*]

| Syntax Description | | |
|---|---|---|
| *ip-address* | (Optional) Binding IP address. |
| *mac-address* | (Optional) Binding MAC address. |
| **dhcp-snooping** | (Optional) DHCP-snooping type binding. |
| **static** | (Optional) Statically configured binding. |
| **vlan** *vlan-id* | (Optional) VLAN number. |
| **interface** *interface-name* | (Optional) Binding interface. |

**Defaults**　　　　Displays both static and DHCP snooping bindings.

**Command Modes**　　Privileged EXEC

| Command History | Release | Modification |
|---|---|---|
| | 12.1(19)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Usage Guidelines**　The optional parameters  filter the display output result.

**Examples**　　　　This example shows how to display the IP source bindings:

```
Switch# show ip source binding
MacAddress         IpAddress       Lease(sec)  Type          VLAN  Interface
------------------ --------------- ----------  ------------- ----  --------------------
00:00:00:0A:00:0B  11.0.0.1        infinite    static        10    FastEthernet6/10

Switch#
```

This example shows how to display the static IP binding entry of IP address 11.0.01:

```
Switch# show ip source binding 11.0.0.1 0000.000A.000B static vlan 10 interface Fa6/10
show ip source binding 11.0.0.1 0000.000A.000B static vlan 10 interface Fa6/10
MacAddress         IpAddress       Lease(sec)  Type          VLAN  Interface
------------------ --------------- ----------  ------------- ----  --------------------
00:00:00:0A:00:0B  11.0.0.1        infinite    static        10    FastEthernet6/10
Switch#
```

**Related Commands**　　**ip source binding**

# show ip verify source

To display the IP source guard configuration and filters on a particular interface, use the **show ip verify source** command.

> **show ip verify source** [**interface** *interface_num*]

**Syntax Description**

| | |
|---|---|
| **interface** *interface_num* | (Optional) Specifies an interface. |

**Defaults**

This command has no default settings.

**Command Modes**

Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(19)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Examples**

These examples show how to display the IP source guard configuration and filters on a particular interface with the **show ip verify source interface** command:

- This output appears when DHCP snooping is enabled on VLANs 10–20, interface fa6/1 has IP source filter mode that is configured  as IP, and an existing IP address binding 10.0.0.1 is on VLAN 10:

```
Interface  Filter-type  Filter-mode  IP-address       Mac-address     Vlan
---------  -----------  -----------  ---------------  --------------  ---------
fa6/1      ip           active       10.0.0.1                         10
fa6/1      ip           active       deny-all                         11-20
```

> ✎
>
> **Note**    The second entry shows that a default PVACL (deny all IP traffic) is installed on the port for those snooping-enabled VLANs that do not have a valid IP source binding.

- This output appears when you enter the **show ip verify source interface fa6/2** command and DHCP snooping is enabled on VLANs 10–20, interface fa6/1 has IP source filter mode that is configured as IP, and there is an existing IP address binding 10.0.0.1 on VLAN 10:

```
Interface  Filter-type  Filter-mode  IP-address       Mac-address     Vlan
---------  -----------  -----------  ---------------  --------------  ---------
fa6/2      ip           inactive-trust-port
```

- This output appears when you enter the **show ip verify source interface fa6/3** command and the interface fa6/3 does not have a VLAN enabled for DHCP snooping:

```
Interface  Filter-type  Filter-mode  IP-address       Mac-address     Vlan
---------  -----------  -----------  ---------------  --------------  ---------
fa6/3      ip           inactive-no-snooping-vlan
```

- This output appears when you enter the **show ip verify source interface fa6/4** command and the interface fa6/4 has an IP source filter mode that is configured  as IP MAC and the existing IP MAC that binds 10.0.0.2/aaaa.bbbb.cccc on VLAN 10 and 11.0.0.1/aaaa.bbbb.cccd on VLAN 11:

```
Interface  Filter-type  Filter-mode  IP-address       Mac-address     Vlan
---------  -----------  -----------  ---------------  --------------  ---------
fa6/4      ip-mac       active       10.0.0.2         aaaa.bbbb.cccc  10
fa6/4      ip-mac       active       11.0.0.1         aaaa.bbbb.cccd  11
fa6/4      ip-mac       active       deny-all         deny-all        12-20
```

- This output appears when you enter the **show ip verify source interface fa6/5** command and the interface fa6/5 has IP source filter mode that is configured  as IP MAC and existing IP MAC binding 10.0.0.3/aaaa.bbbb.ccce on VLAN 10, but port security is not enabled on fa6/5:

```
Interface  Filter-type  Filter-mode  IP-address       Mac-address     Vlan
---------  -----------  -----------  ---------------  --------------  ---------
fa6/5      ip-mac       active       10.0.0.3         permit-all      10
fa6/5      ip-mac       active       deny-all         permit-all      11-20
```

> **Note**  Enable port security first because the DHCP security MAC filter cannot apply to the port or VLAN.

- This output appears when you enter the **show ip verify source interface fa6/6** command and the interface fa6/6 does not have IP source filter mode that is configured:

```
DHCP security is not configured on the interface fa6/6.
```

This example shows how to display all the interfaces on the switch that have DHCP snooping security enabled with the **show ip verify source** command.

The output is an accumulation of per-interface **show** CLIs:

```
Interface  Filter-type  Filter-mode  IP-address       Mac-address     Vlan
---------  -----------  -----------  ---------------  --------------  ---------
fa6/1      ip           active       10.0.0.1                         10
fa6/1      ip           active       deny-all                         11-20
fa6/2      ip           inactive-trust-port
fa6/3      ip           inactive-no-snooping-vlan
fa6/4      ip-mac       active       10.0.0.2         aaaa.bbbb.cccc  10
fa6/4      ip-mac       active       11.0.0.1         aaaa.bbbb.cccd  11
fa6/4      ip-mac       active       deny-all         deny-all        12-20
fa6/5      ip-mac       active       10.0.0.3         permit-all      10
fa6/5      ip-mac       active       deny-all         permit-all      11-20
```

**Related Commands**

**ip dhcp snooping information option**
**ip dhcp snooping limit rate**
**ip dhcp snooping trust**
**ip igmp snooping**
**ip igmp snooping vlan**
**ip source binding**
**ip verify source vlan dhcp-snooping**
**show ip source binding**

# show ipc

To display IPC information, use the **show ipc** command.

**show ipc** {**nodes** | **ports** | **queue** | **status**}

| Syntax Description | | |
|---|---|---|
| **nodes** | Displays the participating nodes. | |
| **ports** | Displays the local IPC ports. | |
| **queue** | Displays the contents of the IPC retransmission queue. | |
| **status** | Displays the status of the local IPC server. | |

**Defaults**    This command has no default settings.

**Command Modes**    Privileged EXEC

| Command History | Release | Modification |
|---|---|---|
| | 12.1(12c)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Examples**    This example shows how to display the participating nodes:

```
Switch# show ipc nodes
There are 3 nodes in this IPC realm.
   ID     Type                   Name                     Last  Last
                                                          Sent  Heard
   10000 Local      IPC Master                              0      0
 2010000 Local      GALIOS IPC:Card 1                       0      0
 2020000 Ethernet   GALIOS IPC:Card 2                      12     26
Switch#
```

This example shows how to display the local IPC ports:

```
Switch# show ipc ports
There are 11 ports defined.

Port ID        Type      Name                   (current/peak/total)
   10000.1    unicast    IPC Master:Zone
   10000.2    unicast    IPC Master:Echo
   10000.3    unicast    IPC Master:Control
   10000.4    unicast    Remote TTY Server Port
   10000.5    unicast    GALIOS RF :Active
     index = 0  seat_id = 0x2020000  last sent = 0     heard = 1635   0/1/1635

   10000.6    unicast    GALIOS RED:Active
     index = 0  seat_id = 0x2020000  last sent = 0     heard = 2       0/1/2

 2020000.3    unicast    GALIOS IPC:Card 2:Control
 2020000.4    unicast    GALIOS RFS :Standby
 2020000.5    unicast    Slave: Remote TTY Client Port
 2020000.6    unicast    GALIOS RF :Standby
 2020000.7    unicast    GALIOS RED:Standby
```

```
RPC packets: current/peak/total

                                                                    0/1/17
Switch#
```

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.
There are 0 messages currently in use by the system.
Switch#
```

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

```
Switch# show ipc status
IPC System Status:

This processor is the IPC master server.

6000 IPC message headers in cache
3363 messages in, 1680 out, 1660 delivered to local port,
1686 acknowledgements received, 1675 sent,
0 NACKS received, 0 sent,
0 messages dropped on input, 0 messages dropped on output
0 no local port, 0 destination unknown, 0 no transport
0 missing callback or queue, 0 duplicate ACKs, 0 retries,
0 message timeouts.
0 ipc_output failures, 0 mtu failures,
0 msg alloc failed, 0 emer msg alloc failed, 0 no origs for RPC replies
0 pak alloc failed, 0 memd alloc failed
0 no hwq, 1 failed opens, 0 hardware errors
No regular dropping of IPC output packets for test purposes
Switch#
```

# show l2protocol-tunnel

To display information about the Layer 2 protocol tunnel ports, use the **show l2protocol-tunnel** command. This command displays information for the interfaces with protocol tunneling enabled.

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

**Syntax Description**

| | |
|---|---|
| **interface** *interface-id* | (Optional) Specifies 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) Displays only Layer 2 protocol summary information. |
| **begin** | (Optional) Displays information beginning with the line that matches the *expression*. |
| **exclude** | (Optional) Displays information that excludes lines that match the *expression*. |
| **include** | (Optional) Displays the lines that match the specified *expression*. |
| *expression* | (Optional) Expression in the output to use as a reference point. |

**Command Modes**    User EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.2(18)EW | This command was first introduced on the Catalyst 4500 series switch. |
| 12.2(25)EW | Added support for the 10-Gigabit Ethernet interface. |

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

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

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

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

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

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

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

Port    Protocol Shutdown  Drop      Encapsulation Decapsulation Drop
                 Threshold Threshold Counter       Counter       Counter
------- -------- --------- --------- ------------- ------------- -------------
Fa0/10  ---      ----      ----      ----          ----          ----
        stp      ----      ----      9847          1866          0
        vtp      ----      ----      77            12            0
        pagp     ----      ----      859           860           0
        lacp     ----      ----      0             0             0
        udld     ----      ----      219           211           0
Fa0/11  cdp      1100      ----      2356          2350          0
        stp      1100      ----      116           13            0
        vtp      1100      ----      3             67            0
        pagp     ----       900      856           5848          0
        lacp     ----       900      0             0             0
        udld     ----       900      0             0             0
Fa0/12  cdp      ----      ----      2356          0             0
        stp      ----      ----      11787         0             0
        vtp      ----      ----      81            0             0
        pagp     ----      ----      0             0             0
        lacp     ----      ----      849           0             0
        udld     ----      ----      0             0             0
Fa0/13  cdp      ----      ----      2356          0             0
        stp      ----      ----      11788         0             0
        vtp      ----      ----      81            0             0
        pagp     ----      ----      0             0             0
        lacp     ----      ----      849           0             0
        udld     ----      ----      0             0             0
Switch#
```

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

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

Port    Protocol    Shutdown         Drop             Status
                    Threshold        Threshold
                    (cdp/stp/vtp)    (cdp/stp/vtp)
                    (pagp/lacp/udld) (pagp/lacp/udld)
------- ----------- ---------------- ---------------- ----------
Fa0/10  --- stp vtp ----/----/----   ----/----/----   up
    pagp lacp udld ----/----/----    ----/----/----
Fa0/11  cdp stp vtp 1100/1100/1100   ----/----/----   up
    pagp lacp udld ----/----/----     900/ 900/ 900
Fa0/12  cdp stp vtp ----/----/----   ----/----/----   up
    pagp lacp udld ----/----/----    ----/----/----
Fa0/13  cdp stp vtp ----/----/----   ----/----/----   up
    pagp lacp udld ----/----/----    ----/----/----
Fa0/14  cdp stp vtp ----/----/----   ----/----/----   down
    pagp ---- udld ----/----/----    ----/----/----
Fa0/15  cdp stp vtp ----/----/----   ----/----/----   down
    pagp ---- udld ----/----/----    ----/----/----
Fa0/16  cdp stp vtp ----/----/----   ----/----/----   down
    pagp lacp udld ----/----/----    ----/----/----
Fa0/17  cdp stp vtp ----/----/----   ----/----/----   down
    pagp lacp udld ----/----/----    ----/----/----
Switch#
```

**Related Commands**    **clear l2protocol-tunnel counter** (refer to Cisco IOS documentation)
**l2protocol-tunnel**
**l2protocol-tunnel cos**

# show lacp

To display LACP information, use the **show lacp** command.

**show lacp** [*channel-group*] {**counters** | **internal** | **neighbors** | **sys-id**}

**Syntax Description**

| | |
|---|---|
| *channel-group* | (Optional) Number of the channel group; valid values are from 1 to 64. |
| **counters** | Displays the LACP statistical information. |
| **internal** | Displays the internal information. |
| **neighbors** | Displays the neighbor information. |
| **sys-id** | Displays the LACP system identification. |

**Defaults**        This command has no default settings.

**Command Modes**        Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(13)EW | Support for this command was introduced on the Catalyst 4500 series switches. |

**Usage Guidelines**        This command is not supported on systems that are configured  with a Supervisor Engine I.

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

You can enter the optional *channel-group* value to specify a channel group for all keywords, except the **sys-id** keyword.

**Examples**        This example shows how to display LACP statistical information for a specific channel group:

```
Switch# show lacp 1 counters
             LACPDUs         Marker        LACPDUs
Port       Sent   Recv    Sent   Recv    Pkts Err
--------------------------------------------------
Channel group: 1
  Fa4/1    8      15      0      0        3      0
  Fa4/2    14     18      0      0        3      0
  Fa4/3    14     18      0      0        0
  Fa4/4    13     18      0      0        0
Switch#
```

The output displays the following information:

- The LACPDUs Sent and Recv columns display the LACPDUs sent and received on each specific interface.
- The LACPDUs Pkts and Err columns display the marker protocol packets.

This example shows how to display internal information for the interfaces belonging to a specific channel:

```
Switch# show lacp 1 internal
Flags:  S - Device sends PDUs at slow rate. F - Device sends PDUs at fast rate.
        A - Device is in Active mode.      P - Device is in Passive mode.

Channel group 1
                             LACPDUs    LACP Port   Admin   Oper   Port     Port
Port       Flags    State    Interval   Priority    Key     Key    Number   State
Fa4/1      saC      bndl     30s        32768       100     100    0xc1     0x75
Fa4/2      saC      bndl     30s        32768       100     100    0xc2     0x75
Fa4/3      saC      bndl     30s        32768       100     100    0xc3     0x75
Fa4/4      saC      bndl     30s        32768       100     100    0xc4     0x75
Switch#
```

Table 2-21 lists the output field definitions.

*Table 2-21   show lacp internal Command Output Fields*

| Field | Description |
| --- | --- |
| State | State of the specific port at the current moment is displayed; allowed values are as follows:<br><br>• *bndl*—Port is attached to an aggregator and bundled with other ports.<br><br>• *susp*—Port is in a suspended state; it is not attached to any aggregator.<br><br>• *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).<br><br>• *hot-sby*—Port is in a Hot-standby state.<br><br>• *down*—Port is down. |
| LACPDUs Interval | Interval setting. |
| LACP Port Priority | Port priority setting. |
| Admin Key | Administrative key. |
| Oper Key | Operator key. |
| Port Number | Port number. |
| Port State | State variables for the port encoded as individual bits within a single octet with the following meaning [1]:<br><br>• **bit0**: *LACP_Activity*<br><br>• **bit1**: *LACP_Timeout*<br><br>• **bit2**: *Aggregation*<br><br>• **bit3**: *Synchronization*<br><br>• **bit4**: *Collecting*<br><br>• **bit5**: *Distributing*<br><br>• **bit6**: *Defaulted*<br><br>• **bit7**: *Expired* |

This example shows how to display LACP neighbors information for a specific port channel:

```
Switch# show lacp 1 neighbor
Flags:  S - Device sends PDUs at slow rate. F - Device sends PDUs at fast rate.
        A - Device is in Active mode.      P - Device is in Passive mode.

