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## CHAPTER **2**

# Ethernet Commands

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This chapter describes the Cisco NX-OS Ethernet commands available on Cisco Nexus 5000 Series switches.

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## bandwidth (interface)

To set the inherited and received bandwidth values for an interface, use the **bandwidth** command. To restore the default values, use the **no** form of this command.

**bandwidth** {*kbps* | **inherit** [*kbps*]}

**no bandwidth** {*kbps* | **inherit** [*kbps*]}

<b>Syntax Description</b>	<i>kbps</i>	Informational bandwidth in kilobits per second. Valid values are from 1 to 10000000.
	<b>inherit</b>	(Optional) Specifies the bandwidth inherited from the main interface.

**Command Default** 1000000 kbps

**Command Modes** Interface configuration mode

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	4.0(0)N1(1a)	This command was introduced.

**Usage Guidelines** The **bandwidth** command sets an informational parameter to communicate only the current bandwidth to the higher-level protocols; you cannot adjust the actual bandwidth of an interface using this command.

The **bandwidth inherit** command controls how a subinterface inherits the bandwidth of its main interface.

The **no bandwidth inherit** command enables all subinterfaces to inherit the default bandwidth of the main interface, regardless of the configured bandwidth. If a bandwidth is not configured on a subinterface, and you use the **bandwidth inherit** command, all subinterfaces will inherit the current bandwidth of the main interface. If you configure a new bandwidth on the main interface, all subinterfaces will use this new value.

If you do not configure a bandwidth on the subinterface and you configure the bandwidth inherit command on the main interface, the subinterfaces will inherit the specified bandwidth.

In all cases, if an interface has an explicit bandwidth setting configured, then that interface will use that setting, regardless of whether the bandwidth inheritance setting is in effect.

**Examples** This example shows how to configure all subinterfaces off this main interface to inherit the configured bandwidth:

```
switch(config-if)# bandwidth inherit 30000
```

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**Related Commands**

<b>Command</b>	<b>Description</b>
<b>show interface</b>	Displays the interface configuration information.

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# 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	
<b>advertise</b> { <b>v1</b>   <b>v2</b> }	Configures the version to use to send CDP advertisements. Version-2 is the default state.
<b>enable</b>	Enables CDP for all Ethernet interfaces.
<b>format device-id</b>	Configures the format of the CDP device ID.
<b>mac-address</b>	Uses the MAC address as the CDP device ID.
<b>serial-number</b>	Uses the serial number as the CDP device ID.
<b>system-name</b>	Uses the system name, which can be expressed as a fully qualified domain name, as the CDP device ID. This is the default.
<b>holdtime</b> <i>seconds</i>	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.
<b>timer</b> <i>seconds</i>	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

Command History	Release	Modification
	4.0(0)N1(1a)	This command was introduced.

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

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

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
```

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

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

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>show cdp</b>	Displays Cisco Discovery Protocol (CDP) information.

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## cdp enable

To enable the Cisco Discovery Protocol (CDP) on an Ethernet interface, use the **cdp enable** command. To disable CDP on the interface, use the **no** form of this command.

**cdp enable**

**no cdp enable**

---

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

---

**Command Default** None

---

**Command Modes** Interface configuration mode

---

Command History	Release	Modification
	4.0(0)N1(1a)	This command was introduced.

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**Examples** This example shows how to enable CDP on an Ethernet interface:

```
switch# configure terminal
switch(config)# interface ethernet 1/1
switch(config-if)# cdp enable
```

---

Related Commands	Command	Description
	<b>show interface</b>	Displays the interface configuration information.

---

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## channel-group (Ethernet)

To assign and configure a physical interface to an EtherChannel, use the **channel-group** command. To remove the channel group configuration from the interface, use the **no** form of this command.

**channel-group** *number* [**mode** { **active** | **on** | **passive** }]

**no channel-group** [*number*]

### Syntax Description

<b>number</b>	Number of channel group. The <i>number</i> range is from 1 to 4096. Cisco NX-OS creates the EtherChannel associated with this channel group if the EtherChannel does not already exist.
<b>mode</b>	(Optional) Specifies the EtherChannel mode of the interface.
<b>active</b>	Specifies that when you enable the Link Aggregation Control Protocol (LACP), this command enables LACP on the specified interface. The interface is in an active negotiating state, in which the port initiates negotiations with other ports by sending LACP packets.
<b>on</b>	This is the default channel mode. Specifies that all EtherChannels that are not running LACP remain in this mode. If you attempt to change the channel mode to active or passive before enabling LACP, the switch returns an error message.  After you enable LACP globally, by using the <b>feature lacp</b> command, you enable LACP on each channel by configuring the channel mode as either active or passive. An interface in this mode does not initiate or respond to LACP packets. When an LACP attempts to negotiate with an interface in the on state, it does not receive any LACP packets and becomes an individual link with that interface; it does not join the channel group.  The default mode is <b>on</b> .
<b>passive</b>	Specifies that when you enable LACP, this command enables LACP only if an LACP device is detected. The interface is in a passive negotiation state, in which the port responds to LACP packets that it receives but does not initiate LACP negotiation.

### Command Default

None

### Command Modes

Interface configuration mode

### Command History

Release	Modification
4.0(0)N1(1a)	This command was introduced.

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### Usage Guidelines

Use this command to create a channel group that includes the interface that you are working on and to add or remove specific interfaces from the channel group. Use this command to move a port from one channel group to another. You enter the channel group that you want the port to move to; the switch automatically removes the specified port from its present channel group and adds it to the specified channel group.

After you enable LACP globally, by using the **feature lacp** command, you enable LACP on each channel by configuring the channel mode as either **active** or **passive**. An EtherChannel in the **on** channel mode is a pure EtherChannel and can aggregate a maximum of eight ports. The EtherChannel does not run LACP.

You cannot change the mode for an existing EtherChannel or any of its interfaces if that EtherChannel is not running LACP; the channel mode remains as **on**. The system returns an error message if you attempt to change the mode.

Use the **no** form of this command to remove the physical interface from the EtherChannel. When you delete the last physical interface from an EtherChannel, the EtherChannel remains. To delete the EtherChannel completely, use the **no** form of the **interface port-channel** command.

The compatibility check includes the following operational attributes:

- Port mode
- Access VLAN
- Trunk native VLAN
- Tagged or untagged
- Allowed VLAN list
- SPAN (cannot be SPAN source or destination port)
- Storm control

Use the **show port-channel compatibility-parameters** command to see the full list of compatibility checks that Cisco NX-OS uses.

You can only add interfaces configured with the channel mode set to **on** for static EtherChannels, that is, without a configured aggregation protocol. You can only add interfaces configured with the channel mode as **active** or **passive** to EtherChannels that are running LACP.

You can configure these attributes on an individual member port. If you configure a member port with an incompatible attribute, Cisco NX-OS suspends that port in the EtherChannel.

When the interface joins an EtherChannel, some of its individual parameters are overridden with the values on the EtherChannel, as follows:

- MAC address
- Spanning Tree Protocol (STP)
- Service policy
- Quality of service (QoS)
- Access control lists (ACLs)

Interface parameters, such as the following, remain unaffected when the interface joins or leaves a EtherChannel:

- Description
- Cisco Discovery Protocol (CDP)
- LACP port priority

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- Debounce
- Rate mode
- Shutdown
- SNMP trap

If interfaces are configured for the EtherChannel interface and a member port is removed from the EtherChannel, the configuration of the EtherChannel interface is not propagated to the member ports.

Any configuration changes that you make in any of the compatibility parameters to the EtherChannel interface are propagated to all interfaces within the same channel group as the EtherChannel (for example, configuration changes are also propagated to the physical interfaces that are not part of the EtherChannel but are part of the channel group).

### **Examples**

This example shows how to add an interface to LACP channel group 5 in active mode:

```
switch(config)# interface ethernet 1/1  
switch(config-if)# channel-group 5 mode active
```

### **Related Commands**

<b>Command</b>	<b>Description</b>
<b>show interface port-channel</b>	Displays information about the traffic on the specified EtherChannel interface.
<b>show lacp</b>	Displays LACP information.
<b>show port-channel summary</b>	Displays information on the EtherChannels.

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## clear mac access-list counters

To clear statistical information from the access list, use the **clear mac access-list counters** command.

```
clear mac access-list counters [name]
```

<b>Syntax Description</b>	<i>name</i> (Optional) Name of a specific counter to clear.
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<b>Command Default</b>	None
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<b>Command Modes</b>	EXEC mode
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	4.0(0)N1(1a)	This command was introduced.

<b>Examples</b>	<p>This example shows how to clear statistical information from the access list:</p> <pre>switch# clear mac access-list counters</pre>
-----------------	--

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show mac access-lists</b>	Displays the information about the MAC address table.

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## 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 {type slot/port | port-channel
number}]] [vlan vlan-id]
```

Syntax Description	
<b>address</b> <i>mac-addr</i>	(Optional) Specifies the MAC address to remove from the table. Use the format EEEE.EEEE.EEEE.
<b>interface</b> <i>type slot/port</i>	(Optional) Specifies the interface for which MAC addresses should be removed from the table. The type can be either Ethernet or EtherChannel. Specify the appropriate slot or virtual interface group number and port number.  The <i>slot</i> number is from 1 to 255, and the <i>port</i> number is from 1 to 128.
<b>port-channel</b> <i>number</i>	(Optional) Specifies the EtherChannel for which MAC addresses should be removed from the table. Use the EtherChannel number. The <i>number</i> range is from 1 to 4096.
<b>vlan</b> <i>vlan-id</i>	(Optional) Specifies the VLAN from which MAC addresses should be removed from the table. The VLAN ID range is from 1 to 4094.

**Command Default** None

**Command Modes** EXEC mode

Command History	Release	Modification
	4.0(0)N1(1a)	This command was introduced.
	4.2(1)N1(1)	The command syntax is changed to <b>clear mac address-table dynamic</b> .

