Cisco Nexus 3548 Switch NX-OS Layer 2 Switching Command Reference

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Preface

This preface describes the audience, organization, and conventions of the *Cisco Nexus 3548 Switch NX-OS Layer 2 Switching Command Reference*. It also provides information on how to obtain related documentation.

This preface includes the following sections:

Audience

This publication is for experienced network administrators who configure and maintain Cisco Nexus Series switches.

Document Conventions

Command descriptions use these conventions:

Convention	Description
boldface font	Commands and keywords are in boldface.
italic font	Arguments for which you supply values are in italics.
[ ]	Elements in square brackets are optional.
[x | y | z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.

Screen examples use these conventions:

`screen font`	Terminal sessions and information that the switch displays are in screen font.
`boldface screen font`	Information that you must enter is in boldface screen font.
`italic screen font`	Arguments for which you supply values are in italic screen font.
< >	Nonprinting characters, such as passwords, are in angle brackets.
[ ]	Default responses to system prompts are in square brackets.
!, #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.

This document uses the following conventions:

Note Means reader *take note*. Notes contain helpful suggestions or references to material not covered in the manual.

Caution Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.

Related Documentation

Documentation for the Cisco Nexus 3000 Series Switch is available at the following URL:

http://www.cisco.com/en/US/products/ps11541/tsd_products_support_series_home.html

The documentation set is divided into the following categories:

Release Notes

The release notes are available at the follwing URL:

http://www.cisco.com/en/US/products/ps11541/prod_release_notes_list.html

Installation and Upgrade Guides

The installation and upgrade guides are available at the following URL:

http://www.cisco.com/en/US/products/ps11541/prod_installation_guides_list.html

Command References

The command references are available at the following URL:

http://www.cisco.com/en/US/products/ps11541/prod_command_reference_list.html

Technical References

The technical references are available at the following URL:

http://www.cisco.com/en/US/products/ps11541/prod_technical_reference_list.html

Configuration Guides

The configuration guides are available at the following URL:

http://www.cisco.com/en/US/products/ps11541/products_installation_and_configuration_guides_list.html

Error and System Messages

The system message reference guide is available at the following URL:

http://www.cisco.com/en/US/products/ps11541/products_system_message_guides_list.html

Documentation Feedback

To provide technical feedback on this document, or to report an error or omission, please send your comments to nexus3k-docfeedback@cisco.com. We appreciate your feedback.

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, using the Cisco Bug Search Tool (BST), submitting a service request, and gathering additional information, see *What's New in Cisco Product Documentation* at: http://www.cisco.com/c/en/us/td/docs/general/whatsnew/whatsnew.html.

Subscribe to *What's New in Cisco Product Documentation*, which lists all new and revised Cisco technical documentation, as an RSS feed and deliver content directly to your desktop using a reader application. The RSS feeds are a free service.

New and Changed Information

This chapter provides release-specific information for each new and changed feature in the *Cisco Nexus 3548 Switch NX-OS Layer 2 Switching Command Reference*. The latest version of this document is available at the following Cisco website:

http://www.cisco.com/en/US/products/ps11541/tsd_products_support_series_home.html

To check for additional information about this Cisco NX-OS Release, see the *Cisco Nexus 3000 Series Switch Release Notes* available at the following Cisco website:

http://www.cisco.com/en/US/products/ps11541/prod_release_notes_list.html

Table 1 summarizes the new and changed features, and tells you where they are documented.

Table 1 New and Changed Information

Feature	Description	Changed in Release	Where Documented
Flex Links	This feature was introduced to configure a pair of layer 2 interfaces (switch ports or port channels) as Flex Link interfaces, where one interface is configured to act as a backup to the other.	6.0(2)A3(1)	feature flexlink show interface switchport backup switchport backup interface
Link negotiation	This feature was introduced to enable or disable auto-negotiation on 1 Gigabit ports.	5.0(3)A1(2)	negotiate auto

Layer 2 Commands

This chapter describes the Cisco NX-OS Layer 2 commands available on the Cisco Nexus 3548 switches.

cdp

To enable the Cisco Discovery Protocol (CDP) and configure CDP attributes, use the **cdp** command. To disable CDP or reset CDP attributes, use the **no** form of this command.

cdp {**advertise** {**v1** | **v2**} | **enable** | **format device-id** {**mac-address** | **serial-number** | **system-name**} | **holdtime** *seconds* | **timer** *seconds*}

no cdp {**advertise** | **enable** | **format device-id** {**mac-address** | **serial-number** | **system-name**} | **holdtime** *seconds* | **timer** *seconds*}

Syntax Description

advertise {**v1** | **v2**}	Configures the version to use to send CDP advertisements. Version-2 is the default state.
enable	Enables CDP for all Ethernet interfaces.
format device-id	Configures the format of the CDP device ID.
mac-address	Uses the MAC address as the CDP device ID.
serial-number	Uses the serial number as the CDP device ID.
system-name	Uses the system name, which can be expressed as a fully qualified domain name, as the CDP device ID. This is the default.
holdtime *seconds*	Specifies the amount of time a receiver should hold CDP information before discarding it. The range is from 10 to 255 seconds; the default is 180 seconds.
timer *seconds*	Sets the transmission frequency of CDP updates in seconds. The range is from 5 to 254; the default is 60 seconds.

Command Default

None

Command Modes

Global configuration mode

Switch profile configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Examples

This example shows how to configure CDP advertisements on a switch profile:

```
switch# configure sync
Enter configuration commands, one per line. End with CNTL/Z.
switch(config-sync)# switch-profile s5010
Switch-Profile started, Profile ID is 1
switch(config-sync-sp)# cdp advertise v1
switch(config-sync-sp)#
```

This example shows how to configure the MAC address as the CDP device ID in a switch profile:

```
switch# configure sync
```

```
Enter configuration commands, one per line. End with CNTL/Z.
switch(config-sync)# switch-profile s5010
Switch-Profile started, Profile ID is 1
switch(config-sync-sp)# cdp format device-id mac-address
switch(config-sync-sp)#
```

This example shows how to enable CDP on all Ethernet interfaces:

```
switch# configure terminal
switch(config)# cdp enable
switch(config)#
```

This example shows how to configure the MAC address as the CDP device ID:

```
switch# configure terminal
switch(config)# cdp format device-id mac-address
switch(config)#
```

This example shows how to disable CDP on all Ethernet interfaces:

```
switch# configure terminal
switch(config)# no cdp enable
switch(config)#
```

Related Commands

Command	Description
show cdp	Displays Cisco Discovery Protocol (CDP) information.
show switch-profile	Displays information about the switch profile and the configuration revision.
switch-profile	Creates or configures a switch profile.

clear mac address-table dynamic

To clear the dynamic address entries from the MAC address table, use the **clear mac address-table dynamic** command.

clear mac address-table dynamic [[**address** *mac-addr*] | [**interface** {**ethernet** *slot/port* | **port-channel** *number*}]] [**vlan** *vlan-id*]

Syntax Description

address *mac-addr*	(Optional) Specifies the MAC address to remove from the table. Use the format EEEE.EEEE.EEEE.
interface	(Optional) Specifies the interface for which MAC addresses should be removed from the table. The type can be either Ethernet or EtherChannel.
ethernet *slot/port*	(Optional) Specifies the Ethernet interface and the slot number and port number. The slot number is from 1 to 255, and the port number is from 1 to 128.
port-channel *number*	(Optional) Specifies the EtherChannel for which MAC addresses should be removed from the table. Use the EtherChannel number. The *number* range is from 1 to 4096.
vlan *vlan-id*	(Optional) Specifies the VLAN from which MAC addresses should be removed from the table. The VLAN ID range is from 1 to 4092.

Command Default

None

Command Modes

EXEC mode
Global configuration mode
Switch profile configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.
5.0(3)A1(1)	Support for this command was introduced in switch profiles.

Usage Guidelines

Use the **clear mac address-table dynamic** command with no arguments to remove all dynamic entries from the table.

To clear static MAC addresses from the table, use the **no mac address-table static** command.

If the **clear mac address-table dynamic** command is entered with no options, all dynamic addresses are removed. If you specify an address but do not specify an interface, the address is deleted from all interfaces. If you specify an interface but do not specify an address, the switch removes all addresses on the specified interfaces.

This command does not require a license.

Examples

This example shows how to clear all the dynamic entries from the MAC address table:

```
switch# clear mac address-table dynamic
switch#
```

This example shows how to clear all the dynamic entries from the MAC address table for VLAN 2:

```
switch# clear mac address-table dynamic vlan 2
switch#
```

This example shows how to clear all the dynamic entries from the MAC address table in a switch profile:

```
switch# configure sync
Enter configuration commands, one per line. End with CNTL/Z.
switch(config-sync)# switch-profile s5010
Switch-Profile started, Profile ID is 1
switch(config-sync-sp)# mac-learn disable
switch(config-sync-sp)# clear mac address-table dynamic
switch(config-sync-sp)#
```

Related Commands

Command	Description
show mac address-table	Displays the information about the MAC address table.
show switch-profile	Displays information about the switch profile and the configuration revision.
switch-profile	Creates or configures a switch profile.

clear spanning-tree counters

To clear the counters for the Spanning Tree Protocol (STP), use the **clear spanning-tree counters** command.

clear spanning-tree counters [**interface** {**ethernet** *interface* | **port-channel** *channel*}] [**vlan** *vlan-id*]

Syntax Description

interface	(Optional) Specifies the interface type.
ethernet *interface*	Specifies the slot and port number.
port-channel *channel*	Specifies the EtherChannel number.
vlan *vlan-id*	(Optional) Specifies the VLAN. The range is from 1 to 4094.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

You can clear all the STP counters on the entire switch, per VLAN, or per interface.

This command does not require a license.

Examples

This example shows how to clear the STP counters for VLAN 5:

```
switch# clear spanning-tree counters vlan 5
switch#
```

Related Commands

Command	Description
show spanning-tree	Displays information about the spanning tree state.

clear spanning-tree detected-protocol

To restart the protocol migration, use the **clear spanning-tree detected-protocol** command. With no arguments, the command is applied to every port of the switch.

clear spanning-tree detected-protocol [**interface** {**ethernet** *interface* | **port-channel** *channel*}]

Syntax Description

interface	(Optional) Specifies the interface type.
ethernet *interface*	Specifies the slot and port number.
port-channel *channel*	Specifies the EtherChannel number.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Rapid per VLAN Spanning Tree Plus (Rapid PVST+) and Multiple Spanning Tree (MST) have built-in compatibility mechanisms that allow them to interact properly with other versions of IEEE spanning tree or other regions. For example, a switch running Rapid PVST+ can send 802.1D bridge protocol data units (BPDUs) on one of its ports when it is connected to a legacy device. An MST switch can detect that a port is at the boundary of a region when it receives a legacy BPDU or an MST BPDU that is associated with a different region.

These mechanisms are not always able to revert to the most efficient mode. For example, a Rapid PVST+ switch that is designated for a legacy 802.1D bridge stays in 802.1D mode even after the legacy bridge has been removed from the link. Similarly, an MST port assumes that it is a boundary port when the bridges to which it is connected have joined the same region.

To force a port to renegotiate with its neighbors, enter the **clear spanning-tree detected-protocol** command.

This command does not require a license.

Examples

This example shows how to restart the protocol migration on a specific interface:

```
switch# clear spanning-tree detected-protocol interface ethernet 1/4
switch#
```

Related Commands

Command	Description
show spanning-tree	Displays information about the spanning tree state.

clear vtp counters

To clear VLAN Trunking Protocol (VTP) counters, use the **clear vtp counters** command.

clear vtp counters

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Use this command to clear the VTP statistics, such as the VTP requests, VTP advertisements, and configuration revisions.

This command does not require a license.

Examples

This example shows how to clear the VTP counters:

```
switch# clear vtp counters
switch#
```

Related Commands

Command	Description
show vtp counters	Displays VTP counters.
show vtp status	Displays VTP information.

errdisable detect cause

To enable error-disable (err-disabled) detection in an application, use the **errdisable detect cause** command. To disable error disable detection, use the **no** form of this command.

errdisable detect cause {**all** | **link-flap** | **loopback**}

no errdisable detect cause {**all** | **link-flap** | **loopback**}

Syntax Description

all	Enables error detection on all cases.
link-flap	Enables error disable detection on linkstate-flapping.
loopback	Enables error disable detection on loopback.

Command Default

Enabled

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

When error disable detection is enabled and a cause is detected on an interface, the interface is placed in an err-disabled state, which is an operational state that is similar to the link-down state.

This command does not require a license.

Examples

This example shows how to enable the err-disabled detection on linkstate-flapping:

```
switch# configure terminal
switch(config)# errdisable detect cause link-flap
switch(config)#
```

Related Commands

Command	Description
errdisable recovery	Configures recovery from the err-disabled state.
show interface status err-disabled	Displays the interface error disabled state.

errdisable recovery cause

To configure the application to bring the interface out of the error-disabled (err-disabled) state and retry coming up, use the **errdisable recovery cause** command. To revert to the defaults, use the **no** form of this command.

errdisable recovery cause {**all** | **bpduguard** | **failed-port-state** | **link-flap-recovery**| **pause-rate-limit** | **udld**}

no errdisable recovery cause {**all** | **bpduguard** | **failed-port-state** | **link-flap-recovery** | **pause-rate-limit** | **udld**}

Syntax Description

all	Enables the timer to recover from all causes.
bpduguard	Enables the timer to recover from the bridge protocol data unit (BPDU) Guard error-disabled state.
failed-port-state	Enables the timer to recover from a stp set port state failure.
link-flap-recovery	Enables the timer to recover from linkstate flapping.
pause-rate-limit	Enables the timer to recover from the pause rate limit error-disabled state.
udld	Enables the timer to recover from the Unidirectional Link Detection (UDLD) error-disabled state.

Command Default

None

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

When an error-disables recovery is enabled, the interface automatically recovers from the error-disabled state, and the device retries bringing the interface up.

This command does not require a license.

Examples

This example shows how to enable an error-disabled recovery from linkstate flapping:

```
switch# configure terminal
switch(config)# errdisable recovery cause link-flap
switch(config)#
```

Related Commands

Command	Description
errdisable detect cause	Enables the error-disabled (err-disabled) detection.
show interface status err-disabled	Displays the interface error-disabled state.

errdisable recovery interval

To configure the recovery time interval to bring the interface out of the error-disabled (err-disabled) state, use the **errdisable recovery interval** command. To revert to the defaults, use the **no** form of this command.

errdisable recovery interval *time*

no errdisable recovery interval

Syntax Description

time	Error disable recovery time interval. The range is from 30 to 65535 seconds.

Command Default

Disabled

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

When error disable recovery is enabled, the interface automatically recovers from the err-disabled state, and the device retries bringing the interface up.

The device waits 300 seconds to retry.

This command does not require a license.

Examples

This example shows how to enable error disable recovery time interval to 100 seconds:

```
switch# configure terminal
switch(config)# errdisable recovery interval 100
switch(config)#
```

Related Commands

Command	Description
errdisable recovery cause	Enables an error-disabled recovery on an interface.
show interface status err-disabled	Displays the interface error-disabled state.

feature flexlink

To enable Flex Links, use the **feature flexlink** command. To disable Flex Links, use the no form of this command.

feature flexlink

no feature flexlink

Syntax Description

This command has no arguments or keywords.

Command Default

Disabled

Command Modes

Global configuration mode

Command History

Release	Modification
6.0(2)A3(1)	This command was introduced.

Examples

This example shows how to enable VTP on the switch:

```
switch# configure terminal
switch(config)# feature flexlink
switch(config)#
```

Related Commands

Command	Description
show feature	Displays the status of features enabled or disabled on the switch.
switchport backport interface	Configures Flex Links, which are two interfaces that provide backup to each other, on a Layer 2 interface.

feature vtp

To enable VLAN Trunking Protocol (VTP), use the **feature vtp** command. To disable VTP, use the **no** form of this command.

feature vtp

no feature vtp

Syntax Description

This command has no arguments or keywords.

Command Default

Disabled

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Examples

This example shows how to enable VTP on the switch:

```
switch# configure terminal
switch(config)# feature vtp
switch(config)#
```

Related Commands

Command	Description
show vtp status	Displays the VTP information.
vtp	Configures VTP.

instance vlan

To map a VLAN or a set of VLANs to a Multiple Spanning Tree instance (MSTI), use the **instance vlan** command. To delete the instance and return the VLANs to the default instance (Common and Internal Spanning Tree [CIST]), use the **no** form of this command.

instance *instance-id* **vlan** *vlan-id*

no instance *instance-id* [**vlan** *vlan-id*]

Syntax Description

instance-id	Instances to which the specified VLANs are mapped. The range is from 0 to 4094.
vlan *vlan-id*	Specifies the number of the VLANs that you are mapping to the specified MSTI. The VLAN ID range is from 1 to 4094.

Command Default

No VLANs are mapped to any MST instance (all VLANs are mapped to the CIST instance).

Command Modes

MST configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

The VLAN identifier is entered as a single value or a range.

The mapping is incremental, not absolute. When you enter a range of VLANs, this range is added to or removed from the existing instances.

Any unmapped VLAN is mapped to the CIST instance.

Caution When you change the VLAN-to-MSTI mapping, the system restarts MST.

This command does not require a license.

Examples

This example shows how to map a range of VLANs to MSTI 4:

```
switch# configure terminal
switch(config)# spanning-tree mst configuration
switch(config-mst)# instance 4 vlan 100-200
switch(config-mst)#
```

Related Commands

Command	Description
show spanning-tree mst configuration	Displays information about the MST protocol.
spanning-tree mst configuration	Enters MST configuration mode.

ip igmp snooping (EXEC)

To enable Internet Group Management Protocol (IGMP), use the **ip igmp snooping** command. To disable IGMP snooping, use the **no** form of this command.

ip igmp snooping

no ip igmp snooping

Syntax Description

This command has no arguments or keywords.

Command Default

IGMP snooping is enabled.

Note If the global setting is disabled, then all VLANs are treated as disabled, whether they are enabled or not.

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Examples

This example shows how to enable IGMP snooping:

```
switch# ip igmp snooping
switch#
```

Related Commands

Command	Description
show ip igmp snooping	Displays IGMP snooping information and configuration.

ip igmp snooping (VLAN)

To configure Internet Group Management Protocol (IGMP) on a VLAN, use the **ip igmp snooping** command. To negate the command or return to the default settings, use the **no** form of this command

ip igmp snooping *parameter*

no ip igmp snooping *parameter*

Syntax Description

parameter	Parameter to configure. See the "Usage Guidelines" section for additional information.

Command Default

The default settings are as follows:

- **explicit-tracking**—enabled
- **fast-leave**—disabled for all VLANs
- **last-member-query-interval** *seconds*—1
- **querier** *IP-address*—disabled
- **report-suppression**—enabled

Command Modes

VLAN configuration mode
Switch profile VLAN configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.
5.0(3)A1(1)	Support was added for the following IGMP parameters in a switch profile: • link-local-groups-suppression • optimised-multicast-flood • v3-report-suppression

Usage Guidelines

Table 1 lists the valid values for *parameter*.