Channel group 1 neighbors
          Partner                   Partner
Port      System ID                 Port Number     Age     Flags
Fa4/1     8000,00b0.c23e.d84e       0x81            29s     P
Fa4/2     8000,00b0.c23e.d84e       0x82            0s      P
Fa4/3     8000,00b0.c23e.d84e       0x83            0s      P
Fa4/4     8000,00b0.c23e.d84e       0x84            0s      P


          Port          Admin     Oper      Port
          Priority      Key       Key       State
Fa4/1     32768         200       200       0x81
Fa4/2     32768         200       200       0x81
Fa4/3     32768         200       200       0x81
Fa4/4     32768         200       200       0x81
Switch#
```

In the case where no PDUs have been received, the default administrative information is displayed in braces.

This example shows how to display the LACP system identification:

```
Switch> show lacp sys-id
8000,AC-12-34-56-78-90
Switch>
```

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

**Related Commands**    **lacp port-priority**
                        **lacp system-priority**

# show mac access-group interface

To display the ACL configuration on a Layer 2 interface, use the **show mac access-group interface** command.

**show mac access-group interface** [*interface interface-number*]

**Syntax Description**

| *interface* | (Optional) Specifies the interface type; valid values are **ethernet**, **fastethernet**, **gigabitethernet**, **tengigabitethernet**, **pos**, **atm**, **port-channel**, and **ge-wan**. |
|---|---|
| *interface-number* | (Optional) Specifies the port number. |

**Defaults**    This command has no default settings.

**Command Modes**    Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(19)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Usage Guidelines**    The valid values for the port number depend on the chassis used.

**Examples**    This example shows how to display the ACL configuration on interface fast 6/1:

```
Switch# show mac access-group interface fast 6/1
Interface FastEthernet6/1:
   Inbound access-list is simple-mac-acl
   Outbound access-list is not set
```

**Related Commands**    **access-group mode**

# show mac-address-table address

To display MAC address table information for a specific MAC address, use the
**show mac-address-table address** command.

> **show mac-address-table address** *mac_addr* [**interface** *type slot/port* | **protocol** *protocol* | **vlan** *vlan_id*]

**Syntax Description**

| | |
|---|---|
| *mac_addr* | 48-bit MAC address; the valid format is H.H.H. |
| **interface** *type slot/port* | (Optional) Displays information for a specific interface; valid values for *type* are **fastethernet**, **gigabitethernet**, and **tengigabitethernet**. |
| **protocol** *protocol* | (Optional) Specifies a protocol. See the "Usage Guidelines" section for more information. |
| **vlan** *vlan_id* | (Optional) Displays entries for the specific VLAN only; valid values are from 1 to 4094. |

**Defaults**    This command has no default settings.

**Command Modes**    Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.1(12c)EW | Added support for extended VLAN addresses. |
| 12.2(25)EW | Added support for the 10-Gigabit Ethernet interface. |

**Usage Guidelines**    For the MAC address table entries that are used by the routed ports, the routed port name is displayed in the "vlan" column not the internal VLAN number.

The keyword definitions for the *protocol* variable are as follows:

- **ip** specifies the IP protocol.
- **ipx** specifies the IPX protocols.
- **assigned** specifies the assigned protocol entries.
- **other** specifies the other protocol entries.

**Examples**

This example shows how to display MAC address table information for a specific MAC address:

```
Switch# show mac-address-table address 0030.94fc.0dff
Unicast Entries
 vlan   mac address      type      protocols            port
-------+---------------+--------+--------------------+--------------------
    1   0030.94fc.0dff    static ip,ipx,assigned,other  Switch
Fa6/1   0030.94fc.0dff    static ip,ipx,assigned,other  Switch
Fa6/2   0030.94fc.0dff    static ip,ipx,assigned,other  Switch
Switch#
```

**Related Commands**

**show mac-address-table aging-time**
**show mac-address-table count**
**show mac-address-table dynamic**
**show mac-address-table interface**
**show mac-address-table multicast**
**show mac-address-table protocol**
**show mac-address-table static**
**show mac-address-table vlan**

# show mac-address-table aging-time

To display the MAC address aging time, use the **show mac-address-table aging-time** command.

**show mac-address-table aging-time** [**vlan** *vlan_id*]

**Syntax Description**

| | |
|---|---|
| **vlan** *vlan_id* | (Optional) Specifies a VLAN; valid values are from 1 to 4094. |

**Defaults**

This command has no default settings.

**Command Modes**

Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.1(12c)EW | Support for extended addressing was added. |

**Examples**

This example shows how to display the currently configured aging time for all VLANs:

```
Switch# show mac-address-table aging-time
Vlan    Aging Time
----    ----------
100     300
200     1000

Switch#
```

This example shows how to display the currently configured aging time for a specific VLAN:

```
Switch# show mac-address-table aging-time vlan 100
Vlan    Aging Time
----    ----------
 100    300

Switch#
```

**Related Commands**

**show mac-address-table address**
**show mac-address-table count**
**show mac-address-table dynamic**
**show mac-address-table interface**
**show mac-address-table multicast**
**show mac-address-table protocol**
**show mac-address-table static**
**show mac-address-table vlan**

# show mac-address-table count

To display the number of entries currently in the MAC address table, use the **show mac-address-table count** command.

**show mac-address-table count** [**vlan** *vlan_id*]

| | |
|---|---|
| **Syntax Description** | **vlan** *vlan_id*    (Optional) Specifies a VLAN; valid values are from 1 to 4094. |

**Defaults**      This command has no default settings.

**Command Modes**    Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.1(12c)EW | Added support for extended VLAN addresses. |

**Examples**      This example shows how to display the entry count for a specific VLAN:

```
Switch# show mac-address-table count vlan 1
MAC Entries for Vlan 1:
Dynamic Unicast Address Count:              0
Static Unicast Address (User-defined) Count:   0
Static Unicast Address (System-defined) Count: 1
Total Unicast MAC Addresses In Use:         1
Total Unicast MAC Addresses Available:      32768
Multicast MAC Address Count:                1
Total Multicast MAC Addresses Available:    16384
Switch#
```

**Related Commands**

**show mac-address-table address**
**show mac-address-table aging-time**
**show mac-address-table dynamic**
**show mac-address-table interface**
**show mac-address-table multicast**
**show mac-address-table protocol**
**show mac-address-table static**
**show mac-address-table vlan**

# show mac-address-table dynamic

To display the dynamic MAC address table entries only, use the **show mac-address-table dynamic** command.

> **show mac-address-table dynamic** [**address** *mac_addr* | **interface** *type slot/port* |
>     **protocol** *protocol* | **vlan** *vlan_id*]

| Syntax Description | | |
|---|---|
| **address** *mac_addr* | (Optional) Specifies a 48-bit MAC address; the valid format is H.H.H. |
| **interface** *type slot/port* | (Optional) Specifies an interface to match; valid values for *type* are **fastethernet**, **gigabitethernet**, and **tengigabitethernet**. |
| **protocol** *protocol* | (Optional) Specifies a protocol. See the "Usage Guidelines" section for more information. |
| **vlan** *vlan_id* | (Optional) Displays entries for a specific VLAN; valid values are from 1 to 4094. |

**Defaults**    This command has no default settings.

**Command Modes**    Privileged EXEC

| Command History | Release | Modification |
|---|---|---|
| | 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| | 12.1(12c)EW | Added support for extended VLAN addresses. |
| | 12.2(25)EW | Added support for the 10-Gigabit Ethernet interface. |

**Usage Guidelines**    The keyword definitions for the *protocol* argument are as follows:

- **assigned** specifies assigned protocol entries.
- **ip** specifies IP protocol.
- **ipx** specifies IPX protocols.
- **other** specifies other protocol entries.

The **show mac-address-table dynamic** command output for an EtherChannel interface changes the port number designation (such as, 5/7) to a port group number (such as, Po80).

For the MAC address table entries that are used by the routed ports, the routed port name is displayed in the "vlan" column not the internal VLAN number.

**Examples**

This example shows how to display all the dynamic MAC address entries:

```
Switch# show mac-address-table dynamic
Unicast Entries
 vlan   mac address      type          protocols               port
-------+--------------+--------+--------------------+--------------------
    1   0000.0000.0201   dynamic  ip                  FastEthernet6/15
    1   0000.0000.0202   dynamic  ip                  FastEthernet6/15
    1   0000.0000.0203   dynamic  ip,assigned         FastEthernet6/15
    1   0000.0000.0204   dynamic  ip,assigned         FastEthernet6/15
    1   0000.0000.0205   dynamic  ip,assigned         FastEthernet6/15
    2   0000.0000.0101   dynamic  ip                  FastEthernet6/16
    2   0000.0000.0102   dynamic  ip                  FastEthernet6/16
    2   0000.0000.0103   dynamic  ip,assigned         FastEthernet6/16
    2   0000.0000.0104   dynamic  ip,assigned         FastEthernet6/16
    2   0000.0000.0105   dynamic  ip,assigned         FastEthernet6/16
Switch#
```

This example shows how to display the dynamic MAC address entries with a specific protocol type (in this case, assigned):

```
Switch# show mac-address-table dynamic protocol assigned
Unicast Entries
 vlan   mac address      type          protocols               port
-------+--------------+--------+--------------------+--------------------
    1   0000.0000.0203   dynamic  ip,assigned         FastEthernet6/15
    1   0000.0000.0204   dynamic  ip,assigned         FastEthernet6/15
    1   0000.0000.0205   dynamic  ip,assigned         FastEthernet6/15
    2   0000.0000.0103   dynamic  ip,assigned         FastEthernet6/16
    2   0000.0000.0104   dynamic  ip,assigned         FastEthernet6/16
    2   0000.0000.0105   dynamic  ip,assigned         FastEthernet6/16
Switch#
```

**Related Commands**

**show mac-address-table protocol**
**show mac-address-table static**
**show mac-address-table vlan**

# show mac-address-table interface

To display the MAC address table information for a specific interface, use the
**show mac-address-table interface** command.

**show mac-address-table interface** *type slot/port*

| Syntax Description | | |
|---|---|---|
| *type* | Interface type; valid values are **ethernet**, **fastethernet**, **gigabitethernet**, and **tengigabitethernet**. | |
| *slot/port* | Number of the slot and port. | |

**Defaults**            This command has no default settings.

**Command Modes**       Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.2(25)EW | Added support for the 10-Gigabit Ethernet interface. |

**Usage Guidelines**    For the MAC address table entries that are used by the routed ports, the routed port name is displayed in the "vlan" column not the internal VLAN number.

**Examples**            This example shows how to display MAC address table information for a specific interface:

```
Switch# show mac-address-table interface fastethernet6/16
Unicast Entries
 vlan   mac address     type        protocols             port
-------+--------------+--------+--------------------+--------------------
   2    0000.0000.0101   dynamic other                 FastEthernet6/16
   2    0000.0000.0102   dynamic other                 FastEthernet6/16
   2    0000.0000.0103   dynamic other                 FastEthernet6/16
   2    0000.0000.0104   dynamic other                 FastEthernet6/16
   2    0000.0000.0105   dynamic other                 FastEthernet6/16
   2    0000.0000.0106   dynamic other                 FastEthernet6/16

Multicast Entries
 vlan    mac address    type    ports
-------+--------------+-------+-----------------------------------------
   2    ffff.ffff.ffff   system Fa6/16
Switch#
```

**Related Commands**   show mac-address-table address
show mac-address-table aging-time
show mac-address-table count
show mac-address-table dynamic
show mac-address-table multicast
show mac-address-table protocol
show mac-address-table static
show mac-address-table vlan

# show mac-address-table multicast

To display information about the multicast MAC address table, use the **show mac-address-table multicast** command.

> **show mac-address-table multicast** [**count** | {**igmp-snooping** [**count**]} | {**user** [**count**]} | {**vlan** *vlan_num*}]

**Syntax Description**

| | |
|---|---|
| **count** | (Optional) Displays the number of multicast entries. |
| **igmp-snooping** | (Optional) Displays only the addresses learned by IGMP snooping. |
| **user** | (Optional) Displays only the user-entered static addresses. |
| **vlan** *vlan_num* | (Optional) Displays information for a specific VLAN only; valid values are from 1 to 4094. |

**Defaults**     This command has no default settings.

**Command Modes**     Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.1(12c)EW | Added support for extended VLAN addresses. |

**Usage Guidelines**     For the MAC address table entries that are used by the routed ports, the routed port name is displayed in the "vlan" column not the the internal VLAN number.

**Examples**     This example shows how to display multicast MAC address table information for a specific VLAN:

```
Switch# show mac-address-table multicast vlan 1
Multicast Entries
 vlan    mac address     type    ports
-------+--------------+-------+----------------------------------------
   1    ffff.ffff.ffff   system Switch,Fa6/15
Switch#
```

This example shows how to display the number of multicast MAC entries for all VLANs:

```
Switch# show mac-address-table multicast count
MAC Entries for all vlans:
Multicast MAC Address Count:               141
Total Multicast MAC Addresses Available:   16384
Switch#
```

**Related Commands**    show mac-address-table address
show mac-address-table aging-time
show mac-address-table count
show mac-address-table dynamic
show mac-address-table interface
show mac-address-table protocol
show mac-address-table static
show mac-address-table vlan

# show mac-address-table protocol

To display the MAC address table information that is based on the protocol, use the **show mac-address-table protocol** command.

**show mac-address-table protocol** {**assigned** | **ip** | **ipx** | **other**}

| Syntax Description | | |
|---|---|---|
| | **assigned** | Specifies the assigned protocol entries. |
| | **ip** | Specifies the IP protocol entries. |
| | **ipx** | Specifies the IPX protocol entries. |
| | **other** | Specifies the other protocol entries. |

**Defaults**

This command has no default settings.

**Command Modes**

Privileged EXEC

| Command History | Release | Modification |
|---|---|---|
| | 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Usage Guidelines**

For the MAC address table entries that are used by the routed ports, the routed port name is displayed in the "vlan" column not the the internal VLAN number.

**Examples**

This example shows how to display the MAC address table entries that have a specific protocol type (in this case, assigned):

```
Switch# show mac-address-table protocol assigned
vlan   mac address     type     protocol  qos            ports
-----+--------------+--------+---------+---+-------------------------------
 200  0050.3e8d.6400  static   assigned  --  Switch
 100  0050.3e8d.6400  static   assigned  --  Switch
   5  0050.3e8d.6400  static   assigned  --  Switch
4092  0000.0000.0000  dynamic  assigned  --  Switch
   1  0050.3e8d.6400  static   assigned  --  Switch
   4  0050.3e8d.6400  static   assigned  --  Switch
4092  0050.f0ac.3058  static   assigned  --  Switch
4092  0050.f0ac.3059  dynamic  assigned  --  Switch
   1  0010.7b3b.0978  dynamic  assigned  --  Fa5/9
Switch#
```

This example shows the other output for the previous example:

```
Switch# show mac-address-table protocol other
Unicast Entries
 vlan   mac address     type      protocols            port
-------+---------------+-------+--------------------+--------------------
    1   0000.0000.0201  dynamic other                FastEthernet6/15
    1   0000.0000.0202  dynamic other                FastEthernet6/15
    1   0000.0000.0203  dynamic other                FastEthernet6/15
    1   0000.0000.0204  dynamic other                FastEthernet6/15
    1   0030.94fc.0dff   static ip,ipx,assigned,other Switch
    2   0000.0000.0101  dynamic other                FastEthernet6/16
    2   0000.0000.0102  dynamic other                FastEthernet6/16
    2   0000.0000.0103  dynamic other                FastEthernet6/16
    2   0000.0000.0104  dynamic other                FastEthernet6/16
Fa6/1   0030.94fc.0dff   static ip,ipx,assigned,other Switch
Fa6/2   0030.94fc.0dff   static ip,ipx,assigned,other Switch

