



show dot1q-tunnel through show uddl

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show dot1q-tunnel

To display a list of 802.1Q tunnel-enabled ports, use the **showdot1q-tunnel** command in user EXEC mode.

show dot1q-tunnel [**interface** *interface interface-number*]

Syntax Description

interface <i>interface</i>	(Optional) Specifies the interface type; possible valid values are ethernet , fastethernet , gigabitethernet , tengigabitethernet , port-channel , and ge-wan .
<i>interface-number</i>	(Optional) Interface number; see the “Usage Guidelines” section for valid values.

Command Modes

User EXEC (>)

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

If you do not enter any keywords, the 802.1Q tunnel ports for all interfaces are displayed.

The **ge-wan** keyword is not supported in Cisco 7600 series routers that are configured with a Supervisor Engine 720.

The *interface-number* argument designates the module and port number for the **ethernet**, **fastethernet**, **gigabitethernet**, **tengigabitethernet**, and **ge-wan** keywords. Valid values depend on the chassis and module that are used. For example, if you have a 48-port 10/100BASE-T Ethernet module that is installed in a 13-slot chassis, valid values for the slot number are from 1 to 13 and valid values for the port number are from 1 to 48.

The *interface-number* argument designates the port-channel number for the **port-channel** keyword; valid values are from 1 to 282. The values from 257 to 282 are supported on the Content Switching Module (CSM) and the Firewall Services Module (FWSM) only.

Examples

This example indicates that the port is up and has one 802.1Q tunnel that is configured on it. The fields shown in the display are self-explanatory.

```
Router# show dot1q-tunnel interface port-channel 10
```

```
Interface  
-----  
Po10
```

Related Commands

Command	Description
switchport mode	Sets the interface type.
vlan dot1q tag native	Enables dot1q tagging for all VLANs in a trunk.

show errdisable flap-values

To display conditions that cause a flap error to be recognized as a result of a specific cause, use the **showerrdisableflap-values** command in user EXEC or privileged EXEC mode.

show errdisable flap-values

Syntax Description This command has no arguments or keywords.

Command Modes User EXEC (>) Privileged EXEC (#)

Command History	Release	Modification
	15.0(1)	This command was introduced in a release earlier than Cisco IOS Release 15.0(1) on the Cisco 3845 series routers.

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

Examples The following is sample output from the **showerrdisableflap-values** command:

```
Router# show errdisable flap-values
ErrDisable Reason    Flaps    Time (sec)
-----
pagp-flap           3         30
dtp-flap            3         30
link-flap           20        10
```

The table below describes the significant fields shown in the display.

Table 1: show errdisable flap-values Field Descriptions

Field	Description
ErrDisable Reason	Reason for error disable.
Flaps	Total number of flaps.
Time (sec)	Time set for the recovery timer, in seconds.
pagp-flap	PAgP flap error disable.

Field	Description
dtp-flap	DTP flap error disable.
link-flap	Link flap error disable.

Related Commands

Command	Description
errdisable detect cause	Enables the error-disabled detection for a specific cause or all causes.
errdisable recovery	Configures the recovery mechanism variables.

show mac-address-table

To display the MAC address table, use the **show mac-address-table** command in privileged EXEC mode.

Cisco 2600, 3600, and 3700 Series Routers

```
show mac-address-table [secure|self] count[[address macaddress][interface type/number]{fa |
gi slot/port}[atm slot/port][atm slot/port ][vlan vlan-id]
```

Catalyst 4500 Series Switches

```
show mac-address-table {assigned|ip|ipx|other}
```

Catalyst 6000/6500 Series Switches and 7600 Series Routers

```
show mac-address-table [ address mac-addr [all | interface type/number | module number | vlan
vlan-id ] | aging-time [vlan vlan-id ] | count[module number | vlan vlan-id ] | interface type/number | limit
[vlan vlan-id | module number | interface type] | module number | multicast [ count] [igmp-snooping
|mld-snooping | user ][vlan vlan-id ] | notification {mac-move[counter[vlan]]| threshold| change}{interface
[number]] | synchronize statistics | unicast-flood | vlan vlan-id [all| module number]]
```

Syntax Description

secure	(Optional) Displays only the secure addresses.
self	(Optional) Displays only addresses added by the switch itself.
count	(Optional) Displays the number of entries that are currently in the MAC address table.
address mac-addr	(Optional) Displays information about the MAC address table for a specific MAC address. See the Usage Guidelines section for formatting information.
interface type / number	(Optional) Displays addresses for a specific interface. For the Catalyst 6500 and 6000 series switches, valid values are atm , fastethernet , gigabitethernet , and port-channel . For the Cisco 7600 series, valid values are atm , ethernet , fastethernet , ge-wan , gigabitethernet , tengigabitethernet , and pos .
fa	(Optional) Specifies the Fast Ethernet interface.
gi	(Optional) Specifies the Gigabit Ethernet interface.
slot / port	(Optional) Adds dynamic addresses to the module in slot 1 or 2. The slash mark is required.

atm <i>slot /port</i>	(Optional) Adds dynamic addresses to ATM module <i>slot /port</i> . Use 1 or 2 for the slot number. Use 0 as the port number. The slash mark is required.
vlan <i>vlan -id</i>	(Optional) Displays addresses for a specific VLAN. For the Cisco 2600, 3600, and 3700 series, valid values are from 1 to 1005; do not enter leading zeroes. Beginning with Cisco IOS Release 12.4(15)T, the valid VLAN ID range is from 1 to 4094. For the Catalyst 6500 and 6000 series switches and 7600 series, valid values are from 1 to 4094.
assigned	Specifies the assigned protocol entries.
ip	Specifies the IP protocol entries.
ipx	Specifies the IPX protocol entries.
other	Specifies the other protocol entries.
all	(Optional) Displays every instance of the specified MAC address in the forwarding table.
<i>type / number</i>	(Optional) Module and interface number.
module <i>number</i>	(Optional) Displays information about the MAC address table for a specific Distributed Forwarding Card (DFC) module.
aging-time	(Optional) Displays the aging time for the VLANs.
limit	Displays MAC-usage information.
multicast	Displays information about the multicast MAC address table entries only.
igmp-snooping	Displays the addresses learned by Internet Group Management Protocol (IGMP) snooping.
mld-snooping	Displays the addresses learned by Multicast Listener Discover version 2 (MLDv2) snooping.
user	Displays the manually entered (static) addresses.
notification mac-move	Displays the MAC-move notification status.
notification mac-move counter	(Optional) Displays the number of times a MAC has moved and the number of these instances that have occurred in the system.

<i>vlan</i>	(Optional) Specifies a VLAN to display. For the Catalyst 6500 and 6000 series switches and 7600 series, valid values are from 1 to 4094.
notification threshold	Displays the Counter-Addressable Memory (CAM) table utilization notification status.
notification change	Displays the MAC notification parameters and history table.
synchronize statistics	Displays information about the statistics collected on the switch processor or DFC.
unicast-flood	Displays unicast-flood information.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
11.2(8)SA	This command was introduced.
11.2(8)SA3	This command was modified. The aging-time , count , self , and vlan <i>vlan -id</i> keywords and arguments were added.
11.2(8)SA5	This command was modified. The atmslot/port keyword-argument pair was added.
12.2(2)XT	This command was modified. This command was implemented on Cisco 2600, 3600, and 3700 series routers.
12.1(8a)EW	This command was modified. This command was implemented on Catalyst 4500 series switches.
12.2(8)T	This command was integrated into Cisco IOS Release 12.2(8)T on Cisco 2600, 3600, and 3700 series routers.
12.2(11)T	This command was integrated into Cisco IOS Release 12.2(11)T.
12.2(14)SX	This command was modified. This command was implemented on the Supervisor Engine 720.