Table 1 IGMP Snooping Parameters

Keyword and Argument	Description
explicit-tracking	Enables tracking IGMPv3 membership reports for each port on a per-VLAN basis. The default is enabled on all VLANs.
fast-leave	Enables IGMPv3 snooping fast-leave processing. The default is disabled for all VLANs.
last-member-query-interval *seconds*	Removes the group if no hosts respond to an IGMP query message. The valid value is from 1 to 25 seconds. The default is 1 second.

Table 1 IGMP Snooping Parameters (continued)

Keyword and Argument	Description
link-local-groups-suppression	Enables suppression of IGMP reports from link-local groups.
mrouter interface *interface*	Configures a static connection to a multicast router. The specified interface is Ethernet or EtherChannel.
optimised-multicast-flood	Configures Optimized Multicast Flood (OMF) on all VLANs.
querier *IP-address*	Configures a snooping querier. The IP address is used as the source in messages. The default is disabled.
report-suppression	Limits the membership report traffic sent to multicast-capable routers. When you disable report suppression, all IGMP reports are sent as is to multicast-capable routers. The default is enabled.
static-group *group-ip-addr* [**source** *source-ip-addr*] **interface** *interface*	Configures an interface belonging to a VLAN as a static member of a multicast group. The specified interface is Ethernet or EtherChannel.
v3-report-suppression	Configures IGMPv3 report suppression and proxy reporting for VLANs.

This command does not require a license.

Examples

This example shows how to configure IGMP snooping parameters for VLAN 5:

```
switch# configure terminal
switch(config)# vlan 5
switch(config-vlan)# ip igmp snooping last-member-query-interval 3
switch(config-vlan)# ip igmp snooping querier 192.168.2.106
switch(config-vlan)# ip igmp snooping explicit-tracking
switch(config-vlan)# ip igmp snooping fast-leave
switch(config-vlan)# ip igmp snooping report-suppression
switch(config-vlan)# ip igmp snooping mrouter interface ethernet 1/10
switch(config-vlan)# ip igmp snooping static-group 192.168.1.1 interface ethernet 1/10
switch(config-vlan)#
```

Related Commands

Command	Description
show ip igmp snooping	Displays the IGMP snooping information and configuration.

lldp

To configure the Link Layer Discovery Protocol (LLDP) global options, use the **lldp** command. To remove the LLDP settings, use the **no** form of this command.

lldp {**holdtime** *seconds* | **reinit** *seconds* | **timer** *seconds* | **tlv-select** {**dcbxp** | **management-address** | **port-description** | **port-vlan** | **system-capabilities** | **system-description** | **system-name**}}

no lldp {**holdtime** | **reinit** | **timer** | **tlv-select** {**dcbxp** | **management-address** | **port-description** | **port-vlan** | **system-capabilities** | **system-description** | **system-name**}}

Syntax Description

holdtime *seconds*	Specifies the hold time (in seconds) to set the length of time that a device should save LLDP information received before discarding it. The range is from 10 to 255, and the default is 120 seconds.
reinit *seconds*	Specifies the length of time (in seconds) to wait before performing LLDP initialization on any interface. The range is from 1 to 10 seconds, and the default is 2 seconds.
timer *seconds*	Specifies the rate (in seconds) at which LLDP packets are sent. The range is from 5 to 254 seconds, and the default is 30 seconds.
tlv-select	Specifies the Type Length Value (TLV) message.
dcbxp	Specifies the Data Center Ethernet Parameter Exchange (DCBXP) TLV messages.
management-address	Specifies the management address TLV messages.
port-description	Specifies the port description TLV messages.
port-vlan	Specifies the port VLAN ID TLV messages.
system-capabilities	Specifies the system capabilities TLV messages.
system-description	Specifies the system description TLV messages.
system-name	Specifies the system name TLV messages.

Command Default

Holdtime (before discarding): 120 seconds.

Reinitialization delay: 2 seconds.

Timer (packet update frequency): 30 seconds.

TLV-select: Enabled to send and receive all TLVs.

Command Modes

Global configuration mode
Switch profile configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.
5.0(3)A1(1)	Support was added to configure LLDP options in switch profiles.

Usage Guidelines

Note LLDP, which is a neighbor discovery protocol that is used for network devices to advertise information about themselves to other devices on the network, is enabled on the switch by default.

The LLDP settings include the length of time before discarding LLDP information received from peers, the length of time to wait before performing LLDP initialization on any interface, and the rate at which LLDP packets are sent.

LLDP supports a set of attributes that it uses to discover neighbor devices. These attributes contain type, length, and value descriptions and are referred to as TLVs. LLDP supported devices can use TLVs to receive and send information to their neighbors. Details such as configuration information, device capabilities, and device identity can be advertised using this protocol.

The switch supports these basic management TLVs. These are mandatory LLDP TLVs.

- Data Center Ethernet Parameter Exchange (DCBXP) TLV
- Management address TLV
- Port description TLV
- Port VLAN ID TLV (IEEE 802.1 organizationally specific TLVs)
- System capabilities TLV
- System description TLV
- System name TLV

The Data Center Bridging Exchange Protocol (DCBXP) is an extension of LLDP. It is used to announce, exchange, and negotiate node parameters between peers. DCBXP parameters are packaged into a specific DCBXP TLV. This TLV is designed to provide an acknowledgement to the received LLDP packet.

DCBXP is enabled by default, provided LLDP is enabled. When LLDP is enabled, DCBXP can be enabled or disabled using the [**no**] **lldp tlv-select dcbxp** command. DCBXP is disabled on ports where LLDP transmit or receive is disabled.

This command does not require a license.

Examples

This example shows how to configure the global LLDP holdtime to 200 seconds:

```
switch# configure terminal
switch(config)# lldp holdtime 200
switch(config)#
```

This example shows how to enable LLDP to send or receive the management address TLVs:

```
switch# configure terminal
switch(config)# lldp tlv-select management-address
switch(config)#
```

This example shows how to disable LLDP to send or receive the DCBXP TLVs:

```
switch# configure terminal
switch(config)# no lldp tlv-select dcbxp
switch(config)#
```

This example shows how to configure the LLDP packet rate to 60 seconds in a switch profile:

```
switch# configure sync
```

```
Enter configuration commands, one per line. End with CNTL/Z.
switch(config-sync)# switch-profile s5010
Switch-Profile started, Profile ID is 1
switch(config-sync-sp)# lldp timer 60
switch(config-sync-sp)#
```

Related Commands

Command	Description
lldp (Interface)	Configures the LLDP feature on an interface.
show lldp	Displays the LLDP configuration information.
show switch-profile	Displays information about the switch profile and the configuration revision.
switch-profile	Creates or configures a switch profile.

mac address-table aging-time

To configure the aging time for entries in the MAC address table, use the **mac address-table aging-time** command. To return to the default settings, use the **no** form of this command.

mac address-table aging-time *seconds* [**vlan** *vlan-id*]

no mac address-table aging-time [**vlan** *vlan-id*]

Syntax Description

seconds	Aging time for MAC address table entries. The range is from 0 to 1000000 seconds. The default is 300 seconds. Entering 0 disables MAC address aging.
vlan *vlan-id*	(Optional) Specifies the VLAN to which the changed aging time should be applied. The range is from 1 to 3967 and 4048 to 4093.

Command Default

1800 seconds

Command Modes

Global configuration mode
Switch profile configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.
5.0(3)A1(1)	Support to configure MAC address table aging time was added to switch profiles.

Usage Guidelines

Enter 0 seconds to disable the aging process.

The age value may be rounded off to the nearest multiple of 5 seconds. If the system rounds the value to a different value from that specified by the user (from the rounding process), the system returns an informational message.

When you use this command, the age values of all VLANs for which a configuration has not been specified are modified and those VLANs with specifically modified aging times are not modified. When you use the **no** form of this command without the VLAN parameter, only those VLANs that have not been specifically configured for the aging time reset to the default value. Those VLANs with specifically modified aging times are not modified.

When you use this command and specify a VLAN, the aging time for only the specified VLAN is modified. When you use the **no** form of this command and specify a VLAN, the aging time for the VLAN is returned to the current global configuration for the aging time, which may or may not be the default value of 300 seconds depending if the global configuration of the switch for the aging time has been changed.

Note In Cisco NX-OS Release 5.0(3)A1(1), you can configure the MAC aging timer on a global basis but not on a per VLAN basis.

The aging time is counted from the last time that the switch detected the MAC address.

This command does not require a license.

Examples

This example shows how to change the length of time an entry remains in the MAC address table to 500 seconds for the entire switch:

```
switch# configure terminal
switch(config)# mac address-table aging-time 500
switch(config)#
```

This example shows how to change the length of time an entry remains in the MAC address table to 300 seconds for a switch profile:

```
switch# configure sync
Enter configuration commands, one per line. End with CNTL/Z.
switch(config-sync)# switch-profile s5010
Switch-Profile started, Profile ID is 1
switch(config-sync-sp)# mac address-table aging-time 300
switch(config-sync-sp)#
```

Related Commands

Command	Description
show mac address-table	Displays information about the MAC address table.
show mac address-table aging-time	Displays information about the MAC address aging time.
show switch-profile	Displays information about the switch profile and the configuration revision.
switch-profile	Creates or configures a switch profile.

mac address-table static

To configure a static entry for the MAC address table, use the **mac address-table static** command. To delete the static entry, use the **no** form of this command.

mac address-table static *mac-address* **vlan** *vlan-id* {**drop** | **interface** {**ethernet** *slot/port* | **port-channel** *number*}

no mac address-table static *mac-address* {**vlan** *vlan-id*}

Syntax Description

mac-address	MAC address to add to the table. Use the format EEEE.EEEE.EEEE.
vlan *vlan-id*	Specifies the VLAN to apply the static MAC address. The VLAN ID range is from 1 to 3967 and 4048 to 4093.
drop	Drops all traffic that is received from and going to the configured MAC address in the specified VLAN.
interface	Specifies the interface. The type can be either Ethernet or EtherChannel.
ethernet *slot/port*	Specifies the Ethernet interface and the slot number and port number. The slot number is from 1 to 255, and the port number is from 1 to 128.
port-channel *number*	Specifies the EtherChannel interface and EtherChannel number. The range is from 1 to 4096.

Command Default

None

Command Modes

Global configuration mode
Switch profile configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.
5.0(3)A1(1)	Support was added to configure static MAC address table entries in switch profiles.

Usage Guidelines

You cannot apply the **mac address-table static** *mac-address* **vlan** *vlan-id* **drop** command to a multicast MAC address.

This command does not require a license.

Examples

This example shows how to add a static entry to the MAC address table:

```
switch# configure terminal
switch(config)# mac address-table static 0050.3e8d.6400 vlan 3 interface ethernet 1/4
switch(config)#
```

This example shows how to add a static entry to the MAC address table in a switch profile:

```
switch# config sync
Enter configuration commands, one per line.  End with CNTL/Z.
switch(config-sync)# switch-profile s5010
Switch-Profile started, Profile ID is 1
switch(config-sync-sp)# mac address-table static 0050.3e8d.6400 vlan 3 interface ethernet
1/2
switch(config-sync-sp)#
```

Related Commands

Command	Description
show mac address-table	Displays information about the MAC address table.
show switch-profile	Displays information about the switch profile and the configuration revision.
switch-profile	Creates or configures a switch profile.

mac-learn

To control the learning of MAC addresses per interface, use the **mac-learn** command. To delete the list, use the **no** form of this command.

mac-learn disable

no mac-learn disable

Syntax Description

disable	Disables MAC learning on the specified interface.

Command Default

Enabled

Command Modes

Global configuration mode
Switch profile configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

By default, each interface automatically learns the MAC addresses of entering traffic.

After you disable MAC learning, enter the **clear mac address-table dynamic** command to clear the dynamic address entries from the MAC address table.

The **no** form of this command reenables MAC address learning.

This command does not require a license.

Examples

This example shows how to disable MAC address learning on the switch and then clear the the dynamic address entries from the MAC address table:

```
switch# configure terminal
switch(config)# mac-learn disable
switch(config)# clear mac address-table dynamic
switch(config)#
```

This example shows how to disable MAC address learning on a switch profile, and then clear the the dynamic address entries from the MAC address table:

```
switch# config sync
Enter configuration commands, one per line.  End with CNTL/Z.
switch(config-sync)# switch-profile s5010
Switch-Profile started, Profile ID is 1
switch(config-sync-sp)# mac-learn disable
switch(config-sync-sp)# clear mac address-table dynamic
switch(config-sync-sp)#
```

Related Commands

Command	Description
clear mac address-table dynamic	Clears the dynamic address entries from the MAC address table.
show switch-profile	Displays information about the switch profile and the configuration revision.
switch-profile	Creates or configures a switch profile.

name (VLAN configuration)

To set the name for a VLAN, use the **name** command. To remove the user-configured name from a VLAN, use the **no** form of this command.

name *vlan-name*

no name

Syntax Description

vlan-name	Name of the VLAN; you can use up to 32 alphanumeric, case-sensitive characters. The default name is VLAN*xxxx* where *xxxx* represents four numeric digits (including leading zeroes) equal to the VLAN ID number (for example, VLAN0002).

Command Default

None

Command Modes

VLAN configuration mode
Switch profile VLAN configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.
5.0(3)A1(1)	Support for this command was introduced in switch profiles.

Usage Guidelines

You cannot change the name for the default VLAN, VLAN 1, or for the internally allocated VLANs.

This command does not require a license.

Examples

This example shows how to name VLAN 2:

```
switch# configure terminal
switch(config)# vlan 2
switch(config-vlan)# name accounting
switch(config-vlan)#
```

This example shows how to name VLAN 3 in a switch profile:

```
switch# configure sync
Enter configuration commands, one per line.  End with CNTL/Z.
switch(config-sync)# switch-profile s5010
Switch-Profile started, Profile ID is 1
switch(config-sync-sp)# vlan 3
switch(config-sync-sp-vlan)# name Sales
switch(config-sync-sp-vlan)#
```

Related Commands

Command	Description
show switch profile	Displays the switch profile configuration.
show vlan	Displays VLAN information.

name (MST configuration)

To set the name of a Multiple Spanning Tree (MST) region, use the **name** command. To return to the default name, use the **no** form of this command.

name *name*

no name *name*

Syntax Description

name	Name to assign to the MST region. It can be any string with a maximum length of 32 alphanumeric characters.

Command Default

None

Command Modes

MST configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Two or more switches with the same VLAN mapping and configuration version number are considered to be in different MST regions if the region names are different.

Caution Be careful when using the **name** command to set the name of an MST region. If you make a mistake, you can put the switch in a different region. The configuration name is a case-sensitive parameter.

This command does not require a license.

Examples

This example shows how to name a region:

```
switch# configure terminal
switch(config)# spanning-tree mst configuration
switch(config-mst)# name accounting
switch(config-mst)#
```

Related Commands

Command	Description
show spanning-tree mst configuration	Displays information about the MST protocol.
spanning-tree mst configuration	Enters MST configuration mode.

negotiate auto

To enable autonegotiation on a specified 1-Gigabit Ethernet port, use the **negotiate auto** command. To disable autonegotiation, use the **no** form of this command.

negotiate auto

no negotiate auto

Syntax Description

This command has no arguments or keywords.

Command Default

Enabled

Command Modes

Interface configuration mode

Command History

Release	Modification
5.0(3)A1(2)	This command was introduced.

Usage Guidelines

You can use this command only on Ethernet and EtherChannel interfaces.

Use the negotiate auto command with the speed command.

Use the **no negotiate auto** command to disable autonegotiation on 1-Gigabit ports when the connected peer does not support autonegotiation. By default, autonegotiation is enabled on 1-Gigabit ports and disabled on 10-Gigabit ports. You cannot disable autonegotiation on 1-Gigabit ports.

Caution We do not recommend that you enable autonegotiation on 10-Gigabit ports. Enabling autonegotiation on 10-Gigabit ports brings the link down.

This command does not require a license.

Examples

This example shows how to enable link negotiation on a specified Ethernet interface:

```
switch# configure terminal
switch(config)# interface ethernet 1/5
switch(config-if)# negotiate auto
switch(config-if)#
```

This example shows how to enable link negotiation on a specified Ethernet interface and advertise that the interface is capable of only 1000 megabyte speed.

```
switch# configure terminal
switch(config)# interface ethernet 1/5
switch(config)# speed 1000
switch(config-if)# negotiate auto
switch(config-if)#
```

This example shows how to enable link negotiation on a specified Ethernet interface and configure the interface to negotiate to all capable speeds. On an RJ45 jack, the interface can autonegotiate to 10, 100, or 1000 megabytes. (Autonegotiation is not possible on 10 or 40 Gigabyte interfaces.)

```
switch# configure terminal
switch(config)# interface ethernet 1/5
switch(config)# speed auto
switch(config-if)# negotiate auto
switch(config-if)#
```

Related Commands

Command	Description
show interface brief	Displays information about the interfaces.
show running-config interface	Displays the running configuration information for configured interfaces.

revision

To set the revision number for the Multiple Spanning Tree (MST) region configuration, use the **revision** command. To return to the default settings, use the **no** form of this command.

revision *version*

no revision *version*

Syntax Description

version	Revision number for the MST region configuration. The range is from 0 to 65535.

Command Default

Revision 0

Command Modes

MST configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Two or more switches with the same VLAN mapping and name are considered to be in different MST regions if the configuration revision numbers are different.

Caution Be careful when using the **revision** command to set the revision number of the MST region configuration because a mistake can put the switch in a different region.

This command does not require a license.

Examples

This example shows how to set the revision number of the MST region configuration:

```
switch(config)# spanning-tree mst configuration
switch(config-mst)# revision 5
switch(config-mst)#
```

Related Commands

Command	Description
show spanning-tree mst	Displays information about the MST protocol.

show interface switchport backup

To display information about all the switch port Flex Links interfaces, use the **show interface switchport backup** command.

show interface switchport backup [**detail**]

Syntax Description

detail	(Optional) Displays detailed information for backup interfaces.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
6.0(2)A3(1)	This command was introduced.