**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.

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

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

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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
```

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

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## 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 <i>interface</i>	Specifies the slot and port number.
	port-channel <i>channel</i>	Specifies the EtherChannel number.
	vlan <i>vlan-id</i>	(Optional) Specifies the VLAN. The range is from 1 to 4094.

**Command Default** None

**Command Modes** EXEC mode

Command History	Release	Modification
	4.0(0)N1(1a)	This command was introduced.

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

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

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

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

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## 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

<b>interface</b>	(Optional) Specifies the interface type.
<b>ethernet</b> <i>interface</i>	Specifies the slot and port number.
<b>port-channel</b> <i>channel</i>	Specifies the EtherChannel number.

### Command Default

None

### Command Modes

EXEC mode

### Command History

Release	Modification
4.0(0)N1(1a)	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.

### Examples

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

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

### Related Commands

Command	Description
<b>show spanning-tree</b>	Displays information about the spanning tree state.

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## delay (interface)

To set a delay value for an interface, use the **delay** command. To restore the default delay value, use the **no** form of this command.

**delay** *tens-of-microseconds*

**no delay**

Syntax Description	tens-of-microseconds	Throughput delay in tens of microseconds.
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Command Default	10 microseconds
-----------------	-----------------

Command Modes	Interface configuration mode
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Command History	Release	Modification
	4.0(0)N1(1a)	This command was introduced.

**Examples** This example shows how to set a delay of 30,000 microseconds on an interface:

```
switch(config)# interface ethernet 1/1
switch(config-if)# delay 3000
```

Related Commands	Command	Description
	<b>show interface</b>	Displays the interface configuration information.

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## description (interface)

To add a description to an interface configuration, use the **description** command. To remove the description, use the **no** form of this command.

**description** *description*

**no description**

<b>Syntax Description</b>	<i>description</i>	String description of the interface configuration. This string is limited to 80 characters.
---------------------------	--------------------	---

<b>Command Default</b>	No description is added.
------------------------	--------------------------

<b>Command Modes</b>	Interface configuration mode
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	4.0(0)N1(1a)	This command was introduced.

<b>Usage Guidelines</b>	The <b>description</b> command is meant to provide a reminder in the configuration to describe what certain interfaces are used for. The description appears in the output of the following commands such as <b>show interface</b> and <b>show running-config</b> .
-------------------------	---

<b>Examples</b>	This example shows how to add a description for an interface:
-----------------	---

```
switch(config)# interface ethernet 1/1
switch(config-if)# description "10G Server Link"
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show interface ethernet</b>	Displays the interface configuration information.
	<b>show running-config</b>	Displays the contents of the currently running configuration file.

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## 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

<b>all</b>	Enables error detection on all cases.
<b>link-flap</b>	Enables error disable detection on linkstate-flapping.
<b>loopback</b>	Enables error disable detection on loopback.

### Command Default

Enabled

### Command Modes

Global configuration mode

### Command History

Release	Modification
4.2(1)N1(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.

### Examples

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

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

### Related Commands

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

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## 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 | link-flap-recovery | failed-port-state |
pause-rate-limit | udld }
```

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

### Syntax Description

<b>all</b>	Enables timer to recover from all causes.
<b>bpduguard</b>	Enables timer to recover from bridge protocol data unit (BPDU) Guard error disable state.
<b>failed-port-state</b>	Enables timer to recover from stp set port state failure.
<b>link-flap</b>	Enables timer to recover from linkstate flapping.
<b>pause-rate-limit</b>	Enables timer to recover from pause rate limit error disabled state.
<b>udld</b>	Enables timer to recover from udld error disabled state.

### Command Default

None

### Command Modes

Global configuration mode

### Command History

Release	Modification
4.2(1)N1(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.

### Examples

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

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

### Related Commands

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

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## 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**

<b>Syntax Description</b>	<i>time</i>	Error disable recovery time interval. The range is from 30 to 65535 seconds.
<b>Command Default</b>	Disabled	
<b>Command Modes</b>	Global configuration mode	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	4.2(1)N1(1)	This command was introduced.
<b>Usage Guidelines</b>	<p>When error disable recovery is enabled, the interface automatically recovers from the err-disabled state, and the device retries bringing the interface up.</p> <p>The device waits 300 seconds to retry.</p>	
<b>Examples</b>	<p>This example shows how to enable error disable recovery time interval to 100 seconds:</p> <pre>switch(config)# <b>errdisable recovery interval 100</b> switch(config)#</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>errdisable recovery cause</b>	Enables error disabled recovery on an interface.
	<b>show interface status err-disabled</b>	Displays the interface error disabled state.

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## 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
	4.2(1)N1(1)	This command was introduced.

**Examples** This example shows how to enable VTP on the switch:

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

Related Commands	Command	Description
	<b>show vtp status</b>	Displays the VTP information.
	<b>vtp</b>	Configures VTP.

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## hardware multicast hw-hash

To use hardware hashing for multicast traffic on an EtherChannel interface, use the **hardware multicast hw-hash** command. To restore the defaults, use the **no** form of this command.

**hardware multicast hw-hash**

**no hardware multicast hw-hash**

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

**Command Default** The software selection method is used for multicast traffic.

**Command Modes** Interface configuration mode

Command History	Release	Modification
	4.2(1)N2(1)	This command was introduced.

**Usage Guidelines** By default, ingress multicast traffic on any port in the switch selects a particular EtherChannel member to egress the traffic. To reduce potential issues with the bandwidth and to provide effective load balancing of the ingress multicast traffic, hardware hashing is used for multicast traffic.



**Note**

Hardware hashing is not available on a Cisco Nexus 2000 Series Fabric Extender HIF port (downlink port).

**Examples** This example shows how to set the hardware hashing for multicast traffic on an EtherChannel interface:

```
switch(config)# interface port-channel 21
switch(config-if)# hardware multicast hw-hash
switch(config-if)#
```

This example shows how to restore the default software selection method for multicast traffic on an EtherChannel interface:

```
switch(config)# interface port-channel 21
switch(config-if)# hardware multicast hw-hash
switch(config-if)# no hardware multicast hw-hash
switch(config-if)#
```

Related Commands	Command	Description
	<b>show interface port-channel</b>	Displays the status of the EtherChannel interface configuration.

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## 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

<i>instance-id</i>	Instances to which the specified VLANs are mapped. The range is from 0 to 4094.
<b>vlan</b> <i>vlan-id</i>	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
4.0(0)N1(1a)	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.

### Examples

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

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

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<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show spanning-tree mst configuration</b>	Displays information about the MST protocol.
	<b>spanning-tree mst configuration</b>	Enters MST configuration mode.

**Send comments to [nx5000-docfeedback@cisco.com](mailto:nx5000-docfeedback@cisco.com)**

## interface ethernet

To enter interface configuration mode for an Ethernet IEEE 802.3 interface, use the **interface ethernet** command.

```
interface ethernet [chassis_ID] slot/port
```

Syntax Description		
<i>chassis_ID</i>	(Optional) Specifies the Fabric Extender chassis ID. The chassis ID is from 100 to 199.	<b>Note</b> This argument is not optional when addressing the host interfaces of a Cisco Nexus 2000 Series Fabric Extender.
<i>slot</i>	Slot from 1 to 3. The following list defines the slots available:	<ul style="list-style-type: none"> <li>Slot 1 includes all the fixed ports. A Fabric Extender only has one slot.</li> <li>Slot 2 includes the ports on the upper expansion module (if populated).</li> <li>Slot 3 includes the ports on the lower expansion module (if populated).</li> </ul>
<i>port</i>	Port number within a particular slot. The port number is from 1 to 128.	

**Command Default** None

**Command Modes** Global configuration mode

Command History	Release	Modification
	4.0(0)N1(1a)	This command was introduced.
	4.0(1a)N2(1)	This command was modified to provide the chassis ID argument.

### Examples

This example shows how to enter configuration mode for Ethernet interface 1/4:

```
switch(config)# interface ethernet 1/4
switch(config-if)#
```

This example shows how to enter configuration mode for a host interface on a Fabric Extender:

```
switch(config)# interface ethernet 101/1/1
switch(config-if)#
```

Related Commands	Command	Description
	<b>show fex</b>	Displays all configured Fabric Extender chassis connected to the switch.
	<b>show interface ethernet</b>	Displays various parameters of an Ethernet IEEE 802.3 interface.
	<b>speed</b>	Sets the speed on the interface.

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## interface port-channel

To create an EtherChannel interface and enter interface configuration mode, use the **interface port-channel** command. To remove an EtherChannel interface, use the **no** form of this command.

```
interface port-channel channel-number
```

```
no interface port-channel channel-number
```

<b>Syntax Description</b>	<i>channel-number</i>	Channel number that is assigned to this EtherChannel logical interface. The range is from 1 to 4096.
---------------------------	-----------------------	--

<b>Command Default</b>	None
------------------------	------

<b>Command Modes</b>	Global configuration mode
----------------------	---------------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	4.0(0)N1(1a)	This command was introduced.

<b>Usage Guidelines</b>	<p>A port can belong to only one channel group.</p> <p>When you use the <b>interface port-channel</b> command, follow these guidelines:</p> <ul style="list-style-type: none"> <li>• If you are using CDP, you must configure it only on the physical interface and not on the EtherChannel interface.</li> <li>• If you do not assign a static MAC address on the EtherChannel interface, a MAC address is automatically assigned. If you assign a static MAC address and then later remove it, the MAC address is automatically assigned.</li> <li>• The MAC address of the EtherChannel is the address of the first operational port added to the channel group. If this first-added port is removed from the channel, the MAC address comes from the next operational port added, if there is one.</li> </ul>
-------------------------	---

<b>Examples</b>	<p>This example shows how to create an EtherChannel group interface with channel-group number 50:</p> <pre>switch(config)# <b>interface port-channel 50</b> switch(config-if)#</pre>
-----------------	--

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show interface port-channel</b>	Displays information on traffic about the specified EtherChannel interface.

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<b>Command</b>	<b>Description</b>
<b>show lacp</b>	Displays LACP information.
<b>show port-channel summary</b>	Displays information on the EtherChannels.

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## 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
	4.0(0)N1(1a)	This command was introduced.

---

---

**Examples** This example shows how to enable IGMP snooping:

```
switch# ip igmp snooping
```

---

Related Commands	Command	Description
	<a href="#">show ip igmp snooping</a>	Displays IGMP snooping information and configuration.

---

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## 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

### Command History

Release	Modification
4.0(0)N1(1a)	This command was introduced.

### Usage Guidelines

Table 2-1 lists the valid values for *parameter*.

**Table 2-1 IGMP Snooping Parameters**

Keyword and Argument	Description
<b>explicit-tracking</b>	Enables tracking IGMPv3 membership reports for each port on a per-VLAN basis. The default is enabled on all VLANs.
<b>fast-leave</b>	Enables IGMPv3 snooping fast-leave processing. The default is disabled for all VLANs.
<b>last-member-query-interval</b> <i>seconds</i>	Removes the group if no hosts respond to an IGMP query message. Valid value is from 1 to 25 seconds. The default is 1 second.
<b>mrouter interface</b> <i>interface</i>	Configures a static connection to a multicast router. The specified interface is Ethernet or EtherChannel.
<b>querier</b> <i>IP-address</i>	Configures a snooping querier. The IP address is used as the source in messages. The default is disabled.

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**Table 2-1 IGMP Snooping Parameters (continued)**

Keyword and Argument	Description
<b>report-suppression</b>	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.
<b>static-group</b> <i>group-ip-addr</i> [ <b>source</b> <i>source-ip-addr</i> ] <b>interface</b> <i>interface</i>	Configures an interface belonging to a VLAN as a static member of a multicast group. The specified interface is Ethernet or EtherChannel.

### 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
```

### Related Commands

Command	Description
<a href="#">show ip igmp snooping</a>	Displays the IGMP snooping information and configuration.