Multicast Entries
 vlan    mac address    type    ports
-------+---------------+-------+------------------------------------------
    1    ffff.ffff.ffff  system Switch,Fa6/15
    2    ffff.ffff.ffff  system Fa6/16
 1002    ffff.ffff.ffff  system
 1003    ffff.ffff.ffff  system
 1004    ffff.ffff.ffff  system
 1005    ffff.ffff.ffff  system
Fa6/1    ffff.ffff.ffff  system Switch,Fa6/1
Fa6/2    ffff.ffff.ffff  system Switch,Fa6/2
Switch#
```

**Related Commands**

**show mac-address-table address**
**show mac-address-table aging-time**
**show mac-address-table count**
**show mac-address-table dynamic**
**show mac-address-table interface**
**show mac-address-table multicast**
**show mac-address-table static**
**show mac-address-table vlan**

# show mac-address-table static

To display the static MAC address table entries only, use the **show mac-address-table static** command.

**show mac-address-table static** [**address** *mac_addr* | **interface** *type number* | **protocol** *protocol* | **vlan** *vlan_id*]

**Syntax Description**

| | |
|---|---|
| **address** *mac_addr* | (Optional) Specifies a 48-bit MAC address to match; the valid format is H.H.H. |
| **interface** *type number* | (Optional) Specifies an interface to match; valid values for *type* are **fastethernet**, **gigabitethernet**, and **tengigabitethernet**. |
| **protocol** *protocol* | (Optional) Specifies a protocol. See the "Usage Guidelines" section for more information. |
| **vlan** *vlan_id* | (Optional) Displays the entries for a specific VLAN; valid values are from 1 to 4094. |

**Defaults**    This command has no default settings.

**Command Modes**    Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.1(12c)EW | Added support for extended VLAN addresses. |
| 12.2(25)EW | Added support for the 10-Gigabit Ethernet interface. |

**Usage Guidelines**    For the MAC address table entries that are used by the routed ports, the routed port name is displayed in the "vlan" column not the internal VLAN number.

The keyword definitions for the *protocol* argument are as follows:

- **assigned** specifies the assigned protocol entries.
- **ip** specifies the IP protocol.
- **ipx** specifies the IPX protocols.
- **other** specifies the other protocol entries.

**Examples**

This example shows how to display all the static MAC address entries:

```
Switch# show mac-address-table static
Unicast Entries
 vlan   mac address     type        protocols            port
-------+--------------+--------+--------------------+--------------------
    1   0030.94fc.0dff    static ip,ipx,assigned,other  Switch
Fa6/1   0030.94fc.0dff    static ip,ipx,assigned,other  Switch
Fa6/2   0030.94fc.0dff    static ip,ipx,assigned,other  Switch

Multicast Entries
 vlan    mac address    type    ports
-------+--------------+-------+-----------------------------------------
    1    ffff.ffff.ffff  system Switch,Fa6/15
    2    ffff.ffff.ffff  system Fa6/16
 1002    ffff.ffff.ffff  system
 1003    ffff.ffff.ffff  system
 1004    ffff.ffff.ffff  system
 1005    ffff.ffff.ffff  system
Fa6/1    ffff.ffff.ffff  system Switch,Fa6/1
Fa6/2    ffff.ffff.ffff  system Switch,Fa6/2
.
.
.
Switch#
```

This example shows how to display the static MAC address entries with a specific protocol type (in this case, assigned):

```
Switch# show mac-address-table static protocol assigned
Unicast Entries
 vlan   mac address     type        protocols            port
-------+--------------+--------+--------------------+--------------------
    1   0030.94fc.0dff    static ip,ipx,assigned,other  Switch
Fa6/1   0030.94fc.0dff    static ip,ipx,assigned,other  Switch
Fa6/2   0030.94fc.0dff    static ip,ipx,assigned,other  Switch

Multicast Entries
 vlan    mac address    type    ports
-------+--------------+-------+-----------------------------------------
    1    ffff.ffff.ffff  system Switch,Fa6/15
    2    ffff.ffff.ffff  system Fa6/16
 1002    ffff.ffff.ffff  system
 1003    ffff.ffff.ffff  system
 1004    ffff.ffff.ffff  system
 1005    ffff.ffff.ffff  system
Fa6/1    ffff.ffff.ffff  system Switch,Fa6/1
Fa6/2    ffff.ffff.ffff  system Switch,Fa6/2
Switch#
```

**Related Commands**

**show mac-address-table address**
**show mac-address-table aging-time**
**show mac-address-table count**
**show mac-address-table dynamic**
**show mac-address-table interface**
**show mac-address-table multicast**
**show mac-address-table protocol**
**show mac-address-table vlan**

# show mac-address-table vlan

To display information about the MAC address table for a specific VLAN, use the **show mac-address-table vlan** command.

**show mac-address-table** [**vlan** *vlan_id*] [**protocol** *protocol*]

**Syntax Description**

| | |
|---|---|
| **vlan** *vlan_id* | (Optional) Displays the entries for a specific VLAN; valid values are from 1 to 4094. |
| **protocol** *protocol* | (Optional) Specifies a protocol. See the "Usage Guidelines" section for more information. |

**Defaults**

This command has no default settings.

**Command Modes**

Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.1(12c)EW | Support for extended addressing was added. |

**Usage Guidelines**

For the MAC address table entries used by the routed ports, the routed port name is displayed in the "vlan" column not the the internal VLAN number.

The keyword definitions for the *protocol* variable are as follows:

- **assigned** specifies the assigned protocol entries.
- **ip** specifies the IP protocol.
- **ipx** specifies the IPX protocols.
- **other** specifies the other protocol entries.

**Examples**

This example shows how to display information about the MAC address table for a specific VLAN:

```
Switch# show mac-address-table vlan 1
Unicast Entries
 vlan   mac address     type       protocols               port
-------+---------------+--------+---------------------+--------------------
    1   0000.0000.0201  dynamic ip                      FastEthernet6/15
    1   0000.0000.0202  dynamic ip                      FastEthernet6/15
    1   0000.0000.0203  dynamic other                   FastEthernet6/15
    1   0000.0000.0204  dynamic other                   FastEthernet6/15
    1   0030.94fc.0dff   static ip,ipx,assigned,other   Switch
```

```
Multicast Entries
 vlan    mac address     type    ports
-------+--------------+-------+-------------------------------------------
   1    ffff.ffff.ffff   system Switch,Fa6/15
Switch#
```

This example shows how to display MAC address table information for a specific protocol type:

```
Switch# show mac-address-table vlan 100 protocol other
Unicast Entries
 vlan    mac address     type        protocols              port
-------+--------------+--------+--------------------+-------------------
   1    0000.0000.0203   dynamic other               FastEthernet6/15
   1    0000.0000.0204   dynamic other               FastEthernet6/15
   1    0030.94fc.0dff    static ip,ipx,assigned,other  Switch

Multicast Entries
 vlan    mac address     type    ports
-------+--------------+-------+-------------------------------------------
   1    ffff.ffff.ffff   system Switch,Fa6/15
Switch#
```

**Related Commands**

**show mac-address-table address**
**show mac-address-table aging-time**
**show mac-address-table count**
**show mac-address-table dynamic**
**show mac-address-table interface**
**show mac-address-table multicast**
**show mac-address-table protocol**
**show mac-address-table static**

# show module

To display information about the module, use the **show module** command.

> **show module** [*mod* | **all**]

| Syntax Description | | |
|---|---|---|
| *mod* | (Optional) Number of the module; valid values vary from chassis to chassis. | |
| **all** | (Optional) Displays information for all modules. | |

**Defaults**

This command has no default settings.

**Command Modes**

Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.2(25)EW | Enhanced the output of the **show idprom interface command** to include the 10-Gigabit Ethernet interface. |

**Usage Guidelines**

In the Mod Sub-Module fields in the command output, the **show module** command displays the supervisor engine number but appends the uplink daughter card's module type and information.

If the PoE consumed by the module is more than 50 W above the administratively allocated PoE, the "Status" displays as "PwrOver." If the PoE consumed by the module is more than 50 W above the PoE module limit, the "Status" displays as "PwrFault."

**Examples**

This example shows how to display information for all the modules.

This example shows the **show module** command output for a system with inadequate power for all installed modules. The system does not have enough power for Module 5; the "Status" displays it as "PwrDeny."

```
Switch# show module all
Mod  Ports Card Type                              Model            Serial No.
----+-----+------------------------------------+----------------+-----------
 1     2  1000BaseX (GBIC) Supervisor(active)   WS-X4014         JAB054109GH
 2     6  1000BaseX (GBIC)                      WS-X4306         00000110
 3    18  1000BaseX (GBIC)                      WS-X4418         JAB025104WK
 5     0  Not enough power for module           WS-X4148-FX-MT   00000000000
 6    48  10/100BaseTX (RJ45)                   WS-X4148         JAB023402RP

M MAC addresses                      Hw  Fw          Sw              Status
--+--------------------------------+---+-----------+----------------+---------
1 005c.9d1a.f9d0 to 005c.9d1a.f9df 0.5 12.1(11br)EW 12.1(20020313:00 Ok
2 0010.7bab.9920 to 0010.7bab.9925 0.2                               Ok
3 0050.7356.2b36 to 0050.7356.2b47 1.0                               Ok
5 0001.64fe.a930 to 0001.64fe.a95f 0.0                               PwrDeny
```

```
  6 0050.0f10.28b0 to 0050.0f10.28df 1.0                              Ok
Switch#
```

This example shows how to display information for a specific module:

```
Switch# show module mod2
Mod Ports Card Type                                 Model              Serial No.
--- ----- ------------------------------------- ------------------ -----------
  2    2  Catalyst 4000 supervisor 2 (Active)     WS-X6K-SUP2-2GE    SAD04450LF1
Mod MAC addresses                       Hw   Fw          Sw           Status
--- --------------------------------- ------ ----------- ----------- -------
  2  0001.6461.39c0 to 0001.6461.39c1  1.1   6.1(3)      6.2(0.97)    Ok
Mod Sub-Module                    Model           Serial          Hw      Status
--- -------------------------- --------------- --------------- ------- -------
  2 Policy Feature Card 2       WS-F6K-PFC2     SAD04440HVU     1.0     Ok
  2 Cat4k MSFC 2 daughterboard  WS-F6K-MSFC2    SAD04430J9K     1.1     Ok
Switch#
```

This example shows how to display information for all the modules on the switch:

```
Switch# show module
Chassis Type : WS-C4506

Power consumed by backplane : 0 Watts

Mod Ports Card Type                               Model              Serial No.
---+-----+-------------------------------------+------------------+-----------
 1    6  XG (X2), 1000BaseX (SFP) Supervisor(ac WS-X4517            ""
 3    6  1000BaseX (GBIC)                       WS-X4306            00000110

 M MAC addresses                       Hw  Fw          Sw              Status
--+-----------------------------+---+-----------+---------------+---------
 1 0004.dd46.7700 to 0004.dd46.7705 0.0 12.2(20r)EW( 12.2(20040513:16 Ok
 3 0010.7bab.9920 to 0010.7bab.9925 0.2                             Ok
Switch#
```

# show monitor

To display information about the SPAN session, use the **show monitor** command.

**show monitor** [**session**] [**range** *session-range* | **local** | **remote** | **all** | *session-number*] [**detail**]

**Syntax Description**

| | |
|---|---|
| **session** | (Optional) Displays the SPAN information for a session. |
| **range** | (Optional) Displays information for a range of sessions. |
| *session-range* | (Optional) Specifies a range of sessions. |
| **local** | (Optional) Displays all local SPAN sessions. |
| **remote** | (Optional) Displays the RSPAN source and destination sessions. |
| **all** | (Optional) Displays the SPAN and RSPAN sessions. |
| *session-number* | (Optional) Session number; valid values are from 1 to 6. |
| **detail** | (Optional) Displays the detailed SPAN information for a session. |

**Defaults**

The **detail** keyword only displays lines with a nondefault configuration.

**Command Modes**

Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.1(13)EW | Added support for differing directions within a single user session. |
| 12.1(19)EW | Output enhanced to display configuration status of SPAN enhancements. |
| 12.1(20)EW | Added support to display configuration state for remote SPAN and learning. |
| 12.2(20)EW | Added support to display ACLs that are applied to SPAN sessions. |

**Examples**

This example shows how to display whether ACLs are applied to a given SPAN session on a Catalyst 4500 series switch:

```
Switch# show monitor

Session 1
---------
Type              : Local Session
Source Ports      :
   Both           : Fa6/1
Destination Ports : Fa6/2
   Encapsulation  : Native
         Ingress  : Disabled
        Learning  : Disabled
Filter VLANs      : 1
IP Access-group   : 10
```

This example shows how to display SPAN information for session 2:

```
Switch# show monitor session 2
Session 2
------------
Type : Remote Source Session
Source Ports:
    RX Only:        Fa1/1-3
Dest RSPAN VLAN:   901
Ingress : Enabled, default VLAN=2
Learning : Disabled
Switch#
```

This example shows how to display the detailed SPAN information for session 1:

```
Switch# show monitor session 1 detail
Session 1
---------
Type              : Local Session
Source Ports      :
    RX Only       : None
    TX Only       : None
    Both          : Gi1/1, CPU
Source VLANs      :
    RX Only       : None
    TX Only       : None
    Both          : None
Source RSPAN VLAN : Fa6/1
Destination Ports : Fa6/1
    Encapsulation : DOT1Q
          Ingress : Enabled, default VLAN = 2
Filter VLANs      : None
  Filter Types RX : Good
  Filter Types TX : None
Dest Rspan Vlan : 901
Ingress : Enabled, default VLAN=2
Learning : Disabled
IP Access-group : None
Switch#
```

This example shows how to display SPAN information for session 1 beginning with the line that starts with Destination:

```
Switch# show monitor session 1 | begin Destination
Destination Ports: None
Filter VLANs:      None
Switch#
Switch#
```

**Related Commands**    monitor session

# show pagp

To display information about the port channel, use the **show pagp** command.

**show pagp** [*group-number*]  {**counters** | **internal** | **neighbor**}

**Syntax Description**

| | |
|---|---|
| *group-number* | (Optional) Channel-group number; valid values are from 1 to 64. |
| **counters** | Specifies the traffic counter information. |
| **internal** | Specifies the PAgP internal information. |
| **neighbor** | Specifies the PAgP neighbor information. |

**Defaults**    This command has no default settings.

**Command Modes**    Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

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

**Examples**    This example shows how to display information about the PAgP counter:

```
Switch# show pagp counters
          Information        Flush
Port      Sent   Recv     Sent   Recv
-----------------------------------
Channel group: 1
  Fa5/4   2660   2452      0      0
  Fa5/5   2676   2453      0      0
Channel group: 2
  Fa5/6   289    261       0      0
  Fa5/7   290    261       0      0
Switch#
```

This example shows how to display internal PAgP information:

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


Channel group 1
                                Hello   Partner  PAgP     Learning
Port       Flags State   Timers Interval Count   Priority Method      IfIndx
Fa5/4      SC    U6/S7           30s     1        128      Any         129
Fa5/5      SC    U6/S7           30s     1        128      Any         129
Switch#
```

This example shows how to display PAgP neighbor information for all neighbors:

```
Switch# show pagp 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.
Fa5/4     JAB031301            0050.0f10.230c   2/45       2s SAC    2D
Fa5/5     JAB031301            0050.0f10.230c   2/46      27s SAC    2D

Channel group 2 neighbors
          Partner              Partner          Partner          Partner Group
Port      Name                 Device ID        Port      Age Flags  Cap.
Fa5/6     JAB031301            0050.0f10.230c   2/47      10s SAC    2F
Fa5/7     JAB031301            0050.0f10.230c   2/48      11s SAC    2F

Switch#
```

**Related Commands**    **pagp learn-method**
**pagp port-priority**

# show policy-map

To display information about the policy map, use the **show policy-map** command.

**show policy-map** [*policy_map_name*]

**Syntax Description**

| | |
|---|---|
| *policy_map_name* | (Optional) Name of the policy map. |

**Defaults**

This command has no default settings.