Examples

This example shows how to display information for all Flex Links:

```
switch# show interface switchport backup

Switch Backup Interface Pairs:

Active Interface        Backup Interface        State
------------------------------------------------------------------------------
Ethernet1/1             Ethernet1/2             Active Down/Backup Down
Ethernet1/8             Ethernet1/45            Active Down/Backup Down
Ethernet1/48            Ethernet1/4             Active Down/Backup Down
port-channel10          port-channel20          Active Down/Backup Up
port-channel300         port-channel301         Active Down/Backup Down
switch#
```

This example shows how to display the detailed information for all Flex Links:

```
switch# show interface switchport backup detail

Switch Backup Interface Pairs:

Active Interface        Backup Interface        State
------------------------------------------------------------------------------
Ethernet1/1             Ethernet1/2             Active Down/Backup Down
        Preemption Mode  : off
        Multicast Fast Convergence  : Off
        Bandwidth : 10000000 Kbit (Ethernet1/1), 10000000 Kbit (Ethernet1/2)

Ethernet1/8             Ethernet1/45            Active Down/Backup Down
        Preemption Mode  : forced
        Preemption Delay : 10 seconds
        Multicast Fast Convergence  : Off
        Bandwidth : 10000000 Kbit (Ethernet1/8), 10000000 Kbit (Ethernet1/45)
```

```
Ethernet1/48            Ethernet1/4             Active Down/Backup Down
        Preemption Mode  : forced
        Preemption Delay : 50 seconds
        Multicast Fast Convergence  : Off
        Bandwidth : 10000000 Kbit (Ethernet1/48), 10000000 Kbit (Ethernet1/4)

port-channel10          port-channel20          Active Down/Backup Up
        Preemption Mode  : forced
        Preemption Delay : 10 seconds
        Multicast Fast Convergence  : Off
        Bandwidth : 100000 Kbit (port-channel10), 10000000 Kbit (port-channel20)

port-channel300         port-channel301         Active Down/Backup Down
        Preemption Mode  : off
        Multicast Fast Convergence  : Off
        Bandwidth : 100000 Kbit (port-channel300), 100000 Kbit (port-channel301)
switch#
```

show ip igmp snooping

To display the Internet Group Management Protocol (IGMP) snooping configuration of the switch, use the **show ip igmp snooping** command.

show ip igmp snooping [**explicit-tracking vlan** *vlan-id* | **groups** [**detail** | **vlan** *vlan-id*] | **mrouter** [**vlan** *vlan-id*] | **querier** [**vlan** *vlan-id*] | **vlan** *vlan-id*]

Syntax Description

explicit-tracking	(Optional) Displays information about the explicit host-tracking status for IGMPv3 hosts. If you provide this keyword, you must specify a VLAN.
vlan *vlan-id*	(Optional) Specifies a VLAN. The VLAN ID range is from1 to 4094.
groups	(Optional) Displays information for the IGMP group address.
detail	(Optional) Displays detailed information for the group.
mrouter	(Optional) Displays information about dynamically detected multicast routers.
querier	(Optional) Displays information about the snooping querier if defined.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Examples

This example shows how to display the IGMP snooping configuration of the switch:

```
switch# show ip igmp snooping
Global IGMP Snooping Information:
  IGMP Snooping enabled
  Optimised Multicast Flood (OMF) disabled
  IGMPv1/v2 Report Suppression enabled
  IGMPv3 Report Suppression disabled
  Link Local Groups Suppression enabled

IGMP Snooping information for vlan 1
  IGMP snooping enabled
  Optimised Multicast Flood (OMF) disabled
  IGMP querier none
  Switch-querier disabled
  IGMPv3 Explicit tracking enabled
  IGMPv2 Fast leave disabled
  IGMPv1/v2 Report suppression enabled
  IGMPv3 Report suppression disabled
  Link Local Groups suppression enabled
  Router port detection using PIM Hellos, IGMP Queries
  Number of router-ports: 0
  Number of groups: 0
```

```
  Active ports:
    Eth1/1      Eth1/2  Eth1/48
switch#
```

This example shows how to display the IGMP snooping configuration for VLAN 1:

```
switch# show ip igmp snooping vlan 1
IGMP Snooping information for vlan 1
  IGMP snooping enabled
  Optimised Multicast Flood (OMF) disabled
  IGMP querier none
  Switch-querier disabled
  IGMPv3 Explicit tracking enabled
  IGMPv2 Fast leave disabled
  IGMPv1/v2 Report suppression enabled
  IGMPv3 Report suppression disabled
  Link Local Groups suppression enabled
  Router port detection using PIM Hellos, IGMP Queries
  Number of router-ports: 0
  Number of groups: 0
  Active ports:
    Eth1/1      Eth1/2  Eth1/48
switch#
```

Related Commands

Command	Description
ip igmp snooping (EXEC)	Globally enables IGMP snooping. IGMP snooping must be globally enabled in order to be enabled on a VLAN.
ip igmp snooping (VLAN)	Enables IGMP snooping on the VLAN interface.

show lldp

To display information about the Link Layer Discovery Protocol (LLDP) configuration on the switch, use the **show lldp** command.

show lldp {**interface** {**ethernet** *slot/port* | **mgmt** *intf-no*} | **neighbors** [**detail** | **interface**] | **timers** | **tlv-select** | **traffic** [**interface** {**ethernet** *slot/port* | **mgmt** *intf-no*}]}

Syntax Description

interface	Displays LLDP interface information, or LLDP neighbor information on an interface.
ethernet *slot/port*	Displays the configuration information of the Ethernet IEEE 802.3z interface. The slot number is from 1 to 255, and the port number is from 1 to 128.
mgmt *intf-no*	Displays the configuration information of the management interface. The management interface number is 0.
neighbors	Displays information about LLDP neighbors.
detail	(Optional) Displays the detailed information about LLDP neighbors.
timers	Displays information about LLDP timers.
tlv-select	Displays information about the TLVs.
traffic	Displays the LLDP counters configured on the switch.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Note LLDP, which is a neighbor discovery protocol that is used for network devices to advertise information about themselves to other devices on the network, is enabled on the switch by default.

Examples

This example shows how to display LLDP interface information:

```
switch# show lldp traffic interface ethernet 1/1
LLDP interface traffic statistics:

    Total frames transmitted: 7490
    Total entries aged: 0
    Total frames received: 7458
    Total frames received in error: 0
```

```
    Total frames discarded: 0
    Total unrecognized TLVs: 0
switch#
```

This example shows how to display LLDP management interface information:

```
switch# show lldp traffic interface mgmt 0
```

This example shows how to display LLDP timers configured on the switch:

```
switch# show lldp timers
LLDP Timers:

    Holdtime in seconds: 120
    Reinit-time in seconds: 2
    Transmit interval in seconds: 30
switch#
```

This example shows how to display LLDP neighbor information:

```
switch# show lldp neighbors detail

switch#
```

This example shows how to display LLDP information for a specified interface:

```
switch# show lldp interface ethernet 1/1
```

This example shows how to display the TLV information:

```
switch# show lldp tlv-select
   management-address
   port-description
   port-vlan
   system-capabilities
   system-description
   system-name
   dcbxp
switch#
```

This example shows how to display LLDP traffic information:

```
switch# show lldp traffic
LLDP traffic statistics:

    Total frames transmitted: 7571
    Total entries aged: 0
    Total frames received: 5694
    Total frames received in error: 0
    Total frames discarded: 0
    Total unrecognized TLVs: 0
switch#
```

Related Commands

Command	Description
lldp	Configures the global LLDP options on the switch.
lldp (Interface)	Configures the LLDP feature on an interface.

show mac address-table aging-time

To display information about the time-out values for the MAC address table, use the **show mac address-table aging-time** command.

show mac address-table aging-time

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Examples

This example shows how to display MAC address aging times:

```
switch# show mac address-table aging-time
Vlan  Aging Time
----- ----------
4040  300
1     300
switch#
```

Related Commands

Command	Description
mac address-table aging-time	Configures the aging time for entries in the MAC address table.
show mac address-table	Displays information about the MAC address table.

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 [**address** *EEEE.EEEE.EEEE*] [**dynamic** | **static**] [**interface** {**ethernet** *slot*/*port* | **port-channel** *number*}] [**vlan** *vlan-id*]

Syntax Description

address *EEEE.EEEE.EEEE*	(Optional) Displays a count of the MAC address table entries for a specific address.
dynamic	(Optional) Displays a count of the dynamic MAC addresses.
static	(Optional) Displays a count of the static MAC addresses.
interface	(Optional) Specifies the interface. The interface can be Ethernet or EtherChannel.
ethernet *slot*/*port*	(Optional) Specifies the Ethernet interface slot number and port number. The *slot* number is from 1 to 255, and the *port* number is from 1 to 128.
port-channel *number*	(Optional) Specifies the EtherChannel interface. The EtherChannel number is from 1 to 4096.
vlan *vlan-id*	(Optional) Displays information for a specific VLAN. The range is from 1 to 4094.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Examples

This example shows how to display the number of dynamic entries currently in the MAC address table:

```
switch# show mac address-table count dynamic
MAC Entries for all vlans:
Total MAC Addresses in Use: 1
switch#
```

Related Commands

Command	Description
show mac address-table	Displays information about the MAC address table.

show mac address-table notification

To display notifications about the MAC address table, use the **show mac address-table notification** command.

show mac address-table notification {**mac-move** | **threshold**}

Syntax Description

mac-move	Displays notification messages about MAC addresses that were moved.
threshold	Displays notification messages sent when the MAC address table threshold was exceeded.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Examples

This example shows how to display MAC address move notifications:

```
switch# show mac address-table notification mac-move
MAC Move Notify Triggers: 0
  Number of MAC Addresses added: 6
  Number of MAC Addresses moved: 0
  Number of MAC Addresses removed: 3
switch#
```

Related Commands

Command	Description
mac address-table notification mac-move	Configures a log message notification when the MAC address is moved.
show mac address-table	Displays information about the MAC address table.

show mac address-table

To display the information about the MAC address table, use the **show mac address-table** command.

show mac address-table [**address** *mac-address*] [**dynamic** | **multicast** | **static**] [**interface** {**ethernet** *slot*/*port* | **port-channel** *number*}] [**vlan** *vlan-id*]

Syntax Description

address *mac-address*	(Optional) Displays information about a specific MAC address.
dynamic	(Optional) Displays information about the dynamic MAC address table entries only.
interface	(Optional) Specifies the interface. The interface can be either Ethernet or EtherChannel.
ethernet *slot*/*port*	(Optional) Specifies the Ethernet interface slot number and port number. The *slot* number is from 1 to 255, and the *port* number is from 1 to 128.
port-channel *number*	(Optional) Specifies the EtherChannel interface. The EtherChannel number is from 1 to 4096.
multicast	(Optional) Displays information about the multicast MAC address table entries only.
static	(Optional) Displays information about the static MAC address table entries only.
vlan *vlan-id*	(Optional) Displays information for a specific VLAN. The VLAN ID range is from 1 to 4094.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

The switch maintains static MAC address entries that are saved in its startup configuration across reboots and flushes the dynamic entries.

Examples

This example shows how to display information about the entries for the MAC address table:

```
switch# show mac address-table
Legend:
        * - primary entry, G - Gateway MAC, (R) - Routed MAC, O - Overlay MAC
        age - seconds since first seen
   VLAN     MAC Address      Type      age     Secure NTFY    Ports
---------+-----------------+--------+---------+------+----+------------------
* 1        0011.2233.4455    static    0          F    F  Eth1/1
* 1        0015.0015.0041    dynamic   360        F    F  Eth1/48
```

```
* 1        0055.4433.2211    static    0          F    F  Eth1/2
switch#
```

This example shows how to display information about the entries for the MAC address table for a specific MAC address:

```
switch# show mac address-table address 0015.0015.0041
Legend:
        * - primary entry, G - Gateway MAC, (R) - Routed MAC, O - Overlay MAC
        age - seconds since first seen
   VLAN     MAC Address      Type      age     Secure NTFY    Ports
---------+-----------------+--------+---------+------+----+------------------
* 1        0015.0015.0041    dynamic   550        F    F  Eth1/48
switch#
```

This example shows how to display information about the dynamic entries for the MAC address table:

```
switch# show mac address-table dynamic
Legend:
        * - primary entry, G - Gateway MAC, (R) - Routed MAC, O - Overlay MAC
        age - seconds since first seen
   VLAN     MAC Address      Type      age     Secure NTFY    Ports
---------+-----------------+--------+---------+------+----+------------------
* 1        0015.0015.0041    dynamic   410        F    F  Eth1/48
switch#
```

This example shows how to display information about the MAC address table for a specific interface:

```
switch# show mac address-table interface ethernet 1/2
Legend:
        * - primary entry, G - Gateway MAC, (R) - Routed MAC, O - Overlay MAC
        age - seconds since first seen
   VLAN     MAC Address      Type      age     Secure NTFY    Ports
---------+-----------------+--------+---------+------+----+------------------
* 1        0055.4433.2211    static    0          F    F  Eth1/2
switch#
```

This example shows how to display static entries in the MAC address table:

```
switch# show mac address-table static
Legend:
        * - primary entry, G - Gateway MAC, (R) - Routed MAC, O - Overlay MAC
        age - seconds since first seen
   VLAN     MAC Address      Type      age     Secure NTFY    Ports
---------+-----------------+--------+---------+------+----+------------------
* 1        0011.2233.4455    static    0          F    F  Eth1/1
* 1        0055.4433.2211    static    0          F    F  Eth1/2
switch#
```

This example shows how to display entries in the MAC address table for a specific VLAN:

```
switch# show mac address-table vlan 1
Legend:
        * - primary entry, G - Gateway MAC, (R) - Routed MAC, O - Overlay MAC
        age - seconds since first seen
   VLAN     MAC Address      Type      age     Secure NTFY    Ports
---------+-----------------+--------+---------+------+----+------------------
* 1        0011.2233.4455    static    0          F    F  Eth1/1
* 1        0015.0015.0041    dynamic   510        F    F  Eth1/48
* 1        0055.4433.2211    static    0          F    F  Eth1/2
switch#
```

Related Commands

Command	Description
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.
show mac address-table aging-time	Displays information about the time-out values for the MAC address table.
show mac address-table count	Displays the number of entries currently in the MAC address table.

show running-config spanning-tree

To display the running configuration for the Spanning Tree Protocol (STP), use the **show running-config spanning-tree** command.

show running-config spanning-tree [**all** | **interface** {**ethernet** *slot*/*port* | **port-channel** *channel-num*}]

Syntax Description

all	(Optional) Displays current STP operating information including default settings.
interface	(Optional) Displays the STP information for a specific interface.
ethernet *slot*/*port*	(Optional) Displays the STP information for an Ethernet interface. The slot number is from 1 to 255, and the port number is from 1 to 128.
port-channel *channel-num*	(Optional) Displays the STP information for an EtherChannel interface. The EtherChannel number is from 1 to 4096.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Examples

This example shows how to display information on the running STP configuration:

```
switch# show running-config spanning-tree
spanning-tree mode mst
switch#
```

This example shows how to display detailed information on the running STP configuration:

```
switch# show running-config spanning-tree all
spanning-tree mode mst
no spanning-tree port type edge default
no spanning-tree port type network default
spanning-tree bridge assurance
no spanning-tree loopguard default
spanning-tree mst simulate pvst global
no snmp-server enable traps bridge topologychange
no snmp-server enable traps bridge newroot
no snmp-server enable traps stpx inconsistency
no snmp-server enable traps stpx loop-inconsistency
no snmp-server enable traps stpx root-inconsistency
spanning-tree mst hello-time 2
spanning-tree mst forward-time 15
spanning-tree mst max-age 20
spanning-tree mst max-hops 20
spanning-tree mst 0 priority 32768
```

```
spanning-tree mst configuration
  name
  revision 0
  instance 0 vlan 1-4094
interface Ethernet1/1
  spanning-tree port-priority 128
  spanning-tree cost auto
  spanning-tree link-type auto
  spanning-tree port type network
  no spanning-tree bpduguard
  no spanning-tree bpdufilter
switch#
```

Note Display output differs slightly depending on whether you are running Rapid Per VLAN Spanning Tree Plus (Rapid PVST+) or Multiple Spanning Tree (MST).

Related Commands

Command	Description
show spanning-tree	Displays information about STP.

show running-config vlan

To display the running configuration for a specified VLAN, use the **show running-config vlan** command.

show running-config vlan *vlan-id*

Syntax Description		
	vlan-id	Number of VLAN or range of VLANs. Valid numbers are from 1 to 4096.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	5.0(3)A1(1)	This command was introduced.

Usage Guidelines This command provides information on the specified VLAN.

The display varies with your configuration. If you have configured the VLAN name, shutdown status, or suspended status, these are also displayed.

Examples This example shows how to display the running configuration for VLAN 5:

```
switch# show running-config vlan 5

!Command: show running-config vlan 5
!Time: Fri May 28 10:41:28 2010

version 5.0(3)A1(1)
vlan 5

switch#
```

Related Commands	Command	Description
	show vlan	Displays information about all the VLANs on the switch.

show running-config vtp

To display the VLAN Trunking Protocol (VTP) running configuration, use the **show running-config vtp** command.

show running-config vtp

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Examples

This example shows how to display the VTP running configuration on the switch:

```
switch# show running-config vtp
```

Related Commands

Command	Description
copy running-config startup-config	Copies the running configuration to the startup configuration file.
feature vtp	Enables VTP on the switch.
vtp domain	Configures the VTP administrative domain.
vtp file	Stores the VTP configuration in a file.

show spanning-tree

To display information about the Spanning Tree Protocol (STP), use the **show spanning-tree** command.

show spanning-tree [**blockedports** | **inconsistentports** | **pathcost method**]

Syntax Description

blockedports	(Optional) Displays the alternate ports blocked by STP.
inconsistentports	(Optional) Displays the ports that are in an inconsistent STP state.
pathcost method	(Optional) Displays whether short or long path cost method is used. The method differs for Rapid Per VLAN Spanning Tree Plus (Rapid PVST+) (configurable, default is short) and Multiple Spanning Tree (MST) (nonconfigurable, operational value is always long).

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

The STP port type displays only when you have configured the port as either an STP edge port or an STP network port. If you have not configured the STP port type, no port type displays.

Table 2 describes the fields that are displayed in the output of **show spanning-tree** commands.

Table 2 show spanning-tree Command Output Fields

Field	Definition
Role	Current port STP role. Valid values are as follows: • Desg (designated) • Root • Altn (alternate) • Back (backup)

Table 2 show spanning-tree Command Output Fields (continued)

Field	Definition
Sts	Current port STP state. Valid values are as follows: • BLK (blocking) • DIS (disabled) • LRN (learning) • FWD (forwarding)
Type	Status information. Valid values are as follows: • P2p/Shr—The interface is considered as a point-to-point (shared) interface by the spanning tree. • Edge—The port is configured as an STP edge port (either globally using the **default** command or directly on the interface) and no BPDU has been received. • Network—The port is configured as an STP network port (either globally using the **default** command or directly on the interface). • *ROOT_Inc, *LOOP_Inc, *PVID_Inc, *BA_Inc, and *TYPE_Inc—The port is in a broken state (BKN*) for an inconsistency. The broken states are Root inconsistent, Loopguard inconsistent, PVID inconsistent, Bridge Assurance inconsistent, or Type inconsistent.

Note Display output differs slightly depending on whether you are running Rapid Per VLAN Spanning Tree Plus (Rapid PVST+) or Multiple Spanning Tree (MST).