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## lacp port-priority

To set the priority for the physical interfaces for the Link Aggregation Control Protocol (LACP), use the **lacp port-priority** command. To return the port priority to the default value, use the **no** form of this command.

**lacp port-priority** *priority*

**no lacp port-priority**

<b>Syntax Description</b>	<i>priority</i>	Priority for the physical interfaces. The range of valid numbers is from 1 to 65535.
---------------------------	-----------------	--

<b>Command Default</b>	System priority value is 32768.
------------------------	---------------------------------

<b>Command Modes</b>	Interface configuration mode
----------------------	------------------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	4.0(0)N1(1a)	This command was introduced.

<b>Usage Guidelines</b>	Each port configured to use LACP has an LACP port priority. You can configure a value between 1 and 65535. LACP uses the port priority in combination with the port number to form the port identifier. The port priority is used with the port number to form the port identifier. The port priority is used to decide which ports should be put into standby mode when there is a hardware limitation that prevents all compatible ports from aggregating.
-------------------------	--



**Note**

When setting the priority, note that a *higher* number means a *lower* priority.

<b>Examples</b>	This example shows how to set the LACP port priority for the interface to 2000:
-----------------	---

```
switch(config-if)# lacp port-priority 2000
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show lacp</b>	Displays LACP information.

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## lACP rate fast

To configure the rate at which control packets are sent by the Link Aggregation Control Protocol (LACP), use the **lACP rate fast** command. To restore the rate to 30 seconds, use the **no** form of this command or the **lACP rate normal** command.

**lACP rate fast**

**no lACP rate**

**no lACP rate fast**

**lACP rate normal**

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

**Command Default** 1 second.

**Command Modes** Interface configuration mode

Command History	Release	Modification
	4.2(1)N2(1)	This command was introduced.

**Usage Guidelines** You must enable LACP before using this command.

You can configure the LACP rate fast feature on the LACP ports of a Cisco Nexus 5000 Series switch or a Cisco Nexus 2000 Series Fabric Extender that is connected to a Cisco Nexus 5000 Series switch.

The LACP rate fast feature is used to set the rate (once every second) at which the LACP control packets are sent to an LACP-supported interface. The normal rate at which LACP packets are sent is 30 seconds.

**Examples** This example shows how to configure the LACP fast rate feature on a specified Ethernet interface:

```
switch(config)# interface ethernet 1/1
switch(config-if)# lACP rate fast
```

This example shows how to remove the LACP fast rate configuration from a specified Ethernet interface:

```
switch(config)# interface ethernet 1/1
switch(config-if)# no lACP rate fast
```

Related Commands	Command	Description
	<b>feature lACP</b>	Enables or disables LACP on the switch.

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<b>Command</b>	<b>Description</b>
<b>interface ethernet</b>	Enters Ethernet interface configuration mode.
<b>show lacp</b>	Displays LACP configuration information.

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## lACP system-priority

To set the system priority of the switch for the Link Aggregation Control Protocol (LACP), use the **lACP system-priority** command. To return the system priority to the default value, use the **no** form of this command.

**lACP system-priority** *priority*

**no lACP system-priority**

<b>Syntax Description</b>	<i>priority</i>	Priority for the physical interfaces. The range of valid numbers is from 1 to 65535.
---------------------------	-----------------	--

<b>Command Default</b>	System priority value is 32768.
------------------------	---------------------------------

<b>Command Modes</b>	Global configuration mode
----------------------	---------------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	4.0(0)N1(1a)	This command was introduced.

<b>Usage Guidelines</b>	Each device that runs LACP has an LACP system priority value. You can configure a value between 1 and 65535. LACP uses the system priority with the MAC address to form the system ID and also during negotiation with other systems.
-------------------------	---

When setting the priority, note that a *higher* number means a *lower* priority.

<b>Examples</b>	This example shows how to set the LACP system priority for the device to 2500:
-----------------	--

```
switch(config)# lACP system-priority 2500
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	show lACP	Displays LACP information.

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## link debounce

To enable the debounce timer on an interface, use the **link debounce** command. To disable the timer, use the **no** form of this command.

**link debounce** [*time milliseconds*]

**no link debounce**

<b>Syntax Description</b>	<b>time milliseconds</b> (Optional) Specifies the extended debounce timer. The range is from 0 to 5000 milliseconds. A value of 0 milliseconds disables the debounce time.
---------------------------	--

<b>Command Default</b>	None
------------------------	------

<b>Command Modes</b>	Interface configuration mode
----------------------	------------------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	4.0(0)N1(1a)	This command was introduced.

<b>Usage Guidelines</b>	The port debounce time is the amount of time that an interface waits to notify the supervisor of a link going down. During this time, the interface waits to see if the link comes back up. The wait period is a time when traffic is stopped.
-------------------------	--



### Caution

When you enable the debounce timer, link up and link down detections are delayed, resulting in a loss of traffic during the debounce period. This situation might affect the convergence of some protocols.

<b>Examples</b>	This example shows how to enable the debounce timer and set the debounce time to 1000 milliseconds for an Ethernet interface:
-----------------	---

```
switch# configure terminal
switch(config)# interface ethernet 1/1
switch(config-if)# link debounce time 1000
```

This example shows how to disable the debounce timer for an Ethernet interface:

```
switch(config-if)# no link debounce
```

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<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show interface ethernet</b>	Displays the interface configuration information.
	<b>show interface debounce</b>	Displays the debounce time information for all interfaces.

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## 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	<i>seconds</i>	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.
	<b>vlan</b> <i>vlan-id</i>	(Optional) Specifies the VLAN to which the changed aging time should be applied.

**Command Default** 300 seconds

**Command Modes** Global configuration mode

Command History	Release	Modification
	4.0(0)N1(1a)	This command was introduced.
	4.2(1)N1(1)	The command syntax is changed to <b>mac address-table aging-time</b> .

**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 in EXEC mode, 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.

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

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### **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(config)# mac address-table aging-time 500
```

### **Related Commands**

<b>Command</b>	<b>Description</b>
<b>show mac address-table</b>	Displays information about the MAC address table.
<b>show mac address-table aging-time</b>	Displays information about the MAC address aging time.

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## mac address-table notification

To configure a log message notification of MAC address table events, use the **mac address-table notification** command. To disable log message notifications, use the **no** form of this command.

**mac address-table notification** { **mac-move** | **threshold** [**limit** *percentage* **interval** *seconds*] }

**no mac address-table notification** { **mac-move** | **threshold** }

Syntax Description		
<b>mac-move</b>	Sends a notification message if the MAC address is moved.	
<b>threshold</b>	Sends a notification message if the MAC address table threshold is exceeded.	
<b>limit</b> <i>percentage</i>	(Optional) Specifies the percentage limit (1 to 100) beyond which threshold notifications are enabled.	
<b>interval</b> <i>seconds</i>	(Optional) Specifies the minimum time in seconds (10 to 10000) between two notifications.	

**Command Default** None

**Command Modes** Global configuration mode

Command History	Release	Modification
	4.0(0)N1(1a)	This command was introduced.
	4.2(1)N1(1)	The command syntax is changed to <b>mac address-table notification</b> .

**Examples** This example shows how to configure a log message notification when the threshold exceeds 45 percent, restricting the update interval to once every 1024 seconds:

```
switch(config)# mac address-table notification threshold limit 45 interval 1024
```

Related Commands	Command	Description
	<b>show mac address-table</b>	Displays information about the MAC address table.

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## 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[.subinterface-number] } } [auto-learn]
```

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

Syntax Description		
<i>mac-address</i>		MAC address to add to the table. Use the format EEEE.EEEE.EEEE.
<b>vlan</b> <i>vlan-id</i>		Specifies the VLAN to apply the static MAC address. The VLAN ID range is from 1 to 4094.
<b>drop</b>		Drops all traffic that is received from and going to the configured MAC address in the specified VLAN.
<b>interface</b>		Specifies the interface. The type can be either Ethernet or EtherChannel.
<b>ethernet</b> <i>slot/port</i>		Specifies the Ethernet interface and the appropriate slot number and port number. The slot number is from 1 to 255, and the port number is from 1 to 128.
<b>port-channel</b> <i>number</i>		Specifies the EtherChannel interface and EtherChannel number. The range is from 1 to 4096.
<i>.subinterface-number</i>		(Optional) EtherChannel number followed by a dot (.) indicator and the subinterface number.
<b>auto-learn</b>		(Optional) Allows the switch to automatically update this MAC address.

**Command Default** None

**Command Modes** Global configuration mode

Command History	Release	Modification
	4.0(0)N1(1a)	This command was introduced.
	4.2(1)N1(1)	The command syntax is changed to <b>mac address-table static</b> .

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

When you install a static MAC address, it is associated with a port. If the same MAC address is seen on a different port, the entry is updated with the new port if you enter the **auto-learn** keyword.

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---

**Examples**

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

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

---

**Related Commands**

Command	Description
<code>show mac address-table</code>	Displays information about the MAC address table.

---

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## monitor session

To create a new SPAN session configuration or add to an existing session configuration, use the **monitor session** command. To clear SPAN sessions, use the **no** form of this command.

**monitor session** {*session-number* [**shut** | **type local**] | **all shut**}

**no monitor session** {*session-number* | **all**} [**shut**]

Syntax Description		
	<i>session-number</i>	SPAN session to create or configure. The range is from 1 to 18.
	<b>all</b>	Specifies to apply configuration information to all SPAN sessions.
	<b>shut</b>	(Optional) Specifies that the selected session will be shut down for monitoring.
	<b>type</b>	(Optional) Specifies the type of session to configure.
	<b>local</b>	Specifies the session type to be local.

**Command Default** None

**Command Modes** Global configuration mode

Command History	Release	Modification
	4.0(0)N1(1a)	This command was introduced.
	4.2(1)N1(1)	The <b>monitor session</b> { <i>session-number</i>   <b>all</b> } <b>suspend</b> command has been dropped.  The <b>monitor session</b> { <i>session-number</i>   <b>all</b> } <b>shut</b> and <b>monitor session</b> { <i>session-number</i>   <b>all</b> } <b>type</b> commands have been added.

**Usage Guidelines** To ensure that you are working with a completely new session, you can clear the desired session number or all SPAN sessions.