**Command Modes**

Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Examples**

This example shows how to display information for all the policy maps:

```
Switch# show policy-map
Policy Map ipp5-policy
  class  ipp5
   set ip precedence 6
Switch#
```

This example shows how to display information for a specific policy map:

```
Switch# show policy ipp5-policy
Policy Map ipp5-policy
  class  ipp5
   set ip precedence 6
Switch#
```

**Related Commands**

**class-map**
**policy-map**
**show class-map**
**show policy-map interface**

# show policy-map interface

To display the statistics and configurations of the input and output policies that are attached to an interface, use the **show policy-map interface** command.

**show policy-map interface** [{**fastethernet** *interface-number*} | {**gigabitethernet** *interface-number*} | {**port-channel** *number*} | {**vlan** *vlan_id*}] [**input** | **output**]

**Syntax Description**

| | |
|---|---|
| **fastethernet** *interface-number* | (Optional) Specifies the Fast Ethernet 802.3 interface. |
| **gigabitethernet** *interface-number* | (Optional) Specifies the Gigabit Ethernet 802.3z interface. |
| **port-channel** *number* | (Optional) Specifies the port channel. |
| **vlan** *vlan_id* | (Optional) Specifies the VLAN ID; valid values are from 1 to 4094. |
| **input** | (Optional) Specifies input policies only. |
| **output** | (Optional) Specifies output policies only. |

**Defaults**  This command has no default settings.

**Command Modes**  Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.1(12c)EW | Added support for extended VLAN addresses. |

**Examples**  This example shows how to display the statistics and configurations of all input and output policies attached to an interface:

```
Switch# show policy-map interface

 FastEthernet6/1

  service-policy input:ipp5-policy

    class-map:ipp5 (match-all)
      0 packets
      match:ip precedence 5
      set:
        ip precedence 6

    class-map:class-default (match-any)
      0 packets
      match:any
        0 packets


  service-policy output:ipp5-policy
```

```
      class-map:ipp5 (match-all)
        0 packets
        match:ip precedence 5
        set:
          ip precedence 6

      class-map:class-default (match-any)
        0 packets
        match:any
          0 packets
Switch#
```

This example shows how to display the input policy statistics and configurations for a specific interface:

```
Switch# show policy-map interface fastethernet 5/36 input
service-policy input:ipp5-policy

      class-map:ipp5 (match-all)
        0 packets
        match:ip precedence 5
        set:
          ip precedence 6

      class-map:class-default (match-any)
        0 packets
        match:any
          0 packets
Switch#
```

**Related Commands**
**class-map**
**policy-map**
**show class-map**
**show qos**

# show policy-map interface vlan

To show the QoS policy-map information applied to a specific VLAN on an interface, use the **show policy-map interface vlan** command.

**show policy-map interface vlan** *interface-id* **vlan** *vlan-id*

**Syntax Description**

| **interface** *interface-id* | (Optional) Displays QoS policy-map information for a specific interface. |
|---|---|
| **vlan** *vlan-id* | (Optional) Displays QoS policy-map information for a specific VLAN. |

**Command Modes**    Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(13)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Examples**    Take the following configuration as an example:

```
interface GigabitEthernet3/1
 vlan-range 20,400
  service-policy input p1
 vlan-range 300-301
  service-policy output p2
```

This example shows how to display policy-map statistics on VLAN 20 on the Gigabit Ethernet 6/1 interface:

```
Switch# show policy-map interface gigabitEthernet 3/1 vlan 20
 GigabitEthernet3/1 vlan 20

  Service-policy input: p1

    Class-map: class-default (match-any)
      0 packets
      Match: any
        0 packets
      police: Per-interface
        Conform: 0 bytes Exceed: 0 bytes
```

**Related Commands**    **service-policy**
**show policy-map interface**

# show port-security

To display the port security settings for an interface or for the switch, use the **show port-security** command.

**show port-security** [**address**] [**interface** *interface-id*] [**vlan** *vlan-id*]

| Syntax Description | | |
|---|---|---|
| | **address** | (Optional) Displays all secure MAC addresses for all ports or for a specific port. |
| | **interface** *interface-id* | (Optional) Displays port security settings for a specific interface. |
| | **vlan** *vlan-id* | (Optional) Displays port security settings for a specific VLAN. |

**Command Modes**      Privileged EXEC

| Command History | Release | Modification |
|---|---|---|
| | 12.1(13)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| | 12.2(18)EW | Support was enhanced to display sticky MAC addresses. |
| | 12.2(25)EWA | Support was enhanced to display setting on a per-VLAN basis. |

**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 the *interface-id* value, the **show port-security** command displays port security settings for the interface.

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

If you enter the *interface-id* value and the **address** keyword, the **show port-security address interface** 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.

**Examples**      This example shows how to display port security settings for the entire switch:

```
Switch# show port-security
Secure Port  MaxSecureAddr  CurrentAddr  SecurityViolation  Security Action
               (Count)       (Count)        (Count)
--------------------------------------------------------------------------
      Fa3/1           2            2                  0           Restrict
      Fa3/2           2            2                  0           Restrict
      Fa3/3           2            2                  0           Shutdown
      Fa3/4           2            2                  0           Shutdown
      Fa3/5           2            2                  0           Shutdown
      Fa3/6           2            2                  0           Shutdown
```

```
    Fa3/7              2              2              0          Shutdown
    Fa3/8              2              2              0          Shutdown
    Fa3/10             1              0              0          Shutdown
    Fa3/11             1              0              0          Shutdown
    Fa3/12             1              0              0          Restrict
    Fa3/13             1              0              0          Shutdown
    Fa3/14             1              0              0          Shutdown
    Fa3/15             1              0              0          Shutdown
    Fa3/16             1              0              0          Shutdown
-------------------------------------------------------------------------
Total Addresses in System (excluding one mac per port)    :8
Max Addresses limit in System (excluding one mac per port) :1024
Global SNMP trap control for port-security               :20 (traps per second)
```

This example shows how to display port security settings for interface Fast Ethernet 5/1:

```
Switch# show port-security interface fastethernet 5/1
Port Security            : Enabled
Port Status              : Secure-up
Violation Mode           : Shutdown
Aging Time               : 0 mins
Aging Type               : Absolute
SecureStatic Address Aging : Disabled
Maximum MAC Addresses    : 1
Total MAC Addresses      : 1
Configured MAC Addresses : 0
Sticky MAC Addresses     : 1
Last Source Address      : 0000.0001.001a
Security Violation Count : 0
```

This example shows how to display all secure MAC addresses configured on all switch interfaces:

```
Switch# show port-security address
        Secure Mac Address Table
-------------------------------------------------------------------
Vlan    Mac Address      Type              Ports   Remaining Age
                                                     (mins)

----    -----------      ----              -----   -------------
  1     0000.0001.0000   SecureConfigured  Fa3/1     15 (I)
  1     0000.0001.0001   SecureConfigured  Fa3/1     14 (I)
  1     0000.0001.0100   SecureConfigured  Fa3/2      -
  1     0000.0001.0101   SecureConfigured  Fa3/2      -
  1     0000.0001.0200   SecureConfigured  Fa3/3      -
  1     0000.0001.0201   SecureConfigured  Fa3/3      -
  1     0000.0001.0300   SecureConfigured  Fa3/4      -
  1     0000.0001.0301   SecureConfigured  Fa3/4      -
  1     0000.0001.1000   SecureDynamic   Fa3/5        -
  1     0000.0001.1001   SecureDynamic   Fa3/5        -
  1     0000.0001.1100   SecureDynamic   Fa3/6        -
  1     0000.0001.1101   SecureDynamic   Fa3/6        -
  1     0000.0001.1200   SecureSticky    Fa3/7        -
  1     0000.0001.1201   SecureSticky    Fa3/7        -
  1     0000.0001.1300   SecureSticky    Fa3/8        -
  1     0000.0001.1301   SecureSticky    Fa3/8        -
-------------------------------------------------------------------
Total Addresses in System (excluding one mac per port)    :8
Max Addresses limit in System (excluding one mac per port) :3072
```

This example shows how to display the maximum allowed number of secure MAC addresses and the current number of secure MAC addresses on interface Gigabitethernet1/1:

```
Switch# show port-security interface gigabitethernet1/1 vlan
Default maximum: 22
VLAN  Maximum    Current
    2        22         3
    3        22         3
    4        22         3
    5        22         1
    6        22         2
```

This example shows how to display the port security settings on interface Gigabitethernet1/1 for VLANs 2 and 3:

```
Switch# show port-security interface gigabitethernet1/1 vlan 2-3
Default maximum: 22
VLAN  Maximum    Current
    2        22         3
    3        22         3
```

This example shows how to display all secure MAC addresses configured on interface Gigabitethernet1/1 with aging information for each address.

```
Switch# show port-security interface gigabitethernet1/1 address

          Secure Mac Address Table
------------------------------------------------------------------------
Vlan    Mac Address        Type                 Ports   Remaining Age(mins)
----    -----------        ----                 -----   -------------
   2    0001.0001.0001     SecureConfigured     Gi1/1      -
   2    0001.0001.0002     SecureSticky             Gi1/1          -
   3    0001.0001.0001     SecureConfigured     Gi1/1      -
   3    0001.0001.0002     SecureSticky             Gi1/1          -
   3    0001.0001.0003     SecureSticky             Gi1/1          -
   4    0001.0001.0001     SecureConfigured     Gi1/1      -
   4    0001.0001.0003     SecureSticky         Gi1/1      -
   6    0001.0001.0001     SecureConfigured     Gi1/1      -
   6    0001.0001.0002     SecureConfigured     Gi1/1      -
------------------------------------------------------------------------
Total Addresses: 12
```

This example shows how to display all secure MAC addresses configured on VLANs 2 and 3 on interface Gigabitethernet1/1 with aging information for each address:

```
Switch# show port-security interface gigabitethernet1/1 address vlan 2-3

          Secure Mac Address Table
------------------------------------------------------------------------
Vlan    Mac Address        Type                 Ports   Remaining Age(mins)
----    -----------        ----                 -----   -------------
   2    0001.0001.0001     SecureConfigured     Gi1/1      -
   2    0001.0001.0002     SecureSticky         Gi1/1      -
   2    0001.0001.0003     SecureSticky         Gi1/1      -
   3    0001.0001.0001     SecureConfigured     Gi1/1      -
   3    0001.0001.0002     SecureSticky         Gi1/1      -
   3    0001.0001.0003     SecureSticky         Gi1/1      -
------------------------------------------------------------------------
Total Addresses: 12
Switch#
```

**Related Commands**    **switchport port-security**

# show power

To display information about the power status, use the **show power** command.

> **show power** [**available** | **capabilities** | **detail** | **inline** {[*interface*] | **consumption default** | **module** *mod*} | **module** | **status** | **supplies**]

**Syntax Description**

| | |
|---|---|
| **available** | (Optional) Displays the available system power. |
| **capabilities** | (Optional) Displays the individual power supply capabilities. |
| **detail** | (Optional) Displays detailed information on power resources. |
| **inline** | (Optional) Displays the PoE status. |
| *interface* | (Optional) Type of interface; the only valid value is **fastethernet.** |
| **consumption default** | (Optional ) Displays the PoE consumption. |
| **module** *mod* | (Optional) Displays the PoE consumption for the specified module. |
| **module** | (Optional) Displays the power consumption for each module. |
| **status** | (Optional) Displays the power supply status. |
| **supplies** | (Optional) Displays the number of power supplies needed by the system. |

**Defaults**    This command has no default settings.

**Command Modes**    Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Usage Guidelines**    If a powered device is connected to an interface with external power, the switch does not recognize the powered device. The Device column in the output of the **show power inline** command displays as unknown.

If your port is not capable of supporting Power over Ethernet, you will receive this message:

```
Power over Ethernet not supported on interface Admin
```

The **show power in-line** *interface* **|** *module* command displays the amount of power that is used to operate a Cisco 7960 IP Phone. To view the amount of power requested, use the **show cdp neighbors** command.

Because of the PoE consumed by FPGAs and other hardware components on the module the operating PoE consumption for an 802.3af-compliant module can be nonzero, even when there are no powered devices attached to the module. The operating PoE can vary by as much as 20 W because of fluctuations in the PoE that is consumed by the hardware components.

**Examples**    This example shows how to display information about the general power supply:

```
Switch# show power
Power                                         Fan     Inline
Supply  Model No         Type       Status    Sensor  Status
------  ---------------  ---------  --------- ------  ------
PS1     PWR-C45-2800AC   AC 2800W   good       good    good
PS2     PWR-C45-1000AC   AC 1000W   err-disable good   n.a.


*** Power Supplies of different type have been detected***


Power supplies needed by system    :1
Power supplies currently available :1


Power Summary                  Maximum
 (in Watts)           Used    Available
--------------------  ----    ---------
System Power (12V)    328       1360
Inline Power (-50V)     0       1400
Backplane Power (3.3V)  10        40
--------------------  ----
Total Used            338 (not to exceed Total Maximum Available = 750)
Switch#
```

This example shows how to display the amount of available system power:

```
Switch# show power available
Power Summary
 (in Watts)    Available   Used   Remaining
-------------  ---------  ------  ---------
System Power    1360       280     1080
Inline Power    1400         0     1400
Maximum Power   2800       280     2520
Switch#
```

This example shows how to display the detailed information for system power.

```
Switch# show power detail
Power                                         Fan     Inline
Supply  Model No         Type       Status    Sensor  Status
------  ---------------  ---------  --------- ------- -------
PS1     PWR-C45-1300ACV  AC 1300W   good       good    good
PS2     none             --         --         --      --


Power supplies needed by system    :1
Power supplies currently available :1


Power Summary                  Maximum
 (in Watts)           Used    Available
--------------------  ----    ---------
System Power (12V)    518       1000
Inline Power (-50V)    24        742
Backplane Power (3.3V)  40         40
--------------------  ----
Total Used            582 (not to exceed Total Maximum Available = 1300)



                       Watts Used of System Power (12V)
Mod   Model            currently  out of reset  in reset
----  ---------------  ---------  ------------  --------
  1   WS-X4013+          110         110          110
  3   WS-X4448-GB-LX      90          90           50
  4   WS-X4418            80          80           50
  5   WS-X4248-RJ45V      65          65           25
```

```
6    WS-X4248-RJ45V         65           65           25
7    WS-4548-GB-RJ45        58           58           15
--   Fan Tray               50           --           --
----------------------  ---------  ------------  -------
     Total                 518          468          275


                        Inline Power Admin  Inline Power Oper
Mod   Model               PS       Device      PS      Device   Efficiency
----  ----------------  ----------------  ----------------  ----------
1     WS-X4013+           -        -          -        -          -
3     WS-X4448-GB-LX      -        -          -        -          -
4     WS-X4418            -        -          -        -          -
5     WS-X4248-RJ45V      24       22         22       20         89
6     WS-X4248-RJ45V      0        0          22       20         89
7     WS-4548-GB-RJ45     -        -          -        -          -
----------------------  ----------------  ----------------  ----------
     Total                24       22         44       40
```

**Note**    The "Inline Power Oper" displays the PoE consumed by the powered devices attached to the module in addition to the PoE consumed by the FPGAs and other hardware components on the module. The "Inline Power Admin" displays only the PoE allocated by the powered devices attached to the module.