Examples

This example shows how to display spanning tree information:

```
switch# show spanning-tree

VLAN0001
  Spanning tree enabled protocol rstp
  Root ID    Priority    32769
             Address     0005.0505.053c
             This bridge is the root
             Hello Time  2  sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32769  (priority 32768 sys-id-ext 1)
             Address     0005.0505.053c
             Hello Time  2  sec  Max Age 20 sec  Forward Delay 15 sec

Interface        Role Sts Cost      Prio.Nbr Type
---------------- ---- --- --------- -------- --------------------------------
Eth1/1           Desg FWD 2         128.129  P2p
Eth1/2           Desg FWD 2         128.130  P2p
Eth1/39          Desg FWD 2         128.167  P2p
Eth1/41          Desg FWD 2         128.169  P2p
Eth1/48          Desg FWD 2         128.176  P2p

switch#
```

This example shows how to display the blocked ports in spanning tree:

```
switch# show spanning-tree blockedports
```

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

```
switch# show spanning-tree inconsistentports
```

This example shows how to display the path cost method:

```
switch# show spanning-tree pathcost method
Spanning tree default pathcost method used is short
switch#
```

Related Commands

Command	Description
show spanning-tree active	Displays information about STP active interfaces only.
show spanning-tree bridge	Displays the bridge ID, timers, and protocol for the local bridge on the switch.
show spanning-tree brief	Displays a brief summary about STP.
show spanning-tree detail	Displays detailed information about STP.
show spanning-tree interface	Displays the STP interface status and configuration of specified interfaces.
show spanning-tree mst	Displays information about Multiple Spanning Tree (MST) STP.
show spanning-tree root	Displays the status and configuration of the root bridge for the STP instance to which this switch belongs.
show spanning-tree summary	Displays summary information about STP.
show spanning-tree vlan	Displays STP information for specified VLANs.

show spanning-tree active

To display Spanning Tree Protocol (STP) information on STP-active interfaces only, use the **show spanning-tree active** command.

show spanning-tree active [**brief** | **detail**]

Syntax Description

brief	(Optional) Displays a brief summary of STP interface information.
detail	(Optional) Displays a detailed summary of STP interface information.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Examples

This example shows how to display STP information on the STP-active interfaces:

```
switch# show spanning-tree active

VLAN0001
  Spanning tree enabled protocol rstp
  Root ID    Priority    32769
             Address     0005.0505.053c
             This bridge is the root
             Hello Time  2  sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32769  (priority 32768 sys-id-ext 1)
             Address     0005.0505.053c
             Hello Time  2  sec  Max Age 20 sec  Forward Delay 15 sec

Interface        Role Sts Cost      Prio.Nbr Type
---------------- ---- --- --------- -------- --------------------------------
Eth1/1           Desg FWD 2         128.129  P2p
Eth1/2           Desg FWD 2         128.130  P2p
Eth1/39          Desg FWD 2         128.167  P2p
Eth1/41          Desg FWD 2         128.169  P2p
Eth1/48          Desg FWD 2         128.176  P2p

switch#
```

Related Commands

Command	Description
show spanning-tree	Displays information about STP.
show spanning-tree bridge	Displays the bridge ID, timers, and protocol for the local bridge on the switch.

Command	Description
show spanning-tree brief	Displays a brief summary about STP.
show spanning-tree detail	Displays detailed information about STP.
show spanning-tree interface	Displays the STP interface status and configuration of specified interfaces.
show spanning-tree mst	Displays information about Multiple Spanning Tree (MST) STP.
show spanning-tree root	Displays the status and configuration of the root bridge for the STP instance to which this switch belongs.
show spanning-tree summary	Displays summary information about STP.
show spanning-tree vlan	Displays STP information for specified VLANs.

show spanning-tree bridge

To display the status and configuration of the local Spanning Tree Protocol (STP) Bridge Assurance, use the **show spanning-tree bridge** command.

show spanning-tree bridge [**address** | **brief** | **detail** | **forward-time** | **hello-time** | **id** | **max-age** | **priority** [**system-id**] | **protocol**]

Syntax Description

address	(Optional) Displays the MAC address for the STP local bridge.
brief	(Optional) Displays a brief summary of the status and configuration for the STP bridge.
detail	(Optional) Displays a detailed summary of the status and configuration for the STP bridge.
forward-time	(Optional) Displays the STP forward delay interval for the bridge.
hello-time	(Optional) Displays the STP hello time for the bridge.
id	(Optional) Displays the STP bridge identifier for the bridge.
max-age	(Optional) Displays the STP maximum-aging time for the bridge.
priority	(Optional) Displays the bridge priority for this bridge.
system-id	(Optional) Displays the bridge priority with the system ID extension for this bridge.
protocol	(Optional) Displays whether the Rapid Per VLAN Spanning Tree Plus (Rapid PVST+) or Multiple Spanning Tree (MST) protocol is active.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Examples

This example shows how to display the STP information for the bridge:

```
switch# show spanning-tree bridge

                                                     Hello  Max  Fwd
Vlan                      Bridge ID                   Time  Age  Dly  Protocol
---------------- --------------------------------- -----  ---  ---  --------
VLAN0001           32769 (32768,1) 0005.73c6.40c1    2    20   15  rstp
VLAN0018           32786 (32768,18) 0005.73c6.40c1   2    20   15  rstp
switch#
```

Table 3 describes the fields shown in the display.

This example shows how to display the STP address information for the bridge:

```
switch# show spanning-tree bridge address

VLAN0001         0005.73c6.40c1
VLAN0018         0005.73c6.40c1
switch#
```

This example shows how to display the detailed STP information for the bridge:

```
switch# show spanning-tree bridge detail

VLAN0001
  Bridge ID  Priority    32769  (priority 32768 sys-id-ext 1)
             Address     0005.73c6.40c1
             Hello Time  2  sec  Max Age 20 sec  Forward Delay 15 sec
VLAN0018
  Bridge ID  Priority    32786  (priority 32768 sys-id-ext 18)
             Address     0005.73c6.40c1
             Hello Time  2  sec  Max Age 20 sec  Forward Delay 15 sec
switch#
```

This example shows how to display the STP forward delay interval for the bridge:

```
switch# show spanning-tree bridge forward-time

VLAN0001         15
VLAN0018         15
switch#
```

This example shows how to display the STP hello time for the bridge:

```
switch# show spanning-tree bridge hello-time

VLAN0001         2
VLAN0018         2
switch#
```

This example shows how to display the STP bridge ID for the bridge:

```
switch# show spanning-tree bridge id

VLAN0001         8001.0005.73c6.40c1
VLAN0018         8012.0005.73c6.40c1
switch#
```

This example shows how to display the STP maximum-aging time for the bridge:

```
switch# show spanning-tree bridge max-age

VLAN0001         20
VLAN0018         20
switch#
```

This example shows how to display the bridge priority with the system ID extension for the bridge:

```
switch# show spanning-tree bridge priority system-id

VLAN0001         32769 (32768,1)
VLAN0018         32786 (32768,18)
switch#
```

This example shows how to display the STP protocol information for the bridge:

```
switch# show spanning-tree bridge protocol
```

```
VLAN0001         rstp
VLAN0018         rstp
switch#
```

Table 3 describes the fields shown in the display.

Table 3 show spanning-tree bridge Field Descriptions

Field	Description
Vlan	VLAN for which spanning-tree information is shown.
Bridge ID	Bridge identifier of the bridge.
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.
Fwd Dly	Amount of time, in seconds, that the port spends in listening or learning mode.
Protocol	Type of spanning-tree protocol enabled on the VLAN.

Related Commands

Command	Description
show running-config spanning-tree	Displays the running configuration information about the Bridge Assurance.
spanning-tree bridge	Enables STP Bridge Assurance on the switch.

show spanning-tree brief

To display a brief summary of the Spanning Tree Protocol (STP) status and configuration on the switch, use the **show spanning-tree brief** command.

show spanning-tree brief

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Examples

This example shows how to display a brief summary of STP information:

```
switch(config)# show spanning-tree brief

VLAN0001
  Spanning tree enabled protocol rstp
  Root ID    Priority    32769
             Address     0005.0505.053c
             This bridge is the root
             Hello Time  2  sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32769  (priority 32768 sys-id-ext 1)
             Address     0005.0505.053c
             Hello Time  2  sec  Max Age 20 sec  Forward Delay 15 sec

Interface        Role Sts Cost      Prio.Nbr Type
---------------- ---- --- --------- -------- --------------------------------
Eth1/1           Desg FWD 2         128.129  P2p
Eth1/2           Desg FWD 2         128.130  P2p
Eth1/39          Desg FWD 2         128.167  P2p
Eth1/41          Desg FWD 2         128.169  P2p
Eth1/48          Desg FWD 2         128.176  P2p

switch(config)#
```

Related Commands

Command	Description
clear spanning-tree counters	Clears the STP counters.

show spanning-tree detail

To display detailed information on the Spanning Tree Protocol (STP) status and configuration on the switch, use the **show spanning-tree detail** command.

show spanning-tree detail [**active**]

Syntax Description

active	(Optional) Displays information about STP active interfaces only.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Examples

This example shows how to display detailed information on the STP configuration:

```
switch# show spanning-tree detail

 VLAN0001 is executing the rstp compatible Spanning Tree protocol
  Bridge Identifier has priority 32768, sysid 1, address 0005.0505.053c
  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 25 last change occurred 0:59:03 ago
          from Ethernet1/48
  Times:  hold 1, topology change 35, notification 2
          hello 2, max age 20, forward delay 15
  Timers: hello 0, topology change 0, notification 0

 Port 129 (Ethernet1/1) of VLAN0001 is designated forwarding
   Port path cost 2, Port priority 128, Port Identifier 128.129
   Designated root has priority 32769, address 0005.0505.053c
   Designated bridge has priority 32769, address 0005.0505.053c
<--Output truncated-->
switch#
```

Related Commands

Command	Description
clear spanning-tree counters	Clears the STP counters.

show spanning-tree interface

To display information on the Spanning Tree Protocol (STP) interface status and configuration of specified interfaces, use the **show spanning-tree interface** command.

show spanning-tree interface {**ethernet** *slot*/*port* | **port-channel** *number*} [**active** [**brief** | **detail**] | **brief** [**active**] | **cost** | **detail** [**active**] | **edge** | **inconsistency** | **priority** | **rootcost** | **state**]

Syntax Description

interface	Specifies the interface. The interface can be Ethernet or EtherChannel.
ethernet *slot*/*port*	Specifies the Ethernet interface slot number and port number. The *slot* number is from 1 to 255, and the *port* number is from 1 to 128.
port-channel *number*	Specifies the EtherChannel interface and number. The EtherChannel number is from 1 to 4096.
active	(Optional) Displays information about STP active interfaces only on the specified interfaces.
brief	(Optional) Displays brief summary of STP information on the specified interfaces.
cost	(Optional) Displays the STP path cost for the specified interfaces.
detail	(Optional) Displays detailed STP information about the specified interfaces.
edge	(Optional) Displays the STP-type edge port information for the specified interfaces.
inconsistency	(Optional) Displays the port STP inconsistency state for the specified interfaces.
priority	(Optional) Displays the STP port priority for the specified interfaces.
rootcost	(Optional) Displays the path cost to the root for specified interfaces.
state	(Optional) Displays the current port STP state.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

The STP port type displays only when you have configured the port as either an STP edge port or an STP network port. If you have not configured the STP port type, no port type displays.

If you specify an interface that is not running STP, the switch returns an error message.

When you are running Multiple Spanning Tree (MST), this command displays the Per VLAN Spanning Tree (PVST) simulation setting.

Note If you are running Multiple Spanning Tree (MST), use the **show spanning-tree mst** command to show more detail on the specified interfaces.

Examples

This example shows how to display STP information on a specified interface:

```
switch(config)# show spanning-tree interface ethernet 1/1

Vlan             Role Sts Cost      Prio.Nbr Type
---------------- ---- --- --------- -------- --------------------------------
VLAN0001         Desg FWD 2         128.129  P2p

switch(config)#
```

This example shows how to display detailed STP information on a specified interface:

```
switch(config)# show spanning-tree interface ethernet 1/1 detail

 Port 129 (Ethernet1/1) of VLAN0001 is designated forwarding
   Port path cost 2, Port priority 128, Port Identifier 128.129
   Designated root has priority 32769, address 0005.0505.053c
   Designated bridge has priority 32769, address 0005.0505.053c
   Designated port id is 128.129, designated path cost 0
   Timers: message age 0, forward delay 0, hold 0
   Number of transitions to forwarding state: 1
   Link type is point-to-point by default
   BPDU: sent 18697, received 0

switch(config)#
```

This example shows how to display STP port inconsistency state information for a specified interface:

```
switch(config)# show spanning-tree interface ethernet 1/1 inconsistency

VLAN0001         none
switch(config)#
```

This example shows how to display STP port priority information for a specified interface:

```
switch(config)# show spanning-tree interface ethernet 1/1 priority

VLAN0001         128
switch(config)#
```

Related Commands

Command	Description
clear spanning-tree counters	Clears the STP counters.

show spanning-tree mst

To display information on Multiple Spanning Tree (MST) status and configuration, use the **show spanning-tree mst** command.

show spanning-tree mst [*instance-id* [**detail | interface** {**ethernet** *slot*/*port* | **port-channel** *number*} [**detail**]]

show spanning-tree mst [**configuration** [**digest**]]

show spanning-tree mst [**detail | interface** {**ethernet** *slot*/*port* | **port-channel** *number*} [**detail**]]

Syntax Description

instance-id	(Optional) Multiple Spanning Tree (MST) instance range that you want to display. For example, 0 to 3, 5, 7 to 9.
detail	(Optional) Displays detailed Multiple Spanning Tree (MST) information.
interface	(Optional) Specifies the interface. The interface can be Ethernet or EtherChannel.
ethernet *slot*/*port*	(Optional) Specifies the Ethernet interface and its slot number and port number. The *slot* number is from 1 to 255, and the *port* number is from 1 to 128.
port-channel *number*	(Optional) Specifies the EtherChannel interface and number. The EtherChannel number is from 1 to 4096.
configuration	(Optional) Displays current Multiple Spanning Tree (MST) regional information including the VLAN-to-instance mapping of all VLANs.
digest	(Optional) Displays information about the MD5 digest.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

If the switch is not running in STP Multiple Spanning Tree (MST) mode when you enter this command, it returns the following message:

```
ERROR: Switch is not in mst mode
```

Examples

This example shows how to display STP information about Multiple Spanning Tree (MST) instance information for the VLAN ports that are currently active:

```
switch# show spanning-tree mst
```

This example shows how to display STP information about a specific Multiple Spanning Tree (MST) instance:

```
switch)# show spanning-tree mst 0
```

This example shows how to display detailed STP information about the Multiple Spanning Tree (MST) protocol:

```
switch)# show spanning-tree mst detail
```

This example shows how to display STP information about specified Multiple Spanning Tree (MST) interfaces:

```
switch)# show spanning-tree mst interface ethernet 8/2
```

This example shows how to display information about the Multiple Spanning Tree (MST) configuration:

```
switch)# show spanning-tree mst configuration
```

This example shows how to display the MD5 digest included in the current Multiple Spanning Tree (MST) configuration:

```
switch)# show spanning-tree mst configuration digest
```

Related Commands

Command	Description
clear spanning-tree counters	Clears the STP counters.

show spanning-tree root

To display the status and configuration of the Spanning Tree Protocol (STP) root bridge, use the **show spanning-tree root** command.

show spanning-tree root [**address** | **brief** | **cost** | **detail** | **forward-time** | **hello-time** | **id** | **max-age** | **port** | **priority** [**system-id**]]

Syntax Description

address	(Optional) Displays the MAC address for the STP root bridge.
brief	(Optional) Displays a brief summary of the status and configuration for the root bridge.
cost	(Optional) Displays the path cost from the root to this bridge.
detail	(Optional) Displays detailed information on the status and configuration for the root bridge.
forward-time	(Optional) Displays the STP forward delay interval for the root bridge.
hello-time	(Optional) Displays the STP hello time for the root bridge.
id	(Optional) Displays the STP bridge identifier for the root bridge.
max-age	(Optional) Displays the STP maximum-aging time for the root bridge.
port	(Optional) Displays which port is the root port.
priority	(Optional) Displays the bridge priority for the root bridge.
system-id	(Optional) Displays the bridge identifier with the system ID extension for the root bridge.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Examples

This example shows how to display the detailed information for the root bridge:

```
switch(config)# show spanning-tree root detail

VLAN0001
  Root ID    Priority    32769
             Address     0005.0505.053c
             This bridge is the root
             Hello Time  2  sec  Max Age 20 sec  Forward Delay 15 sec
switch(config)#
```

Related Commands

Command	Description
clear spanning-tree counters	Clears the STP counters.

show spanning-tree summary

To display summary Spanning Tree Protocol (STP) information on the switch, use the **show spanning-tree summary** command.

show spanning-tree summary [**totals**]

Syntax Description

totals	(Optional) Displays totals only of STP information.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

The display output for this command differs when you are running Rapid Per VLAN Spanning Tree Plus (Rapid PVST+) or Multiple Spanning Tree (MST).