**Examples** This example shows how to create a SPAN session:

```
switch# configure terminal
switch(config)# monitor session 2
```

This example shows how to enter the monitor configuration mode for configuring SPAN session number 9 for analyzing traffic between ports:

```
switch(config)# monitor session 9 type local
switch(config-monitor)# description A Local SPAN session
switch(config-monitor)# source interface ethernet 1/1
switch(config-monitor)# destination interface ethernet 1/2
switch(config-monitor)# no shut
```

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This example shows how to configure any SPAN destination interfaces as Layer 2 SPAN monitor ports before activating the SPAN session:

```
switch(config)# interface ethernet 1/2
switch(config-if)# switchport
switch(config-if)# switchport monitor
switch(config-if)# no shutdown
```

This example shows how to configure a typical SPAN destination trunk interface:

```
switch(config)# interface Ethernet1/2
switch(config-if)# switchport
switch(config-if)# switchport mode trunk
switch(config-if)# switchport monitor
switch(config-if)# switchport trunk allowed vlan 10-12
switch(config-if)# no shutdown
```

### Related Commands

Command	Description
<b>show monitor session</b>	Displays SPAN session configuration information.

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## 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 name** form of this command.

**name** *vlan-name*

**no name**

<b>Syntax Description</b>	<i>vlan-name</i>	Name of the VLAN; you can use up to 32 alphanumeric, case-sensitive characters. The default name is VLANxxxx where xxxx represents four numeric digits (including leading zeroes) equal to the VLAN ID number (for example, VLAN0002).				
<b>Command Default</b>	None					
<b>Command Modes</b>	VLAN configuration mode					
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>4.0(0)N1(1a)</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	4.0(0)N1(1a)	This command was introduced.	
Release	Modification					
4.0(0)N1(1a)	This command was introduced.					
<b>Usage Guidelines</b>	You cannot change the name for the default VLAN, VLAN 1, or for the internally allocated VLANs.					
<b>Examples</b>	<p>This example shows how to name VLAN 2:</p> <pre>switch(config)# <b>vlan 2</b> switch(config-vlan)# <b>name accounting</b></pre>					
<b>Related Commands</b>	<table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><b>show vlan</b></td> <td>Displays VLAN information.</td> </tr> </tbody> </table>	Command	Description	<b>show vlan</b>	Displays VLAN information.	
Command	Description					
<b>show vlan</b>	Displays VLAN information.					

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## 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

<i>name</i>	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
4.0(0)N1(1a)	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.

### Examples

This example shows how to name a region:

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

### Related Commands

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

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## port-channel load-balance ethernet

To configure the load-balancing method among the interfaces in the channel-group bundle, use the **port-channel load-balance ethernet** command. To return the system priority to the default value, use the **no** form of this command.

**port-channel load-balance ethernet** *method*

**no port-channel load-balance ethernet** [*method*]

<b>Syntax Description</b>	<i>method</i>	Load-balancing method. See the “Usage Guidelines” section for a list of valid values.
---------------------------	---------------	---

<b>Command Default</b>	Loads distribution on the source and destination MAC address.
------------------------	---

<b>Command Modes</b>	Global configuration mode
----------------------	---------------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	4.0(0)N1(1a)	This command was introduced.

**Usage Guidelines** The valid load-balancing *method* values are as follows:

- **destination-ip**—Loads distribution on the destination IP address.
- **destination-mac**—Loads distribution on the destination MAC address.
- **destination-port**—Loads distribution on the destination port.
- **source-destination-ip**—Loads distribution on the source and destination IP address.
- **source-destination-mac**—Loads distribution on the source and destination MAC address.
- **source-destination-port**—Loads distribution on the source and destination port.
- **source-ip**—Loads distribution on the source IP address.
- **source-mac**—Loads distribution on the source MAC address.
- **source-port**—Loads distribution on the source port.

Use the option that provides the balance criteria with the greatest variety in your configuration. For example, if the traffic on an EtherChannel is going only to a single MAC address and you use the destination MAC address as the basis of EtherChannel load balancing, the EtherChannel always chooses the same link in that EtherChannel; using source addresses or IP addresses might result in better load balancing.

**Examples** This example shows how to set the load-balancing method to use the source IP:

```
switch(config)# port-channel load-balance ethernet source-ip
```

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**Related Commands**

<b>Command</b>	<b>Description</b>
<b>show port-channel load-balance</b>	Displays information on EtherChannel load balancing.

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## private-vlan

To configure private VLANs, use the **private-vlan** command. To return the specified VLANs to normal VLAN mode, use the **no** form of this command.

**private-vlan** { **isolated** | **community** | **primary** }

**no private-vlan** { **isolated** | **community** | **primary** }

### Syntax Description

<b>isolated</b>	Designates the VLAN as an isolated secondary VLAN.
<b>community</b>	Designates the VLAN as a community secondary VLAN.
<b>primary</b>	Designates the VLAN as the primary VLAN.

### Command Default

None

### Command Modes

VLAN configuration mode

### Command History

Release	Modification
4.0(0)N1(1a)	This command was introduced.

### Usage Guidelines

You must enable private VLANs by using the **feature private-vlan** command before you can configure private VLANs. The commands for configuring private VLANs are not visible until you enable private VLANs.

If you delete either the primary or secondary VLAN, the ports that are associated with the VLAN become inactive. When you enter the **no private-vlan** command, the VLAN returns to the normal VLAN mode. All primary and secondary associations on that VLAN are suspended, but the interfaces remain in private VLAN mode. When you reconvert the specified VLAN to private VLAN mode, the original associations are reinstated.

If you enter the **no vlan** command for the primary VLAN, all private VLAN associations with that VLAN are lost. If you enter the **no vlan** command for a secondary VLAN, the private VLAN associations with that VLAN are suspended and are reenabled when you recreate the specified VLAN and configure it as the previous secondary VLAN.

You cannot configure VLAN1 or the internally allocated VLANs as private VLANs.

A private VLAN is a set of private ports that are characterized by using a common set of VLAN number pairs. Each pair is made up of at least two special unidirectional VLANs and is used by isolated ports and/or by a community of ports to communicate with routers.

An isolated VLAN is a VLAN that is used by isolated ports to communicate with promiscuous ports. An isolated VLAN's traffic is blocked on all other private ports in the same VLAN. Its traffic can only be received by standard trunking ports and promiscuous ports that are assigned to the corresponding primary VLAN.

A promiscuous port is defined as a private port that is assigned to a primary VLAN.

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A community VLAN is defined as the VLAN that carries the traffic among community ports and from community ports to the promiscuous ports on the corresponding primary VLAN.

A primary VLAN is defined as the VLAN that is used to convey the traffic from the routers to customer end stations on private ports.

Multiple community and isolated VLANs are allowed. If you enter a range of primary VLANs, the system uses the first number in the range for the association.



### Note

A private VLAN-isolated port on a Cisco Nexus 5000 Series switch running the current release of Cisco NX-OS does not support IEEE 802.1Q encapsulation and cannot be used as a trunk port.

### Examples

This example shows how to assign VLAN 5 to a private VLAN as the primary VLAN:

```
switch# configure terminal
switch(config)# vlan 5
switch(config-vlan)# private-vlan primary
```

This example shows how to assign VLAN 100 to a private VLAN as a community VLAN:

```
switch(config-vlan)# exit
switch(config)# vlan 100
switch(config-vlan)# private-vlan community
```

This example shows how to assign VLAN 109 to a private VLAN as an isolated VLAN:

```
switch(config-vlan)# exit
switch(config)# vlan 109
switch(config-vlan)# private-vlan isolated
```

### Related Commands

Command	Description
<a href="#">feature private-vlan</a>	Enables private VLANs.
<a href="#">show vlan</a>	Displays information about VLANs.
<a href="#">show vlan private-vlan</a>	Displays information about private VLANs.

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## private-vlan association

To configure the association between a primary VLAN and a secondary VLAN on a private VLAN, use the **private-vlan association** command. To remove the association, use the **no** form of this command.

```
private-vlan association { [add] secondary-vlan-list | remove secondary-vlan-list }
```

```
no private-vlan association
```

Syntax Description	add	(Optional) Associates a secondary VLAN to a primary VLAN.
	<i>secondary-vlan-list</i>	Number of the secondary VLAN.
	<b>remove</b>	Clears the association between a secondary VLAN and a primary VLAN.

Command Default	None
-----------------	------

Command Modes	VLAN configuration mode
---------------	-------------------------

Command History	Release	Modification
	4.0(0)N1(1a)	This command was introduced.

**Usage Guidelines** You must enable private VLANs by using the **feature private-vlan** command before you can configure private VLANs. The commands for configuring private VLANs are not visible until you enable private VLANs.

If you delete either the primary or secondary VLAN, the ports that are associated with the VLAN become inactive. When you enter the **no private-vlan** command, the VLAN returns to the normal VLAN mode. All primary and secondary associations on that VLAN are suspended, but the interfaces remain in private VLAN mode. However, when you reconvert the specified VLAN to private VLAN mode, the original associations are reinstated.

If you enter the **no vlan** command for the primary VLAN, all private VLAN associations with that VLAN are lost. However, if you enter the **no vlan** command for a secondary VLAN, the private VLAN associations with that VLAN are suspended and return when you recreate the specified VLAN and configure it as the previous secondary VLAN.

The *secondary-vlan-list* argument cannot contain spaces. It can contain multiple comma-separated items. Each item can be a single secondary VLAN ID or a hyphenated range of secondary VLAN IDs. The *secondary-vlan-list* parameter can contain multiple secondary VLAN IDs.

A private VLAN is a set of private ports that are characterized by using a common set of VLAN number pairs. Each pair is made up of at least two special unidirectional VLANs and is used by isolated ports and/or by a community of ports to communicate with routers.

Multiple community and isolated VLANs are allowed. If you enter a range of primary VLANs, the system uses the first number in the range for the association.

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Isolated and community VLANs can only be associated with one primary VLAN. You cannot configure a VLAN that is already associated to a primary VLAN as a primary VLAN.



### Note

A private VLAN-isolated port on a Cisco Nexus 5000 Series switch running the current release of Cisco NX-OS does not support IEEE 802.1Q encapsulation and cannot be used as a trunk port.

### Examples

This example shows how to create a private VLAN relationship between the primary VLAN 14, the isolated VLAN 19, and the community VLANs 20 and 21:

```
switch(config)# vlan 19
switch(config-vlan)# private-vlan isolated
switch(config)# vlan 20
switch(config-vlan)# private-vlan community
switch(config)# vlan 21
switch(config-vlan)# private-vlan community
switch(config)# vlan 14
switch(config-vlan)# private-vlan primary
switch(config-vlan)# private-vlan association 19-21
```

This example shows how to remove isolated VLAN 18 and community VLAN 20 from the private VLAN association:

```
switch(config)# vlan 14
switch(config-vlan)# private-vlan association remove 18,20
```

### Related Commands

Command	Description
<a href="#">feature private-vlan</a>	Enables private VLANs.
<a href="#">show vlan</a>	Displays information about VLANs.
<a href="#">show vlan private-vlan</a>	Displays information about private VLANs.