This example shows how to display the power status information:

```
Switch# show power status
Power                                           Fan     Inline
Supply  Model No          Type       Status     Sensor  Status
------  ----------------  ---------  ---------  ------  ------
PS1     PWR-C45-2800AC    AC 2800W   good       good    good
PS2     PWR-C45-2800AC    AC 2800W   good       good    good


Power Supply    Max     Min     Max     Min     Absolute
(Nos in Watts)  Inline  Inline  System  System  Maximum
--------------  ------  ------  ------  ------  --------
PS1             1400    1400    1360    1360    2800
PS2             1400    1400    1360    1360    2800
Switch#
```

This example shows how to verify the PoE consumption for the switch:

```
Switch# show power inline consumption default
Default PD consumption : 5000 mW
Switch#
```

This example shows how to display the status of inline power:

```
Switch# show power inline
Available:677(w)  Used:117(w)  Remaining:560(w)

Interface Admin  Oper         Power(Watts)    Device                Class
                          From PS    To Device
--------- ------ ----------  ----------  ----------  ------------------  -----
Fa3/1     auto   on          17.3        15.4        Ieee PD             0
Fa3/2     auto   on          4.5         4.0         Ieee PD             1
Fa3/3     auto   on          7.1         6.3         Cisco IP Phone 7960 0
Fa3/4     auto   on          7.1         6.3         Cisco IP Phone 7960 n/a
Fa3/5     auto   on          17.3        15.4        Ieee PD             0
Fa3/6     auto   on          17.3        15.4        Ieee PD             0
Fa3/7     auto   on          4.5         4.0         Ieee PD             1
Fa3/8     auto   on          7.9         7.0         Ieee PD             2
Fa3/9     auto   on          17.3        15.4        Ieee PD             3
Fa3/10    auto   on          17.3        15.4        Ieee PD             4
```

```
Fa3/11    auto    off         0           0           n/a                 n/a
Fa3/12    auto    off         0           0           n/a                 n/a
Fa3/13    auto    off         0           0           n/a                 n/a
Fa3/14    auto    off         0           0           n/a                 n/a
Fa3/15    auto    off         0           0           n/a                 n/a
Fa3/16    auto    off         0           0           n/a                 n/a
Fa3/17    auto    off         0           0           n/a                 n/a
Fa3/18    auto    off         0           0           n/a                 n/a


--------- ------ ---------- ---------- ---------- ------------------- -----


Totals:           10     on     117.5       104.6

Switch#
```

This example shows how to display the number of power supplies needed by the system:

```
Switch# show power supplies
Power supplies needed by system = 2
Switch#
```

This example shows how to display the PoE status for Fast Ethernet interface 3/1:

```
Switch# show power inline fa3/1
Available:677(w)  Used:11(w)  Remaining:666(w)

Interface Admin  Oper           Power(Watts)      Device              Class
                               From PS    To Device
--------- ------ ---------- ---------- ---------- ------------------- -----


Fa3/1     auto    on          11.2        10.0     Ieee PD              0

Interface  AdminPowerMax   AdminConsumption
            (Watts)            (Watts)
---------- --------------- --------------------


Fa3/1               15.4                10.0
Switch#
```

**Related Commands**    **power dc input**
                        **power inline**
                        **power inline consumption**
                        **power redundancy-mode**
                        **power supplies required**

# show qos

To display QoS information, use the **show qos** command.

**show qos**

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

**Defaults**     This command has no default settings.

**Command Modes**     Privileged EXEC

**Command History**

| Release | Modification |
|---------|--------------|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Examples**     This example shows the output that might be displayed if you do not enter any keywords:

```
Switch# show qos
  QoS is enabled globally
Switch#
```

**Related Commands**     **qos (global configuration mode)**
**qos (interface configuration mode)**

# show qos aggregate policer

To display QoS aggregate policer information, use the **show qos aggregate policer** command.

**show qos aggregate policer** [*aggregate_name*]

| Syntax Description | *aggregate_name* | (Optional) Named aggregate policer. |
| --- | --- | --- |

**Defaults**    This command has no default settings.

**Command Modes**    Privileged EXEC

**Command History**

| Release | Modification |
| --- | --- |
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Usage Guidelines**    The aggregate policer name is case sensitive.

**Examples**    This example shows the output if you do not enter any keywords:

```
Switch# show qos aggregate policer
Policer aggr-1
Rate(bps):10000000 Normal-Burst(bytes):1000000
conform-action:transmit exceed-action:policed-dscp-transmit
Policymaps using this policer:
    ipp5-policy
Switch#
```

**Related Commands**    **qos aggregate-policer**

# show qos dbl

To display global Dynamic Buffer Limiting (DBL) information, use the **show qos dbl** command.

**show qos dbl**

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

**Defaults**    This command has no default settings.

**Command Modes**    Privileged EXEC

**Command History**

| Release | Modification |
|---------|--------------|
| 12.1(13)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Examples**    This example shows how to display global DBL information:

```
Switch# show qos dbl
DBL is enabled globally
DBL flow includes vlan
DBL flow includes l4-ports
DBL does not use ecn to indicate congestion
DBL exceed-action mark probability:15%
DBL max credits:15
DBL aggressive credit limit:10
DBL aggressive buffer limit:2 packets
Switch#
```

**Related Commands**    **qos (global configuration mode)**
**qos dbl**

# show qos interface

To display queueing information, use the **show qos interface** command.

**show qos interface** {**fastethernet** *interface-number* | **gigabitethernet** *interface-number*} |
[**vlan** *vlan_id* | **port-channel** *number*]

**Syntax Description**

| | |
|---|---|
| **fastethernet** *interface-number* | Specifies the Fast Ethernet 802.3 interface. |
| **gigabitethernet** *interface-number* | Specifies the Gigabit Ethernet 802.3z interface. |
| **vlan** *vlan_id* | (Optional) Specifies the VLAN ID; valid values are from 1 to 4094. |
| **port-channel** *number* | (Optional) Specifies the port channel; valid ranges are from 1 to 64. |

**Defaults**      This command has no default settings.

**Command Modes**      Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.1(13)EW | Added support for extended VLAN addresses. |
| 12.1(19)EW | Display changed to include the Port Trust Device. |

**Examples**      This example shows how to display queueing information:

```
Switch# show qos interface fastethernet 6/1
    QoS is enabled globally
    Port QoS is enabled
    Administrative Port Trust State: 'dscp'
    Operational Port Trust State: 'untrusted'
    Port Trust Device:'cisco-phone'
    Default DSCP:0 Default CoS:0

    Tx-Queue   Bandwidth    ShapeRate    Priority    QueueSize
               (bps)        (bps)                    (packets)
      1        31250000     disabled     N/A         240
      2        31250000     disabled     N/A         240
      3        31250000     disabled     normal      240
      4        31250000     disabled     N/A         240
Switch#
```

**Related Commands**      **qos map cos**
**show qos**
**tx-queue**

# show qos maps

To display QoS map information, use the **show qos maps** command.

**show qos maps** [**cos** | **dscp** [**policed** | **tx-queue**]]

**Syntax Description**

| | |
|---|---|
| **cos** | (Optional) Displays CoS map information. |
| **dscp** | (Optional) Displays DSCP map information. |
| **policed** | (Optional) Displays policed map information. |
| **tx-queue** | (Optional) Displays tx-queue map information. |

**Defaults**

This command has no default settings.

**Command Modes**

Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Examples**

This example shows how to display QoS map settings:

```
Switch# show qos maps
DSCP-TxQueue Mapping Table (dscp = d1d2)
d1 :d2  0  1  2  3  4  5  6  7  8  9
------------------------------------
 0 :   01 01 01 01 01 01 01 01 01 01
 1 :   01 01 01 01 01 01 02 02 02 02
 2 :   02 02 02 02 02 02 02 02 02 02
 3 :   02 02 03 03 03 03 03 03 03 03
 4 :   03 03 03 03 03 03 03 03 04 04
 5 :   04 04 04 04 04 04 04 04 04 04
 6 :   04 04 04 04

Policed DSCP Mapping Table (dscp = d1d2)
d1 :d2  0  1  2  3  4  5  6  7  8  9
------------------------------------
 0 :   00 01 02 03 04 05 06 07 08 09
 1 :   10 11 12 13 14 15 16 17 18 19
 2 :   20 21 22 23 24 25 26 27 28 29
 3 :   30 31 32 33 34 35 36 37 38 39
 4 :   40 41 42 43 44 45 46 47 48 49
 5 :   50 51 52 53 54 55 56 57 58 59
 6 :   60 61 62 63
```

```
DSCP-CoS Mapping Table (dscp = d1d2)
d1 :d2  0   1   2   3   4   5   6   7   8   9
-------------------------------------
 0 :   00  00  00  00  00  00  00  00  01  01
 1 :   01  01  01  01  01  01  02  02  02  02
 2 :   02  02  02  02  03  03  03  03  03  03
 3 :   03  03  04  04  04  04  04  04  04  04
 4 :   05  05  05  05  05  05  05  05  06  06
 5 :   06  06  06  06  06  06  07  07  07  07
 6 :   07  07  07  07

CoS-DSCP Mapping Table
   CoS:  0   1   2   3   4   5   6   7
-------------------------------
  DSCP:  0   8  16  24  32  40  48  56

Switch#
```

**Related Commands**    **qos (global configuration mode)**
**qos (interface configuration mode)**

# show redundancy

To display redundancy facility information, use the **show redundancy** command.

**show redundancy** {**clients** | **counters** | **history** | **states**}

**Syntax Description**

| | |
|---|---|
| **clients** | (Optional) Displays information about the redundancy facility client. |
| **counters** | (Optional) Displays information about the redundancy facility counter. |
| **history** | (Optional) Displays a log of past status and related information for the redundancy facility. |
| **states** | (Optional) Displays information about the redundancy facility state. |

**Defaults**

This command has no default settings.

**Command Modes**

Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1.(13)EW | Support for this command was introduced on the Catalyst 4500 series switch (Catalyst 4507R only). |

**Examples**

This example shows how to display information about the redundancy facility:

```
Switch# show redundancy
4507r-demo#show redundancy
Redundant System Information :
------------------------------
       Available system uptime = 2 days, 2 hours, 39 minutes
Switchovers system experienced = 0
             Standby failures = 0
       Last switchover reason = none

                 Hardware Mode = Duplex
   Configured Redundancy Mode = Stateful Switchover
    Operating Redundancy Mode = Stateful Switchover
             Maintenance Mode = Disabled
                Communications = Up

Current Processor Information :
------------------------------
               Active Location = slot 1
        Current Software state = ACTIVE
       Uptime in current state = 2 days, 2 hours, 39 minutes
                 Image Version = Cisco Internetwork Operating System Software
IOS (tm) Catalyst 4000 L3 Switch Software (cat4000-I5S-M), Version 12.2(20)EWA(3
.92), CISCO INTERNAL USE ONLY ENHANCED PRODUCTION VERSION
Copyright (c) 1986-2004 by cisco Systems, Inc.
Compiled Wed 14-Jul-04 04:42 by esi
                          BOOT = bootflash:cat4000-i5s-mz.122_20_EWA_392,1
          Configuration register = 0x2002
```

```
Peer Processor Information :
----------------------------
               Standby Location = slot 2
         Current Software state = STANDBY HOT
       Uptime in current state = 2 days, 2 hours, 39 minutes
                  Image Version = Cisco Internetwork Operating System Software
IOS (tm) Catalyst 4000 L3 Switch Software (cat4000-I5S-M), Version 12.2(20)EWA(3
.92), CISCO INTERNAL USE ONLY ENHANCED PRODUCTION VERSION
Copyright (c) 1986-2004 by cisco Systems, Inc.
Compiled Wed 14-Jul-04 0
                           BOOT = bootflash:cat4000-i5s-mz.122_20_EWA_392,1
         Configuration register = 0x2002

Switch#
```

This example shows how to display redundancy facility client information:

```
Switch# show redundancy clients
clientID = 0        clientSeq = 0        RF_INTERNAL_MSG
clientID = 30       clientSeq = 135      Redundancy Mode RF
clientID = 28       clientSeq = 330      GALIOS_CONFIG_SYNC
clientID = 65000    clientSeq = 65000    RF_LAST_CLIENT Switch
```

The output displays the following information:

- clientID displays the client's ID number.

- clientSeq displays the client's notification sequence number.

- Current redundancy facility state.

This example shows how to display the redundancy facility counter information:

```
Switch# show redundancy counters
Redundancy Facility OMs
              comm link up = 1
       comm link down down = 0

         invalid client tx = 0
         null tx by client = 0
               tx failures = 0
     tx msg length invalid = 0

     client not rxing msgs = 0
 rx peer msg routing errors = 0
          null peer msg rx = 0
       errored peer msg rx = 0

                buffers tx = 1535
     tx buffers unavailable = 0
                buffers rx = 1530
     buffer release errors = 0

 duplicate client registers = 0
  failed to register client = 0
       Invalid client syncs = 0
```

This example shows how to display redundancy facility history information:

```
Switch# show redundancy history
00:00:01 client added: RF_INTERNAL_MSG(0) seq=0
00:00:01 client added: RF_LAST_CLIENT(65000) seq=65000
00:00:01 client added: GALIOS_CONFIG_SYNC(28) seq=330
00:00:03 client added: Redundancy Mode RF(30) seq=135
```

```
00:00:03 *my state = INITIALIZATION(2) *peer state = DISABLED(1)
00:00:03 RF_PROG_INITIALIZATION(100) RF_INTERNAL_MSG(0) op=0 rc=11
00:00:03 RF_PROG_INITIALIZATION(100) Redundancy Mode RF(30) op=0 rc=11
00:00:03 RF_PROG_INITIALIZATION(100) GALIOS_CONFIG_SYNC(28) op=0 rc=11
00:00:03 RF_PROG_INITIALIZATION(100) RF_LAST_CLIENT(65000) op=0 rc=11
00:00:03 *my state = NEGOTIATION(3) peer state = DISABLED(1)
00:00:25 RF_EVENT_GO_ACTIVE(511) op=0
00:00:25 *my state = ACTIVE-FAST(9) peer state = DISABLED(1)
00:00:25 RF_STATUS_MAINTENANCE_ENABLE(403) Redundancy Mode RF(30) op=0
00:00:25 RF_STATUS_MAINTENANCE_ENABLE(403) GALIOS_CONFIG_SYNC(28) op=0
00:00:25 RF_PROG_ACTIVE_FAST(200) RF_INTERNAL_MSG(0) op=0 rc=11
00:00:25 RF_PROG_ACTIVE_FAST(200) Redundancy Mode RF(30) op=0 rc=11
00:00:25 RF_PROG_ACTIVE_FAST(200) GALIOS_CONFIG_SYNC(28) op=0 rc=11
00:00:25 RF_PROG_ACTIVE_FAST(200) RF_LAST_CLIENT(65000) op=0 rc=11
00:00:25 *my state = ACTIVE-DRAIN(10) peer state = DISABLED(1)
00:00:25 RF_PROG_ACTIVE_DRAIN(201) RF_INTERNAL_MSG(0) op=0 rc=11
00:00:25 RF_PROG_ACTIVE_DRAIN(201) Redundancy Mode RF(30) op=0 rc=11
00:00:25 RF_PROG_ACTIVE_DRAIN(201) GALIOS_CONFIG_SYNC(28) op=0 rc=11
00:00:25 RF_PROG_ACTIVE_DRAIN(201) RF_LAST_CLIENT(65000) op=0 rc=11
---cut---cut---cut---
---cut---cut---cut---
00:01:34 RF_PROG_PLATFORM_SYNC(300) RF_INTERNAL_MSG(0) op=0 rc=11
00:01:34 RF_PROG_PLATFORM_SYNC(300) Redundancy Mode RF(30) op=0 rc=11
00:01:34 RF_PROG_PLATFORM_SYNC(300) GALIOS_CONFIG_SYNC(28) op=0 rc=0
00:01:34 RF_EVENT_CLIENT_PROGRESSION(503) GALIOS_CONFIG_SYNC(28) op=1 rc=0
00:01:36 RF_EVENT_PEER_PROG_DONE(506) GALIOS_CONFIG_SYNC(28) op=300
00:01:36 RF_PROG_PLATFORM_SYNC(300) RF_LAST_CLIENT(65000) op=0 rc=0
00:01:36 RF_EVENT_CLIENT_PROGRESSION(503) RF_LAST_CLIENT(65000) op=1 rc=0
00:01:36 RF_EVENT_PEER_PROG_DONE(506) RF_LAST_CLIENT(65000) op=300
00:01:38 *my state = ACTIVE(13) *peer state = STANDBY COLD(4)
```

This example shows how to display information about the redundancy facility state:

```
Switch# show redundancy states
my state = 13 -ACTIVE
     peer state = 8  -STANDBY HOT
           Mode = Duplex
           Unit = Primary
        Unit ID = 2

Redundancy Mode (Operational) = Stateful Switchover
Redundancy Mode (Configured)  = Stateful Switchover
     Split Mode = Disabled
   Manual Swact = Enabled
 Communications = Up

   client count = 21
 client_notification_TMR = 240000 milliseconds
         keep_alive TMR = 9000 milliseconds
       keep_alive count = 0
    keep_alive threshold = 18
           RF debug mask = 0x0
Switch#
```

**Related Commands**    **redundancy**
**redundancy force-switchover**

# show running-config

To display the module status and configuration, use the **show running-config** command.

