

Spanning Tree Commands

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spanning-tree

Use the **spanning-tree** Global Configuration mode command to enable spanning-tree functionality. Use the **no** form of this command to disable the spanning-tree functionality.

Syntax

spanning-tree

no spanning-tree

Default Configuration

Spanning-tree is enabled.

Command Mode

Global Configuration mode

Example

The following example enables spanning-tree functionality.

```
switchxxxxxx(config)#  spanning-tree
```

spanning-tree mode

Use the **spanning-tree mode** Global Configuration mode command to select which Spanning Tree Protocol (STP) protocol to run. Use the **no** form of this command to restore the default configuration.

Syntax

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

no spanning-tree mode

Parameters

- **stp**—Specifies that STP is enabled.
- **rstp**—Specifies that the Rapid STP is enabled.
- **mst**—Specifies that the Multiple STP is enabled.
- **pvst**—Specifies that the PVST+ is enabled.
- **rapid-pvst**—Specifies that the Rapid PVST+ is enabled.

Default Configuration

The default is RSTP.

Command Mode

Global Configuration mode

User Guidelines

In the RSTP mode, the device uses STP on a port, when the neighbor device uses STP.

In the MSTP mode, the device uses RSTP when the neighbor device uses RSTP, and uses STP when the neighbor device uses STP.

If the PVST mode or the Rapid PVST mode is enabled the switch can support maximum 126 VLANs.

In the Rapid PVST mode, the device uses PVST into a VLAN on a port, when the neighbor device uses PVST.

Examples

The following example enables MSTP.

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

spanning-tree forward-time

Use the **spanning-tree forward-time** Global Configuration mode command to configure the spanning-tree bridge forward time, which is the amount of time a port remains in the listening and learning states before entering the forwarding state. Use the **no** form of this command to restore the default configuration.

Syntax

spanning-tree forward-time *seconds*

no spanning-tree forward-time

Parameters

- ***seconds***—Specifies the spanning-tree forward time in seconds. (Range: 4–30)

Default Configuration

15 seconds.

Command Mode

Global Configuration mode

User Guidelines

When configuring the forwarding time, the following relationship should be maintained:

2*(Forward-Time - 1) >= Max-Age

Example

The following example configures the spanning tree bridge forwarding time to 25 seconds.

```
switchxxxxxx(config)#  spanning-tree forward-time 25
```

spanning-tree hello-time

Use the **spanning-tree hello-time** Global Configuration mode command to configure how often the device broadcasts Hello messages to other devices. Use the **no** form of this command to restore the default configuration.

Syntax

spanning-tree hello-time *seconds*

no spanning-tree hello-time

Parameters

- ***seconds***—Specifies the spanning-tree Hello time in seconds. (Range: 1–10)

Default Configuration

2 seconds.

Command Mode

Global Configuration mode

User Guidelines

When configuring the Hello time, the following relationship should be maintained:

- Max-Age >= 2*(Hello-Time + 1)

Example

The following example configures the spanning-tree bridge hello time to 5 seconds.

```
switchxxxxxx(config)#  spanning-tree hello-time 5
```

spanning-tree max-age

Use the **spanning-tree max-age** Global Configuration mode command to configure the STP maximum age. Use the **no** form of this command to restore the default configuration.

Syntax

spanning-tree max-age *seconds*

no spanning-tree max-age

Parameters

- ***seconds***—Specifies the spanning-tree bridge maximum age in seconds. (Range: 6–40)

Default Configuration

The default maximum age is 20 seconds.

Command Mode

Global Configuration mode

User Guidelines

When configuring the maximum age, the following relationships should be maintained:

- 2*(Forward-Time - 1) >= Max-Age
- Max-Age >= 2*(Hello-Time + 1)

Example

The following example configures the spanning-tree bridge maximum age to 10 seconds.

```
switchxxxxxx(config)#  spanning-tree max-age 10
```

spanning-tree priority

Use the **spanning-tree priority** Global Configuration mode command to configure the device STP priority, which is used to determine which bridge is selected as the root bridge. Use the **no** form of this command to restore the default device spanning-tree priority.