Release	Modification
12.2(17a)SX	This command was modified. For the Catalyst 6500 and 6000 series switches and 7600 series, this command was changed to support the following optional keywords and arguments: <ul style="list-style-type: none"> • count module <i>number</i> • limit [vlan <i>vlan-id</i> port <i>number</i> interface <i>interface-type</i> • notification threshold • unicast-flood
12.2(17d)SXB	This command was modified. Support for this command was added for the Supervisor Engine 2.
12.2(18)SXE	This command was modified. For the Catalyst 6500 and 6000 series switches and Cisco 7600 series, support was added for the mld-snooping keyword on the Supervisor Engine 720 only.
12.2(18)SXF	This command was modified. For the Catalyst 6500 and 6000 series switches and Cisco 7600 series, support was added for the synchronizestatistics keywords on the Supervisor Engine 720 only.
12.2(33)SRA	This command was modified. This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.4(15)T	This command was modified to extend the range of valid VLAN IDs to 1 to 4094 for specified platforms.
12.2(33)SXH	This command was modified. The change keyword was added.
12.2(33)SXI	This command was modified to add the counter keyword.

Usage Guidelines

Cisco 2600, 3600, and 3700 Series Routers

The **show mac-address-table** command displays the MAC address table for the switch. Specific views can be defined by using the optional keywords and arguments. If more than one optional keyword is used, then all the conditions must be true for that entry to be displayed.

Catalyst 4500 Series Switches

For the MAC address table entries that are used by the routed ports, the routed port name, rather than the internal VLAN number, is displayed in the □vlan□ column.

Catalyst 6000 and 6500 Series Switches and Cisco 7600 Series Routers

If you do not specify a module number, the output of the **show mac-address-table** command displays information about the supervisor engine. To display information about the MAC address table of the DFCs, you must enter the module number or the **all** keyword.

The *mac-addr* value is a 48-bit MAC address. The valid format is H.H.H.

The interface *number* argument designates the module and port number. Valid values 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.

The optional **module number** keyword-argument pair is supported only on DFC modules. The **module number** keyword-argument pair designate the module number.

Valid values for the *mac-group-address* argument are from 1 to 9.

The optional **count** keyword displays the number of multicast entries.

The optional **multicast** keyword displays the multicast MAC addresses (groups) in a VLAN or displays all statically installed or IGMP snooping-learned entries in the Layer 2 table.

The information that is displayed in the show mac-address-table unicast-flood command output is as follows:

- Up to 50 flood entries, shared across all the VLANs that are not configured to use the filter mode, can be recorded.
- The output field displays are defined as follows:
 - ALERT--Information is updated approximately every 3 seconds.
 - SHUTDOWN--Information is updated approximately every 3 seconds.



Note

The information displayed on the destination MAC addresses is deleted as soon as the floods stop after the port shuts down.

- Information is updated each time that you install the filter. The information lasts until you remove the filter.

The dynamic entries that are displayed in the Learn field are always set to Yes.

The **show mac-address-table limit** command output displays the following information:

- The current number of MAC addresses.
- The maximum number of MAC entries that are allowed.
- The percentage of usage.

The show mac-address-table synchronize statistics command output displays the following information:

- Number of messages processed at each time interval.
- Number of active entries sent for synchronization.
- Number of entries updated, created, ignored, or failed.

Examples

The following is sample output from the **show mac-address-table** command:

```
Switch# show mac-address-table
Dynamic Addresses Count:          9
Secure Addresses (User-defined) Count: 0
```

```

Static Addresses (User-defined) Count: 0
System Self Addresses Count:          41
Total MAC addresses:                  50
Non-static Address Table:
-----
Destination Address  Address Type  VLAN  Destination Port
-----
0010.0de0.e289      Dynamic      1    FastEthernet0/1
0010.7b00.1540      Dynamic      2    FastEthernet0/5
0010.7b00.1545      Dynamic      2    FastEthernet0/5
0060.5cf4.0076      Dynamic      1    FastEthernet0/1
0060.5cf4.0077      Dynamic      1    FastEthernet0/1
0060.5cf4.1315      Dynamic      1    FastEthernet0/1
0060.70cb.f301      Dynamic      1    FastEthernet0/1
00e0.1e42.9978      Dynamic      1    FastEthernet0/1
00e0.1e9f.3900      Dynamic      1    FastEthernet0/1

```

Examples

The following 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

```

The following 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

```

Examples

The following is sample output from the `show mac-address-table` command:

```
Switch# show mac-address-table

Dynamic Addresses Count:          9
Secure Addresses (User-defined) Count: 0
Static Addresses (User-defined) Count: 0
System Self Addresses Count:     41
Total MAC addresses:             50
Non-static Address Table:
Destination Address  Address Type  VLAN  Destination Port
-----
0010.0de0.e289      Dynamic      1     FastEthernet0/1
0010.7b00.1540      Dynamic      2     FastEthernet0/5
0010.7b00.1545      Dynamic      2     FastEthernet0/5
0060.5cf4.0076      Dynamic      1     FastEthernet0/1
0060.5cf4.0077      Dynamic      1     FastEthernet0/1
0060.5cf4.1315      Dynamic      1     FastEthernet0/1
0060.70cb.f301      Dynamic      1     FastEthernet0/1
00e0.1e42.9978      Dynamic      1     FastEthernet0/1
00e0.1e9f.3900      Dynamic      1     FastEthernet0/1
```

**Note**

In a distributed Encoded Address Recognition Logic (EARL) switch, the asterisk (*) indicates a MAC address that is learned on a port that is associated with this EARL.

The following example shows how to display the information about the MAC address table for a specific MAC address with a Supervisor Engine 720:

```
Switch# show mac-address-table address 001.6441.60ca

Codes: * - primary entry
       vlan  mac address      type  learn qos          ports
-----+-----+-----+-----+-----+-----
Supervisor:
* --- 0001.6441.60ca  static No  -- Router
```

The following example shows how to display MAC address table information for a specific MAC address with a Supervisor Engine 720:

```
Router# show mac-address-table address 0100.5e00.0128

Legend: * - primary entry
       age - seconds since last seen
       n/a - not available
       vlan  mac address      type  learn  age          ports
-----+-----+-----+-----+-----+-----
Supervisor:
* 44 0100.5e00.0128  static Yes  - Fa6/44,Router
* 1  0100.5e00.0128  static Yes  - Router
Module 9:
* 44 0100.5e00.0128  static Yes  - Fa6/44,Router
* 1  0100.5e00.0128  static Yes  - Router
```

The following 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
```

The following example shows how to display the entry count for a specific slot:

```
Switch# show mac-address-table count module 1

MAC Entries on slot 1 :
Dynamic Address Count:          4
Static Address (User-defined) Count: 25
Total MAC Addresses In Use:     29
Total MAC Addresses Available:  131072
```

The following example shows how to display the information about the MAC address table for a specific interface with a Supervisor Engine 720:

```
Switch# show mac-address-table interface fastethernet 6/45

Legend: * - primary entry
        age - seconds since last seen
        n/a - not available

  vlan  mac address      type    learn    age    ports
-----+-----+-----+-----+-----+-----
*  45   00e0.f74c.842d    dynamic Yes         5   Fa6/45
```



Note

A leading asterisk (*) indicates entries from a MAC address that was learned from a packet coming from an outside device to a specific module.

The following example shows how to display the limit information for a specific slot:

```
Switch# show mac-address-table limit vlan 1 module 1

vlan  switch  module  action    maximum  Total entries  flooding
-----+-----+-----+-----+-----+-----+-----
1      1         7       warning   500      0              enabled
1      1         11      warning   500      0              enabled
1      1         12      warning   500      0              enabled

Router# show mac-address-table limit vlan 1 module 2

vlan  switch  module  action    maximum  Total entries  flooding
-----+-----+-----+-----+-----+-----+-----
1      2         7       warning   500      0              enabled
1      2         9       warning   500      0              enabled
```

The following example shows how to display the MAC-move notification status:

```
Switch# show mac-address-table notification mac-move

MAC Move Notification: Enabled
```

The following example shows how to display the MAC move statistics:

```
Router# show mac-address-table notification mac-move counter

-----
Vlan Mac Address From Mod/Port To Mod/Port Count
-----
1 00-01-02-03-04-01 2/3 3/1 10
20 00-01-05-03-02-01 5/3 5/1 20
```

The following example shows how to display the CAM-table utilization-notification status:

```
Router# show mac-address-table notification threshold
```

```
Status limit Interval
-----+-----
enabled 1 120
```

The following example shows how to display the MAC notification parameters and history table:

```
Switch# show mac-address-table notification change

MAC Notification Feature is Disabled on the switch
MAC Notification Flags For All Ethernet Interfaces :
-----
Interface                MAC Added Trap  MAC Removed Trap
-----
```

The following example shows how to display the MAC notification parameters and history table for a specific interface:

```
Switch# show mac-address-table notification change interface gigabitethernet5/2

MAC Notification Feature is Disabled on the switch
Interface                MAC Added Trap  MAC Removed Trap
-----
GigabitEthernet5/2      Disabled        Disabled
```

The following example shows how to display unicast-flood information:

```
Switch# show mac-address-table unicast-flood

> > Unicast Flood Protection status: enabled
> >
> > Configuration:
> > vlan Kfps action timeout
> > -----+-----+-----+-----
> > 2 2 alert none
> >
> > Mac filters:
> > No. vlan source mac addr. installed
> > on time left (mm:ss)
> >
> > -----+-----+-----+-----
> >
> > Flood details:
> > Vlan source mac addr. destination mac addr.
> >
> > -----+-----+-----+-----
> > 2 0000.0000.cafe 0000.0000.bad0, 0000.0000.babe,
> > 0000.0000.bac0
> > 0000.0000.bac2, 0000.0000.bac4,
> > 0000.0000.bac6
> > 0000.0000.bac8
> > 2 0000.0000.caff 0000.0000.bad1, 0000.0000.babf,
> > 0000.0000.bac1
> > 0000.0000.bac3, 0000.0000.bac5,
> > 0000.0000.bac7
> > 0000.0000.bac9
```

The following example shows how to display the information about the MAC-address table for a specific VLAN:

```
Switch#show mac-address-table vlan 100

vlan  mac address      type      protocol  qos      ports
-----+-----+-----+-----+-----+-----
100   0050.3e8d.6400      static   assigned  --      Router
100   0050.7312.0cff      dynamic   ip        --      Fa5/9
100   0080.1c93.8040      dynamic   ip        --      Fa5/9
100   0050.3e8d.6400      static   ipx       --      Router
100   0050.3e8d.6400      static   other    --      Router
```

```

100 0100.0cdd.dddd static other -- Fa5/9,Router,Switch
100 00d0.5870.a4ff dynamic ip -- Fa5/9
100 00e0.4fac.b400 dynamic ip -- Fa5/9
100 0100.5e00.0001 static ip -- Fa5/9,Switch
100 0050.3e8d.6400 static ip -- Router

```

The following example shows how to display the information about the MAC address table for MLDv2 snooping:

```
Switch# show mac-address-table multicast mld-snooping
```

```

vlan mac address type learn qos ports
-----+-----+-----+-----+-----+-----
--- 3333.0000.0001 static Yes - Switch,Stby-Switch
--- 3333.0000.000d static Yes - Fa2/1,Fa4/1,Router,Switch
--- 3333.0000.0016 static Yes - Switch,Stby-Switch

```

The table below describes the significant fields shown in the displays.

Table 2: show mac-address-table Field Descriptions

Field	Description
Dynamic Addresses Count	Total number of dynamic addresses in the MAC address table.
Secure Addresses (User-defined) Count	Total number of secure addresses in the MAC address table.
Static Addresses (User-defined) Count	Total number of static addresses in the MAC address table.
System Self Addresses Count	Total number of addresses in the MAC address table.
Total MAC addresses	Total MAC addresses in the MAC address table.
Destination Address	Destination addresses present in the MAC address table.
Address Type	Address type: static or dynamic.
VLAN	VLAN number.
Destination Port	Destination port information present in the MAC address table.
mac address	The MAC address of the entry.
protocol	Protocol present in the MAC address table.
qos	Quality of service associated with the MAC address table.
ports	Port type.

Field	Description
age	The time in seconds since last occurrence of the interface.
Aging Time	Aging time for entries.
module	Module number.
action	Type of action.
flooding	Status of the flooding.

Related Commands

Command	Description
clear mac-address-table	Deletes entries from the MAC address table.
mac-address-table aging-time	Configures the aging time for entries in the Layer 2 table.
mac-address-table limit	Enables MAC limiting.
mac-address-table notification mac-move	Enables MAC-move notification.
mac-address-table static	Adds static entries to the MAC address table or configures a static MAC address with IGMP snooping disabled for that address.
mac-address-table synchronize	Synchronizes the Layer 2 MAC address table entries across the PFC and all the DFCs.
show mac-address-table static	Displays only static MAC address table entries.

show mac-address-table aging-time

To display the MAC address aging time, use the **show mac-address-table aging-time** command in privileged EXEC mode.

Cisco 2600 Series, Cisco 3600 Series, and Cisco 3700 Series Routers

show mac-address-table aging-time

Catalyst Switches

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

Syntax Description

vlan <i>vlan-id</i>	(Optional) Specifies a VLAN; valid values are from 1 to 1005.
begin	(Optional) Specifies that the output display begin with the line that matches the <i>expression</i> .
exclude	(Optional) Specifies that the output display exclude lines that match the <i>expression</i> .
include	(Optional) Specifies that the output display include lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.0(7)XE	This command was introduced on Catalyst 6000 series switches.
12.2(2)XT	This command was implemented on Cisco 2600 series, Cisco 3600 series, and Cisco 3700 series routers.
12.2(8)T	This command was integrated into Cisco IOS Release 12.2(8)T on Cisco 2600 series, Cisco 3600 series, and Cisco 3700 series routers.
12.2(11)T	This command was integrated into Cisco IOS Release 12.2(11)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Examples

The following example shows how to display the current configured aging time for all VLANs. The fields shown in the display are self-explanatory.

Examples

```
Router# show mac-address-table aging-time
Mac address aging time 300
```

Examples

```
Router# show mac-address-table aging-time
Vlan    Aging Time
----    -
100     300
200     1000
```

The following example shows how to display the current configured aging time for a specific VLAN. The fields shown in the display are self-explanatory.