> **show running-config** [**module** *slot*]

| | |
|---|---|
| **Syntax Description** | **module** *slot*        (Optional) Specifies the module slot number; valid values are from 1 to 6. |

**Defaults**

This command has no default settings.

**Command Modes**

Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Usage Guidelines**

In some cases, you might see a difference in the duplex mode displayed when you enter the **show interfaces** command and the **show running-config** command. If you do see a difference, the duplex mode displayed in the **show interfaces** command is the actual duplex mode that the interface is running. The **show interfaces** command shows the operating mode for an interface, while the **show running-config** command shows the configured mode for an interface.

The **show running-config** command output for an interface may display a duplex mode configuration but no configuration for the speed. When no speed is displayed in the output, it indicates that the interface speed is configured to be auto and that the duplex mode shown becomes the operational setting once the speed is configured to something other than auto. With this configuration, it is possible that the operating duplex mode for that interface does not match the duplex mode shown with the **show running-config** command.

**Examples**

This example shows how to display the module and status configuration for all modules:

```
Switch# show running-config
03:23:36:%SYS-5-CONFIG_I:Configured from console by consolesh runn
Building configuration...

Current configuration:3268 bytes
!
version 12.1
no service pad
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname Switch
!
!
power supplies required 1
ip subnet-zero
```

```
!
!
!
interface FastEthernet1
 no ip address
 shutdown
 duplex auto
 speed auto
Switch#
```

This example shows the output for the **show running-config** command when you have enabled the **switchport voice vlan** command:

```
Switch# show running-config int fastethernet 6/1
Building configuration...

Current configuration:133 bytes
!
interface FastEthernet6/1
 switchport voice vlan 2
 no snmp trap link-status
 spanning-tree portfast
 channel-group 1 mode on
end

Switch#
```

# show slavebootflash:

To display information about the standby bootflash file system, use the **show slavebootflash:** command.

**show slavebootflash:** [**all** | **chips** | **filesys**]

## Syntax Description

| | |
|---|---|
| **all** | (Optional) Displays all possible Flash information. |
| **chips** | (Optional) Displays Flash chip information. |
| **filesys** | (Optional) Displays file system information. |

## Defaults

This command has no default settings.

## Command Modes

EXEC

## Command History

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

## Examples

This example shows how to display file system status information:

```
Switch# show slavebootflash: filesys

-------- F I L E   S Y S T E M   S T A T U S --------
  Device Number = 0
DEVICE INFO BLOCK: bootflash
  Magic Number       = 6887635   File System Vers = 10000    (1.0)
  Length             = 1000000   Sector Size      = 40000
  Programming Algorithm = 39      Erased State     = FFFFFFFF
  File System Offset = 40000     Length = F40000
  MONLIB Offset      = 100       Length = C628
  Bad Sector Map Offset = 3FFF8   Length = 8
  Squeeze Log Offset = F80000    Length = 40000
  Squeeze Buffer Offset = FC0000  Length = 40000
  Num Spare Sectors  = 0
    Spares:
STATUS INFO:
  Writable
  NO File Open for Write
  Complete Stats
  No Unrecovered Errors
  No Squeeze in progress
USAGE INFO:
  Bytes Used    = 917CE8  Bytes Available = 628318
  Bad Sectors   = 0       Spared Sectors  = 0
  OK Files      = 2       Bytes = 917BE8
  Deleted Files = 0       Bytes = 0
  Files w/Errors = 0      Bytes = 0
Switch>
```

This example shows how to display system image information:

```
Switch# show slavebootflash:
-# - ED --type-- --crc--- -seek-- nlen -length- -----date/time------ name
1   .. image    8C5A393A  237E3C   14  2063804 Aug 23 1999 16:18:45 c4-boot-mz
2   .. image    D86EE0AD  957CE8    9  7470636 Sep 20 1999 13:48:49 rp.halley
Switch>
```

This example shows how to display all bootflash information:

```
Switch# show slavebootflash: all
-# - ED --type-- --crc--- -seek-- nlen -length- -----date/time------ name
1   .. image    8C5A393A  237E3C   14  2063804 Aug 23 1999 16:18:45 c4-boot-
mz
2   .. image    D86EE0AD  957CE8    9  7470636 Sep 20 1999 13:48:49 rp.halley

6456088 bytes available (9534696 bytes used)

-------- F I L E   S Y S T E M   S T A T U S --------
  Device Number = 0
DEVICE INFO BLOCK: bootflash
  Magic Number        = 6887635    File System Vers = 10000    (1.0)
  Length              = 1000000    Sector Size      = 40000
  Programming Algorithm = 39       Erased State     = FFFFFFFF
  File System Offset  = 40000      Length = F40000
  MONLIB Offset       = 100        Length = C628
  Bad Sector Map Offset = 3FFF8    Length = 8
  Squeeze Log Offset  = F80000     Length = 40000
  Squeeze Buffer Offset = FC0000   Length = 40000
  Num Spare Sectors   = 0
    Spares:
STATUS INFO:
  Writable
  NO File Open for Write
  Complete Stats
  No Unrecovered Errors
  No Squeeze in progress
USAGE INFO:
  Bytes Used    = 917CE8  Bytes Available = 628318
  Bad Sectors   = 0       Spared Sectors  = 0
  OK Files      = 2       Bytes = 917BE8
  Deleted Files = 0       Bytes = 0
  Files w/Errors = 0      Bytes = 0
Switch>
```

# show slaveslot0:

To display information about the file system on the standby supervisor engine, use the **show slaveslot0:** command.

**show slot0:** [**all** | **chips** | **filesys**]

## Syntax Description

| | |
|---|---|
| **all** | (Optional) Displays all Flash information including the output from the **show slot0: chips** and **show slot0: filesys** commands. |
| **chips** | (Optional) Displays Flash chip register information. |
| **filesys** | (Optional) Displays file system status information. |

## Defaults

This command has no default settings.

## Command Modes

EXEC

## Command History

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

## Examples

This example shows how to display a summary of the file system:

```
Switch# show slaveslot0:
-# - ED --type-- --crc--- -seek-- nlen -length- -----date/time------ name
1   .. image   6375DBB7  A4F144    6 10678468 Nov 09 1999 10:50:42 halley

5705404 bytes available (10678596 bytes used)
Switch>
```

This example shows how to display Flash chip information:

```
Switch# show slaveslot0: chips
******** Intel Series 2+ Status/Register Dump ********
ATTRIBUTE MEMORY REGISTERS:
  Config Option Reg (4000): 2
  Config Status Reg (4002): 0
  Card Status   Reg (4100): 1
  Write Protect Reg (4104): 4
  Voltage Cntrl Reg (410C): 0
  Rdy/Busy Mode Reg (4140): 2

COMMON MEMORY REGISTERS: Bank 0
  Intelligent ID Code  : 8989A0A0
  Compatible Status Reg: 8080
  Global     Status Reg: B0B0
  Block Status Regs:
    0  : B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0
    8  : B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0
    16 : B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0
    24 : B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0
```

```
COMMON MEMORY REGISTERS: Bank 1
  Intelligent ID Code  : 8989A0A0
  Compatible Status Reg: 8080
  Global     Status Reg: B0B0
  Block Status Regs:
    0  :  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0
    8  :  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0
    16 :  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0
    24 :  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0

COMMON MEMORY REGISTERS: Bank 2
  Intelligent ID Code  : 8989A0A0
  Compatible Status Reg: 8080
  Global     Status Reg: B0B0
  Block Status Regs:
    0  :  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0
    8  :  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0
    16 :  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0
    24 :  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0

COMMON MEMORY REGISTERS: Bank 3
  Intelligent ID Code  : 8989A0A0
  Compatible Status Reg: 8080
  Global     Status Reg: B0B0
  Block Status Regs:
    0  :  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0
    8  :  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0
    16 :  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0
    24 :  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0

COMMON MEMORY REGISTERS: Bank 4
  Intelligent ID Code  : FFFFFFFF
    IID Not Intel -- assuming bank not populated
```

This example shows how to display file system information:

```
Switch# show slaveslot0: filesys
-------- F I L E   S Y S T E M   S T A T U S --------
  Device Number = 0
DEVICE INFO BLOCK: slot0
  Magic Number       = 6887635    File System Vers = 10000    (1.0)
  Length             = 1000000    Sector Size      = 20000
  Programming Algorithm = 4       Erased State     = FFFFFFFF
  File System Offset   = 20000    Length = FA0000
  MONLIB Offset        = 100      Length = F568
  Bad Sector Map Offset = 1FFF0   Length = 10
  Squeeze Log Offset   = FC0000   Length = 20000
  Squeeze Buffer Offset = FE0000  Length = 20000
  Num Spare Sectors    = 0
    Spares:
STATUS INFO:
  Writable
  NO File Open for Write
  Complete Stats
  No Unrecovered Errors
  No Squeeze in progress
USAGE INFO:
  Bytes Used    = 9F365C  Bytes Available = 5AC9A4
  Bad Sectors   = 0       Spared Sectors  = 0
  OK Files      = 1       Bytes = 9F35DC
  Deleted Files = 0       Bytes = 0
  Files w/Errors = 0      Bytes =
Switch>
```

# show slot0:

To display information about the slot0: file system, use the **show slot0:** command.

**show slot0:** [**all** | **chips** | **filesys**]

| Syntax Description | all | (Optional) Displays all Flash information including the output from the **show slot0: chips** and **show slot0: filesys** commands. |
|---|---|---|
| | chips | (Optional) Displays Flash chip register information. |
| | filesys | (Optional) Displays file system status information. |

**Defaults**           This command has no default settings.

**Command Modes**      EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Examples**           This example shows how to display a summary of the file system:

```
Switch# show slot0:
-# - ED --type-- --crc--- -seek-- nlen -length- -----date/time------ name
1   .. image    6375DBB7  A4F144    6 10678468 Nov 09 1999 10:50:42 halley

5705404 bytes available (10678596 bytes used)
Switch>
```

This example shows how to display Flash chip information:

```
Switch# show slot0: chips
******** Intel Series 2+ Status/Register Dump ********
ATTRIBUTE MEMORY REGISTERS:
  Config Option Reg (4000): 2
  Config Status Reg (4002): 0
  Card Status  Reg (4100): 1
  Write Protect Reg (4104): 4
  Voltage Cntrl Reg (410C): 0
  Rdy/Busy Mode Reg (4140): 2

COMMON MEMORY REGISTERS: Bank 0
  Intelligent ID Code  : 8989A0A0
  Compatible Status Reg: 8080
  Global     Status Reg: B0B0
  Block Status Regs:
    0  : B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0
    8  : B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0
    16 : B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0
    24 : B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0
```

```
COMMON MEMORY REGISTERS: Bank 1
  Intelligent ID Code  : 8989A0A0
  Compatible Status Reg: 8080
  Global     Status Reg: B0B0
  Block Status Regs:
    0  :  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0
    8  :  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0
    16 :  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0
    24 :  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0

COMMON MEMORY REGISTERS: Bank 2
  Intelligent ID Code  : 8989A0A0
  Compatible Status Reg: 8080
  Global     Status Reg: B0B0
  Block Status Regs:
    0  :  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0
    8  :  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0
    16 :  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0
    24 :  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0

COMMON MEMORY REGISTERS: Bank 3
  Intelligent ID Code  : 8989A0A0
  Compatible Status Reg: 8080
  Global     Status Reg: B0B0
  Block Status Regs:
    0  :  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0
    8  :  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0
    16 :  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0
    24 :  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0  B0B0

COMMON MEMORY REGISTERS: Bank 4
  Intelligent ID Code  : FFFFFFFF
    IID Not Intel -- assuming bank not populated
Switch>
```

This example shows how to display file system information:

```
Switch# show slot0: filesys
-------- F I L E   S Y S T E M   S T A T U S --------
  Device Number = 0
DEVICE INFO BLOCK: slot0
  Magic Number        = 6887635    File System Vers = 10000    (1.0)
  Length              = 1000000    Sector Size      = 20000
  Programming Algorithm = 4        Erased State     = FFFFFFFF
  File System Offset  = 20000      Length = FA0000
  MONLIB Offset       = 100        Length = F568
  Bad Sector Map Offset = 1FFF0    Length = 10
  Squeeze Log Offset  = FC0000     Length = 20000
  Squeeze Buffer Offset = FE0000   Length = 20000
  Num Spare Sectors   = 0
    Spares:
STATUS INFO:
  Writable
  NO File Open for Write
  Complete Stats
  No Unrecovered Errors
  No Squeeze in progress
USAGE INFO:
  Bytes Used    = 9F365C  Bytes Available = 5AC9A4
  Bad Sectors   = 0       Spared Sectors  = 0
  OK Files      = 1       Bytes = 9F35DC
  Deleted Files = 0       Bytes = 0
  Files w/Errors = 0      Bytes = 0
Switch>
```

# show spanning-tree

To display spanning-tree state information, use the **show spanning-tree** command.

**show spanning-tree** [*bridge_group* | **active** | **backbonefast** | **bridge** [*id*] | **inconsistentports** | **interface** *type* | **root** | **summary** [**total**] | **uplinkfast** | **vlan** *vlan_id* | **pathcost method** | **detail**]

**Syntax Description**

| | |
|---|---|
| *bridge_group* | (Optional) Specifies the bridge group number; valid values are from 1 to 255. |
| **active** | (Optional) Displays the spanning-tree information on active interfaces only. |
| **backbonefast** | (Optional) Displays the spanning-tree BackboneFast status. |
| **bridge** | (Optional) Displays the bridge status and configuration information. |
| *id* | (Optional) Name of the bridge. |
| **inconsistentports** | (Optional) Displays the root inconsistency state. |
| **interface** *type* | (Optional) Specifies the interface type and number; valid values are **fastethernet**, **gigabitethernet**, **tengigabitethernet**, **port-channel** (1 to 64), and **vlan** (1 to 4094). |
| **root** | (Optional) Displays the root bridge status and configuration. |
| **summary** | (Optional) Specifies a summary of port states. |
| **total** | (Optional) Displays the total lines of the spanning-tree state section. |
| **uplinkfast** | (Optional) Displays the spanning-tree UplinkFast status. |
| **vlan** *vlan_id* | (Optional) Specifies the VLAN ID; valid values are from 1 to 4094. |
| **pathcost method** | (Optional) Displays the default path cost calculation method used. |
| **detail** | (Optional) Displays a summary of interface information. |

**Defaults**        Interface information summary is displayed.

**Command Modes**    Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.1(12c)EW | Support for extended addressing was added. |
| 12.2(25)EW | Added support for the 10-Gigabit Ethernet interface. |

**Examples**       This example shows how to display spanning-tree information on the active interfaces only:

```
Switch# show spanning-tree active
UplinkFast is disabled
BackboneFast is disabled

 VLAN1 is executing the ieee compatible Spanning Tree protocol
  Bridge Identifier has priority 32768, address 0050.3e8d.6401
  Configured hello time 2, max age 20, forward delay 15
```

```
    Current root has priority 16384, address 0060.704c.7000
    Root port is 265 (FastEthernet5/9), cost of root path is 38
    Topology change flag not set, detected flag not set
    Number of topology changes 0 last change occurred 18:13:54 ago
    Times:  hold 1, topology change 24, notification 2
            hello 2, max age 14, forward delay 10
    Timers: hello 0, topology change 0, notification 0

 Port 265 (FastEthernet5/9) of VLAN1 is forwarding
   Port path cost 19, Port priority 128, Port Identifier 129.9.
   Designated root has priority 16384, address 0060.704c.7000
   Designated bridge has priority 32768, address 00e0.4fac.b000
   Designated port id is 128.2, designated path cost 19
   Timers: message age 3, forward delay 0, hold 0
   Number of transitions to forwarding state: 1
   BPDU: sent 3, received 32852
Switch#
```