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## private-vlan synchronize

To map the secondary VLANs to the same Multiple Spanning Tree (MST) instance as the primary VLAN, use the **private-vlan synchronize** command.

### private-vlan synchronize

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

**Command Default** None

**Command Modes** MST configuration mode

Command History	Release	Modification
	4.0(0)N1(1a)	This command was introduced.

**Usage Guidelines** If you do not map secondary VLANs to the same MST instance as the associated primary VLAN when you exit the MST configuration mode, the device displays a warning message that lists the secondary VLANs that are not mapped to the same instance as the associated VLAN. The **private-vlan synchronize** command automatically maps all secondary VLANs to the same instance as the associated primary VLANs.

**Examples** This example shows how to initialize private VLAN synchronization:

```
switch(config)# spanning-tree mst configuration
switch(config-mst)# private-vlan synchronize
```

Related Commands	Command	Description
	<b>show spanning-tree mst configuration</b>	Displays information about the MST protocol.
	<b>spanning-tree mst configuration</b>	Enters MST configuration mode.

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## 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*

<b>Syntax Description</b>	<i>version</i>	Revision number for the MST region configuration. The range is from 0 to 65535.
---------------------------	----------------	---

<b>Command Default</b>	Revision 0
------------------------	------------

<b>Command Modes</b>	MST configuration mode
----------------------	------------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	4.0(0)N1(1a)	This command was introduced.

<b>Usage Guidelines</b>	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.

<b>Examples</b>	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
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show spanning-tree mst</b>	Displays information about the MST protocol.

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## 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

Command History	Release	Modification
	4.0(0)N1(1a)	This command was introduced.

**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 reenables, or recreates, 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.

**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
```

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Related Commands	Command	Description
	show vlan	Displays VLAN information.

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## spanning-tree bpdudfilter

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

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

**no spanning-tree bpdudfilter**

### Syntax Description

<b>enable</b>	Enables BPDU Filtering on this interface.
<b>disable</b>	Disables BPDU Filtering on this interface.

### Command Default

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

### Command Modes

Interface configuration mode

### Command History

Release	Modification
4.0(0)N1(1a)	This command was introduced.

### Usage Guidelines

Entering the **spanning-tree bpdudfilter 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 bpdudfilter 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 bpdudfilter default** command to enable BPDU Filtering on all spanning tree edge ports.

### 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 bpdudfilter enable
```

### Related Commands

Command	Description
<b>show spanning-tree summary</b>	Displays information about the spanning tree state.

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## 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

<b>enable</b>	Enables BPDU Guard on this interface.
<b>disable</b>	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
4.0(0)N1(1a)	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.

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---

**Examples**

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

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

---

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>show spanning-tree summary</b>	Displays information about the spanning tree state.

---

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## 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

<b>vlan</b> <i>vlan-id</i>	(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.
<i>value</i>	Value of the port cost. The available cost range depends on the path-cost calculation method as follows: <ul style="list-style-type: none"> <li>short—The range is from 1 to 65536.</li> <li>long—The range is from 1 to 200,000,000.</li> </ul>
<b>auto</b>	Sets the value of the port cost by the media speed of the interface (see <a href="#">Table 2-2</a> for the values).

### Command Default

Port cost is set by the media speed.

### Command Modes

Interface configuration mode

### Command History

Release	Modification
4.0(0)N1(1a)	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 2-2](#)). 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 2-2** 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.

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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.

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

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>show spanning-tree</b>	Displays information about the spanning tree configuration.

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## 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	Command	Description
	<b>loop</b>	Enables Loop Guard on the interface.
	<b>none</b>	Sets the guard mode to none.
	<b>root</b>	Enables Root Guard on the interface.

Command Default	Default Value
	Disabled

Command Modes	Mode
	Interface configuration mode

Command History	Release	Modification
	4.0(0)N1(1a)	This command was introduced.

Usage Guidelines	Guidelines
	You cannot enable Loop Guard if Root Guard is enabled, although the switch accepts the command to enable Loop Guard on <b>spanning tree edge ports</b> .

Examples	Example
	This example shows how to enable Root Guard: <pre>switch(config-if)# <b>spanning-tree guard root</b></pre>

Related Commands	Command	Description
	<b>show spanning-tree summary</b>	Displays information about the spanning tree state.

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## 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

<b>auto</b>	Sets the link type based on the duplex setting of the interface.
<b>point-to-point</b>	Specifies that the interface is a point-to-point link.
<b>shared</b>	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
4.0(0)N1(1a)	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 5000 Series switch, port duplex is not configurable.

### Examples

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

```
switch(config-if)# spanning-tree link-type shared
```

### Related Commands

Command	Description
<b>show spanning-tree interface</b>	Displays information about the spanning tree state.

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## 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
	4.0(0)N1(1a)	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.

**Examples** This example shows how to enable Loop Guard:

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

Related Commands	Command	Description
	<b>show spanning-tree summary</b>	Displays information about the spanning tree state.

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## 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	Command	Description
	<b>rapid-pvst</b>	Sets the STP mode to Rapid PVST+.
	<b>mst</b>	Sets the STP mode to MST.

**Command Default** Rapid PVST+

**Command Modes** Global configuration mode

Command History	Release	Modification
	4.0(0)N1(1a)	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.

**Examples** This example shows how to switch to MST mode:

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

Related Commands	Command	Description
	<b>show spanning-tree summary</b>	Displays the information about the spanning tree configuration.

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## 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 keywords or arguments.

### 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
4.0(0)N1(1a)	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
```

See the **switchport mode private-vlan host** command to fix this problem.

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.

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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
```

### **Examples**

This example shows how to enter MST-configuration mode:

```
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(config)# no spanning-tree mst configuration
```

### **Related Commands**

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

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## 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

<i>instance-id</i>	Instance ID number. The range is from 0 to 4094.
<i>cost</i>	Port cost for an instance. The range is from 1 to 200,000,000.
<b>auto</b>	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
4.0(0)N1(1a)	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.

### Examples

This example shows how to set the interface path cost:

```
switch(config-if)# spanning-tree mst 0 cost 17031970
```

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

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## 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**

<b>Syntax Description</b>	<i>seconds</i>	Number of seconds to set the forward-delay timer for all the instances on the switch. The range is from 4 to 30 seconds.
---------------------------	----------------	--

<b>Command Default</b>	15 seconds
------------------------	------------

<b>Command Modes</b>	Global configuration mode
----------------------	---------------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	4.0(0)N1(1a)	This command was introduced.

<b>Examples</b>	This example shows how to set the forward-delay timer: <pre>switch(config)# <b>spanning-tree mst forward-time 20</b></pre>
-----------------	---

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show spanning-tree mst</b>	Displays the information about the MST protocol.

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## 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**

<b>Syntax Description</b>	<i>seconds</i>	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.
---------------------------	----------------	---

<b>Command Default</b>	2 seconds
------------------------	-----------

<b>Command Modes</b>	Global configuration mode
----------------------	---------------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	4.0(0)N1(1a)	This command was introduced.

<b>Usage Guidelines</b>	If you do not specify the <i>hello-time</i> value, the value is calculated from the network diameter.
-------------------------	---

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

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

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show spanning-tree mst</b>	Displays the information about the MST protocol.

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## 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**

<b>Syntax Description</b>	<i>seconds</i>	Number of seconds to set the max-age timer for all the instances on the switch. The range is from 6 to 40 seconds.				
<b>Command Default</b>	20 seconds					
<b>Command Modes</b>	Global configuration mode					
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>4.0(0)N1(1a)</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	4.0(0)N1(1a)	This command was introduced.	
Release	Modification					
4.0(0)N1(1a)	This command was introduced.					
<b>Usage Guidelines</b>	This parameter is used only by Instance 0 or the IST.					
<b>Examples</b>	<p>This example shows how to set the max-age timer:</p> <pre>switch(config)# <b>spanning-tree mst max-age 40</b></pre>					
<b>Related Commands</b>	<table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><b>show spanning-tree mst</b></td> <td>Displays the information about the MST protocol.</td> </tr> </tbody> </table>	Command	Description	<b>show spanning-tree mst</b>	Displays the information about the MST protocol.	
Command	Description					
<b>show spanning-tree mst</b>	Displays the information about the MST protocol.					

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## 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**

<b>Syntax Description</b>	<i>hop-count</i>	Number of possible hops in the region before a BPDU is discarded. The range is from 1 to 255 hops.
<b>Command Default</b>	20 hops	
<b>Command Modes</b>	Global configuration mode	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	4.0(0)N1(1a)	This command was introduced.
<b>Examples</b>	This example shows how to set the number of possible hops: <pre>switch(config)# spanning-tree mst max-hops 25</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show spanning-tree mst</b>	Displays the information about the MST protocol.

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## 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	<i>instance-id</i>	Instance ID number. The range is from 0 to 4094.
	<i>priority</i>	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
	4.0(0)N1(1a)	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.

**Examples** This example shows how to set the interface priority:

```
switch(config-if)# spanning-tree mst 0 port-priority 64
```

Related Commands	Command	Description
	<b>show spanning-tree mst</b>	Displays the information about the MST protocol.
	<a href="#">spanning-tree port-priority</a>	Configures the port priority for the default STP, which is Rapid PVST+.

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## 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	
<i>instance-id</i>	Instance identification number. The range is from 0 to 4094.
<i>priority-value</i>	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
	4.0(0)N1(1a)	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.

**Examples** This example shows how to set the bridge priority:

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

Related Commands	Command	Description
	<b>show spanning-tree mst</b>	Displays the information about the MST protocol.

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## 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		
<i>instance-id</i>		Instance identification number. The range is from 0 to 4094.
<b>primary</b>		Specifies the high priority (low value) that is high enough to make the bridge root of the spanning-tree instance.
<b>secondary</b>		Specifies the switch as a secondary root, if the primary root fails.
<b>diameter</b> <i>dia</i>		(Optional) Specifies the timer values for the bridge that are based on the network diameter.
<b>hello-time</b> <i>hello-time</i>		(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
	4.0(0)N1(1a)	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.

### Examples

This example shows how to designate the primary root:

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

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

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

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

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## spanning-tree mst simulate pvst

To reenablen 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 keywords or arguments.

**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
	4.0(0)N1(1a)	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 reenablen seamless operation between MST and Rapid PVST+ on specific interfaces, use the **spanning-tree mst simulate pvst** command.

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

```
switch(config-if)# spanning-tree mst simulate pvst disable
```

**Related Commands**

<b>Command</b>	<b>Description</b>
<b><a href="#">spanning-tree mst simulate pvst global</a></b>	Enables global seamless interoperation between MST and Rapid PVST+.