```
Router# show mac-address-table aging-time vlan 100
Vlan    Aging Time
----    -
100     300
```

Related Commands

Command	Description
show mac -address-tableaddress	Displays MAC address table information for a specific MAC address.
show mac -address-tablecount	Displays the number of entries currently in the MAC address table.
show mac -address-tabledetail	Displays detailed MAC address table information.
show mac -address-tabledynamic	Displays dynamic MAC address table entries only.
show mac -address-tableinterface	Displays the MAC address table information for a specific interface.
show mac -address-tablemulticast	Displays multicast MAC address table information.
show mac -address-tableprotocol	Displays MAC address table information based on protocol.
show mac -address-tablestatic	Displays static MAC address table entries only.
show mac -address-tablevlan	Displays the MAC address table information for a specific VLAN.

show mac-address-table dynamic

To display dynamic MAC address table entries only, use the **showmac-address-tabledynamic** command in privileged EXEC mode.

Cisco 2600 Series, Cisco 3600 Series, and Cisco 3700 Series Routers

show mac-address-table dynamic [**address** *mac-addr*] **interface** *interface type slot/number* | **vlan** *vlan*]

Catalyst Switches

show mac-address-table dynamic [**address** *mac-addr*] **detail** | **interface** *interface number* **protocol** *protocol* | **module** *number* | **vlan** *vlan*][**begin** | **exclude** | **include** | *expression*]

Catalyst 6500 Series Switches

show mac-address-table dynamic [**address** *mac-addr*] **interface** *interface interface-number* [**all** | **module** *number*] | **module** *num* | **vlan** *vlan-id* [**all** | **module** *number*]

Syntax Description

address <i>mac -address</i>	(Optional) Specifies a 48-bit MAC address; valid format is H.H.H.
detail	(Optional) Specifies a detailed display of MAC address table information.
interface <i>type number</i>	(Optional) Specifies an interface to match; valid type values are FastEthernet and GigabitEthernet, valid number values are from 1 to 9.
interface <i>type</i>	(Optional) Specifies an interface to match; valid type values are FastEthernet and GigabitEthernet.
<i>slot</i>	(Optional) Adds dynamic addresses to module in slot 1 or 2.
<i>port</i>	(Optional) Port interface number ranges based on type of Ethernet switch network module used: <ul style="list-style-type: none"> • 0 to 15 for NM-16ESW • 0 to 35 for NM-36ESW • 0 to 1 for GigabitEthernet
protocol <i>protocol</i>	(Optional) Specifies a protocol. See the “Usage Guidelines” section for keyword definitions.
module <i>number</i>	(Optional) Displays information about the MAC address table for a specific Distributed Forwarding Card (DFC) module.

vlan <i>vlan</i>	(Optional) Displays entries for a specific VLAN; valid values are from 1 to 1005.
begin	(Optional) Specifies that the output display begin with the line that matches the expression.
exclude	(Optional) Specifies that the output display exclude lines that match the expression.
include	(Optional) Specifies that the output display include lines that match the specified expression.
<i>expression</i>	Expression in the output to use as a reference point.
all	(Optional) Specifies that the output display all dynamic MAC-address table entries.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.0(7)XE	This command was introduced on Catalyst 6000 series switches.
12.2(2)XT	This command was implemented on Cisco 2600 series, Cisco 3600 series, and Cisco 3700 series routers.
12.2(8)T	This command was integrated into Cisco IOS Release 12.2(8)T on Cisco 2600 series, Cisco 3600 series, and Cisco 3700 series routers.
12.2(11)T	This command was integrated into Cisco IOS Release 12.2(11)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(14)SX	Support for this command was introduced on the Catalyst 6500 series switch.
12.2(33)SXH	This command was changed to support the all keyword on the Catalyst 6500 series switch.

Usage Guidelines**Cisco 2600 Series, Cisco 3600 Series, and Cisco 3700 Series Routers**

The **showmac-address-tabledynamic** command output for an EtherChannel interface changes the port-number designation (for example, 5/7) to a port-group number.

Catalyst Switches

The keyword definitions for the protocol argument are:

- **ip** --Specifies IP protocol
- **ipx** --Specifies Internetwork Packet Exchange (IPX) protocols
- **assigned** --Specifies assigned protocol entries
- **other** --Specifies other protocol entries

The **show mac-address-table dynamic** command output for an EtherChannel interface changes the port-number designation (for example, 5/7) to a port-group number.

Catalyst 6500 Series Switches

The *mac-address* is a 48-bit MAC address and the valid format is H.H.H.

The optional **module num** keyword and argument are supported only on DFC modules. The **module num** keyword and argument designate the module number.

Examples

The following examples show how to display all dynamic MAC address entries. The fields shown in the various displays are self-explanatory.

Examples

```
Router# show mac-address-table dynamic
```

```
Non-Static Address Table:
Destination Address  Address Type  VLAN  Destination Port
-----
000a.000a.000a      Dynamic      1     FastEthernet4/0
002a.2021.4567      Dynamic      2     FastEthernet4/0
```

Examples

```
Router# show mac-address-table dynamic
vlan  mac address  type  protocol  qos  ports
-----
200   0010.0d40.37ff  dynamic  ip  --  5/8
1     0060.704c.73ff  dynamic  ip  --  5/9
4095  0000.0000.0000  dynamic  ip  --  15/1
1     0060.704c.73fb  dynamic  other --  5/9
1     0080.1c93.8040  dynamic  ip  --  5/9
4092  0050.f0ac.3058  dynamic  ip  --  15/1
1     00e0.4fac.b3ff  dynamic  other --  5/9
```

The following example shows how to display dynamic MAC address entries with a specific protocol type (in this case, assigned).

```
Router# show mac-address-table dynamic protocol assigned
vlan  mac address  type  protocol  qos  ports
-----
4092  0000.0000.0000  dynamic  assigned  --  Router
4092  0050.f0ac.3059  dynamic  assigned  --  Router
1     0010.7b3b.0978  dynamic  assigned  --  Fa5/9
Router#
```

The following example shows the detailed output for the previous example.

```
Router# show mac-address-table dynamic protocol assigned detail
MAC Table shown in details
=====
Type  Always Learn Trap Modified Notify Capture Protocol Flood
-----
QoS bit  L3 Spare  Mac Address  Age Byte Pvlan Xtag SWbits Index
-----
DYNAMIC  NO        NO          YES        NO        NO        assigned  NO
Bit Not On  0        0000.0000.0000  255        4092  0        0        0x3
```

show mac-address-table dynamic

```

DYNAMIC      NO      NO      YES      NO      NO      assigned NO
  Bit Not On      0      0050.f0ac.3059 254      4092 0      0      0x3

DYNAMIC      NO      NO      YES      NO      NO      assigned NO
  Bit Not On      0      0010.7b3b.0978 254      1      0      0      0x108

Router#

```

Examples

This example shows how to display all the dynamic MAC-address entries for a specific VLAN.

```

Router# show mac-address-table dynamic vlan 200 all
Legend: * - primary entry
       age - seconds since last seen
       n/a - not available
vlan   mac address      type   learn   age      ports
-----+-----+-----+-----+-----+-----
 200   0010.0d40.37ff    dynamic NO      23      Gi5/8
Router#

```

This example shows how to display all the dynamic MAC-address entries.

```

Router# show mac-address-table dynamic
Legend: * - primary entry
       age - seconds since last seen
       n/a - not applicable
vlan   mac address      type   learn   age      ports
-----+-----+-----+-----+-----+-----
* 10   0010.0000.0000    dynamic Yes    n/a     Gi4/1
* 3    0010.0000.0000    dynamic Yes    0      Gi4/2
* 1    0002.fcbc.ac64    dynamic Yes    265    Gi8/1
* 1    0009.12e9.adc0    static  No      -       Router
Router#

```

Related Commands

Command	Description
show mac -address-tableaddress	Displays MAC address table information for a specific MAC address.
show mac -address-tableaging-time	Displays the MAC address aging time.
show mac -address-tablecount	Displays the number of entries currently in the MAC address table.
show mac -address-tabledetail	Displays detailed MAC address table information.
show mac -address-tableinterface	Displays the MAC address table information for a specific interface.
show mac -address-tablemulticast	Displays multicast MAC address table information.
show mac -address-tableprotocol	Displays MAC address table information based on protocol.
show mac -address-tablestatic	Displays static MAC address table entries only.
show mac -address-tablevlan	Displays the MAC address table information for a specific VLAN.

show mac-address-table learning

To display the MAC-address learning state, use the **show mac-address-table learning** command in user EXEC mode.

show mac-address-table learning[vlan]

Syntax Description

vlan <i>vlan-id</i>	(Optional) Displays information about the MAC-address learning state for the specified switch port VLAN; valid values are from 1 to 4094.
interface <i>interface slot / port</i>	(Optional) Displays information about the MAC-address learning state for the specified routed interface type, the slot number, and the port number.
module <i>num</i>	(Optional) Displays information about the MAC-address learning state for the specified module number.

Command Default

This command has no default settings.

Command Modes

User EXEC (>)

Command History

Release	Modification
12.2(18)SXE	Support for this command was introduced on the Supervisor Engine 720.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

The **module***num* keyword and argument can be used to specify supervisor engines or Distributed Forwarding Cards (DFCs) only.

The **interface***interfaceslot/port* keyword and arguments can be used on routed interfaces only. The **interface***interfaceslot/port* keyword and arguments cannot be used to configure learning on switch-port interfaces.

If you specify the **vlan***vlan-id*, the state of the MAC-address learning of the specified VLAN, including router interfaces, on all modules, is displayed.

If you specify the **vlan***vlan-id* and the **module***num*, the state of the MAC-address learning of a specified VLAN on a specified module is displayed.

If you specify the **interface***interfaceslot/port* keyword and arguments, the state of the MAC-address learning of the specified interface on all modules is displayed.

If you specify the **interface***interfaceslot/port* keyword and arguments, the state of the MAC-address learning of the specified interface on the specified module is displayed.

If you enter the **show mac-address-table learning** command with no arguments or keywords, the status of MAC learning on all the existing VLANs on all the supervisor engines or DFCs configured on a Cisco 7600 series router is displayed.

Examples

This example shows how to display the MAC-address learning status on all the existing VLANs on all the supervisor engines or DFCs configured on a Cisco 7600 series router:

```
Router# show mac-address-table learning

VLAN/Interface          Mod1    Mod4    Mod7
-----
1                        yes     yes     yes
100                      yes     yes     yes
150                      yes     yes     yes
200                      yes     yes     yes
250                      yes     yes     yes
1006                    no      no      no
1007                    no      no      no
1008                    no      no      no
1009                    no      no      no
1010                    no      no      no
1011                    no      no      no
1012                    no      no      no
1013                    no      no      no
1014                    no      no      no
GigabitEthernet6/1     no      no      no
GigabitEthernet6/2     no      no      no
GigabitEthernet6/4     no      no      no
FastEthernet3/4        no      no      no
FastEthernet3/5        no      no      no
GigabitEthernet4/1     no      no      no
GigabitEthernet4/2     no      no      no
GigabitEthernet7/1     no      no      no
GigabitEthernet7/2     no      no      no
Router#
```

Table 1 describes the fields that are shown in the example.

Table 3: show mac-address-table learning Field Descriptions

Field	Description
VLAN/Interface ¹	VLAN ID or interface type, module, and port number.
Mod#	Module number of a supervisor engine or DFC.
yes	MAC-address learning is enabled.
no	MAC-address learning is disabled.

¹ The interfaces displayed are routed interfaces that have internal VLANs assigned to them.

This example shows how to display the status of MAC-address learning on all the existing VLANs on a single supervisor engine or a DFC:

```
Router# show mac-address-table learning module 4
```

VLAN/Interface	Mod4
1	yes
100	yes
150	yes
200	yes
250	yes
1006	no
1007	no
1008	no
1009	no
1010	no
1011	no
1012	no
1013	no
1014	no
GigabitEthernet6/1	no
GigabitEthernet6/2	no
GigabitEthernet6/4	no
FastEthernet3/4	no
FastEthernet3/5	no
GigabitEthernet4/1	no
GigabitEthernet4/2	no
GigabitEthernet7/1	no
GigabitEthernet7/2	no

```
Router#
```

This example shows how to display the status of MAC-address learning for a specific VLAN on all the supervisor engines and DFCs:

```
Router# show mac-address-table learning vlan 100
```

VLAN	Mod1	Mod4	Mod7
100	no	no	yes

```
Router
```

This example shows how to display the status of MAC-address learning for a specific VLAN on a specific supervisor engine or DFC:

```
Router# show mac-address-table learning vlan 100 module 7
```

VLAN	Mod7
100	yes

```
Router
```

This example shows how to display the status of MAC-address learning for a specific supervisor engine or DFC:

```
Router# show mac-address-table learning interface FastEthernet 3/4
```

Interface	Mod1	Mod4	Mod7
Fa3/4	no	yes	no

```
Router
```

This example shows how to display the status of MAC-address learning for a specific interface on a specific supervisor engine or DFC:

```
Router# show mac-address-table learning
interface FastEthernet 3/4 module 1
```

Interface	Mod1
-----------	------

```
-----  
Fa3/4      no  
Router
```

Related Commands

Command	Description
mac-address-table learning	Enables MAC-address learning.

show mac-address-table static

To display static MAC address table entries only, use the **show mac-address-table static** command in privileged EXEC mode.

Cisco 2600 Series, Cisco 3600 Series, and Cisco 3700 Series Routers

show mac-address-table static [**address** *mac-address*] **interface** *type /slot number* | **vlan** *vlan-id*]

Catalyst Switches

show mac-address-table static [**address** *mac-address*] **detail** **interface** *type number* | **protocol** *protocol* | **vlan** *vlan-id*] [[**begin**] **exclude**] **include**] *expression*]

Syntax Description

address <i>mac -address</i>	(Optional) Specifies a 48-bit MAC address to match; valid format is H.H.H.
detail	(Optional) Specifies a detailed display of MAC address table information.
interface <i>type number</i>	(Optional) Specifies an interface to match; valid type values are Ethernet, FastEthernet, and Gigabit Ethernet and valid number values are from 1 to 9.
interface <i>type</i>	(Optional) Specifies an interface to match; valid type values are FastEthernet and Gigabit Ethernet.
<i>slot</i>	(Optional) Adds dynamic addresses to module in slot 1 or 2.
<i>port</i>	(Optional) Port interface number ranges based on type of Ethernet switch network module used: <ul style="list-style-type: none"> • 0 to 15 for NM-16ESW • 0 to 35 for NM-36ESW • 0 to 1 for Gigabit Ethernet
protocol <i>protocol</i>	(Optional) Specifies a protocol. See the “Usage Guidelines” section for keyword definitions.
vlan <i>vlan</i>	(Optional) Displays entries for a specific VLAN; valid values are from 1 to 1005.
begin	(Optional) Specifies that the output display begin with the line that matches the expression.

exclude	(Optional) Specifies that the output display exclude lines that match the expression.
include	(Optional) Specifies that the output display include lines that match the expression.
<i>expression</i>	Expression in the output to use as a reference point.

Command Modes Privileged EXEC (#)

Command History

Release	Modification
12.0(7)XE	This command was introduced on Catalyst 6000 series switches.
12.2(2)XT	This command was implemented on Cisco 2600 series, Cisco 3600 series, and Cisco 3700 series routers.
12.2(8)T	This command was integrated into Cisco IOS Release 12.2(8)T on Cisco 2600 series, Cisco 3600 series, and Cisco 3700 series routers.
12.2(11)T	This command was integrated into Cisco IOS Release 12.2(11)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

Catalyst Switches

The keyword definitions for the protocol argument are:

- **ip** --Specifies IP protocol
- **ipx** --Specifies Internetwork Packet Exchange (IPX) protocols
- **assigned** --Specifies assigned protocol entries
- **other** --Specifies other protocol entries

Examples

The following examples show how to display all static MAC address entries. The fields shown in the various displays are self-explanatory.

Examples

```
Router# show mac-address-table static
Static Address Table:
```

show mac-address-table static

Destination Address	Address Type	VLAN	Destination Port
2323.3214.5432	Static	4	FastEthernet4/1
2323.3214.5431	Static	5	FastEthernet4/1
2323.3214.5432	Static	6	FastEthernet4/1
2323.3214.5434	Static	7	FastEthernet4/1
2323.3214.5435	Static	8	FastEthernet4/1

Examples

```
Router# show mac-address-table static
*Oct 22 12:15:35: %SYS-5-CONFIG_I: Configured from console by console
vlan mac address type protocol qos ports
```

vlan	mac address	type	protocol	qos	ports
200	0050.3e8d.6400	static	assigned	--	Router
100	0050.3e8d.6400	static	assigned	--	Router
4092	0050.f0ac.3058	static	other	--	Router
917	0100.0cdd.dddd	static	other	--	Fa5/9,Router,Switch
5	0050.3e8d.6400	static	assigned	--	Router
303	0100.0cdd.dddd	static	other	--	Fa5/9,Router,Switch
850	0100.0cdd.dddd	static	other	--	Fa5/9,Router,Switch
1002	0100.0cdd.dddd	static	other	--	Fa5/9,Router,Switch
802	0100.0cdd.dddd	static	other	--	Fa5/9,Router,Switch
2	0100.0cdd.dddd	static	other	--	Fa5/9,Router,Switch
304	0100.5e00.0001	static	ip	--	Fa5/9,Switch

The following example shows how to display static MAC address entries with a specific protocol type (in this case, assigned).