This example shows how to display the spanning-tree BackboneFast status:

```
Switch# show spanning-tree backbonefast
BackboneFast is enabled

BackboneFast statistics
-----------------------
Number of transition via backboneFast (all VLANs) : 0
Number of inferior BPDUs received (all VLANs)     : 0
Number of RLQ request PDUs received (all VLANs)   : 0
Number of RLQ response PDUs received (all VLANs)  : 0
Number of RLQ request PDUs sent (all VLANs)       : 0
Number of RLQ response PDUs sent (all VLANs)      : 0
Switch#
```

This example shows how to display spanning-tree information for the bridge:

```
Switch# show spanning-tree bridge
VLAN1
  Bridge ID  Priority    32768
             Address     0050.3e8d.6401
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
VLAN2
  Bridge ID  Priority    32768
             Address     0050.3e8d.6402
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
VLAN3
  Bridge ID  Priority    32768
             Address     0050.3e8d.6403
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
Switch#
```

This example shows how to display a summary of interface information:

```
Switch# show spanning-tree

VLAN1
  Spanning tree enabled protocol ieee
  Root ID    Priority    32768
             Address     0030.94fc.0a00
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32768
             Address     0030.94fc.0a00
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
             Aging Time 300
```

```
Interface                                         Designated
Name                 Port ID Prio  Cost Sts  Cost Bridge ID          Port ID
------------------   ------- --- ------ ---  ---- ------------------ -------
FastEthernet6/15     129.79  128     19 FWD      0 32768 0030.94fc.0a00 129.79


VLAN2
  Spanning tree enabled protocol ieee
  Root ID    Priority   32768
             Address    0030.94fc.0a01
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority   32768
             Address    0030.94fc.0a01
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
             Aging Time 300

Interface                                         Designated
Name                 Port ID Prio  Cost Sts  Cost Bridge ID          Port ID
------------------   ------- --- ------ ---  ---- ------------------ -------
FastEthernet6/16     129.80  128     19 FWD      0 32768 0030.94fc.0a01 129.80
Switch#
```

This example shows how to display spanning-tree information for Fast Ethernet interface 5/9:

```
Switch# show spanning-tree interface fastethernet5/9
Interface Fa0/10 (port 23) in Spanning tree 1 is ROOT-INCONSISTENT
Port path cost 100, Port priority 128
Designated root has priority 8192, address 0090.0c71.a400
Designated bridge has priority 32768, address 00e0.1e9f.8940
Designated port is 23, path cost 115
Timers: message age 0, forward delay 0, hold 0
BPDU: sent 0, received 0
The port is in the portfast mode
Switch#
```

This example shows how to display spanning-tree information for a specific VLAN:

```
Switch# show spanning-tree vlan 1
VLAN1 is executing the ieee compatible Spanning Tree protocol
  Bridge Identifier has priority 32768, address 0030.94fc.0a00
  Configured hello time 2, max age 20, forward delay 15
  We are the root of the spanning tree
  Topology change flag not set, detected flag not set
  Number of topology changes 5 last change occurred 01:50:47 ago
          from FastEthernet6/16
  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

 Port 335 (FastEthernet6/15) of VLAN1 is forwarding
   Port path cost 19, Port priority 128, Port Identifier 129.79.
   Designated root has priority 32768, address 0030.94fc.0a00
   Designated bridge has priority 32768, address 0030.94fc.0a00
   Designated port id is 129.79, designated path cost 0
   Timers:message age 0, forward delay 0, hold 0
   Number of transitions to forwarding state:1
   BPDU:sent 6127, received 0
Switch#
```

This example shows how to display spanning-tree information for a specific bridge group:

```
Switch# show spanning-tree vlan 1
 UplinkFast is disabled
 BackboneFast is disabled
Switch#
```

This example shows how to display a summary of port states:

```
Switch# show spanning-tree summary
Root bridge for:VLAN1, VLAN2.
PortFast BPDU Guard is disabled
EtherChannel misconfiguration guard is enabled
UplinkFast is disabled
BackboneFast is disabled
Default pathcost method used is short

Name                 Blocking Listening Learning Forwarding STP Active
-------------------- -------- --------- -------- ---------- ----------
VLAN1                0        0         0        1          1
VLAN2                0        0         0        1          1
-------------------- -------- --------- -------- ---------- ----------
          2 VLANs 0        0         0        2          2
Switch#
```

This example shows how to display the total lines of the spanning-tree state section:

```
Switch#  show spanning-tree summary totals
Root bridge for:VLAN1, VLAN2.
PortFast BPDU Guard is disabled
EtherChannel misconfiguration guard is enabled
UplinkFast is disabled
BackboneFast is disabled
Default pathcost method used is short

Name                 Blocking Listening Learning Forwarding STP Active
-------------------- -------- --------- -------- ---------- ----------
          2 VLANs 0        0         0        2          2
Switch#
```

This example shows how to determine whether any ports are in root inconsistent state:

```
Switch#  show spanning-tree inconsistentports

Name                 Interface            Inconsistency
-------------------- -------------------- ------------------
VLAN1                FastEthernet3/1      Root Inconsistent

Number of inconsistent ports (segments) in the system:1
Switch#
```

**Related Commands**

**spanning-tree backbonefast**
**spanning-tree cost**
**spanning-tree guard**
**spanning-tree pathcost method**
**spanning-tree portfast default**
**spanning-tree portfast (interface configuration mode)**
**spanning-tree port-priority**
**spanning-tree uplinkfast**
**spanning-tree vlan**

# show spanning-tree mst

To display MST protocol information, use the **show spanning-tree mst** command.

> **show spanning-tree mst** [**configuration**]

> **show spanning-tree mst** [*instance-id*] [**detail**]

> **show spanning-tree mst** [*instance-id*] **interface** *interface* [**detail**]

| Syntax Description | | |
|---|---|---|
| **configuration** | (Optional) Displays region configuration information. | |
| *instance-id* | (Optional) Instance identification number; valid values are from 0 to 15. | |
| **detail** | (Optional) Displays detailed MST protocol information. | |
| **interface** *interface* | (Optional) Interface type and number; valid values for type are **fastethernet**, **gigabitethernet**, **tengigabitethernet**, **port-channel**, and **vlan**. See the "Usage Guidelines" section for more information. | |

**Defaults**    This command has no default settings.

**Command Modes**    Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(12c)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.2(25)EW | Added support for the 10-Gigabit Ethernet interface. |

**Usage Guidelines**    This command is not supported on systems that are configured with a Supervisor Engine I.

In the output display of the **show spanning-tree mst configuration** command, a warning message might display. This message appears if you do not map secondary VLANs to the same instance as the associated primary VLAN. The display includes a list of the secondary VLANs that are not mapped to the same instance as the associated primary VLAN. The warning message is as follows:

```
These secondary vlans are not mapped to the same instance as their primary:
-> 3
```

See the **show spanning-tree** command for output definitions.

**Examples**    This example shows how to display region configuration information:

```
Switch# show spanning-tree mst configuration
Name     [leo]
Revision 2702
Instance  Vlans mapped
--------  -------------------------------------------------------------------
0         1-9,11-19,21-29,31-39,41-4094
1         10,20,30,40
```

```
--------------------------------------------------------------------------------
Switch#
```

This example shows how to display additional MST protocol values:

```
Switch# show spanning-tree mst 3 detail
# # # # # # MST03 vlans mapped: 3,3000-3999
Bridge address 0002.172c.f400 priority 32771 (32768 sysid 3)
Root this switch for MST03

GigabitEthernet1/1 of MST03 is boundary forwarding
Port info port id 128.1 priority 128
cost 20000
Designated root address 0002.172c.f400 priority 32771
cost 0
Designated bridge address 0002.172c.f400 priority 32771 port
id 128.1
Timers: message expires in 0 sec, forward delay 0, forward transitions 1
Bpdus (MRecords) sent 4, received 0

FastEthernet4/2 of MST03 is backup blocking
Port info port id 128.194 priority 128 cost
200000
Designated root address 0002.172c.f400 priority 32771
cost 0
Designated bridge address 0002.172c.f400 priority 32771 port id
128.193
Timers: message expires in 2 sec, forward delay 0, forward transitions 1
Bpdus (MRecords) sent 3, received 252
Switch#
```

This example shows how to display MST information for a specific interface:

```
Switch# show spanning-tree mst 0 interface fastethernet4/1 detail
Edge port: no (trunk) port guard : none
(default)
Link type: point-to-point (point-to-point) bpdu filter: disable
(default)
Boundary : internal bpdu guard : disable
(default)
FastEthernet4/1 of MST00 is designated forwarding
Vlans mapped to MST00 1-2,4-2999,4000-4094
Port info port id 128.193 priority 128 cost
200000
Designated root address 0050.3e66.d000 priority 8193
cost 20004
Designated ist master address 0002.172c.f400 priority 49152
cost 0
Designated bridge address 0002.172c.f400 priority 49152 port id
128.193
Timers: message expires in 0 sec, forward delay 0, forward transitions 1
Bpdus sent 492, received 3
Switch#
```

**Related Commands**    **spanning-tree mst**
**spanning-tree mst forward-time**
**spanning-tree mst hello-time**
**spanning-tree mst max-hops**
**spanning-tree mst root**

# show storm-control

To display the broadcast storm control settings on the switch or on the specified interface, use the **show storm-control** command.

**show storm-control** [*interface-id* | **broadcast**]

**Syntax Description**

| | |
|---|---|
| *interface-id* | (Optional) Specifies the interface ID for the physical port. |
| **broadcast** | (Optional) Displays the broadcast storm threshold setting. |

**Command Modes**   Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(19)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.2(25)EW | Added support for the 10-Gigabit Ethernet interface. |

**Usage Guidelines**   When you enter an interface ID, the storm control thresholds are displayed for the specified interface.

If you do not enter an interface ID, the settings are displayed for the broadcast traffic type for all ports on the switch.

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

```
Switch# show storm-control
Interface  Filter State   Upper    Lower    Current
---------  -------------  -------  -------  -------
Gi2/1      Forwarding     30.00%   30.00%     N/A
Gi4/1      Forwarding     30.00%   30.00%     N/A
Gi4/3      Forwarding     30.00%   30.00%     N/A
Switch#
```

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 are displayed.

```
Switch# show storm-control fastethernet2/17
Interface  Filter State   Level    Current
---------  -------------  -------  -------
Fa2/17     Forwarding     50.00%    0.00%
Switch#
```

This is an example of output from the **show storm-control** command for a specified interface and traffic type, where no storm control threshold has been set for that traffic type on the specified interface.

```
Switch# show storm-control gigabitethernet2/1 broadcast
Interface  Filter State   Level    Current
---------  -------------  -------  -------
Gi2/1      forwarding     100.00%  N/A
<output truncated>
Switch#
```

Table 2-22 describes the fields in the **show storm-control** display.

*Table 2-22    show storm-control Field Descriptions*

| Field | Description |
|---|---|
| Interface | Displays the ID of the interface. |
| Filter State | Displays the status of the filter:<br>• Blocking—Storm control is enabled, and a storm has occurred.<br>• Forwarding—Storm control is enabled, and no storms have occurred.<br>• Inactive—Storm control is disabled. |
| Level | Displays the threshold level set on the interface for broadcast traffic. |
| Current | Displays the bandwidth utilization of broadcast traffic as a percentage of total available bandwidth. This field is valid only when storm control is enabled.<br>**Note**    N/A is displayed for interfaces that do storm control in the hardware. |

**Related Commands**    **storm-control**
**show interfaces counters**
**show running-config**

# show system mtu

To display the global MTU setting, use the **show system mtu** command.

**show system mtu**

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

**Defaults**    This command has no default settings.

**Command Modes**    Privileged EXEC

**Command History**

| Release | Modification |
|---------|--------------|
| 12.1(12c)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Examples**    This example shows how to display the global MTU setting:

```
Switch# show system mtu
Global Ethernet MTU is 1550 bytes.
Switch#
```

**Related Commands**    system mtu

# show tech-support

To display troubleshooting information for TAC, use the **show tech-support** command.

**show tech-support** [**bridging** | **cef** | **ipmulticast** | **isis** | **password** [**page**] | **page**]

**Syntax Description**

| | |
|---|---|
| **bridging** | (Optional) Specifies bridging-related information. |
| **cef** | (Optional) Specifies CEF-related information. |
| **ipmulticast** | (Optional) Specifies IP multicast-related information. |
| **isis** | (Optional) Specifies CLNS and ISIS-related information. |
| **password** | (Optional) Includes passwords and other security information in the output. |
| **page** | (Optional) Displays one page of information at a time in the output. |

**Defaults**

The defaults are as follows:

- Outputs are displayed without page breaks.
- Passwords and other security information are removed from the output.

**Command Modes**

Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Usage Guidelines**

Press the **Return** key to display the next line of output, or press the **Space** bar to display the next page of information. If you do not enter the **page** keyword, the output scrolls. It does not stop for page breaks.

If you enter the **password** keyword, password encryption is enabled, but only the encrypted form appears in the output.

If you do not enter the **password** keyword, the passwords and other security-sensitive information in the output are replaced in the output with the word "removed."

The **show tech-support** commands are a compilation of several **show** commands and the output can be quite lengthy. For a sample display of the output of the **show tech-support** command, see the individual **show** command listed.

If you enter the **show tech-support** command without arguments, the output displays the equivalent of these **show** commands:

- **show version**
- **show running-config**
- **show stacks**
- **show interfaces**
- **show controllers**

- **show process memory**
- **show process cpu**
- **show buffers**
- **show logging**
- **show module**
- **show power**
- **show environment**
- **show interfaces switchport**
- **show interfaces trunk**
- **show vlan**

If you enter the **ipmulticast** keyword, the output displays the equivalent of these **show** commands:

- **show ip pim interface**
- **show ip pim interface count**
- **show ip pim neighbor**
- **show ip pim rp**
- **show ip igmp groups**
- **show ip igmp interface**
- **show ip mroute count**
- **show ip mroute**
- **show ip mcache**
- **show ip dvmrp route**

**Examples**          For a sample display of the **show tech-support** command output, see the commands listed in the "Usage Guidelines" section for more information.

**Related Commands**          See the "Usage Guidelines " section.

# show udld

To display the administrative and operational UDLD status, use the **show udld** command.

**show udld** *interface-id*

| **Syntax Description** | *interface-id* | Name of the interface. |
|---|---|---|

**Defaults**

This command has no default settings.

**Command Modes**

Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.2(25)EW | Added support for the 10-Gigabit Ethernet interface. |

**Usage Guidelines**

If you do not enter an interface ID value, the administrative and operational UDLD status for all interfaces is displayed.

**Examples**

This example shows how to display the UDLD state for Gigabit Ethernet interface 2/2:

```
Switch# show udld gigabitethernet2/2
Interface Gi2/2
---
Port enable administrative configuration setting: Follows device default
Port enable operational state: Enabled
Current bidirectional state: Bidirectional
Current operational state: Advertisement
Message interval: 60
Time out interval: 5
No multiple neighbors detected
    Entry 1
    ---
    Expiration time: 146
    Device ID: 1
    Current neighbor state: Bidirectional
    Device name: 0050e2826000
    Port ID: 2/1
    Neighbor echo 1 device: SAD03160954
    Neighbor echo 1 port: Gi1/1
    Message interval: 5
    CDP Device name: 066527791
Switch#
```

**Related Commands**    udld (global configuration mode)
                        udld (interface configuration mode)

# show vlan

To display VLAN information, use the **show vlan** command.