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## 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 keywords or arguments.

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

**Command Modes** Global configuration mode

Command History	Release	Modification
	4.0(0)N1(1a)	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.

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

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

**Related Commands**

Command	Description
<a href="#">spanning-tree mst simulate pvst</a>	Enables seamless interoperation between MST and Rapid PVST+ by the interface.

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## 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
	4.0(0)N1(1a)	This command was introduced.

**Usage Guidelines** The **long** path-cost calculation method uses all 32 bits for path-cost calculations and yields values 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.

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

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

Related Commands	Command	Description
	<b>show spanning-tree summary</b>	Displays information about the spanning tree state.

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## 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**

<b>Syntax Description</b>	<b>trunk</b> (Optional) Configures the trunk port as a spanning tree edge port.
---------------------------	---

<b>Command Default</b>	The default is the global setting for the default port type edge that is configured when you entered the <b>spanning-tree port type edge default</b> command. If you did not configure a global setting, the default spanning tree port type is normal.
------------------------	---

<b>Command Modes</b>	Interface configuration mode
----------------------	------------------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	4.0(0)N1(1a)	This command was introduced.

<b>Usage Guidelines</b>	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.
```

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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.

### **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(config-if)# spanning-tree port type edge
```

### **Related Commands**

<b>Command</b>	<b>Description</b>
<b>show spanning-tree</b>	Displays information about the spanning tree state.

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## 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 keywords or arguments.

### Command Default

Disabled

### Command Modes

Global configuration mode

### Command History

Release	Modification
4.0(0)N1(1a)	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.



#### 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.

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### Examples

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

```
switch(config)# spanning-tree port type edge bpdudfilter default
```

### Related Commands

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

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## 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 keywords or arguments.

**Command Default** Disabled

**Command Modes** Global configuration mode

Command History	Release	Modification
	4.0(0)N1(1a)	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.

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

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

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Related Commands	Command	Description
	<code>show spanning-tree summary</code>	Displays the information about the spanning tree configuration.
	<code>spanning-tree bpduguard</code>	Enables BPDU guard on the interface.
	<code>spanning-tree port type edge</code>	Configures an interface as a spanning tree edge port.

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## 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
	4.0(0)N1(1a)	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.

**Examples** This example shows how to globally configure all ports connected to hosts as spanning tree edge ports:

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

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Related Commands	Command	Description
	<code>show spanning-tree summary</code>	Displays information about the spanning tree configuration.
	<code>spanning-tree port type edge</code>	Configures an interface as a spanning tree edge port.

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## 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 **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
4.0(0)N1(1a)	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.

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---

**Examples**

This example shows how to configure an interface connected to a switch or bridge as a spanning tree network port:

```
switch(config-if)# spanning-tree port type network
```

---

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>show spanning-tree interface</b>	Displays information about the spanning tree configuration per specified interface.

---

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## 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
	4.0(0)N1(1a)	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.

**Examples** This example shows how to globally configure all ports connected to switches as spanning tree network ports:

```
switch(config)# spanning-tree port type network default
```

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Related Commands	Command	Description
	<b>show spanning-tree summary</b>	Displays information about the spanning tree configuration.

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## 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	
<b>vlan</b> <i>vlan-id</i>	(Optional) Specifies the VLAN identification number. The range is from 0 to 4094.
<i>value</i>	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
	4.0(0)N1(1a)	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.

**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(config-if)# spanning-tree port-priority 32
```

Related Commands	Command	Description
	<b>show spanning-tree</b>	Displays information about the spanning tree state.
	<b>spanning-tree interface priority</b>	Displays information on the spanning tree port priority for the interface.

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## 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

<b><i>vlan-id</i></b>	VLAN identification number. The VLAN ID range is from 0 to 4094.
<b>forward-time</b> <i>value</i>	(Optional) Specifies the STP forward-delay time. The range is from 4 to 30 seconds.
<b>hello-time</b> <i>value</i>	(Optional) Specifies the number of seconds between the generation of configuration messages by the root switch. The range is from 1 to 10 seconds.
<b>max-age</b> <i>value</i>	(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.
<b>priority</b> <i>value</i>	(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.
<b>root primary</b>	(Optional) Forces this switch to be the root bridge.
<b>root secondary</b>	(Optional) Forces this switch to be the root switch if the primary root fails.
<b>diameter</b> <i>dia</i>	(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
4.0(0)N1(1a)	This command was introduced.

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### 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.

### Examples

This example shows how to enable spanning tree on VLAN 200:

```
switch(config)# spanning-tree vlan 200
```

This example shows how to configure the switch as the root switch for VLAN 10 with a network diameter of 4:

```
switch(config)# spanning-tree vlan 10 root primary diameter 4
```

This example shows how to configure the switch as the secondary root switch for VLAN 10 with a network diameter of 4:

```
switch(config)# spanning-tree vlan 10 root secondary diameter 4
```

### Related Commands

Command	Description
<b>show spanning-tree</b>	Displays information about the spanning tree state.

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## speed (Ethernet)

To configure the transmit and receive speed for an Ethernet interface, use the **speed** command. To reset to the default speed, use the **no** form of this command.

**speed** {1000 | 10000}

**no speed**

Syntax Description	1000	Sets the interface speed to 1 Gbps.
	10000	Sets the interface speed to 10 Gbps. This is the default speed.

**Command Default** The default speed is 10000 (10-Gigabit).

**Command Modes** Interface configuration mode

Command History	Release	Modification
	4.0(1a)N1(1)	This command was introduced.

**Usage Guidelines** The first 8 ports of a Nexus 5010 switch and the first 16 ports of a Nexus 5020 switch are switchable 1-Gigabit and 10-Gigabit ports. The default interface speed is 10-Gigabit. To configure these ports for 1-Gigabit Ethernet, insert a 1-Gigabit Ethernet SFP transceiver into the applicable port and then set its speed with the speed command.



### Note

If the interface and transceiver speed is mismatched, the SFP validation failed message is displayed when you enter the **show interface ethernet slot/port** command. For example, if you insert a 1-Gigabit SFP transceiver into a port without configuring the **speed 1000** command, you will get this error.

By default, all ports on a Cisco Nexus 5000 Series switch are 10 Gigabits.

**Examples** This example shows how to set the speed for a 1-Gigabit Ethernet port:

```
switch# configure terminal
switch(config)# interface ethernet 2/1
switch(config-if)# speed 1000
```

Related Commands	Command	Description
	<b>show interface</b>	Displays the interface configuration information.

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## 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

Command History	Release	Modification
	4.0(0)N1(1a)	This command was introduced.

**Usage Guidelines** You cannot suspend the state for VLAN 1 or VLANs 1006 to 4094. VLANs in the suspended state do not pass packets.

**Examples** This example shows how to suspend VLAN 2:

```
switch(config)# vlan 2
switch(config-vlan)# state suspend
```

Related Commands	Command	Description
	show vlan	Displays VLAN information.

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## 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
	4.0(0)N1(1a)	This command was introduced.
	4.0(1a)N1(1)	This command was deprecated and replaced with the <b>feature interface-vlan</b> command. For backwards compatibility, it will be maintained for a number of releases.

**Usage Guidelines** You must use the **feature interface-vlan** command before you can create VLAN interfaces.

**Examples** This example shows how to enable the interface VLAN feature on the switch:

```
switch(config)# svi enable
```

Related Commands	Command	Description
	<b>interface vlan</b>	Creates a VLAN interface.

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## 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**

<b>Syntax Description</b>	<i>vlan-id</i>	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.
<b>Command Default</b>	VLAN 1	
<b>Command Modes</b>	Interface configuration mode	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	4.0(0)N1(1a)	This command was introduced.
<b>Usage Guidelines</b>	Use the <b>no</b> form of the <b>switchport access vlan</b> 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.	
<b>Examples</b>	This example shows how to configure an Ethernet interface to join VLAN 2: <pre>switch(config)# interface ethernet 1/7 switch(config-if)# switchport access vlan 2</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show interface switchport</b>	Displays the administrative and operational status of a port.

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## switchport block

To prevent the unknown multicast or unicast packets from being forwarded, use the **switchport block** command. To allow the unknown multicast or unicast packets to be forwarded, use the **no** form of this command.

**switchport block** { **multicast** | **unicast** }

**no switchport block** { **multicast** | **unicast** }

### Syntax Description

<b>multicast</b>	Specifies that the unknown multicast traffic should be blocked.
<b>unicast</b>	Specifies that the unknown unicast traffic should be blocked.

### Command Default

Unknown multicast and unicast traffic are not blocked. All traffic with unknown MAC addresses is sent to all ports.

### Command Modes

Interface configuration mode

### Command History

Release	Modification
4.0(0)N1(1a)	This command was introduced.

### Usage Guidelines

You can block the unknown multicast or unicast traffic on the switch ports.

Blocking the unknown multicast or unicast traffic is not automatically enabled on the switch ports; you must explicitly configure it.

### Examples

This example shows how to block the unknown multicast traffic on an interface:

```
switch# configure terminal
switch(config)# interface ethernet 1/1
switch(config-if)# switchport block multicast
```

### Related Commands

Command	Description
<b>show interface switchport</b>	Displays the switch port information for a specified interface or all interfaces.

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## switchport mode private-vlan host

To set the interface type to be a host port for a private VLAN, use the **switchport mode private-vlan host** command.

**switchport mode private-vlan host**

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

**Command Default** None

**Command Modes** Interface configuration mode

Command History	Release	Modification
	4.0(0)N1(1a)	This command was introduced.

**Usage Guidelines** When you configure a port as a host private VLAN port and one of the following applies, the port becomes inactive:

- The port does not have a valid private VLAN association configured.
- The port is a Switched Port Analyzer (SPAN) destination.
- The private VLAN association is suspended.

If you delete a private VLAN port association, or if you configure a private port as a SPAN destination, the deleted private VLAN port association or the private port that is configured as a SPAN destination becomes inactive.



**Note**

We recommend that you enable spanning tree BPDU Guard on all private VLAN host ports.

**Examples** This example shows how to set a port to host mode for private VLANs:

```
switch(config-if)# switchport mode private-vlan host
```

Related Commands	Command	Description
	<b>show interface switchport</b>	Displays information on all interfaces configured as switch ports.
	<b>show vlan private-vlan</b>	Displays the status of the private VLAN.

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## switchport mode private-vlan promiscuous

To set the interface type to be a promiscuous port for a private VLAN, use the **switchport mode private-vlan promiscuous** command.

**switchport mode private-vlan promiscuous**

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

**Command Default** None

**Command Modes** Interface configuration mode

Command History	Release	Modification
	4.0(0)N1(1a)	This command was introduced.

**Usage Guidelines** When you configure a port as a promiscuous private VLAN port and one of the following applies, the port becomes inactive:

- The port does not have a valid private VLAN mapping configured.
- The port is a Switched Port Analyzer (SPAN) destination.

If you delete a private VLAN port mapping or if you configure a private port as a SPAN destination, the deleted private VLAN port mapping or the private port that is configured as a SPAN destination becomes inactive.

See the [private-vlan](#) command for more information on promiscuous ports.

**Examples** This example shows how to set a port to promiscuous mode for private VLANs:

```
switch(config-if)# switchport mode private-vlan promiscuous
```

Related Commands	Command	Description
	<b>show interface switchport</b>	Displays information on all interfaces configured as switch ports.
	<b>show vlan private-vlan</b>	Displays the status of the private VLAN.

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## switchport mode private-vlan trunk

To configure the port as a secondary trunk port for a private VLAN, use the **switchport mode private-vlan trunk** command. To remove the isolated trunk port, use the **no** form of this command.

**switchport mode private-vlan trunk [secondary]**

**no switchport mode private-vlan trunk [secondary]**

<b>Syntax Description</b>	<b>secondary</b>	(Optional) Specifies the secondary port.
<b>Command Default</b>	None	
<b>Command Modes</b>	Interface configuration mode	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	4.0(0)N1(1a)	This command was introduced.
<b>Usage Guidelines</b>	In a private VLAN domain, isolated trunks are part of a secondary VLAN. Isolated trunk ports can carry multiple isolated VLANs.	
<b>Examples</b>	This example shows how to configure Ethernet interface 1/1 as a promiscuous trunk port for a private VLAN:	
	<pre>switch(config)# interface ethernet 1/1 switch(config-if)# switchport mode private-vlan trunk secondary switch(config-if)#</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show interface switchport</b>	Displays information on all interfaces configured as switch ports.
	<b>switchport private-vlan association trunk</b>	Associates the isolated trunk port with the primary and secondary VLANs of a private VLAN.

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## switchport private-vlan association trunk

To associate an isolated trunk port with the primary and secondary VLANs of a private VLAN, use the **switchport private-vlan association trunk** command. To remove the isolated trunk port association, use the **no** form of this command.

**switchport private-vlan association trunk** *primary-id secondary-id*

**no switchport private-vlan association trunk**

Syntax Description	primary-id	Secondary VLAN ID. The range is from 1 to 3967 and from 4048 to 4093.
	secondary-id	Secondary VLAN ID. The range is from 1 to 3967 and from 4048 to 4093.

**Command Default** None

**Command Modes** Interface configuration mode

Command History	Release	Modification
	4.0(0)N1(1a)	This command was introduced.

**Usage Guidelines** The secondary VLAN should be an isolated VLAN. Only one isolated VLAN under a given primary VLAN can be associated to an isolated trunk port.

**Examples** This example shows how to map the secondary VLANs to the primary VLAN:

```
switch(config)# interface ethernet 1/1
switch(config-if)# switchport mode private-vlan trunk secondary
switch(config-if)# switchport private-vlan association trunk 5 100
switch(config-if)#
```

Related Commands	Command	Description
	<b>show interface switchport</b>	Displays information on all interfaces configured as switch ports.
	<b>switchport mode private-vlan trunk</b>	Configures the port as a secondary trunk port for a private VLAN.
	<b>show vlan private-vlan</b>	Displays the status of the private VLAN.

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## switchport private-vlan trunk allowed vlan

To configure the allowed VLANs for the private trunk interface, use the **switchport private-vlan trunk allowed vlan** command. To remove the allowed VLANs, use the **no** form of this command.

```
switchport private-vlan trunk allowed vlan {vlan-list | {add | all | except | remove} vlan-list | none}
```

```
no switchport private-vlan trunk allowed vlan {vlan-list | {add | all | except | remove} vlan-list | none}
```

### Syntax Description

<i>vlan-list</i>	VLAN IDs of the allowed VLANs when the interface is in private-vlan trunking mode. The range is from 1 to 3967 and from 4048 to 4093. You can specify a list of VLAN IDs using the following separators: <ul style="list-style-type: none"> <li>, is a multirange separator; for example, 100-200, 201-203.</li> <li>- is a range separator; for example, 100-200.</li> </ul>
<b>add</b>	Specifies the VLANs to be added to the current list.
<b>all</b>	Specifies all VLANs to be added to the current list.
<b>except</b>	Specifies all VLANs to be added to the current list, except the specified VLANs.
<b>remove</b>	Specifies the VLANs to be removed from the current list.
<b>none</b>	Specifies that no VLANs be added to the current list.

### Command Default

Allows only associated VLANs on the private VLAN trunk interface.

### Command Modes

Interface configuration mode

### Command History

Release	Modification
4.0(0)N1(1a)	This command was introduced.

### Usage Guidelines

The primary VLANs do not need to be explicitly added to the allowed VLAN list. They are added automatically once there is a mapping between primary and secondary VLANs.

### Examples

This example shows how to add VLANs to the list of allowed VLANs on an Ethernet private VLAN trunk port:

```
switch(config)# interface ethernet 1/3
switch(config-if)# switchport private-vlan trunk allowed vlan 15-20
switch(config-if)#
```

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Related Commands	Command	Description
	<b>show interface switchport</b>	Displays information on all interfaces configured as switch ports.
	<b>switchport mode private-vlan trunk</b>	Configures the port as a secondary trunk port for a private VLAN.
	<b>show vlan private-vlan</b>	Displays the status of the private VLAN.

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## switchport private-vlan trunk native

To configure the native VLAN ID for the private VLAN trunk, use the **switchport private-vlan trunk native** command. To remove the native VLAN ID from the private VLAN trunk, use the **no** form of this command.

```
switchport private-vlan trunk native vlan vlan-list
```

```
no switchport private-vlan trunk native vlan vlan-list
```

<b>Syntax Description</b>	<b>vlan</b> <i>vlan-list</i>	Specifies the VLAN ID. The range is from 1 to 3967 and from 4048 to 4093.
---------------------------	------------------------------	---

<b>Command Default</b>	VLAN 1.
------------------------	---------

<b>Command Modes</b>	Interface configuration mode
----------------------	------------------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	4.0(0)N1(1a)	This command was introduced.

<b>Usage Guidelines</b>	Secondary VLANs cannot be configured with a native VLAN ID on promiscuous trunk ports. Primary VLANs cannot be configured with a native VLAN ID on isolated trunk ports.
-------------------------	--

<b>Examples</b>	This example shows how to map the secondary VLANs to the primary VLAN:
-----------------	--

```
switch(config)# interface ethernet 1/1
switch(config-if)# switchport private-vlan trunk native vlan 5
switch(config-if)#
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show interface switchport</b>	Displays information on all interfaces configured as switch ports.
	<b>switchport mode private-vlan trunk</b>	Configures the port as a secondary trunk port for a private VLAN.
	<b>show vlan private-vlan</b>	Displays the status of the private VLAN.

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## switchport host

To configure the interface to be an access host port, use the **switchport host** command. To remove the host port, use the **no** form of this command.

**switchport host**

**no switchport host**

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

**Command Default** None

**Command Modes** Interface configuration mode

Command History	Release	Modification
	4.0(0)N1(1a)	This command was introduced.

**Usage Guidelines** Ensure that you are configuring the correct interface. It must be an interface that is connected to an end station.

An access host port handles the Spanning Tree Protocol (STP) like an edge port and immediately moves to the forwarding state without passing through the blocking and learning states. Configuring an interface as an access host port also disables EtherChannel on that interface.

**Examples** This example shows how to set an interface as an Ethernet access host port with EtherChannel disabled:

```
switch(config)# interface ethernet 2/1
switch(config-if)# switchport host
switch(config-if)#
```

Related Commands	Command	Description
	<b>show interface brief</b>	Displays a summary of the interface configuration information.
	<b>show interface switchport</b>	Displays information on all interfaces configured as switch ports.

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## switchport mode

To configure the interface as a nontrunking nontagged single-VLAN Ethernet interface, use the **switchport mode** command. To remove the configuration and restore the default, use the **no** form of this command.

```
switchport mode {access | trunk}
```

```
no switchport mode {access | trunk}
```

Syntax Description	access	Specifies that the interface is in access mode.
	trunk	Specifies that the interface is in trunk mode.

**Command Default** An access port carries traffic for VLAN 1.

**Command Modes** Interface configuration mode

Command History	Release	Modification
	4.0(0)N1(1a)	This command was introduced.

**Usage Guidelines** An access port can carry traffic in one VLAN only. By default, an access port carries traffic for VLAN 1. To set the access port to carry traffic for a different VLAN, use the **switchport access vlan** command.

The VLAN must exist before you can specify that VLAN as an access VLAN. The system shuts down an access port that is assigned to an access VLAN that does not exist.

**Examples** This example shows how to set an interface as an Ethernet access port that carries traffic for a specific VLAN only:

```
switch(config)# interface ethernet 2/1
switch(config-if)# switchport mode access
switch(config-if)# switchport access vlan 5
switch(config-if)#
```

Related Commands	Command	Description
	<b>show interface switchport</b>	Displays information on all interfaces configured as switch ports.
	<b>switchport access vlan</b>	Sets the access VLAN when the interface is in access mode.

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## switchport private-vlan host-association

To define a private VLAN association for an isolated or community port, use the **switchport private-vlan host-association** command. To remove the private VLAN association from the port, use the **no** form of this command.

**switchport private-vlan host-association** {*primary-vlan-id*} {*secondary-vlan-id*}

**no switchport private-vlan host-association**

### Syntax Description

<i>primary-vlan-id</i>	Number of the primary VLAN of the private VLAN relationship.
<i>secondary-vlan-id</i>	Number of the secondary VLAN of the private VLAN relationship.

### Command Default

None

### Command Modes

Interface configuration mode

### Command History

Release	Modification
4.0(0)N1(1a)	This command was introduced.

### Usage Guidelines

There is no run-time effect on the port unless it is in private VLAN-host mode. If the port is in private VLAN-host mode but neither of the VLANs exist, the command is allowed but the port is made inactive. The port also may be inactive when the association between the private VLANs is suspended.

The secondary VLAN may be an isolated or community VLAN.

See the **private-vlan** command for more information on primary VLANs, secondary VLANs, and isolated or community ports.



#### Note

A private VLAN-isolated port on a Cisco Nexus 5000 Series switch running the current release of Cisco NX-OS does not support IEEE 802.1Q encapsulation and cannot be used as a trunk port.

### Examples

This example shows how to configure a Layer 2 host private VLAN port with a primary VLAN (VLAN 18) and a secondary VLAN (VLAN 20):

```
switch(config-if)# switchport private-vlan host-association 18 20
```

This example shows how to remove the private VLAN association from the port:

```
switch(config-if)# no switchport private-vlan host-association
```

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---

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>show vlan private-vlan</b>	Displays information on private VLANs.