Examples

This example shows how to display a summary of STP information on the switch:

```
switch# show spanning-tree summary
Switch is in rapid-pvst mode
Root bridge for: VLAN0001
Port Type Default                        is disable
Edge Port [PortFast] BPDU Guard Default  is disabled
Edge Port [PortFast] BPDU Filter Default is disabled
Bridge Assurance                         is enabled
Loopguard Default                        is disabled
Pathcost method used                     is short

Name                   Blocking Listening Learning Forwarding STP Active
---------------------- -------- --------- -------- ---------- ----------
VLAN0001                    0         0        0          5          5
---------------------- -------- --------- -------- ---------- ----------
1 vlan                      0         0        0          5          5
switch#
```

Related Commands

Command	Description
clear spanning-tree counters	Clears the STP counters.

show spanning-tree vlan

To display Spanning Tree Protocol (STP) information for specified VLANs, use the **show spanning-tree vlan** command.

show spanning-tree vlan {*vlan-id*} [**active** [**brief** | **detail**]]

show spanning-tree vlan {*vlan-id*} [**blockedports**]

show spanning-tree vlan {*vlan-id*} [**bridge** [**address**] | **brief** | **detail** | **forward-time** | **hello-time** | **id** | **max-age** | **priority** [**system-id**] | **protocol**]

show spanning-tree vlan {*vlan-id*} [**brief** [**active**]]

show spanning-tree vlan {*vlan-id*} [**detail** [**active**]]

show spanning-tree vlan {*vlan-id*} [**inconsistentports**]

show spanning-tree vlan {*vlan-id*} [**interface** {**ethernet** *slot/port* | **port-channel** *number*} [**active** [**brief** | **detail**]] | **brief** [**active**] | **cost** | **detail** [**active**] | **edge** | **inconsistency** | **priority** | **rootcost** | **state**]]

show spanning-tree vlan {*vlan-id*} [**root** [**address** | **brief** | **cost** | **detail** | **forward-time** | **hello-time** | **id** | **max-age** | **port** | **priority** [**system-id**]]

show spanning-tree vlan {*vlan-id*} [**summary**]

Syntax Description

vlan-id	VLAN or range of VLANs that you want to display.
active	(Optional) Displays information about STP VLANs and active ports.
brief	(Optional) Displays a brief summary of STP information for the specified VLANs.
detail	(Optional) Displays detailed STP information for the specified VLANs.
blockedports	(Optional) Displays the STP alternate ports in the blocked state for the specified VLANs.
bridge	(Optional) Displays the status and configuration of the bridge for the specified VLANs.
address	(Optional) Displays the MAC address for the specified STP bridge for the specified VLANs.
forward-time	(Optional) Displays the STP forward delay interval for the bridge for the specified VLANs.
hello-time	(Optional) Displays the STP hello time for the bridge for the specified VLANs.
id	(Optional) Displays the STP bridge identifier for the specified VLANs.
max-age	(Optional) Displays the STP maximum-aging time for the specified VLANs.
priority	(Optional) Displays the STP priority for the specified VLANs.
system-id	(Optional) Displays the bridge identification with the system ID added for the specified VLANs.
protocol	(Optional) Displays which STP protocol is active on the switch.

inconsistentports	(Optional) Displays the ports that are in an inconsistent STP state for specified VLANs.
interface	(Optional) Specifies the interface. The interface can be Ethernet or EtherChannel.
ethernet *slot*/*port*	(Optional) Specifies the Ethernet interface and its slot number and port number. The *slot* number is from 1 to 255, and the *port* number is from 1 to 128.
port-channel *number*	(Optional) Specifies the EtherChannel interface and number. The EtherChannel number is from 1 to 4096.
cost	(Optional) Displays the STP path cost for the specified VLANs.
edge	(Optional) Displays the STP-type edge port information for the specified interface for the specified VLANs.
inconsistency	(Optional) Displays the STP port inconsistency state for the specified interface for the specified VLANs.
priority	(Optional) Displays the STP priority for the specified VLANs.
rootcost	(Optional) Displays the path cost to the root for specified interfaces for the specified VLANs.
state	(Optional) Displays the current port STP state. Valid values are blocking, disabled, learning, and forwarding.
port	(Optional) Displays information about the root port for the specified VLANs.
summary	(Optional) Displays summary STP information on the specified VLANs.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Examples

This example shows how to display STP information on VLAN 1:

```
switch# show spanning-tree vlan 1

VLAN0001
  Spanning tree enabled protocol rstp
  Root ID    Priority    32769
             Address     0005.0505.053c
             This bridge is the root
             Hello Time  2  sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32769  (priority 32768 sys-id-ext 1)
             Address     0005.0505.053c
             Hello Time  2  sec  Max Age 20 sec  Forward Delay 15 sec

Interface        Role Sts Cost      Prio.Nbr Type
```

```
---------------- ---- --- --------- -------- --------------------------------
Eth1/1           Desg FWD 2         128.129  P2p
Eth1/2           Desg FWD 2         128.130  P2p
Eth1/39          Desg FWD 2         128.167  P2p
Eth1/41          Desg FWD 2         128.169  P2p
Eth1/48          Desg FWD 2         128.176  P2p

switch#
```

Related Commands

Command	Description
clear spanning-tree counters	Clears the STP counters.
show spanning-tree summary	Displays summary information about STP.

show udld

To display the Unidirectional Link Detection (UDLD) information for a switch, use the **show udld** command.

show udld [**ethernet** *slot/port* | **global** | **neighbors**]

Syntax Description

ethernet *slot/port*	Displays UDLD information for an Ethernet IEEE 802.3z interface. The *slot* number is from 1 to 255, and the *port* number is from 1 to 128.
global	Displays the UDLD global status and configuration information on all interfaces.
neighbors	Displays information about UDLD neighbor interfaces.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Examples

This example shows how to display UDLD information for all interfaces:

```
switch# show udld

Interface Ethernet1/1
------------------------------
Port enable administrative configuration setting: device-default
Port enable operational state: enabled
Current bidirectional state: unknown
Current operational state:  link-up - Multiple neighbor not detected
Message interval: 7
Timeout interval: 5
        Last pkt send on: 751414, May 28 11:08:40 2010
                Probe pkt send on: 751414, May 28 11:08:40 2010
                Echo  pkt send on: None.
                Flush pkt send on: None.

        Last pkt recv on: None.
                Probe pkt recv on: None.
                Echo  pkt recv on: None.
                Flush pkt recv on: None.

        Deep pkt inspections done: None.
        Mismatched if index found: None.
        Deep pkt inspection drops: None.

<--Output truncated-->
switch#
```

This example shows how to display the UDLD information for a specified interface:

```
switch# show udld ethernet 1/1

Interface Ethernet1/1
------------------------------
Port enable administrative configuration setting: device-default
Port enable operational state: enabled
Current bidirectional state: unknown
Current operational state:  advertisement - Multiple neighbor not detected
Message interval: 7
Timeout interval: 5
        Last pkt send on: 781338, May 28 11:09:48 2010
                Probe pkt send on: 781338, May 28 11:09:48 2010
                Echo  pkt send on: None.
                Flush pkt send on: None.

        Last pkt recv on: None.
                Probe pkt recv on: None.
                Echo  pkt recv on: None.
                Flush pkt recv on: None.

        Deep pkt inspections done: None.
        Mismatched if index found: None.
        Deep pkt inspection drops: None.
switch#
```

This example shows how to display the UDLD global status and configuration on all interfaces:

```
switch# show udld global

UDLD global configuration mode: enabled
UDLD global message interval: 15
switch#
```

This example shows how to display the UDLD neighbor interfaces:

```
switch# show udld neighbors
```

Related Commands

Command	Description
udld (configuration mode)	Configures the UDLD protocol on the switch.
udld (Ethernet)	Configures the UDLD protocol on an Ethernet interface.

show vlan

To display VLAN information, use the **show vlan** command.

show vlan [**brief** | **name** {*name*} | **summary**]

Syntax Description

brief	(Optional) Displays only a single line for each VLAN, naming the VLAN, status, and ports.
name *name*	(Optional) Displays information about a single VLAN that is identified by the VLAN name.
summary	(Optional) Displays the number of existing VLANs on the switch.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

This command displays information for all VLANs on the switch.

Each access port can belong to only one VLAN. Trunk ports can be on multiple VLANs.

Note Although a port can be associated with a VLAN as an access VLAN, a native VLAN, or one of the trunk allowed ports, only access VLANs are shown under Ports in the display.

If you shut down a VLAN using the **state suspend** or the **state active** command, these values appear in the Status field:

- suspended—VLAN is suspended.
- active—VLAN is active.

If you shut down a VLAN using the **shutdown** command, these values appear in the Status field:

- act/lshut—VLAN status is active but shut down locally.
- sus/lshut—VLAN status is suspended but shut down locally.

If a VLAN is shut down internally, these values appear in the Status field:

- act/ishut—VLAN status is active but shut down internally.
- sus/ishut—VLAN status is suspended but shut down internally.

If a VLAN is shut down locally and internally, the value that is displayed in the Status field is act/ishut or sus/ishut. If a VLAN is shut down locally only, the value that is displayed in the Status field is act/lshut or sus/lshut.

Examples

This example shows how to display information for all VLANs on the switch:

```
switch# show vlan

VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active    Eth1/1, Eth1/2, Eth1/3, Eth1/4
                                                Eth1/6, Eth1/7, Eth1/8, Eth1/9
                                                Eth1/10, Eth1/11, Eth1/12
                                                Eth1/13, Eth1/14, Eth1/15
                                                Eth1/16, Eth1/17, Eth1/18
                                                Eth1/19, Eth1/20, Eth1/21
                                                Eth1/22, Eth1/23, Eth1/24
                                                Eth1/25, Eth1/26, Eth1/27
                                                Eth1/28, Eth1/29, Eth1/30
                                                Eth1/31, Eth1/32, Eth1/33
                                                Eth1/34, Eth1/35, Eth1/36
                                                Eth1/37, Eth1/38, Eth1/39
                                                Eth1/40, Eth1/41, Eth1/42
                                                Eth1/43, Eth1/44, Eth1/45
                                                Eth1/46, Eth1/47, Eth1/48
                                                Eth1/49, Eth1/50, Eth1/51
                                                Eth1/52, Eth1/53, Eth1/54
                                                Eth1/55, Eth1/56, Eth1/57
                                                Eth1/58, Eth1/59, Eth1/60
                                                Eth1/61, Eth1/62, Eth1/63
                                                Eth1/64
5    VLAN0005                         active

Remote SPAN VLANs
------------------------------------------------------------------------------

Primary  Secondary  Type             Ports
-------  ---------  ---------------  ---------------------------------------
5                   primary


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    Eth1/1, Eth1/2, Eth1/3, Eth1/4
                                                Eth1/6, Eth1/7, Eth1/8, Eth1/9
                                                Eth1/10, Eth1/11, Eth1/12
                                                Eth1/13, Eth1/14, Eth1/15
                                                Eth1/16, Eth1/17, Eth1/18
                                                Eth1/19, Eth1/20, Eth1/21
                                                Eth1/22, Eth1/23, Eth1/24
                                                Eth1/25, Eth1/26, Eth1/27
                                                Eth1/28, Eth1/29, Eth1/30
<--Output truncated-->
switch#
```

This example shows how to display the VLAN information for a specific VLAN by name:

```
switch# show vlan name VLAN0005

VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
5    VLAN0005                         active
```

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

Primary  Secondary  Type              Ports
-------  ---------  ---------------  ------------------------------------------


switch#
```

This example shows how to display information about the number of VLANs configured on the switch:

```
switch# show vlan summary

Number of existing VLANs           : 2
 Number of existing user VLANs     : 2
 Number of existing extended VLANs : 0


switch#
```

Related Commands

Command	Description
show interface switchport	Displays information about the ports.

show vlan dot1Q tag native

To display the status of tagging on the native VLANs, use the **show vlan dot1Q tag native** command.

show vlan dot1Q tag native

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Examples

This example shows how to display the status of 802.1Q tagging on the native VLANs:

```
switch# show vlan dot1Q tag native
vlan dot1q native tag is enabled
switch#
```

Related Commands

Command	Description
vlan dot1q tag native	Enables dot1q (IEEE 802.1Q) tagging for all native VLANs on all trunked ports on the switch.

show vlan id

To display information and statistics for an individual VLAN or a range of VLANs, use the **show vlan id** command.

show vlan id {*vlan-id*}

Syntax Description

vlan-id	VLAN or range of VLANs that you want to display.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Use this command to display information and statistics on an individual VLAN or a range of VLANs.

Note You can also display information about individual VLANs using the **show vlan name** command.

Examples

This example shows how to display information for the individual VLAN 5:

```
switch# show vlan id 5

VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------

5    VLAN0005                         active

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

Primary  Secondary  Type             Ports
-------  ---------  ---------------  -----------------------------------------

5                   primary


switch#
```

Related Commands

Command	Description
show vlan	Displays information about VLANs on the switch.

show vtp counters

To display the VLAN Trunking Protocol (VTP) statistics, use the **show vtp counters** command.

show vtp counters

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Before you use this command, you must enable VTP on the switch by using the **feature vtp** command.

Note VTP pruning is not supported in Cisco NX-OS Release 5.0(3)A1(1).

Examples

This example shows how to display the VTP counters:

```
switch# show vtp counters
```

Related Commands

Command	Description
feature vtp	Enables VTP on the switch.
vtp	Enables VTP on an interface.

show vtp interface

To display the VLAN Trunking Protocol (VTP) interface status and configuration information, use the **show vtp interface** command.

show vtp interface [**ethernet** *slot/port* | **port-channel** *channel-no*]

Syntax Description

ethernet *slot/port*	(Optional) Displays the VTP configuration on Ethernet interfaces. The slot number is from 1 to 255, and the port number can be from 1 to 128.
port-channel *channel-no*	(Optional) Displays the VTP configuration on EtherChannel interfaces. The EtherChannel number can be from 1 to 4096.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Before you use this command, you must enable VTP on the switch by using the **feature vtp** command.

Examples

This example shows how to display the VTP configuration information on all interfaces:

```
switch# show vtp interface
```

This example shows how to display the VTP configuration information for an Ethernet interface:

```
switch# show vtp interface ethernet 1/12
```

This example shows how to display the VTP configuration information for an EtherChannel interface:

```
switch# show vtp interface port-channel 23
```

Related Commands

Command	Description
feature vtp	Enables VTP on the switch.
show interface ethernet	Displays the Ethernet interfaces configured on the switch.
show interface port-channel	Displays the EtherChannels configured on the switch.
show vtp status	Displays the VTP configuration status.
vtp	Enables VTP on an interface.

show vtp password

To display the VLAN Trunking Protocol (VTP) administrative password, use the **show vtp password** command.

show vtp password [**domain** *domain-id*]

Syntax Description

domain	(Optional) Specifies the VTP administrative domain.
domain-id	VTP domain ID. The ID can be from 0 to 4294967295.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Before you use this command, you must enable VTP on the switch by using the **feature vtp** command.

Examples

This example shows how to display the VTP password configured for administrative domain 1:

```
switch# show vtp password domain 1
```

Related Commands

Command	Description
feature vtp	Enables VTP on the switch.
vtp domain	Configures the VTP domain.
vtp password	Configures the VTP administrative password.

show vtp status

To display the VLAN Trunking Protocol (VTP) domain status information, use the **show vtp status** command.

show vtp status

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Before you use this command, you must enable VTP on the switch by using the **feature vtp** command.

Examples

This example shows how to display the VTP domain status:

```
switch# show vtp status
VTP Status Information
----------------------
VTP Version                     : 2 (capable)
Configuration Revision          : 0
Maximum VLANs supported locally : 1005
Number of existing VLANs        : 1
VTP Operating Mode              : Transparent
VTP Domain Name                 : Accounting
VTP Pruning Mode                : Disabled (Operationally Disabled)
VTP V2 Mode                     : Disabled
VTP Traps Generation            : Disabled
MD5 Digest                      : 0xDF 0x75 0x14 0x0C 0x3E 0xE0 0xA1 0x7E
Configuration last modified by 0.0.0.0 at 0-0-00 00:00:00
VTP version running             : 1

switch#
```

Related Commands

Command	Description
feature vtp	Enables VTP on the switch.
vtp domain	Configures the VTP domain.
vtp version	Configures the VTP version.

shutdown (VLAN configuration)

To shut down the local traffic on a VLAN, use the **shutdown** command. To return a VLAN to its default operational state, use the **no** form of this command.

shutdown

no shutdown

Syntax Description

This command has no arguments or keywords.

Command Default

Not shut down

Command Modes

VLAN configuration mode
Switch profile VLAN configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.
5.0(3)A1(1)	Support for this command was introduced in switch profiles.

Usage Guidelines

You cannot shut down, or disable, VLAN 1 or VLANs 1006 to 4094.

After you shut down a VLAN, the traffic ceases to flow on that VLAN. Access ports on that VLAN are also brought down; trunk ports continue to carry traffic for the other VLANs allowed on that port. However, the interface associations for the specified VLAN remain, and when you reenable, or recreate, that specified VLAN, the switch automatically reinstates all the original ports to that VLAN.

To find out if a VLAN has been shut down internally, check the Status field in the **show vlan** command output. If a VLAN is shut down internally, one of these values appears in the Status field:

- act/lshut—VLAN status is active and shut down internally.
- sus/lshut—VLAN status is suspended and shut down internally.

Note If the VLAN is suspended and shut down, you use both the **no shutdown** and **state active** commands to return the VLAN to the active state.

This command does not require a license.

Examples

This example shows how to restore local traffic on VLAN 2 after you have shut down, or disabled, the VLAN:

```
switch(config)# vlan 2
switch(config-vlan)# no shutdown
switch(config-vlan)#
```

This example shows how to shut down local traffic on VLAN 3 in a switch profile:

```
switch# configure sync
Enter configuration commands, one per line.  End with CNTL/Z.
switch(config-sync)# switch-profile s5010
Switch-Profile started, Profile ID is 1
switch(config-sync-sp)# vlan 3
switch(config-sync-sp-vlan)# shutdown
switch(config-sync-sp-vlan)#
```

Related Commands

Command	Description
show vlan	Displays VLAN information.

spanning-tree bpdufilter

To enable bridge protocol data unit (BPDU) Filtering on the interface, use the **spanning-tree bpdufilter** command. To return to the default settings, use the **no** form of this command.

spanning-tree bpdufilter {**enable** | **disable**}

no spanning-tree bpdufilter

Syntax Description

enable	Enables BPDU Filtering on this interface.
disable	Disables BPDU Filtering on this interface.

Command Default

The setting that is already configured when you enter the **spanning-tree port type edge bpdufilter default** command.

Command Modes

Interface configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Entering the **spanning-tree bpdufilter enable** command to enable BPDU Filtering overrides the spanning tree edge port configuration. That port then returns to the normal spanning tree port type and moves through the normal spanning tree transitions.

Caution Be careful when you enter the **spanning-tree bpdufilter enable** command on specified interfaces. Explicitly configuring BPDU Filtering on a port this is not connected to a host can cause a bridging loop because the port will ignore any BPDU that it receives, and the port moves to the STP forwarding state.

Use the **spanning-tree port type edge bpdufilter default** command to enable BPDU Filtering on all spanning tree edge ports.

This command does not require a license.

Examples

This example shows how to explicitly enable BPDU Filtering on the Ethernet spanning tree edge port 1/4:

```
switch (config)# interface ethernet 1/4
switch(config-if)# spanning-tree bpdufilter enable
switch(config-if)#
```

Related Commands

Command	Description
show spanning-tree summary	Displays information about the spanning tree state.

spanning-tree bpduguard

To enable bridge protocol data unit (BPDU) Guard on an interface, use the **spanning-tree bpduguard** command. To return to the default settings, use the **no** form of this command.

spanning-tree bpduguard {**enable** | **disable**}

no spanning-tree bpduguard

Syntax Description

enable	Enables BPDU Guard on this interface.
disable	Disables BPDU Guard on this interface.

Command Default

The setting that is already configured when you enter the **spanning-tree port type edge bpduguard default** command.

Command Modes

Interface configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

BPDU Guard prevents a port from receiving BPDUs. If the port still receives a BPDU, it is put in the error-disabled state as a protective measure.

Caution Be careful when using this command. You should use this command only with interfaces that connect to end stations; otherwise, an accidental topology loop could cause a data-packet loop and disrupt the switch and network operation.

When you enable this BPDU Guard command globally, the command applies only to spanning tree edge ports. See the **spanning-tree port type edge bpduguard default** command for more information on the global command for BPDU Guard. However, when you enable this feature on an interface, it applies to that interface regardless of the spanning tree port type.

This command has three states:

- **spanning-tree bpduguard enable**—Unconditionally enables BPDU Guard on the interface.
- **spanning-tree bpduguard disable**—Unconditionally disables BPDU Guard on the interface.
- **no spanning-tree bpduguard**—Enables BPDU Guard on the interface if it is an operational spanning tree edge port and if the **spanning-tree port type edge bpduguard default** command is configured.

Typically, this feature is used in a service-provider environment where the network administrator wants to prevent an access port from participating in the spanning tree.

This command does not require a license.

Examples

This example shows how to enable BPDU Guard on this interface:

```
switch(config-if)# spanning-tree bpduguard enable
switch(config-if)#
```

Related Commands

Command	Description
show spanning-tree summary	Displays information about the spanning tree state.

spanning-tree bridge

To enable Bridge Assurance on the switch, use the **spanning-tree bridge** command. To disable Bridge Assurance, use the **no** form of this command.

spanning-tree bridge assurance

no spanning-tree bridge assurance

Syntax Description

assurance	Enables bridge assurance on all network ports.

Command Default

None

Command Modes

Global configuration mode
Switch profile configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

You can use Bridge Assurance to protect against certain problems that can cause bridging loops in the network. Bridge Assurance is enabled only on spanning tree network ports that are point-to-point links.

This command does not require a license.

Examples

This example shows how to enable Bridge Assurance on all network ports on the switch:

```
switch(config)# spanning-tree bridge assurance
switch(config)#
```

This example shows how to enable Bridge Assurance in a switch profile:

```
switch# configure sync
Enter configuration commands, one per line.  End with CNTL/Z.
switch(config-sync)# switch-profile s5010
Switch-Profile started, Profile ID is 1
switch(config-sync-sp)# spanning-tree bridge assurance
switch(config-sync-sp)#
```

Related Commands

Command	Description
show spanning-tree bridge	Displays information about the spanning tree bridge.
show running-config spanning-tree	Displays the running configuration information about spanning trees.

spanning-tree cost

To set the path cost of the interface for Spanning Tree Protocol (STP) calculations, use the **spanning-tree cost** command. To return to the default settings, use the **no** form of this command.

spanning-tree [**vlan** *vlan-id*] **cost** {*value* | **auto**}

no spanning-tree [**vlan** *vlan-id*] **cost**

Syntax Description

vlan *vlan-id*	(Optional) Lists the VLANs on this trunk interface for which you want to assign the path cost. You do not use this parameter on access ports. The range is from 1 to 4094.
value	Value of the port cost. The available cost range depends on the path-cost calculation method as follows: • short—The range is from 1 to 65536. • long—The range is from 1 to 200,000,000.
auto	Sets the value of the port cost by the media speed of the interface (see Table 4 for the values).

Command Default

Port cost is set by the media speed.

Command Modes

Interface configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

The STP port path cost default value is determined from the media speed and path cost calculation method of a LAN interface (see Table 4). See the **spanning-tree pathcost method** command for information on setting the path cost calculation method for Rapid per VLAN Spanning Tree Plus (Rapid PVST+).

Table 4 Default Port Cost

Bandwidth	Short Path Cost Method Port Cost	Long Path Cost Method Port Cost
10 Mbps	100	2,000,000
100 Mbps	19	200,000
1-Gigabit Ethernet	4	20,000
10-Gigabit Ethernet	2	2,000

When you configure the *value*, higher values will indicate higher costs.

On access ports, assign the port cost by port. On trunk ports, assign the port cost by VLAN; you can configure all the VLANs on a trunk port as the same port cost.

The EtherChannel bundle is considered as a single port. The port cost is the aggregation of all the configured port costs assigned to that channel.

Note Use this command to set the port cost for Rapid PVST+. Use the **spanning-tree mst cost** command to set the port cost for MST.

This command does not require a license.

Examples

This example shows how to access an interface and set a path cost value of 250 for the spanning tree VLAN that is associated with that interface:

```
switch# configure terminal
switch(config)# interface ethernet 1/4
switch(config-if)# spanning-tree cost 250
switch(config-if)#
```

Related Commands

Command	Description
show spanning-tree	Displays information about the spanning tree configuration.

spanning-tree guard

To enable or disable Loop Guard or Root Guard, use the **spanning-tree guard** command. To return to the default settings, use the **no** form of this command.

spanning-tree guard {**loop** | **none** | **root**}

no spanning-tree guard

Syntax Description

loop	Enables Loop Guard on the interface.
none	Sets the guard mode to none.
root	Enables Root Guard on the interface.

Command Default

Disabled

Command Modes

Interface configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

You cannot enable Loop Guard if Root Guard is enabled, although the switch accepts the command to enable Loop Guard on **spanning tree edge ports**.

This command does not require a license.

Examples

This example shows how to enable Root Guard:

```
switch# configure terminal
switch(config)# interface ethernet 1/1
switch(config-if)# spanning-tree guard root
switch(config-if)#
```

Related Commands

Command	Description
show spanning-tree summary	Displays information about the spanning tree state.

spanning-tree link-type

To configure a link type for a port, use the **spanning-tree link-type** command. To return to the default settings, use the **no** form of this command.

spanning-tree link-type {**auto** | **point-to-point** | **shared**}

no spanning-tree link-type

Syntax Description

auto	Sets the link type based on the duplex setting of the interface.
point-to-point	Specifies that the interface is a point-to-point link.
shared	Specifies that the interface is a shared medium.

Command Default

Link type set automatically based on the duplex setting.

Command Modes

Interface configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Fast transition (specified in IEEE 802.1w) functions only on point-to-point links between two bridges.

By default, the switch derives the link type of a port from the duplex mode. A full-duplex port is considered as a point-to-point link while a half-duplex configuration is assumed to be on a shared link.

Note On a Cisco Nexus 3000 Series switch, port duplex is not configurable.

This command does not require a license.

Examples

This example shows how to configure the port as a shared link:

```
switch# configure terminal
switch(config)# interface ethernet 1/1
switch(config-if)# spanning-tree link-type shared
switch(config-if)#
```

Related Commands

Command	Description
show spanning-tree interface	Displays information about the spanning tree state.

spanning-tree loopguard default

To enable Loop Guard as a default on all spanning tree normal and network ports, use the **spanning-tree loopguard default** command. To disable Loop Guard, use the **no** form of this command.

spanning-tree loopguard default

no spanning-tree loopguard default

Syntax Description

This command has no arguments or keywords.

Command Default

Disabled

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Loop Guard provides additional security in the bridge network. Loop Guard prevents alternate or root ports from becoming the designated port because of a failure that could lead to a unidirectional link.

Loop Guard operates only on ports that are considered point-to-point links by the spanning tree, and it does not run on spanning tree edge ports.

Entering the **spanning-tree guard loop** command for the specified interface overrides this global Loop Guard command.

This command does not require a license.

Examples

This example shows how to enable Loop Guard:

```
switch# configure terminal
switch(config)# spanning-tree loopguard default
switch(config)#
```

Related Commands

Command	Description
show spanning-tree summary	Displays information about the spanning tree state.

spanning-tree mode

To switch between Rapid per VLAN Spanning Tree Plus (Rapid PVST+) and Multiple Spanning Tree (MST) Spanning Tree Protocol (STP) modes, use the **spanning-tree mode** command. To return to the default settings, use the **no** form of this command.

spanning-tree mode {**rapid-pvst** | **mst**}

no spanning-tree mode

Syntax Description

rapid-pvst	Sets the STP mode to Rapid PVST+.
mst	Sets the STP mode to MST.

Command Default

Rapid PVST+

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

You cannot simultaneously run MST and Rapid PVST+ on the switch.

Caution Be careful when using the **spanning-tree mode** command to switch between Rapid PVST+ and MST modes. When you enter the command, all STP instances are stopped for the previous mode and are restarted in the new mode. Using this command may cause the user traffic to be disrupted.

This command does not require a license.

Examples

This example shows how to switch to MST mode:

```
switch# configure terminal
switch(config)# spanning-tree mode mst
switch(config-mst)#
```

Related Commands

Command	Description
show spanning-tree summary	Displays the information about the spanning tree configuration.

spanning-tree mst configuration

To enter the Multiple Spanning Tree (MST) configuration mode, use the **spanning-tree mst configuration** command. To return to the default settings, use the **no** form of this command.

spanning-tree mst configuration

no spanning-tree mst configuration

Syntax Description

This command has no arguments or keywords.

Command Default

The default value for the MST configuration is the default value for all its parameters:

- No VLANs are mapped to any MST instance. All VLANs are mapped to the Common and Internal Spanning Tree (CIST) instance.
- The region name is an empty string.
- The revision number is 0.

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

The MST configuration consists of three main parameters:

- Instance VLAN mapping—See the **instance vlan** command.
- Region name—See the **name (MST configuration)** command.
- Configuration revision number—See the **revision** command.

The **abort** and **exit** commands allow you to exit MST configuration mode. The difference between the two commands depends on whether you want to save your changes or not:

- The **exit** command commits all the changes before leaving MST configuration mode.
- The **abort** command leaves MST configuration mode without committing any changes.

If you do not map secondary VLANs to the same instance as the associated primary VLAN, when you exit MST configuration mode, the following warning message is displayed:

```
These secondary vlans are not mapped to the same instance as their primary:
-> 3
```

Changing an MST configuration mode parameter can cause connectivity loss. To reduce service disruptions, when you enter MST configuration mode, make changes to a copy of the current MST configuration. When you are done editing the configuration, you can apply all the changes at once by using the **exit** keyword.

In the unlikely event that two administrators commit a new configuration at exactly the same time, this warning message is displayed:

```
% MST CFG:Configuration change lost because of concurrent access
```

This command does not require a license.

Examples

This example shows how to enter MST-configuration mode:

```
switch# configure terminal
switch(config)# spanning-tree mst configuration
switch(config-mst)#
```

This example shows how to reset the MST configuration (name, instance mapping, and revision number) to the default settings:

```
switch# configure terminal
switch(config)# no spanning-tree mst configuration
switch(config)#
```

Related Commands

Command	Description
instance vlan	Maps a VLAN or a set of VLANs to an MST instance.
name (MST configuration)	Sets the name of an MST region.
revision	Sets the revision number for the MST configuration.
show spanning-tree mst	Displays the information about the MST protocol.

spanning-tree mst cost

To set the path-cost parameter for any Multiple Spanning Tree (MST) instance (including the Common and Internal Spanning Tree [CIST] with instance ID 0), use the **spanning-tree mst cost** command. To return to the default settings, use the **no** form of this command.

spanning-tree mst *instance-id* **cost** {*cost* | **auto**}

no spanning-tree mst *instance-id* **cost**

Syntax Description

instance-id	Instance ID number. The range is from 0 to 4094.
cost	Port cost for an instance. The range is from 1 to 200,000,000.
auto	Sets the value of the port cost by the media speed of the interface.

Command Default

Automatically set port cost values:

- 10 Mbps—2,000,000
- 100 Mbps—200,000
- 1-Gigabit Ethernet—20,000
- 10-Gigabit Ethernet—2,000

Command Modes

Interface configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

The port cost depends on the port speed; the faster interface speeds indicate smaller costs. MST always uses long path costs.

Higher cost values indicate higher costs. When entering the cost, do not include a comma in the entry; for example, enter 1000, not 1,000.

The EtherChannel bundle is considered as a single port. The port cost is the aggregation of all the configured port costs assigned to that channel.

This command does not require a license.

Examples

This example shows how to set the interface path cost:

```
switch# configure terminal
switch(config)# interface ethernet 1/1
switch(config-if)# spanning-tree mst 0 cost 17031970
switch(config-if)#
```

Related Commands

Command	Description
show spanning-tree mst	Displays the information about the MST protocol.

spanning-tree mst forward-time

To set the forward-delay timer for all the instances on the switch, use the **spanning-tree mst forward-time** command. To return to the default settings, use the **no** form of this command.

spanning-tree mst forward-time *seconds*

no spanning-tree mst forward-time

Syntax Description

seconds	Number of seconds to set the forward-delay timer for all the instances on the switch. The range is from 4 to 30 seconds.

Command Default

15 seconds

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Examples

This example shows how to set the forward-delay timer:

```
switch# configure terminal
switch(config)# spanning-tree mst forward-time 20
switch(config)#
```

Related Commands

Command	Description
show spanning-tree mst	Displays the information about the MST protocol.

spanning-tree mst hello-time

To set the hello-time delay timer for all the instances on the switch, use the **spanning-tree mst hello-time** command. To return to the default settings, use the **no** form of this command.

spanning-tree mst hello-time *seconds*

no spanning-tree mst hello-time

Syntax Description

seconds	Number of seconds to set the hello-time delay timer for all the instances on the switch. The range is from 1 to 10 seconds.

Command Default

2 seconds

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

If you do not specify the *hello-time* value, the value is calculated from the network diameter.

This command does not require a license.

Examples

This example shows how to set the hello-time delay timer:

```
switch# configure terminal
switch(config)# spanning-tree mst hello-time 3
switch(config)#
```

Related Commands

Command	Description
show spanning-tree mst	Displays the information about the MST protocol.

spanning-tree mst max-age

To set the max-age timer for all the instances on the switch, use the **spanning-tree mst max-age** command. To return to the default settings, use the **no** form of this command.

spanning-tree mst max-age *seconds*

no spanning-tree mst max-age

Syntax Description

seconds	Number of seconds to set the max-age timer for all the instances on the switch. The range is from 6 to 40 seconds.

Command Default

20 seconds

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

This parameter is used only by Instance 0 or the IST.

This command does not require a license.

Examples

This example shows how to set the max-age timer:

```
switch# configure terminal
switch(config)# spanning-tree mst max-age 40
switch(config)#
```

Related Commands

Command	Description
show spanning-tree mst	Displays the information about the MST protocol.

spanning-tree mst max-hops

To specify the number of possible hops in the region before a bridge protocol data unit (BPDU) is discarded, use the **spanning-tree mst max-hops** command. To return to the default settings, use the **no** form of this command.

spanning-tree mst max-hops *hop-count*

no spanning-tree mst max-hops

Syntax Description

hop-count	Number of possible hops in the region before a BPDU is discarded. The range is from 1 to 255 hops.

Command Default

20 hops

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Examples

This example shows how to set the number of possible hops:

```
switch# configure terminal
switch(config)# spanning-tree mst max-hops 25
switch(config)#
```

Related Commands

Command	Description
show spanning-tree mst	Displays the information about the MST protocol.

spanning-tree mst port-priority

To set the port-priority parameters for any Multiple Spanning Tree (MST) instance, including the Common and Internal Spanning Tree (CIST) with instance ID 0, use the **spanning-tree mst port-priority** command. To return to the default settings, use the **no** form of this command.

spanning-tree mst *instance-id* **port-priority** *priority*

no spanning-tree mst *instance-id* **port-priority**

Syntax Description

instance-id	Instance ID number. The range is from 0 to 4094.
priority	Port priority for an instance. The range is from 0 to 224 in increments of 32.

Command Default

Port priority value is 128.

Command Modes

Interface configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Higher **port-priority** *priority* values indicate smaller priorities.

The priority values are 0, 32, 64, 96, 128, 160, 192, and 224. All other values are rejected.

This command does not require a license.

Examples

This example shows how to set the interface priority:

```
switch# configure terminal
switch(config)# interface ethernet 1/1
switch(config-if)# spanning-tree mst 0 port-priority 64
switch(config-if)#
```

Related Commands

Command	Description
show spanning-tree mst	Displays the information about the MST protocol.
spanning-tree port-priority	Configures the port priority for the default STP, which is Rapid PVST+.

spanning-tree mst priority

To set the bridge priority, use the **spanning-tree mst priority** command. To return to the default setting, use the **no** form of this command.

spanning-tree mst *instance-id* **priority** *priority-value*

no spanning-tree mst *instance-id* **priority**

Syntax Description

instance-id	Instance identification number. The range is from 0 to 4094.
priority-value	Bridge priority. See the "Usage Guidelines" section for valid values and additional information.

Command Default

Bridge priority default is 32768.

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

You can set the bridge priority in increments of 4096 only. When you set the priority, valid values are 0, 4096, 8192, 12288, 16384, 20480, 24576, 28672, 32768, 36864, 40960, 45056, 49152, 53248, 57344, and 61440.

You can set the *priority-value* argument to 0 to make the switch root.

You can enter the *instance-id* argument as a single instance or a range of instances, for example, 0-3,5,7-9.

This command does not require a license.

Examples

This example shows how to set the bridge priority:

```
switch# configure terminal
switch(config)# spanning-tree mst 0 priority 4096
switch(config)#
```

Related Commands

Command	Description
show spanning-tree mst	Displays the information about the MST protocol.

spanning-tree mst root

To designate the primary and secondary root and set the timer value for an instance, use the **spanning-tree mst root** command. To return to the default settings, use the **no** form of this command.

spanning-tree mst *instance-id* **root** {**primary** | **secondary**} [**diameter** *dia* [**hello-time** *hello-time*]]

no spanning-tree mst *instance-id* **root**

Syntax Description

instance-id	Instance identification number. The range is from 0 to 4094.
primary	Specifies the high priority (low value) that is high enough to make the bridge root of the spanning-tree instance.
secondary	Specifies the switch as a secondary root, if the primary root fails.
diameter *dia*	(Optional) Specifies the timer values for the bridge that are based on the network diameter.
hello-time *hello-time*	(Optional) Specifies the duration between the generation of configuration messages by the root switch. The range is from 1 to 10 seconds; the default is 2 seconds.

Command Default

None

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

You can enter the *instance-id* argument as a single instance or a range of instances, for example, 0-3,5,7-9.

If you do not specify the *hello-time* argument, the argument is calculated from the network diameter. You must first specify the **diameter** *dia* keyword and argument before you can specify the **hello-time** *hello-time* keyword and argument.

This command does not require a license.

Examples

This example shows how to designate the primary root:

```
switch# configure terminal
switch(config)# spanning-tree mst 0 root primary
switch(config)#
```

This example shows how to set the priority and timer values for the bridge:

```
switch# configure terminal
switch(config)# spanning-tree mst 0 root primary diameter 7 hello-time 2
```

```
switch(config)#
```

Related Commands

Command	Description
show spanning-tree mst	Displays the information about the MST protocol.

spanning-tree mst simulate pvst

To reenable specific interfaces to automatically interoperate between Multiple Spanning Tree (MST) and Rapid per VLAN Spanning Tree Plus (Rapid PVST+), use the **spanning-tree mst simulate pvst** command. To prevent specific MST interfaces from automatically interoperating with a connecting device running Rapid PVST+, use the **spanning-tree mst simulate pvst disable** command. To return specific interfaces to the default settings that are set globally for the switch, use the **no** form of this command.

spanning-tree mst simulate pvst

spanning-tree mst simulate pvst disable

no spanning-tree mst simulate pvst

Syntax Description

This command has no arguments or keywords.

Command Default

Enabled. By default, all interfaces on the switch interoperate seamlessly between MST and Rapid PVST+. See the **spanning-tree mst simulate pvst global** command to change this setting globally.

Command Modes

Interface configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

MST interoperates with Rapid PVST+ with no need for user configuration. The PVST+ simulation feature enables this seamless interoperability. However, you may want to control the connection between MST and Rapid PVST+ to protect against accidentally connecting an MST-enabled port to a Rapid PVST+-enabled port.

When you use the **spanning-tree mst simulate pvst disable** command, specified MST interfaces that receive a Rapid PVST+ (SSTP) bridge protocol data unit (BPDU) move into the STP blocking state. Those interfaces remain in the inconsistent state until the port stops receiving Rapid PVST+ BPDUs, and then the port resumes the normal STP transition process.

Note To block automatic MST and Rapid PVST+ interoperability for the entire switch, use **no spanning-tree mst simulate pvst global** command.

This command is useful when you want to prevent accidental connection with a device running Rapid PVST+.

To reenable seamless operation between MST and Rapid PVST+ on specific interfaces, use the **spanning-tree mst simulate pvst** command.

This command does not require a license.

Examples

This example shows how to prevent specified ports from automatically interoperating with a connected device running Rapid PVST+:

```
switch# configure terminal
switch(config)# interface ethernet 1/1
switch(config-if)# spanning-tree mst simulate pvst disable
switch(config-if)#
```

Related Commands

Command	Description
spanning-tree mst simulate pvst global	Enables global seamless interoperation between MST and Rapid PVST+.

spanning-tree mst simulate pvst global

To prevent the Multiple Spanning Tree (MST) switch from automatically interoperating with a connecting device running Rapid per VLAN Spanning Tree Plus (Rapid PVST+), use the **spanning-tree mst simulate pvst global** command. To return to the default settings, which is a seamless operation between MST and Rapid PVST+ on the switch, use the **no spanning-tree mst simulate pvst global** command.

spanning-tree mst simulate pvst global

no spanning-tree mst simulate pvst global

Syntax Description

This command has no arguments or keywords.

Command Default

Enabled. By default, the switch interoperates seamlessly between MST and Rapid PVST+.

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

MST does not require user configuration to interoperate with Rapid PVST+. The PVST+ simulation feature enables this seamless interoperability. However, you may want to control the connection between MST and Rapid PVST+ to protect against accidentally connecting an MST-enabled port to a Rapid PVST+-enabled port.

When you use the **no spanning-tree mst simulate pvst global** command, the switch running in MST mode moves all interfaces that receive a Rapid PVST+ (SSTP) bridge protocol data unit (BPDU) into the Spanning Tree Protocol (STP) blocking state. Those interfaces remain in the inconsistent state until the port stops receiving Rapid PVST+ BPDUs, and then the port resumes the normal STP transition process.

You can also use this command from the interface mode, and the configuration applies to the entire switch.

Note To block automatic MST and Rapid PVST+ interoperability for specific interfaces, see the **spanning-tree mst simulate pvst** command.

This command is useful when you want to prevent accidental connection with a device not running MST.

To return the switch to seamless operation between MST and Rapid PVST+, use the **spanning-tree mst simulate pvst global** command.

This command does not require a license.

Examples

This example shows how to prevent all ports on the switch from automatically interoperating with a connected device running Rapid PVST+:

```
switch# configure terminal
switch(config)# no spanning-tree mst simulate pvst global
switch(config)#
```

Related Commands

Command	Description
spanning-tree mst simulate pvst	Enables seamless interoperation between MST and Rapid PVST+ by the interface.

spanning-tree pathcost method

To set the default path-cost calculation method, use the **spanning-tree pathcost method** command. To return to the default settings, use the **no** form of this command.

spanning-tree pathcost method {**long** | **short**}

no spanning-tree pathcost method

Syntax Description

long	Specifies the 32-bit based values for port path costs.
short	Specifies the 16-bit based values for port path costs.

Command Default

Short

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

The **long** path-cost calculation method uses all 32 bits for path-cost calculations and yields valued in the range of 2 through 2,00,000,000.

The **short** path-cost calculation method (16 bits) yields values in the range of 1 through 65535.

Note This command applies only to the Rapid per VLAN Spanning Tree Plus (Rapid PVST+) spanning tree mode, which is the default mode. When you are using Multiple Spanning Tree (MST) spanning tree mode, the switch uses only the long method for calculating path cost; this is not user-configurable for MST.

This command does not require a license.

Examples

This example shows how to set the default pathcost method to long:

```
switch# configure terminal
switch(config)# spanning-tree pathcost method long
switch(config)#
```

Related Commands

Command	Description
show spanning-tree summary	Displays information about the spanning tree state.

spanning-tree port type edge

To configure an interface connected to a host as an edge port, which automatically transitions the port to the spanning tree forwarding state without passing through the blocking or learning states, use the **spanning-tree port type edge** command. To return the port to a normal spanning tree port, use the **no spanning-tree port type** command.

spanning-tree port type edge [**trunk**]

no spanning-tree port type

Syntax Description

trunk	(Optional) Configures the trunk port as a spanning tree edge port.

Command Default

The default is the global setting for the default port type edge that is configured when you entered the **spanning-tree port type edge default** command. If you did not configure a global setting, the default spanning tree port type is normal.

Command Modes

Interface configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

You can also use this command to configure a port in trunk mode as a spanning tree edge port.

Caution You should use this command only with interfaces that connect to end stations; otherwise, an accidental topology loop could cause a data-packet loop and disrupt the switch and network operation.

When a linkup occurs, spanning tree edge ports are moved directly to the spanning tree forwarding state without waiting for the standard forward-time delay.

Note This is the same functionality that was previously provided by the Cisco-proprietary PortFast feature.

When you use this command, the system returns a message similar to the following:

```
Warning: portfast should only be enabled on ports connected to a single
 host. Connecting hubs, concentrators, switches, bridges, etc... to this
 interface when portfast is enabled, can cause temporary bridging loops.
 Use with CAUTION
```

When you use this command without the **trunk** keyword, the system returns an additional message similar to the following:

```
%Portfast has been configured on Ethernet1/40 but will only
 have effect when the interface is in a non-trunking mode.
```

To configure trunk interfaces as spanning tree edge ports, use the **spanning-tree port type trunk** command. To remove the spanning tree edge port type setting, use the **no spanning-tree port type** command.

The default spanning tree port type is normal.

This command does not require a license.

Examples

This example shows how to configure an interface connected to a host as an edge port, which automatically transitions that interface to the forwarding state on a linkup:

```
switch# configure terminal
switch(config)# interface ethernet 1/1
switch(config-if)# spanning-tree port type edge
switch(config-if)#
```

Related Commands

Command	Description
show spanning-tree	Displays information about the spanning tree state.

spanning-tree port type edge bpdufilter default

To enable bridge protocol data unit (BPDU) Filtering by default on all spanning tree edge ports, use the **spanning-tree port type edge bpdufilter default** command. To disable BPDU Filtering by default on all edge ports, use the **no** form of this command.

spanning-tree port type edge bpdufilter default

no spanning-tree port type edge bpdufilter default

Syntax Description

This command has no arguments or keywords.

Command Default

Disabled

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

To enable BPDU Filtering by default, you must do the following:

- Configure the interface as a spanning tree edge port, using the **spanning-tree port type edge** or the **spanning-tree port type edge default** command.
- Enable BPDU Filtering.

Use this command to enable BPDU Filtering globally on all spanning tree edge ports. BPDU Filtering prevents a port from sending or receiving any BPDUs.

Caution Be cautious when using this command; incorrect usage can cause bridging loops.

You can override the global effects of this **spanning-tree port type edge bpdufilter default** command by configuring BPDU Filtering at the interface level. See the **spanning-tree bpdufilter** command for complete information on using this feature at the interface level.

Note The BPDU Filtering feature's functionality is different when you enable it on a per-port basis or globally. When enabled globally, BPDU Filtering is applied only on ports that are operational spanning tree edge ports. Ports send a few BPDUs at a linkup before they effectively filter outbound BPDUs. If a BPDU is received on an edge port, that port immediately becomes a normal spanning tree port with all the normal transitions and BPDU Filtering is disabled. When enabled locally on a port, BPDU Filtering prevents the switch from receiving or sending BPDUs on this port.

This command does not require a license.

Examples

This example shows how to enable BPDU Filtering globally on all spanning tree edge operational ports by default:

```
switch# configure terminal
switch(config)# spanning-tree port type edge bpdufilter default
switch(config)#
```

Related Commands

Command	Description
show spanning-tree summary	Displays the information about the spanning tree configuration.
spanning-tree bpdufilter	Enables BPDU Filtering on the interface.
spanning-tree port type edge	Configures an interface as a spanning tree edge port.

spanning-tree port type edge bpduguard default

To enable bridge protocol data unit (BPDU) Guard by default on all spanning tree edge ports, use the **spanning-tree port type edge bpduguard default** command. To disable BPDU Guard on all edge ports by default, use the **no** form of this command.

spanning-tree port type edge bpduguard default

no spanning-tree port type edge bpduguard default

Syntax Description

This command has no arguments or keywords.

Command Default

Disabled

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

To enable BPDU Guard by default, you must do the following:

- Configure the interface as spanning tree edge ports by entering the **spanning-tree port type edge** or the **spanning-tree port type edge default** command.
- Enable BPDU Guard.

Use this command to enable BPDU Guard globally on all spanning tree edge ports. BPDU Guard disables a port if it receives a BPDU.

Global BPDU Guard is applied only on spanning tree edge ports.

You can also enable BPDU Guard per interface; see the **spanning-tree bpduguard** command for more information.

Note We recommend that you enable BPDU Guard on all spanning tree edge ports.

This command does not require a license.

Examples

This example shows how to enable BPDU Guard by default on all spanning tree edge ports:

```
switch# configure terminal
switch(config)# spanning-tree port type edge bpduguard default
switch(config)#
```

Related Commands

Command	Description
show spanning-tree summary	Displays the information about the spanning tree configuration.
spanning-tree bpduguard	Enables BPDU guard on the interface.
spanning-tree port type edge	Configures an interface as a spanning tree edge port.

spanning-tree port type edge default

To configure all access ports that are connected to hosts as edge ports by default, use the **spanning-tree port type edge default** command. To restore all ports connected to hosts as normal spanning tree ports by default, use the **no** form of this command.

spanning-tree port type edge default

no spanning-tree port type edge default

Syntax Description

This command has no arguments or keywords.

Command Default

Disabled

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Use this command to automatically configure all interfaces as spanning tree edge ports by default. This command will not work on trunk ports.

Caution Be careful when using this command. You should use this command only with interfaces that connect to end stations; otherwise, an accidental topology loop could cause a data-packet loop and disrupt the switch and network operation.

When a linkup occurs, an interface configured as an edge port automatically moves the interface directly to the spanning tree forwarding state without waiting for the standard forward-time delay. (This transition was previously configured as the Cisco-proprietary PortFast feature.)

When you use this command, the system returns a message similar to the following:

```
Warning: this command enables portfast by default on all interfaces. You
 should now disable portfast explicitly on switched ports leading to hubs,
 switches and bridges as they may create temporary bridging loops.
```

You can configure individual interfaces as edge ports using the **spanning-tree port type edge** command.

The default spanning tree port type is normal.

This command does not require a license.

Examples

This example shows how to globally configure all ports connected to hosts as spanning tree edge ports:

```
switch# configure terminal
switch(config)# spanning-tree port type edge default
```

```
switch(config)#
```

Related Commands

Command	Description
show spanning-tree summary	Displays information about the spanning tree configuration.
spanning-tree port type edge	Configures an interface as a spanning tree edge port.

spanning-tree port type network

To configure the interface that connects to a switch as a network spanning tree port, regardless of the global configuration, use the **spanning-tree port type network** command. To return the port to a normal spanning tree port, use the use the **no** form of this command.

spanning-tree port type network

no spanning-tree port type

Syntax Description

This command has no arguments or keywords.

Command Default

The default is the global setting for the default port type network that is configured when you entered the **spanning-tree port type network default** command. If you did not configure a global setting, the default spanning tree port type is normal.

Command Modes

Interface configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Use this command to configure an interface that connects to a switch as a spanning tree network port. Bridge Assurance runs only on Spanning Tree Protocol (STP) network ports.

Note If you mistakenly configure ports connected to hosts as STP network ports and enable Bridge Assurance, those ports will automatically move into the blocking state.

Note Bridge Assurance is enabled by default, and all interfaces configured as spanning tree network ports have Bridge Assurance enabled.

To configure a port as a spanning tree network port, use the **spanning-tree port type network** command. To remove this configuration, use the **no spanning-tree port type** command. When you use the **no spanning-tree port type** command, the software returns the port to the global default setting for network port types.

You can configure all ports that are connected to switches as spanning tree network ports by default by entering the **spanning-tree port type network default** command.

The default spanning tree port type is normal.

This command does not require a license.

Examples

This example shows how to configure an interface connected to a switch or bridge as a spanning tree network port:

```
switch# configure terminal
switch(config)# interface ethernet 1/1
switch(config-if)# spanning-tree port type network
switch(config-if)#
```

Related Commands

Command	Description
show spanning-tree interface	Displays information about the spanning tree configuration per specified interface.

spanning-tree port type network default

To configure all ports as spanning tree network ports by default, use the **spanning-tree port type network default** command. To restore all ports to normal spanning tree ports by default, use the **no** form of this command.

spanning-tree port type network default

no spanning-tree port type network default

Syntax Description

This command has no arguments or keywords.

Command Default

Disabled

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Use this command to automatically configure all interfaces that are connected to switches as spanning tree network ports by default. You can then use the **spanning-tree port type edge** command to configure specified ports that are connected to hosts as spanning-tree edge ports.

Note If you mistakenly configure ports connected to hosts as Spanning Tree Protocol (STP) network ports and Bridge Assurance is enabled, those ports will automatically move into the blocking state.

Configure only the ports that connect to other switches as network ports because the Bridge Assurance feature causes network ports that are connected to hosts to move into the spanning tree blocking state.

You can identify individual interfaces as network ports by using the **spanning-tree port type network** command.

The default spanning tree port type is normal.

This command does not require a license.

Examples

This example shows how to globally configure all ports connected to switches as spanning tree network ports:

```
switch# configure terminal
switch(config)# spanning-tree port type network default
switch(config)#
```

Related Commands

Command	Description
show spanning-tree summary	Displays information about the spanning tree configuration.

spanning-tree port-priority

To set an interface priority when two bridges compete for position as the root bridge, use the **spanning-tree port-priority** command. The priority you set breaks the tie. To return to the default settings, use the **no** form of this command.

spanning-tree [**vlan** *vlan-id*] **port-priority** *value*

no spanning-tree [**vlan** *vlan-id*] **port-priority**

Syntax Description

vlan *vlan-id*	(Optional) Specifies the VLAN identification number. The range is from 0 to 4094.
value	Port priority. The range is from 1 to 224, in increments of 32.

Command Default

Port priority default value is 128.

Command Modes

Interface configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Do not use the **vlan** *vlan-id* parameter on access ports. The software uses the port priority value for access ports and the VLAN port priority values for trunk ports.

The priority values are 0, 32, 64, 96, 128, 160, 192, and 224. All other values are rejected.

Note Use this command to configure the port priority for Rapid per VLAN Spanning Tree Plus (Rapid PVST+) spanning tree mode, which is the default STP mode. To configure the port priority for Multiple Spanning Tree (MST) spanning tree mode, use the **spacing-tree mst port-priority** command.

This command does not require a license.

Examples

This example shows how to increase the probability that the spanning tree instance on access port interface 2/0 is chosen as the root bridge by changing the port priority to 32:

```
switch# configure terminal
switch(config)# interface ethernet 1/1
switch(config-if)# spanning-tree port-priority 32
switch(config-if)#
```

Related Commands

Command	Description
show spanning-tree	Displays information about the spanning tree state.
spanning-tree interface priority	Displays information on the spanning tree port priority for the interface.

spanning-tree vlan

To configure Spanning Tree Protocol (STP) parameters on a per-VLAN basis, use the **spanning-tree vlan** command. To return to the default settings, use the **no** form of this command.

spanning-tree vlan *vlan-id* [**forward-time** *value* | **hello-time** *value* | **max-age** *value* | **priority** *value* | [**root** {**primary** | **secondary**} [**diameter** *dia* [**hello-time** *value*]]]]

no spanning-tree vlan *vlan-id* [**forward-time** | **hello-time** | **max-age** | **priority** | **root**]

Syntax Description

vlan-id	VLAN identification number. The VLAN ID range is from 0 to 4094.
forward-time *value*	(Optional) Specifies the STP forward-delay time. The range is from 4 to 30 seconds.
hello-time *value*	(Optional) Specifies the number of seconds between the generation of configuration messages by the root switch. The range is from 1 to 10 seconds.
max-age *value*	(Optional) Specifies the maximum number of seconds that the information in a bridge protocol data unit (BPDU) is valid. The range is from 6 to 40 seconds.
priority *value*	(Optional) Specifies the STP-bridge priority; the valid values are 0, 4096, 8192, 12288, 16384, 20480, 24576, 28672, 32768, 36864, 40960, 45056, 49152, 53248, 57344, or 61440. All other values are rejected.
root primary	(Optional) Forces this switch to be the root bridge.
root secondary	(Optional) Forces this switch to be the root switch if the primary root fails.
diameter *dia*	(Optional) Specifies the maximum number of bridges between any two points of attachment between end stations.

Command Default

The defaults are as follows:

- **forward-time**—15 seconds
- **hello-time**—2 seconds
- **max-age**—20 seconds
- **priority**—32768

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Caution When disabling spanning tree on a VLAN using the **no spanning-tree vlan** *vlan-id* command, ensure that all switches and bridges in the VLAN have spanning tree disabled. You cannot disable spanning tree on some switches and bridges in a VLAN and leave it enabled on other switches and bridges in the same VLAN because switches and bridges with spanning tree enabled have incomplete information about the physical topology of the network.

Caution We do not recommend disabling spanning tree even in a topology that is free of physical loops. Spanning tree is a safeguard against misconfigurations and cabling errors. Do not disable spanning tree in a VLAN without ensuring that there are no physical loops present in the VLAN.

When setting the **max-age** *seconds*, if a bridge does not see BPDUs from the root bridge within the specified interval, it assumes that the network has changed and recomputes the spanning-tree topology.

The **spanning-tree root primary** alters this switch's bridge priority to 24576. If you enter the **spanning-tree root primary** command and the switch does not become the root, then the bridge priority is changed to 4096 less than the bridge priority of the current bridge. The command fails if the value required to be the root bridge is less than 1. If the switch does not become the root, an error results.

If the network devices are set for the default bridge priority of 32768 and you enter the **spanning-tree root secondary** command, the software alters this switch's bridge priority to 28762. If the root switch fails, this switch becomes the next root switch.

Use the **spanning-tree root** commands on the backbone switches only.

This command does not require a license.

Examples

This example shows how to enable spanning tree on VLAN 200:

```
switch# configure terminal
switch(config)# spanning-tree vlan 200
switch(config)#
```

This example shows how to configure the switch as the root switch for VLAN 10 with a network diameter of 4:

```
switch# configure terminal
switch(config)# spanning-tree vlan 10 root primary diameter 4
switch(config)#
```

This example shows how to configure the switch as the secondary root switch for VLAN 10 with a network diameter of 4:

```
switch# configure terminal
switch(config)# spanning-tree vlan 10 root secondary diameter 4
switch(config)#
```

Related Commands

Command	Description
show spanning-tree	Displays information about the spanning tree state.

state

To set the operational state for a VLAN, use the **state** command. To return a VLAN to its default operational state, use the **no** form of this command.

state {**active** | **suspend**}

no state

Syntax Description

active	Specifies that the VLAN is actively passing traffic.
suspend	Specifies that the VLAN is not passing any packets.

Command Default

The VLAN is actively passing traffic.

Command Modes

VLAN configuration mode
Switch profile VLAN configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.
5.0(3)A1(1)	Support for this command was introduced in a switch profile.

Usage Guidelines

You cannot suspend the state for VLAN 1 or VLANs 1006 to 4094.

VLANs in the suspended state do not pass packets.

This command does not require a license.

Examples

This example shows how to suspend VLAN 2:

```
switch# configure terminal
switch(config)# vlan 2
switch(config-vlan)# state suspend
switch(config-vlan)#
```

This example shows how to suspend VLAN 5 in a switch profile:

```
switch# configure sync
Enter configuration commands, one per line.  End with CNTL/Z.
switch(config-sync)# switch-profile s5010
Switch-Profile started, Profile ID is 1
switch(config-sync-sp)# vlan 5
switch(config-sync-sp-vlan)# state suspend
switch(config-sync-sp-vlan)#
```

Related Commands

Command	Description
show vlan	Displays VLAN information.

svi enable

To enable the creation of VLAN interfaces, use the **svi enable** command. To disable the VLAN interface feature, use the **no** form of this command.

svi enable

no svi enable

Syntax Description

This command has no arguments or keywords.

Command Default

VLAN interfaces are disabled.

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

You must use the **feature interface-vlan** command before you can create VLAN interfaces.

This command does not require a license.

Examples

This example shows how to enable the interface VLAN feature on the switch:

```
switch# configure terminal
switch(config)# svi enable
switch(config)#
```

Related Commands

Command	Description
interface vlan	Creates a VLAN interface.

switchport access vlan

To set the access VLAN when the interface is in access mode, use the **switchport access vlan** command. To reset the access-mode VLAN to the appropriate default VLAN for the switch, use the **no** form of this command.

switchport access vlan *vlan-id*

no switchport access vlan

Syntax Description

vlan-id	VLAN to set when the interface is in access mode. The range is from 1 to 4094, except for the VLANs reserved for internal use.

Command Default

VLAN 1

Command Modes

Interface configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Use the **no** form of the **switchport access vlan** command to reset the access-mode VLAN to the appropriate default VLAN for the switch. This action may generate messages on the device to which the port is connected.

This command does not require a license.

Examples

This example shows how to configure an Ethernet interface to join VLAN 2:

```
switch# configure terminal
switch(config)# interface ethernet 1/7
switch(config-if)# switchport access vlan 2
switch(config-if)#
```

Related Commands

Command	Description
show interface switchport	Displays the administrative and operational status of a port.

Related Commands

Command	Description
show interface switchport	Displays information on all interfaces configured as switch ports.

switchport backup interface

To configure Flex Links, which are two interfaces that provide backup to each other, on a Layer 2 interface, use the switchport backup interface command. To remove the Flex Links configuration, use the no form of this command.

switchport backup interface {**ethernet** *slot/port* | **port-channel** *channel-no*} [**multicast fast-convergence** | **preemption** {**delay** *delay-time* | **mode** [**bandwidth** | **forced** | **off**]}]

[**no**] **switchport backup interface** {**ethernet** *slot/port* | **port-channel** *channel-no*} [**multicast fast-convergence** | **preemption** {**delay** *delay-time* | **mode** [**bandwidth** | **forced** | **off**]}]

Syntax Description

ethernet *slot/port*	Specifies the backup Ethernet interface. The slot number is 1 and the port number is from 1 to 48.
port-channel *channel-no*	Specifies the port channel interface. The interface number is from 1 to 4096.
multicast	(Optional) Specifies to configure the multicast parameters.
fast-convergence	(Optional) Configures fast convergence on the backup interface.
preemption	(Optional) Specifies to configure a preemption scheme for a backup interface pair.
delay *delay-time*	(Optional) Specifies a preemption delay. The range is from 1 to 300 seconds. The default preemption delay is 35 seconds
mode	(Optional) Specifies the preemption mode.
bandwidth	(Optional) Specifies that the interface with the higher available bandwidth always preempts the backup.
forced	(Optional) Specifies the interface that always preempts the backup.
off	(Optional) Specifies no preemption occurs from backup to active.

Command Default

None

Command Modes

Interface configuration mode

Command History

Release	Modification
6.0(2)A3(1)	This command was introduced.

Usage Guidelines

Note This command is applicable to the Cisco Nexus 3500 Series switches only.

- Before you use this command, ensure that you enable Flex Links on the switch by using the **feature flexlink** command.

Note Ensure that the virtual port channel (vPC) is disabled on the switch.

- A Flex Links port can only be a physical Ethernet port or a port channel.
- You cannot configure Flex Links port on the following types of interface:
  - Interface with port security enabled
  - Layer 3 interface
  - Switched Port Analyzer (SPAN) destination
  - Port channel member
  - Interface configured with private VLAN
  - Endnode mode
  - Fabric path core interface (Layer 2 multipath)

Examples

This example shows how to configure Ethernet 1/1 and Ethernet 1/12 as Flex Links:

```
switch# configure terminal
switch(config)# interface ethernet 1/1
switch(config-if)# switchport backup interface ethernet 1/12
switch(config-if)#
```

This example shows how to configure EtherChannel 100 and EtherChannel 101 as Flex Links:

```
switch# configure terminal
switch(config)# interface port-channel 100
switch(config-if)# switchport backup interface port-channel 101
switch(config-if)#
```

This example shows how to configure the Ethernet interface to always preempt the backup:

```
switch# configure terminal
switch(config)# interface ethernet1/10
switch(config-if)# switchport backup interface ethernet1/2 preemption mode forced
switch(config-if)#
```

This example shows how to configure the Ethernet interface preemption delay time:

```
switch# configure terminal
switch(config)# interface ethernet1/1
switch(config-if)# switchport backup interface ethernet1/12 preemption delay 150
switch(config-if)#
```

This example shows how to configure fast convergence on the backup interface:

```
switch# configure terminal
switch(config)# interface ethernet1/1
switch(config-if)# switchport backup interface ethernet1/12 multicast fast-convergence
switch(config-if)#
```

Related Commands

Command	Description
feature flexlink	Enables Flex Links for Layer 2 interfaces.
show interface switchport backup	Displays backup interfaces.

switchport mac-learn disable

To disable MAC address learning on Layer 2 interfaces, use the **switchport mac-learn disable** command. To re-enable MAC address learning on Layer 2 interfaces, use the **no** form of this command.

switchport mac-learn disable

no switchport mac-learn disable

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

Interface configuration mode

Command History

Release	Modification
6.0(2)A1(1d)	This command was introduced.

Usage Guidelines

After you disable MAC learning, run the **clear mac address-table dynamic interface** command to clear the dynamic address entries for a specified interface from the MAC address table.

In Warp mode, the Cisco Nexus 3500 switch does not flood Layer 3 traffic to the VLAN in which the port configured by using the **switchport mac-learn disable** command is present, and the traffic is dropped. In Normal mode, the switch should flood the Layer 3 traffic to this VLAN.

Examples

This example shows how to how to disable MAC address learning on Layer 2 interfaces:

```
switch# configure terminal
switch(config)# interface ethernet 1/4
switch(config-if)# switchport mac-learn disable
switch(config-if)# clear mac address-table dynamic interface ethernet 1/4
```

Related Commands

Command	Description
clear mac address-table dynamic interface	Clears the dynamic address entries for the specified interface from the MAC address table.

switchport monitor rate-limit

To configure a rate limit to monitor traffic on an interface, use the **switchport monitor rate-limit** command. To remove a rate limit, use the **no** form of this command.

switchport monitor rate-limit 1G

no switchport monitor rate-limit [**1G**]

Syntax Description

1G	(Optional) Specifies that the rate limit is 1 GB.

Command Default

None

Command Modes

Interface configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

This command does not require a license.

Examples

This example shows how to limit the bandwidth on Ethernet interface 1/2 to 1 GB:

```
switch# configure terminal
switch(config)# interface ethernet 1/2
switch(config-if)# switchport monitor rate-limit 1G
switch(config-if)#
```

Related Commands

Command	Description
show interface switchport	Displays information on all interfaces configured as switch ports.

vlan

To add a VLAN or to enter the VLAN configuration mode, use the **vlan** command. To delete the VLAN and exit the VLAN configuration mode, use the **no** form of this command.

vlan {*vlan-id* | *vlan-range*}

no vlan {*vlan-id* | *vlan-range*}

Syntax Description

vlan-id	Number of the VLAN. The range is from 1 to 4094. **Note** You cannot create, delete, or modify VLAN 1 or any of the internally allocated VLANs.
vlan-range	Range of configured VLANs; see the "Usage Guidelines" section for a list of valid values.

Command Default

None

Command Modes

Global configuration mode
Switch profile configuration mode

Note You can also create and delete VLANs in the VLAN configuration mode using these same commands.

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.
5.0(3)A1(1)	Support for this command was introduced in switch profiles.

Usage Guidelines

When you enter the **vlan** *vlan-id* command, a new VLAN is created with all default parameters and causes the CLI to enter VLAN configuration mode. If the *vlan-id* argument that you entered matches an existing VLAN, nothing happens except that you enter VLAN configuration mode.

You can enter the *vlan-range* using a comma (**,**), a dash (**-**), and the number.

VLAN 1 parameters are factory configured and cannot be changed; you cannot create or delete this VLAN. Additionally, you cannot create or delete VLAN 4095 or any of the internally allocated VLANs.

When you delete a VLAN, all the access ports in that VLAN are shut down and no traffic flows. On trunk ports, the traffic continues to flow for the other VLANs allowed on that port, but the packets for the deleted VLAN are dropped. However, the system retains all the VLAN-to-port mapping for that VLAN, and when you reenable, or recreate, that specified VLAN, the switch automatically reinstates all the original ports to that VLAN.

In Cisco NX-OS 5.0(3)A1(1), you can configure VLANs on a device configured as a VLAN Trunking Protocol (VTP) server or transparent device. If the VTP device is configured as a client, you cannot add a VLAN or enter the VLAN configuration mode.

This command does not require a license.

Examples

This example shows how to add a new VLAN and enter VLAN configuration mode:

```
switch# configure terminal
switch(config)# vlan 2
switch(config-vlan)#
```

This example shows how to add a range of new VLANs and enter VLAN configuration mode:

```
switch# configure terminal
switch(config)# vlan 2,5,10-12,20,25,4000
switch(config-vlan)#
```

This example shows how to add a new VLAN and enter VLAN configuration mode in a switch profile:

```
switch# configure sync
Enter configuration commands, one per line.  End with CNTL/Z.
switch(config-sync)# switch-profile s5010
Switch-Profile started, Profile ID is 1
switch(config-sync-sp)# vlan 3
switch(config-sync-sp-vlan)#
```

This example shows how to delete a VLAN:

```
switch# configure terminal
switch(config)# no vlan 2
switch(config)#
```

Related Commands

Command	Description
ip igmp snooping (VLAN)	Configures the Internet Group Management Protocol (IGMP) on a VLAN.
name (VLAN configuration)	Sets the name for a VLAN.
show vlan	Displays VLAN information.
shutdown (VLAN configuration)	Shuts down the local traffic on a VLAN.
state	Sets the operational state for a VLAN.

vlan dot1Q tag native

To enable dot1q (IEEE 802.1Q) tagging for all native VLANs on all trunked ports on the switch, use the **vlan dot1Q tag native** command. To disable dot1q (IEEE 802.1Q) tagging for all native VLANs on all trunked ports on the switch, use the **no** form of this command.

vlan dot1Q tag native

no vlan dot1Q tag native

Syntax Description

This command has no arguments or keywords.

Command Default

Disabled

Command Modes

Global configuration mode
Switch profile configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.
5.0(3)A1(1)	Support for this command was introduced in switch profiles.

Usage Guidelines

Typically, you configure 802.1Q trunks with a native VLAN ID, which strips tagging from all packets on that VLAN.

To maintain the tagging on the native VLAN and drop untagged traffic, use the **vlan dot1q tag native** command. The switch will tag the traffic received on the native VLAN and admit only 802.1Q-tagged frames, dropping any untagged traffic, including untagged traffic in the native VLAN.

Control traffic continues to be accepted as untagged on the native VLAN on a trunked port, even when the vlan dot1q tag native command is enabled.

Note The **vlan dot1q tag native** command is enabled on global basis.

This command does not require a license.

Examples

This example shows how to enable 802.1Q tagging on the switch:

```
switch# configure terminal
switch(config)# vlan dot1q tag native
switch(config)#
```

This example shows how to disable 802.1Q tagging on the switch:

```
switch# configure terminal
switch(config)# no vlan dot1q tag native
```

```
Turning off vlan dot1q tag native may impact the functioning of existing dot1q tunnel
ports
switch(config)#
```

This example shows how to enable 802.1Q tagging in a switch profile:

```
switch# configure sync
Enter configuration commands, one per line.  End with CNTL/Z.
switch(config-sync)# switch-profile s5010
Switch-Profile started, Profile ID is 1
switch(config-sync-sp)# vlan dot1q tag native
switch(config-sync-sp)#
```

Related Commands

Command	Description
show vlan dot1q tag native	Displays the status of tagging on the native VLAN.

vtp (interface)

To enable VLAN Trunking Protocol (VTP) on an interface, use the **vtp** command. To disable VTP on an interface, use the **no** form of this command.

vtp

no vtp

Syntax Description

This command has no arguments or keywords.

Command Default

VTP is enabled on a trunk interface

Command Modes

Interface configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Before you use this command, you must enable VTP on the switch by using the **feature vtp** command.

VLAN Trunking Protocol (VTP) is a Cisco Proprietary Layer 2 messaging protocol used to distribute the VLAN configuration information across multiple devices within a VTP domain.

This command does not require a license.

Examples

This example shows how to enable VTP on an interface:

```
switch# configure terminal
switch(config)# interface ethernet 1/1
switch(config-if)# vtp
switch(config-if)#
```

Related Commands

Command	Description
copy running-config startup-config	Copies the running configuration to the startup configuration.
feature vtp	Enables VTP on the switch.
show running-config vtp	Displays the running VTP configuration.
show vtp status	Displays VTP information.
snmp-server enable traps vtp	Enables Simple Network Management Protocol (SNMP) notifications.

vtp domain

To configure the name of the VLAN Trunking Protocol (VTP) administrative domain, use the **vtp domain** command. To remove the domain name, use the **no** form of this command.

vtp domain *name*

no vtp domain

Syntax Description

name	VTP domain name. The name can be a maximum of 32 ASCII characters.

Command Default

Blank (NULL)

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Before you use this command, you must enable VTP on the switch by using the **feature vtp** command.

VLAN Trunking Protocol (VTP) is a Cisco Proprietary Layer 2 messaging protocol used to distribute the VLAN configuration information across multiple devices within a VTP domain. Without VTP, you must configure VLANs in each device in the network. Using VTP, you configure VLANs on a VTP server and then distribute the configuration to other VTP devices in the VTP domain.

This command does not require a license.

Examples

This example shows how to create a VTP domain named accounting:

```
switch# configure terminal
switch(config)# vtp domain accounting
switch(config)#
```

Related Commands

Command	Description
feature vtp	Enables VTP on the switch.
show running-config vtp	Displays the running VTP configuration.
show vtp status	Displays VTP information.

vtp file

To store the VLAN Trunking Protocol (VTP) configuration information in a file, use the **vtp file** command. To stop storing the configuration in a file, use the **no** form of this command.

vtp file bootflash:*server*[*directory/*]*filename*

no vtp file

Syntax Description

bootflash:	Specifies that the VTP configuration file is to be stored in the bootflash memory of the NVRAM. The colon character (:) is required after the file system name.
server	Name of the server. Valid values are **///**, **//module-1/**, **//sup-1/**, **//sup-active/**, or **//sup-local/**. The double slash (//) is required.
directory/	(Optional) Name of the destination directory. The directory name is case sensitive.
filename	Name of the VTP configuration file.

Note There can be no spaces in the **bootflash://***server/directory/filename* string. Individual elements of this string are separated by colons (:) and slashes (/).

Command Default

VTP database file, vlan.dat

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Before you use this command, you must enable VTP on the switch by using the **feature vtp** command.

The default configuration file is stored in the VTP database, vlan.dat, in NVRAM. VTP configuration information is also stored in the startup configuration file.

Note Do not delete the vlan.dat file.

When a switch in a VTP domain reloads, the switch updates the VTP domain and VLAN configuration information from the information contained in the VTP database file (vlan.dat) or the startup configuration file.

If the VTP domain names in the VTP database and the startup configuration file match, the VTP database is ignored. The VTP and VLAN configurations in the startup configuration file are used to restore the configuration in this VTP device.

If the VTP domain information in the startup configuration file does not match with that in the VTP database file, then the configuration in the VTP database file is used to restore the configuration in the transparent VTP device.

This command does not require a license.

Examples

This example shows how to store the VTP configuration to a file named myvtp.txt in the local writable storage file system, bootflash:

```
switch# configure terminal
switch(config)# vtp file bootflash:///myvtp.txt
switch(config)#
```

Related Commands

Command	Description
feature vtp	Enables VTP on the switch.
show running-config vtp	Displays the running VTP configuration.
show vtp status	Displays VTP information.

vtp password

Command	Description
feature vtp	Enables VTP on the switch.
show vtp status	Displays VTP information.
vlan	Configures VLANs.

To set the password for the VTP administrative domain, use the **vtp password** command. To remove the administrative password, use the **no** form of this command.

vtp password *password*

no vtp password

Syntax Description

password	VTP domain password. The password is in ASCII text and can be a maximum of 64 characters.

Command Default

None

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

If you configure a password for VTP, you must configure the password on all switches in the VTP domain. The password must be the same password on all those switches. The VTP password that you configure is translated by an algorithm into a 16-byte word (MD5 value) that is carried in all summary-advertisement VTP packets.

This command does not require a license.

Examples

This example shows how to configure a password for the VTP administrative domain named accounting:

```
switch# configure terminal
switch(config)# vtp domain accounting
switch(config)# vtp password cisco
switch(config)#
```

Related Commands

Command	Description
show vtp password	Displays the VTP domain password.
show vtp status	Displays VTP information.

vtp version

To configure the administrative domain to a VLAN Trunking Protocol (VTP) version, use the **vtp version** command. To revert to the default version, use the **no** form of this command.

vtp version *version*

no vtp version

Syntax Description

version	VTP version. The range is from 1 to 2.

Command Default

Version 1 enabled

Version 2 disabled

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Before you use this command, you must enable VTP on the switch by using the **feature vtp** command.

If you enable VTP, you must configure either version 1 or version 2. If you are using VTP in a Token Ring environment, you must use version 2.

This command does not require a license.

Examples

This example shows how to enable VTP version 2 for Token Ring VLANs:

```
switch# configure terminal
switch(config)# vtp version 2
switch(config)#
```

Related Commands

Command	Description
feature vtp	Enables VTP on the switch.
show vtp status	Displays VTP information.