```
Router# show mac-address-table static protocol assigned
```

vlan	mac address	type	protocol	qos	ports
200	0050.3e8d.6400	static	assigned	--	Router
100	0050.3e8d.6400	static	assigned	--	Router
5	0050.3e8d.6400	static	assigned	--	Router

The following example shows the detailed output for the previous example.

```
Router# show mac-address-table static protocol assigned detail
```

```
MAC Table shown in details
=====
Type Always Learn Trap Modified Notify Capture Protocol Flood
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
QoS bit L3 Spare Mac Address Age Byte Pvlan Xtag SWbits Index
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
STATIC NO NO NO NO NO assigned NO
Bit Not On 0 0050.3e8d.6400 254 200 1 0 0x3
STATIC NO NO NO NO NO assigned NO
Bit Not On 0 0050.3e8d.6400 254 100 1 0 0x3
STATIC NO NO NO NO NO assigned NO
Bit Not On 0 0050.3e8d.6400 254 5 1 0 0x3
S Bit Not On 0 0050.f0ac.3058 254 4092 1 0 0x3
.
.
.
```

Examples

This example shows how to display all the static MAC address entries; this Cisco 7600 series router is configured with a Supervisor Engine 720.

```
Router# show mac-address-table static
Codes: * - primary entry
vlan mac address type learn qos ports
```


show spanning-tree

To display spanning-tree information for the specified spanning-tree instances, use the **showspanning-tree** command in privileged EXEC mode.

Cisco 2600, 3660, and 3845 Series Switches

show spanning-tree [*bridge-group*] [**active**| **backbonefast**| **blockedports**| **bridge**| **brief**| **inconsistentports**| **interface** *interface-type interface-number*| **root**| **summary** [**totals**]| **uplinkfast**| **vlan** *vlan-id*]

Cisco 6500/6000 Catalyst Series Switches and Cisco 7600 Series Routers

show spanning-tree [*bridge-group*| **active**| **backbonefast**| **bridge** [*id*]| **detail**| **inconsistentports**| **interface** *interface-type interface-number* [**portfast** [**edge**]]| **mst** [*list* | **configuration** [**digest**]]| **root**| **summary** [**totals**]| **uplinkfast**| **vlan** *vlan-id*| **port-channel** *number*| **pathcost** **method**]

Syntax Description

<i>bridge-group</i>	(Optional) Specifies the bridge group number. The range is 1 to 255.
active	(Optional) Displays spanning-tree information on active interfaces only.
backbonefast	(Optional) Displays spanning-tree BackboneFast status.
blockedports	(Optional) Displays blocked port information.
bridge	(Optional) Displays status and configuration of this switch.
brief	(Optional) Specifies a brief summary of interface information.
configuration digest]	(Optional) Displays the multiple spanning-tree current region configuration.
inconsistentports	(Optional) Displays information about inconsistent ports.
interface <i>interface-type interface-number</i>	(Optional) Specifies the type and number of the interface. Enter each interface designator, using a space to separate it from the one before and the one after. Ranges are not supported. Valid interfaces include physical ports and virtual LANs (VLANs). See the "Usage Guidelines" for valid values.

<i>list</i>	(Optional) Specifies a multiple spanning-tree instance list.
mst	(Optional) Specifies multiple spanning-tree.
portfast edge]	(Optional) Displays spanning-tree PortFast edge interface operational status. Beginning with Cisco IOS Release 12.2(33)SXI, the edge keyword is required. In earlier releases, the edge keyword is not used.
root	(Optional) Displays root-switch status and configuration.
summary	(Optional) Specifies a summary of port states.
totals	(Optional) Displays the total lines of the spanning-tree state section.
uplinkfast	(Optional) Displays spanning-tree UplinkFast status.
vlan <i>vlan-id</i>	(Optional) Specifies the VLAN ID. The range is 1 to 1005. Beginning with Cisco IOS Release 12.4(15)T, the valid VLAN ID range is from 1 to 4094. If the <i>vlan-id</i> value is omitted, the command applies to the spanning-tree instance for all VLANs.
<i>id</i>	(Optional) Identifies the spanning tree bridge.
detail	(Optional) Shows status and configuration details.
port-channel <i>number</i>	(Optional) Identifies the Ethernet channel associated with the interfaces.
pathcost <i>method</i>	(Optional) Displays the default path-cost calculation method that is used. See the “Usage Guidelines” section for the valid values.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.0(1)T	This command was introduced.
12.0(5.2)WC(1)	This command was integrated into Cisco IOS Release 12.0(5.2)WC(1).

Release	Modification
12.1(6)EA2	This command was integrated into Cisco IOS Release 12.1(6)EA2. The following keywords and arguments were added: <i>bridge-group</i> , active , backbonefast , blockedports , bridge , inconsistentports , pathcostmethod , root , totals , and uplinkfast .
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(15)ZJ	The syntax added in Cisco IOS Release 12.1(6)EA2 was implemented on the Cisco 2600 series, Cisco 3600 series, and Cisco 3700 series routers.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Cisco IOS Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.3(4)T	The platform support and syntax added in Cisco IOS Release 12.2(15)ZJ was integrated into Cisco IOS Release 12.3(4)T.
12.4(15)T	This command was modified to extend the range of valid VLAN IDs to 1-4094 for specified platforms.
12.2(33)SXI	This command was modified to require the edge keyword after portfast . The command output was modified to show the status of Bridge Assurance and PVST Simulation.

Usage Guidelines

The keywords and arguments that are available with the **showspanning-tree** command vary depending on the platform you are using and the network modules that are installed and operational.

Cisco 2600, 3660, and 3845 Series Switches

The valid values for **interface***interface-type* are:

- **fastethernet** --Specifies a Fast Ethernet IEEE 802.3 interface.
- **port-channel** --Specifies an Ethernet channel of interfaces.

Cisco 6500/6000 Catalyst Switches and 7600 Series Routers

The **port-channel***number* values from 257 to 282 are supported on the Content Switching Module (CSM) and the Firewall Services Module (FWSM) only.

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 2 to 13 and valid values for the port number are from 1 to 48.

When checking spanning tree-active states and you have a large number of VLANs, you can enter the **showspanning-treesummarytotal** command. You can display the total number of VLANs without having to scroll through the list of VLANs.

The valid values for **interface***interface-type* are:

- **fastethernet** --Specifies a Fast Ethernet IEEE 802.3 interface.
- **port-channel** --Specifies an Ethernet channel of interfaces.
- **atm** --Specifies an Asynchronous Transfer Mode (ATM) interface.
- **gigabitethernet** --Specifies a Gigabit Ethernet IEEE 802.3z interface.
- **multilink** --Specifies a multilink-group interface.
- **serial** --Specifies a serial interface.
- **vlan** --Specifies a catalyst VLAN interface.

The valid values for keyword **pathcoastmethod** are:

- **append** --Appends the redirected output to a URL (supporting the append operation).
- **begin** --Begins with the matching line.
- **exclude** --Excludes matching lines.
- **include** --Includes matching lines.
- **redirect** --Redirects output to a URL.
- **tee** --Copies output to a URL.

When you run the **showspanning-tree** command for a VLAN or an interface the switch router will display the different port states for the VLAN or interface. The valid spanning-tree port states are listening, learning, forwarding, blocking, disabled, and loopback. See the table below for definitions of the port states:

Table 4: show spanning-tree vlan Command Port States

Field	Definition
BLK	Blocked is when the port is still sending and listening to BPDU packets but is not forwarding traffic.
DIS	Disabled is when the port is not sending or listening to BPDU packets and is not forwarding traffic.
FWD	Forwarding is when the port is sending and listening to BPDU packets and forwarding traffic.
LBK	Loopback is when the port receives its own BPDU packet back.
LIS	Listening is when the port spanning tree initially starts to listen for BPDU packets for the root bridge.
LRN	Learning is when the port sets the proposal bit on the BPDU packets it sends out

Examples**Examples**

The following example shows that bridge group 1 is running the VLAN Bridge Spanning Tree Protocol:

```
Router# show spanning-tree 1
Bridge group 1 is executing the VLAN Bridge compatible Spanning Tree Protocol
Bridge Identifier has priority 32768, address 0000.0c37.b055
Configured hello time 2, max age 30, forward delay 20
We are the root of the spanning tree
Port Number size is 10 bits
Topology change flag not set, detected flag not set
Times: hold 1, topology change 35, notification 2
      hello 2, max age 30, forward delay 20
Timers: hello 0, topology change 0, notification 0
      bridge aging time 300

Port 8 (Ethernet1) of Bridge group 1 is forwarding
  Port path cost 100, Port priority 128
  Designated root has priority 32768, address 0000.0c37.b055
  Designated bridge has priority 32768, address 0000.0c37.b055
  Designated port is 8, path cost 0
  Timers: message age 0, forward delay 0, hold 0
  BPDUs: sent 184, received 0
```

The following is sample output from the **showspanning-treesummary** command:

```
Router# show spanning-tree summary
UplinkFast is disabled
Name                Blocking  Listening  Learning  Forwarding  STP Active
-----
VLAN1                23        0         0         1           24
-----
      1 VLAN 23      0         0         1           24
-----
```

The table below describes the significant fields shown in the display.

Table 5: show spanning-tree summary Field Descriptions

Field	Description
UplinkFast	Indicates whether the spanning-tree UplinkFast feature is enabled or disabled.
Name	Name of VLAN.
Blocking	Number of ports in the VLAN in a blocking state.
Listening	Number of ports in a listening state.
Learning	Number of ports in a learning state.
Forwarding	Number of ports in a forwarding state.
STP Active	Number of ports using the Spanning-Tree Protocol.

The following is sample output from the **showspanning-treebrief** command:

```

Router# show spanning-tree brief
VLAN1
  Spanning tree enabled protocol IEEE
  ROOT ID      Priority 32768
                Address 0030.7172.66c4
                Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
VLAN1
  Spanning tree enabled protocol IEEE
  ROOT ID      Priority 32768
                Address 0030.7172.66c4
Port
  Name      Port ID Prio Cost Sts Cost Bridge ID Port ID
-----
Fa0/11     128.17 128 100 BLK 38 0404.0400.0001 128.17
Fa0/12     128.18 128 100 BLK 38 0404.0400.0001 128.18
Fa0/13     128.19 128 100 BLK 38 0404.0400.0001 128.19
Fa0/14     128.20 128 100 BLK 38 0404.0400.0001 128.20
Fa0/15     128.21 128 100 BLK 38 0404.0400.0001 128.21
Fa0/16     128.22 128 100 BLK 38 0404.0400.0001 128.22
Fa0/17     128.23 128 100 BLK 38 0404.0400.0001 128.23
Fa0/18     128.24 128 100 BLK 38 0404.0400.0001 128.24
Fa0/19     128.25 128 100 BLK 38 0404.0400.0001 128.25
Fa0/20     128.26 128 100 BLK 38 0404.0400.0001 128.26
Fa0/21     128.27 128 100 BLK 38 0404.0400.0001 128.27
Port
  Name      Port ID Prio Cost Sts Cost Bridge ID Port ID
-----
Fa0/22     128.28 128 100 BLK 38 0404.0400.0001 128.28
Fa0/23     128.29 128 100 BLK 38 0404.0400.0001 128.29
Fa0/24     128.30 128 100 BLK 38 0404.0400.0001 128.30 Hello Time 2 sec Max Age 20
sec Forward Delay 15 sec

```

The table below describes the significant fields shown in the display.

Table 6: show spanning-tree brief Field Descriptions

Field	Description
VLAN1	VLAN for which spanning-tree information is shown.
Spanning tree enabled protocol	Type of spanning tree (IEEE, IBM, CISCO).
ROOT ID	Indicates the root bridge.
Priority	Priority indicator.
Address	MAC address of the port.
Hello Time	Amount of time, in seconds, that the bridge sends bridge protocol data units (BPDUs).
Max Age	Amount of time, in seconds, that a BPDU packet should be considered valid.
Forward Delay	Amount of time, in seconds, that the port spends in listening or learning mode.
Port Name	Interface type and number of the port.

Field	Description
Port ID	Identifier of the named port.
Prio	Priority associated with the port.
Cost	Cost associated with the port.
Sts	Status of the port.
Designated Cost	Designated cost for the path.
Designated Bridge ID	Bridge identifier of the bridge assumed to be the designated bridge for the LAN associated with the port.

The following is sample output from the **showspanning-treevlan1** command:

```
Router# show spanning-tree vlan 1
Spanning tree 1 is executing the IEEE compatible Spanning Tree protocol
  Bridge Identifier has priority 32768, address 00e0.1eb2.ddc0
  Configured hello time 2, max age 20, forward delay 15
  Current root has priority 32768, address 0010.0b3f.ac80
  Root port is 5, cost of root path is 10
  Topology change flag not set, detected flag not set, changes 1
  Times: hold 1, topology change 35, notification 2
         hello 2, max age 20, forward delay 15
  Timers: hello 0, topology change 0, notification 0
Interface Fa0/1 in Spanning tree 1 is down
  Port path cost 100, Port priority 128
  Designated root has priority 32768, address 0010.0b3f.ac80
Designated bridge has priority 32768, address 00e0.1eb2.ddc0
  Designated port is 1, path cost 10
  Timers: message age 0, forward delay 0, hold 0
  BPDU: sent 0, received 0
```

The table below describes the significant fields shown in the display.

Table 7: show spanning-tree vlan Field Descriptions

Field	Description
Spanning tree	Type of spanning tree (IEEE, IBM, CISCO).
Bridge Identifier	Part of the bridge identifier and taken as the most significant part for bridge ID comparisons.
address	Bridge MAC address.
Root port	Identifier of the root port.
Topology change	Flags and timers associated with topology changes.

The following is sample output from the **showspanning-treeinterfacefastethernet0/3** command:

```
Router# show spanning-tree interface fastethernet0/3
Interface Fa0/3 (port 3) in Spanning tree 1 is down
Port path cost 100, Port priority 128
Designated root has priority 6000, address 0090.2bba.7a40
Designated bridge has priority 32768, address 00e0.1e9f.4abf
Designated port is 3, path cost 410
Timers: message age 0, forward delay 0, hold 0
BPDU: sent 0, received 0
```

Examples

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

```
Router#
show spanning-tree
VLAN0001
Spanning tree enabled protocol ieee
Root ID      Priority    4097
Address      0004.9b78.0800
This bridge is the root
Hello Time   2 sec    Max Age 20 sec    Forward Delay 15 sec
Bridge ID    Priority    4097 (priority 4096 sys-id-ext 1)
Address      0004.9b78.0800
Hello Time   2 sec    Max Age 20 sec    Forward Delay 15 sec
Aging Time 15

Interface    Port ID          Designated          Port ID
Name          Prio.Nbr         Cost Sts             Cost Bridge ID       Prio.Nbr
-----
Gi2/1         128.65           4 LIS              0 4097 0004.9b78.0800 128.65
Gi2/2         128.66           4 LIS              0 4097 0004.9b78.0800 128.66
Fa4/3         128.195          19 LIS             0 4097 0004.9b78.0800 128.195
Fa4/4         128.196          19 BLK             0 4097 0004.9b78.0800 128.195
Router#
```

The table below describes the fields that are shown in the example.

Table 8: show spanning-tree Command Output Fields

Field	Definition
Port ID Prio.Nbr	Port ID and priority number.
Cost	Port cost.
Sts	Status information.

This example shows how to display information about the spanning tree on active interfaces only:

```
Router#
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
Router#
```

This example shows how to display the status of spanning-tree BackboneFast:

```
Router# 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
Router#
```

This example shows how to display information about the spanning tree for this bridge only:

```
Router# 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
.
```

```
Router#
```

This example shows how to display detailed information about the interface:

```
Router#
```

```
show spanning-tree detail
```

```
VLAN1 is executing the ieee compatible Spanning Tree protocol
Bridge Identifier has priority 4096, address 00d0.00b8.1401
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 9 last change occurred 02:41:34 ago
from FastEthernet4/21
Times: hold 1, topology change 35, notification 2
hello 2, max age 20, forward delay 15
Timers: hello 1, topology change 0, notification 0, aging 300
```

```
Port 213 (FastEthernet4/21) of VLAN1 is forwarding
Port path cost 19, Port priority 128, Port Identifier 128.213.
Designated root has priority 4096, address 00d0.00b8.1401
Designated bridge has priority 4096, address 00d0.00b8.1401
Designated port id is 128.213, designated path cost 0
Timers: message age 0, forward delay 0, hold 0
Number of transitions to forwarding state: 1
BPDUs: sent 4845, received 1
Router#
```

This example shows how to display information about the spanning tree for a specific interface:

```
Router# show spanning-tree interface fastethernet 5/9
```

```
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
```

This example shows how to display information about the spanning tree for a specific bridge group:

```
Router#
```

```
show spanning-tree 1
```

```
UplinkFast is disabled
BackboneFast is disabled
```

```
Bridge group 1 is executing the ieee compatible Spanning Tree protocol
Bridge Identifier has priority 32768, address 00d0.d39c.004d
```

```

Configured hello time 2, max age 20, forward delay 15
Current root has priority 32768, address 00d0.d39b.fddd
Root port is 7 (FastEthernet2/2), cost of root path is 19
Topology change flag set, detected flag not set
Number of topology changes 3 last change occurred 00:00:01 ago
      from FastEthernet2/2
Times: hold 1, topology change 35, notification 2
      hello 2, max age 20, forward delay 15
Timers: hello 0, topology change 0, notification 0 bridge aging time 15

Port 2 (Ethernet0/1/0) of Bridge group 1 is down

Port path cost 100, Port priority 128
Designated root has priority 32768, address 0050.0bab.1808
Designated bridge has priority 32768, address 0050.0bab.1808
Designated port is 2, path cost 0
Timers: message age 0, forward delay 0, hold 0
BPDU: sent 0, received 0
Router#

```

This example shows how to display a summary of port states:

```

Router#
show spanning-tree summary

Root bridge for: Bridge group 1, VLAN0001, VLAN0004-VLAN1005
VLAN1013-VLAN1499, VLAN2001-VLAN4094
EtherChannel misconfiguration guard is enabled
Extended system ID is enabled
Portfast is enabled by default
PortFast BPDU Guard is disabled by default
Portfast BPDU Filter is disabled by default
Loopguard is disabled by default
UplinkFast is disabled
BackboneFast is disabled
Platform PVST Simulation is enabled
Pathcost method used is long
Name                Blocking Listening Learning Forwarding STP Active
-----
1 bridge             0          0          0          1          1
3584 vlans 3584 0 0 7168 10752

Blocking Listening Learning Forwarding STP Active
-----
Total                3584      0          0          7169      10753
Router#

```

This example shows how to display the total lines of the spanning-tree state section:

```

Router#
show spanning-tree summary total
Root bridge for: Bridge group 10, VLAN1, VLAN6, VLAN1000.
Extended system ID is enabled.
PortFast BPDU Guard is disabled
EtherChannel misconfiguration guard is enabled
UplinkFast is disabled
BackboneFast is disabled
Default pathcost method used is long
Name                Blocking Listening Learning Forwarding STP Active
-----
105 VLANs 3433      0          0          105      3538

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
Router#

```

This example shows how to display information about the spanning tree for a specific VLAN:

```
Router#
show spanning-tree vlan 200
VLAN0200
Spanning tree enabled protocol ieee
Root ID Priority 32768
  Address 00d0.00b8.14c8
  This bridge is the root
  Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
Bridge ID Priority 32768
  Address 00d0.00b8.14c8
  Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
Aging Time 300
Interface Role Sts Cost Prio.Nbr Status
-----
Fa4/4 Desg FWD 200000 128.196 P2p
Fa4/5 Back BLK 200000 128.197 P2p
Router#
```

The table below describes the fields that are shown in the example.

Table 9: show spanning-tree vlan Command Output Fields

Field	Definition
Role	Current 802.1w role; valid values are Boun (boundary), Desg (designated), Root, Altn (alternate), and Back (backup).
Sts	Spanning-tree states; valid values are BKN* (broken) ² , BLK (blocking), DWN (down), LTN (listening), LBK (loopback), LRN (learning), and FWD (forwarding).
Cost	Port cost.
Prio.Nbr	Port ID that consists of the port priority and the port number.

Field	Definition
Status	<p>Status information; valid values are as follows:</p> <ul style="list-style-type: none"> • P2p/Shr--The interface is considered as a point-to-point (resp. shared) interface by the spanning tree. • Edge--PortFast has been configured (either globally using the default command or directly on the interface) and no BPDU has been received. • *ROOT_Inc, *LOOP_Inc, *PVID_Inc and *TYPE_Inc--The port is in a broken state (BKN*) for an inconsistency. The port would be (respectively) Root inconsistent, Loopguard inconsistent, PVID inconsistent, or Type inconsistent. • Bound(type)--When in MST mode, identifies the boundary ports and specifies the type of the neighbor (STP, RSTP, or PVST). • Peer(STP)--When in PVRST rapid-pvst mode, identifies the port connected to a previous version of the 802.1D bridge.

² For information on the *, see the definition for the Status field.

This example shows how to determine if any ports are in the root-inconsistent state:

```

Router#
show spanning-tree inconsistentports

Name                Interface          Inconsistency
-----
VLAN1               FastEthernet3/1   Root Inconsistent
Number of inconsistent ports (segments) in the system :1
Router#

```

Related Commands

Command	Description
spanning-tree backbonefast	Enables BackboneFast on all Ethernet VLANs.
spanning-tree cost	Sets the path cost of the interface for STP calculations.
spanning-tree guard	Enables or disables the guard mode.
spanning-tree pathcost method	Sets the default path-cost calculation method.

Command	Description
spanning-tree portfast (interface configuration mode)	Enables PortFast mode.
spanning-tree portfast bpdupfilter default	Enables BPDU filtering by default on all PortFast ports.
spanning-tree portfast bpduguard default	Enables BPDU guard by default on all PortFast ports.
spanning-tree port-priority	Sets an interface priority when two bridges vie for position as the root bridge.
spanning-tree uplinkfast	Enables UplinkFast.
spanning-tree vlan	Enables the STP on a VLAN.

show udld

To display the administrative and operational Unidirectional Link Detection Protocol (UDLD) status, use the **show udld** command in user EXEC mode.

show udld [*interface-id*] **neighbors**

Syntax Description

<i>interface-id</i>	(Optional) Interface name and number.
neighbors	(Optional) Displays neighbor information only.

Command Modes

User EXEC (>)

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(18)SXD	This command was changed to include the neighbors keyword.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

If you do not enter an *interface-id* value, the administrative and operational UDLD status for all interfaces are displayed.

Examples

This example shows how to display the UDLD state for a single interface. The fields shown in the display are self-explanatory.

```
Router#
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

```

Router#

This example shows how to display neighbor information only. The fields shown in the display are self-explanatory.

Router#

show uddl neighbors

```

Port      Device Name          Device ID  Port-ID  OperState
-----
Gi3/1     SAL0734K5R2          1          Gi4/1    Bidirectional
Gi4/1     SAL0734K5R2          1          Gi3/1    Bidirectional
Router#

```

Related Commands

Command	Description
uddl	Enables aggressive or normal mode in UDLD and sets the configurable message time.
uddl port	Enables UDLD on the interface or enables UDLD in aggressive mode on the interface.