---

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## switchport private-vlan mapping

To define the private VLAN association for a promiscuous port, use the **switchport private-vlan mapping** command. To clear all mapping from the primary VLAN, use the **no** form of this command.

```
switchport private-vlan mapping {primary-vlan-id} {[add] secondary-vlan-id | remove
secondary-vlan-id}
```

```
no switchport private-vlan mapping
```

### Syntax Description

<i>primary-vlan-id</i>	Number of the primary VLAN of the private VLAN relationship.
<b>add</b>	(Optional) Associates the secondary VLANs to the primary VLAN.
<i>secondary-vlan-id</i>	Number of the secondary VLAN of the private VLAN relationship.
<b>remove</b>	Clears the association between the secondary VLANs and the primary VLAN.

### Command Default

None

### Command Modes

Interface configuration mode

### Command History

Release	Modification
4.0(0)N1(1a)	This command was introduced.

### Usage Guidelines

There is no run-time effect on the port unless it is in private VLAN-promiscuous mode. If the port is in private VLAN-promiscuous mode but the primary VLAN does not exist, the command is allowed but the port is made inactive.

The secondary VLAN may be an isolated or community VLAN.

See the [private-vlan](#) command for more information on primary VLANs, secondary VLANs, and isolated or community ports.



#### Note

A private VLAN-isolated port on a Cisco Nexus 5000 Series switch running the current release of Cisco NX-OS does not support IEEE 802.1Q encapsulation and cannot be used as a trunk port.

### Examples

This example shows how to configure the associated primary VLAN 18 to secondary isolated VLAN 20 on a private VLAN promiscuous port:

```
switch(config-if)# switchport private-vlan mapping 18 20
```

This example shows how to add a VLAN to the association on the promiscuous port:

```
switch(config-if)# switchport private-vlan mapping 18 add 21
```

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This example shows how to remove all private VLAN associations from the port:

```
switch(config-if)# no switchport private-vlan mapping
```

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>show interface switchport</b>	Displays information on all interfaces configured as switch ports.
<b>show interface private-vlan mapping</b>	Displays the information about the private VLAN mapping for VLAN interfaces or SVIs.

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## udd (configuration mode)

To configure the Unidirectional Link Detection (UDLD) protocol on the switch, use the **udd** command. To disable UDLD, use the **no** form of this command.

```
udd { aggressive | message-time timer-time | reset }
```

```
no udd { aggressive | message-time | reset }
```

### Syntax Description

<b>aggressive</b>	Enables UDLD in aggressive mode on the switch.
<b>message-time</b> <i>timer-time</i>	Sets the period of time between UDLD probe messages on ports that are in advertisement mode and are currently determined to be bidirectional. The range is from 7 to 90 seconds. The default is 15 seconds.
<b>reset</b>	Resets all the ports that are shut down by UDLD and permit traffic to begin passing through them again. Other features, such as spanning tree, will behave normally if enabled.

### Command Modes

Global configuration mode

### Command History

Release	Modification
4.0(1a)N1(1)	This command was introduced.

### Usage Guidelines

UDLD aggressive mode is disabled by default. You can configure UDLD aggressive mode only on point-to-point links between network devices that support UDLD aggressive mode. If UDLD aggressive mode is enabled, when a port on a bidirectional link that has a UDLD neighbor relationship established stops receiving UDLD frames, UDLD tries to reestablish the connection with the neighbor. After eight failed retries, the port is disabled.

To prevent spanning tree loops, normal UDLD with the default interval of 15 seconds is fast enough to shut down a unidirectional link before a blocking port transitions to the forwarding state (with default spanning tree parameters).

When you enable the UDLD aggressive mode, the following occurs:

- One side of a link has a port stuck (both transmission and receive)
- One side of a link remains up while the other side of the link is down

In these cases, the UDLD aggressive mode disables one of the ports on the link, which prevents traffic from being discarded.

### Examples

This example shows how to enable the aggressive UDLD mode for the switch:

```
switch# configure terminal
switch(config)# udd aggressive
```

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This example shows how to reset all ports that were shut down by UDLD:

```
switch# configure terminal  
switch(config)# udld reset
```

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>show udld</b>	Displays the administrative and operational UDLD status.

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## udd (Ethernet)

To enable and configure the Unidirectional Link Detection (UDLD) protocol on an Ethernet interface, use the **udd** command. To disable UDLD, use the **no** form of this command.

**udd** { **aggressive** | **disable** | **enable** }

**no udd** { **aggressive** | **disable** | **enable** }

### Syntax Description

<b>aggressive</b>	Enables UDLD in aggressive mode on the interface.
<b>disable</b>	Disables UDLD on the interface.
<b>enable</b>	Enables UDLD in normal mode on the interface.

### Command Default

None

### Command Modes

Interface configuration mode

### Command History

Release	Modification
4.0(1a)N1(1)	This command was introduced.

### Usage Guidelines

You can configure normal or aggressive UDLD modes for an Ethernet interface. Before you can enable a UDLD mode for an interface, you must make sure that UDLD is enabled on the switch. UDLD must also be enabled on the other linked interface and its device.

To use the normal UDLD mode on a link, you must configure one of the ports for normal mode and configure the port on the other end for the normal or aggressive mode. To use the aggressive UDLD mode, you must configure both ends of the link for aggressive mode.

### Examples

This example shows how to enable the normal UDLD mode for an Ethernet port:

```
switch# configure terminal
switch(config)# interface ethernet 1/1
switch(config-if)# udd enable
```

This example shows how to enable the aggressive UDLD mode for an Ethernet port:

```
switch(config-if)# udd aggressive
```

This example shows how to disable UDLD for an Ethernet port:

```
switch(config-if)# udd disable
```

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Related Commands	Command	Description
	show udd	Displays the administrative and operational UDLD status.

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## vlan (EXEC mode)

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	
<i>vlan-id</i>	Number of the VLAN. The range is from 1 to 4094. <b>Note</b> You cannot create, delete, or modify VLAN 1 or any of the internally allocated VLANs.
<i>vlan-range</i>	Range of configured VLANs; see the “Usage Guidelines” section for a list of valid values.

**Command Default** None

**Command Modes** Global configuration mode



**Note**

You can also create and delete VLANs in the VLAN configuration mode using these same commands.

Command History	Release	Modification
	4.0(0)N1(1a)	This command was introduced.

### 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 reenables, or recreate, that specified VLAN, the switch automatically reinstates all the original ports to that VLAN.

### Examples

This example shows how to add a new VLAN and enter VLAN configuration mode:

```
switch(config)# vlan 2
switch(config-vlan)#
```

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This example shows how to add a range of new VLANs and enter VLAN configuration mode:

```
switch(config)# vlan 2,5,10-12,20,25,4000  
switch(config-vlan)#
```

This example shows how to delete a VLAN:

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

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>show vlan</b>	Displays VLAN information.

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## 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

### Command History

Release	Modification
4.0(0)N1(1a)	This command was introduced.

### 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

### Examples

This example shows how to enable 802.1Q tagging on the switch:

```
switch(config)# vlan dot1q tag native
switch(config)#
```

This example shows how to disable 802.1Q tagging on the switch:

```
switch(config)# no vlan dot1q tag native
Turning off vlan dot1q tag native may impact the functioning of existing dot1q tunnel
ports
switch(config)#
```

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---

**Related Commands**

---

**Command**

---

**Description**

---

**show vlan dot1q tag  
nativet**

---

Displays the status of tagging on the native VLAN.

---

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## vrf context

To create a virtual routing and forwarding instance (VRF) and enter VRF configuration mode, use the **vrf context** command. To remove a VRF entry, use the **no** form of this command.

**vrf context** {*name* | **management**}

**no vrf context** {*name* | **management**}

Syntax Description	<i>name</i>	Name of the VRF. The name can be a maximum of 32 alphanumeric characters.
	<b>management</b>	Specifies the management VRF.

**Command Default** None

**Command Modes** Global configuration mode

Command History	Release	Modification
	4.0(0)N1(1a)	This command was introduced.

**Usage Guidelines** When you enter the VRF configuration mode, the following commands are available:

- **exit**—Exits from the current command mode.
- **ip**—Enables configuration of IP features.  
Additional commands available in IP configuration mode:
  - **domain-list**—Adds additional domain names.
  - **domain-lookup**—Enables or disables DNS lookup.
  - **domain-name**—Specifies the default domain name.
  - **host**—Adds an entry to the IP hostname table
  - **name-server**—Specifies the IP address of a DNS name server
  - **route**—Adds route information by specifying IP addresses of the next hop servers.
- **no**—Negates a command or set its defaults.
- **shutdown**—Shuts down the current VRF context.

**Examples** This example shows how to enter VRF context mode:

```
switch(config)# vrf context management
switch(config-vrf)#
```

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**Related Commands**

<b>Command</b>	<b>Description</b>
<b>show vrf</b>	Displays VRF information.

---

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## 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**

<b>Syntax Description</b>	<i>name</i>	VTP domain name. The name can be a maximum of 32 ASCII characters.
<b>Command Default</b>	Blank	
<b>Command Modes</b>	Global configuration mode	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	4.2(1)N1(1)	This command was introduced.
<b>Usage Guidelines</b>	Before you use this command, you must enable VTP on the switch by using the <b>feature vtp</b> command.	
<b>Examples</b>	This example shows how to create a VTP domain: <pre>switch(config)# vtp domain accounting switch(config)#</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>feature vtp</b>	Enables VTP on the switch.
	<b>show vtp status</b>	Displays VTP information.

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## vtp mode

To configure the VLAN Trunking Protocol (VTP) device mode, use the **vtp mode** command. To revert to the defaults, use the **no** form of this command.

**vtp mode transparent**

**no vtp mode**

Syntax Description	transparent	Specifies the device mode as transparent.
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Command Default	Transparent
-----------------	-------------

Command Modes	Global configuration mode
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Command History	Release	Modification
	4.2(1)N1(1)	This command was introduced.

**Examples** This example shows how to configure the VTP mode:

```
switch(config)# vtp mode transparent
switch(config)#
```

Related Commands	Command	Description
	<b>feature vtp</b>	Enables VTP on the switch.
	<b>show vtp status</b>	Displays VTP information.

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## vtp version

To configure the administrative domain to 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

<i>version</i>	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
4.2(1)N1(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.

### Examples

This example shows how to create a VTP domain:

```
switch(config)# vtp version 2
switch(config)#
```

### Related Commands

Command	Description
<b>feature vtp</b>	Enables VTP on the switch.
<b>show vtp status</b>	Displays VTP information.