> **show vlan** [**brief** | **id** *vlan_id* | **name** *name*]

> **show vlan private-vlan** [*type*]

| Syntax Description | | |
|---|---|---|
| **brief** | (Optional) Displays only a single line for each VLAN, naming the VLAN, status, and ports. |
| **id** *vlan_id* | (Optional) Displays information about a single VLAN identified by VLAN ID number; valid values are from 1 to 4094. |
| **name** *name* | (Optional) Displays information about a single VLAN identified by VLAN name; valid values are an ASCII string from 1 to 32 characters. |
| **private-vlan** | Displays private VLAN information. |
| *type* | (Optional) Private VLAN type. |

**Defaults**    This command has no default settings.

**Command Modes**    Privileged EXEC

| Command History | Release | Modification |
|---|---|---|
| | 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| | 12.1(12c)EW | Added support for extended VLAN addresses. |

**Examples**    This example shows how to display the VLAN parameters for all VLANs within the administrative domain:

```
Switch# show vlan
VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active    Fa5/9
2    VLAN0002                         active    Fa5/9
3    VLAN0003                         active    Fa5/9
4    VLAN0004                         active    Fa5/9
5    VLAN0005                         active    Fa5/9
6    VLAN0006                         active    Fa5/9
10   VLAN0010                         active    Fa5/9
20   VLAN0020                         active    Fa5/9

<...Output truncated...>
```

```
850  VLAN0850                            active    Fa5/9
917  VLAN0917                            active    Fa5/9
999  VLAN0999                            active    Fa5/9
1002 fddi-default                        active    Fa5/9
1003 trcrf-default                       active    Fa5/9
1004 fddinet-default                     active    Fa5/9
1005 trbrf-default                       active    Fa5/9


VLAN Type  SAID       MTU   Parent RingNo BridgeNo Stp  BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1    enet  100001     1500  -      -      -        -    -        0      0
2    enet  100002     1500  -      -      -        -    -        0      0
3    enet  100003     1500  -      -      -        -    -        303    0
4    enet  100004     1500  -      -      -        -    -        304    0
5    enet  100005     1500  -      -      -        -    -        305    0
6    enet  100006     1500  -      -      -        -    -        0      0
10   enet  100010     1500  -      -      -        -    -        0      0
20   enet  100020     1500  -      -      -        -    -        0      0
50   enet  100050     1500  -      -      -        -    -        0      0


<...Output truncated...>


850  enet  100850     1500  -      -      -        -    -        0      0
917  enet  100917     1500  -      -      -        -    -        0      0
999  enet  100999     1500  -      -      -        -    -        0      0
1002 fddi  101002     1500  -      0      -        -    -        0      0
1003 trcrf 101003     4472  1005   3276   -        -    srb      0      0
1004 fdnet 101004     1500  -      -      -        ieee -        0      0
1005 trbrf 101005     4472  -      -      15       ibm  -        0      0


VLAN AREHops STEHops Backup CRF
---- ------- ------- ----------
802  0       0       off
1003 7       7       off
Switch#
```

This example shows how to display the VLAN name, status, and associated ports only:

```
Switch# show vlan brief
VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active    Fa5/9
2    VLAN0002                         active    Fa5/9
3    VLAN0003                         active    Fa5/9
4    VLAN0004                         active    Fa5/9
5    VLAN0005                         active    Fa5/9
10   VLAN0010                         active    Fa5/9
.
.
.
999  VLAN0999                         active    Fa5/9
1002 fddi-default                     active    Fa5/9
1003 trcrf-default                    active    Fa5/9
1004 fddinet-default                  active    Fa5/9
1005 trbrf-default                    active    Fa5/9
Switch#
```

This example shows how to display the VLAN parameters for VLAN 3 only:

```
Switch# show vlan id 3

VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
3    VLAN0003                         active    Fa5/9

VLAN Type  SAID       MTU   Parent RingNo BridgeNo Stp  BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
3    enet  100003     1500  -      -      -        -    -        303    0
```

Table 2-23 describes the fields in the **show vlan** command output.

***Table 2-23   show vlan Command Output Fields***

| Field | Description |
| --- | --- |
| VLAN | VLAN number. |
| Name | Name, if configured, of the VLAN. |
| Status | Status of the VLAN (active or suspend). |
| Ports | Ports that belong to the VLAN. |
| Type | Media type of the VLAN. |
| SAID | Security Association Identifier 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. |

**Related Commands**  **vlan database**
**vlan (VLAN Database mode)**
**vtp (global configuration mode)**

# show vlan access-map

To display the contents of a VLAN access map, use the **show vlan access-map** command.

**show vlan access-map** [*map-name*]

**Syntax Description**

| | |
|---|---|
| *map-name* | (Optional) Name of the VLAN access map. |

**Defaults**    This command has no default settings.

**Command Modes**    Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(12c)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Examples**    This command shows how to display the contents of a VLAN access map:

```
Switch# show vlan access-map mordred
Vlan access-map "mordred"  1
        match: ip address 13
        action: forward capture
Switch#
```

**Related Commands**    vlan access-map

# show vlan counters

To display the software-cached counter values, use the **show vlan counters** command.

**show vlan** [**id** *vlanid*] **counters**

**Syntax Description**

| **id** *vlanid* | (Optional) Displays the software-cached counter values for a specific VLAN. |
|---|---|

**Defaults**

This command has no default settings.

**Command Modes**

Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(13)EW | Support for this command was introduced on the Catalyst 4500 series switches. |

**Usage Guidelines**

If you enter the **show vlan counters** command without specifying the VLAN ID, the software-cached counter values for all VLANs are displayed.

**Examples**

This example shows how to display the software-cached counter values for a specific VLAN:

```
Switch# show vlan counters
* Multicast counters include broadcast packets

Vlan Id                                     : 1
L2 Unicast Packets                          : 0
L2 Unicast Octets                           : 0
L3 Input Unicast Packets                    : 0
L3 Input Unicast Octets                     : 0
L3 Output Unicast Packets                   : 0
L3 Output Unicast Octets                    : 0
L3 Output Multicast Packets                 : 0
L3 Output Multicast Octets                  : 0
L3 Input Multicast Packets                  : 0
L3 Input Multicast Octets                   : 0
L2 Multicast Packets                        : 1
L2 Multicast Octets                         : 94
Switch>
```

**Related Commands**

**clear vlan counters**

# show vlan dot1q tag native

To display all the ports on the switch that are eligible for native VLAN tagging as well as their current native VLAN tagging status, use the **show vlan dot1q tag native** command.

**show vlan dot1q tag native**

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

**Command Modes**    User EXEC

**Command History**

| Release | Modification |
|---------|--------------|
| 12.1(18)EW | This command was introduced on the Catalyst 4500 series switch. |

**Examples**    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 globally

Per Port Native Vlan Tagging State
----------------------------------


Port     Operational    Native VLAN
           Mode         Tagging State
----------------------------------
f3/2    trunk          enabled
f3/16   PVLAN trunk    disabled
f3/16   trunk          enabled
```

**Related Commands**    **switchport mode**
**vlan (global configuration)** (refer to Cisco IOS documentation)
**vlan (VLAN configuration)** (refer to Cisco IOS documentation)

# show vlan internal usage

Use the **show vlan internal usage** command to display information about the internal VLAN allocation.

**show vlan** [**id** *vlan-id*] **internal usage**

| | |
|---|---|
| **Syntax Description** | **id** *vlan-id*    (Optional) Displays internal VLAN allocation information for the specified VLAN; valid values are from 1 to 4094. |

**Defaults**    This command has no default settings.

**Command Modes**    Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(19)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Examples**    This example shows how to display information about the current internal VLAN allocation:

```
Switch# show vlan internal usage

VLAN Usage
---- --------------------
1025 -
1026 -
1027 -
1028 -
1029 Port-channel6
1030 GigabitEthernet1/2
1032 FastEthernet3/20
1033 FastEthernet3/21
1129 -
```

This example shows how to display information about the internal VLAN allocation for a specific VLAN:

```
Switch# show vlan id 1030 internal usage

VLAN Usage
---- --------------------
1030 GigabitEthernet1/2
```

**Related Commands**    **vlan internal allocation policy**

# show vlan mtu

To display the minimum and maximum transmission unit (MTU) sizes of each VLAN, use the **show vlan mtu** command.

**show vlan mtu**

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

**Defaults**   This command has no default settings.

**Command Modes**   EXEC

**Command History**

| Release | Modification |
|---------|--------------|
| 12.1(13)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Usage Guidelines**   The MTU_Mismatch column in the command output indicates whether all the ports in the VLAN have the same MTU. When "yes" is displayed in the MTU_Mismatch column, it means that the VLAN has a port with different MTUs, and packets might be dropped that are switched from a port with a larger MTU to a port with a smaller MTU. If the VLAN does not have an SVI, the hyphen (-) symbol is displayed in the SVI_MTU column.

For a VLAN, if the MTU-Mismatch column displays yes, the names of the port with the MinMTU and the port with the MaxMTU are displayed. For a VLAN, if the SVI_MTU is bigger than the MinMTU, "TooBig" is displayed after the SVI_MTU.

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

```
Switch# show vlan mtu

VLAN    SVI_MTU       MinMTU(port)   MaxMTU(port)   MTU_Mismatch
----   -------------  -------------  ------------   ------------
1   1500            1500           1500             No
Switch>
```

**Related Commands**   **mtu**

# show vlan private-vlan

To display private VLAN information, use the **show vlan private-vlan** command.

**show vlan private-vlan** [**type**]

**Syntax Description**

| type | (Optional) Displays the private VLAN type; valid types are isolated, primary, community, nonoperational, and normal. |
|------|--------------------------------------------------------------------------------------------------------------------|

**Defaults**

This command has no default settings.

**Command Modes**

Privileged EXEC

**Command History**

| Release | Modification |
|---------|--------------|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |
| 12.2(20)EW | Support for community VLAN was added. |

**Usage Guidelines**

When the **show vlan private-vlan type** command displays a VLAN type as normal, it indicates that a regular VLAN has been used in the private VLAN configuration. When normal is displayed, this indicates that two VLANs have been associated before the type was set, and the private VLAN is not operational. This information is useful for debugging purposes.

**Examples**

This example shows how to display information about all currently configured private VLANs:

```
Switch# show vlan private-vlan

Primary Secondary Type              Ports
------- --------- ----------------- ----------------------------------------
2       301       community         Fa5/3, Fa5/25
2       302       community
        10        community
100     101       isolated
150     151       non-operational
        202       community
        303       community
401     402       non-operational
Switch#
```

**Note**    A blank Primary value indicates that no association exists.

This example shows how to display information about all currently configured private VLAN types:

```
Switch# show vlan private-vlan type

Vlan Type
---- ----------------
202  primary
303  community
304  community
305  community
306  community
307  community
308  normal
309  community
440  isolated
Switch#
```

Table 2-24 describes the fields in the **show vlan private-vlan** command output.

***Table 2-24   show vlan private-vlan Command Output Fields***

| Field | Description |
| --- | --- |
| Primary | Number of the primary VLAN. |
| Secondary | Number of the secondary VLAN. |
| Secondary-Type | Secondary VLAN type is **isolated or community.** |
| Ports | Indicates the ports within a VLAN. |
| Type | Type of VLAN; possible values are **primary, isolated**, community, nonoperational, or **normal**. |

**Related Commands**     **private-vlan**
                         **private-vlan mapping**

# show vlan remote-span

To  display a list of Remote SPAN (RSPAN) VLANs, use the **show vlan remote-span** command.

**show vlan remote-span**

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

**Defaults**    This command has no default settings.

**Command Modes**    Privileged EXEC

**Command History**

| Release | Modification |
|---------|--------------|
| 12.1(12)EW | This command was introduced on the Catalyst 4500 series switches. |

**Examples**    This example shows how to display a list of RSPAN VLANs:

```
Router# show vlan remote-span
Remote SPAN VLANs
------------------------------------------------------------------------
2,20
```

**Related Commands**    **remote-span**
**vlan (VLAN Database mode)**

# show vmps

To display the VLAN Query Protocol (VQP) version, reconfirmation interval, retry count, VLAN Membership Policy Server (VMPS) IP addresses, current servers, and primary servers, use the **show vmps** command.

> **show vmps** [**statistics**]

| Syntax Description | | |
|---|---|---|
| **statistics** | (Optional) Displays the client-side statistics. | |

**Defaults**
This command has no default settings.

**Command Modes**
EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(13)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

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

```
Switch# show vmps
VQP Client Status:
--------------------
VMPS VQP Version:   1
Reconfirm Interval: 60 min
Server Retry Count: 3
VMPS domain server: 172.20.50.120 (primary, current)

Reconfirmation status
--------------------
VMPS Action:         No Dynamic Port
Switch#
```

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
Switch#
```

**Related Commands**
**vmps reconfirm (privileged EXEC)**

# show vtp

To display VTP statistics and domain information, use the **show vtp** command.

> **show vtp** {**counters** | **status**}

**Syntax Description**

| | |
|---|---|
| **counters** | Specifies the VTP statistics. |
| **status** | Specifies the VTP domain status. |

**Defaults**          This command has no default settings.

**Command Modes**     Privileged EXEC

**Command History**

| Release | Modification |
|---|---|
| 12.1(8a)EW | Support for this command was introduced on the Catalyst 4500 series switch. |

**Examples**          This example shows how to display the VTP statistics:

```
Switch# show vtp counters
VTP statistics:
Summary advertisements received    : 1
Subset advertisements received     : 1
Request advertisements received    : 0
Summary advertisements transmitted : 31
Subset advertisements transmitted  : 1
Request advertisements transmitted : 0
Number of config revision errors   : 0
Number of config digest errors     : 0
Number of V1 summary errors        : 0

VTP pruning statistics:

Trunk            Join Transmitted Join Received    Summary advts received from
                                                   non-pruning-capable device
---------------- ---------------- ---------------- ---------------------------
Fa5/9            1555             1564             0
Switch#
```

This example shows how to display the VTP domain status:

```
Switch# show vtp status
VTP Version                 : 2
Configuration Revision      : 250
Maximum VLANs supported locally : 1005
Number of existing VLANs    : 33
VTP Operating Mode          : Server
VTP Domain Name             : Lab_Network
VTP Pruning Mode            : Enabled
VTP V2 Mode                 : Enabled
VTP Traps Generation        : Disabled
```

```
MD5 digest                      : 0xE6 0xF8 0x3E 0xDD 0xA4 0xF5 0xC2 0x0E
Configuration last modified by 172.20.52.18 at 9-22-99 11:18:20
Local updater ID is 172.20.52.18 on interface Vl1 (lowest numbered VLAN interfac
e found)
Switch#
```

This example shows how to display only those lines in the **show vtp** output that contain the word Summary:

```
Switch# show vtp counters | include Summary
Summary advertisements received    : 1
Summary advertisements transmitted : 32
Trunk           Join Transmitted Join Received    Summary advts received from
Switch#
```

Table 2-25 describes the fields in the **show vtp** command output.

***Table 2-25   show vtp Command Output Fields***

| Field | Description |
|-------|-------------|
| Summary advertisements received | Total number of summary advertisements received. |
| Subset advertisements received | Total number of subset advertisements received. |
| Request advertisements received | Total number of request advertisements received. |
| Summary advertisements transmitted | Total number of summary advertisements transmitted. |
| Subset advertisements transmitted | Total number of subset advertisements transmitted. |
| Request advertisements transmitted | Total number of request advertisements transmitted. |
| Number of config revision errors | Number of config revision errors. |
| Number of config digest errors | Number of config revision digest errors. |
| Number of V1 summary errors | Number of V1 summary errors. |
| Trunk | Trunk port participating in VTP pruning. |
| Join Transmitted | Number of VTP-Pruning Joins transmitted. |
| Join Received | Number of VTP-Pruning Joins received. |
| Summary advts received from non-pruning-capable device | Number of Summary advertisements received from nonpruning-capable devices. |
| Number of existing VLANs | Total number of VLANs in the domain. |
| Configuration Revision | VTP revision number used to exchange VLAN information. |
| Maximum VLANs supported locally | Maximum number of VLANs allowed on the device. |
| Number of existing VLANs | Number of existing VLANs. |
| VTP Operating Mode | Indicates whether VTP is enabled or disabled. |
| VTP Domain Name | Name of the VTP domain. |
| VTP Pruning Mode | Indicates whether VTP pruning is enabled or disabled. |
| VTP V2 Mode | Indicates the VTP V2 mode as server, client, or transparent. |
| VTP Traps Generation | Indicates whether VTP trap generation mode is enabled or disabled. |
| MD5 digest | Checksum values. |

**Related Commands**   vtp (global configuration mode)
vtp client
vtp domain
vtp password
vtp pruning
vtp server
vtp transparent
vtp v2-mode