Syntax

spanning-tree priority *priority*

no spanning-tree priority

Parameters

- ***priority***—Specifies the bridge priority. (Range: 0–61440)

Default Configuration

Default priority = 32768.

Command Mode

Global Configuration mode

User Guidelines

The priority value must be a multiple of 4096.

The switch with the lowest priority is the root of the spanning tree. When more than one switch has the lowest priority, the switch with the lowest MAC address is selected as the root.

Example

The following example configures the spanning-tree priority to 12288.

```
switchxxxxxx(config)#  spanning-tree priority 12288
```

spanning-tree disable

Use the **spanning-tree disable** Interface (Ethernet, Port Channel) Configuration mode command to disable the spanning tree on a specific port. Use the **no** form of this command to enable the spanning tree on a port.

Syntax

spanning-tree disable

no spanning-tree disable

Default Configuration

Spanning tree is enabled on all ports.

Command Mode

Interface (Ethernet, Port Channel) Configuration mode

Example

The following example disables the spanning tree on gi1/0/5

```
switchxxxxxx(config)#  interface gi1/0/5
switchxxxxxx(config-if)#  spanning-tree disable
```

spanning-tree cost

Use the **spanning-tree cost** Interface (Ethernet, Port Channel) Configuration mode command to configure the spanning-tree path cost for a port. Use the **no** form of this command to restore the default configuration.

Syntax

spanning-tree cost *cost*

no spanning-tree cost

Parameters

- ***cost***—Specifies the port path cost. (Range: 1–200000000)

Default Configuration

Default path cost is determined by port speed and path cost method (long or short) as shown below.

Interface	Long	Short
Port-channel	Half the default cost based on Port-channel interface speed	Half the default cost based on Port-channel interface speed
TenGigabit Ethernet (10000 Mbps)	2000	2
5 **Gigabit Ethernet (5000 Mbps)**	12,000	3
2.5 **Gigabit Ethernet (2500 Mbps)**	17,000	4
Gigabit Ethernet (1000 Mbps)	20,000	4
Fast Ethernet (100 Mbps)	200,000	19
Ethernet (10 Mbps)	2,000,000	100

Command Mode

Interface (Ethernet, Port Channel) Configuration mode

Example

The following example configures the spanning-tree cost on gi1/0/15 to 35000.

```
switchxxxxxx(config)#  interface gi1/0/15
switchxxxxxx(config-if)#  spanning-tree cost 35000
```

spanning-tree port-priority

Use the **spanning-tree port-priority** Interface (Ethernet, Port Channel) Configuration mode command to configure the port priority. Use the **no** form of this command to restore the default configuration.

Syntax

spanning-tree port-priority *priority*

no spanning-tree port-priority

Parameters

- ***priority***—Specifies the port priority. (Range: 0–240)

Default Configuration

The default port priority is 128.

Command Mode

Interface (Ethernet, Port Channel) Configuration mode

User Guidelines

The priority value must be a multiple of 16.

Example

The following example configures the spanning priority on gi1/0/15 to 96

```
switchxxxxxx(config)#  interface gi1/0/15
switchxxxxxx(config-if)#  spanning-tree port-priority 96
```

spanning-tree portfast

Use the **spanning-tree portfast** Interface (Ethernet, Port Channel) Configuration mode command to enable the PortFast mode. Use the **no** form of this command to disable the PortFast mode.

Syntax

spanning-tree portfast [**auto**]

no spanning-tree portfast

Parameters

- **auto**—Specifies delay before putting the interface into the PortFast mode.

Default Configuration

PortFast mode is set to auto.

Command Mode

Interface (Ethernet, Port Channel) Configuration mode

User Guidelines

In the PortFast mode, the interface is immediately put into the forwarding state upon linkup, without waiting for the standard forward time delay.

Use the **spanning-tree portfast** command to enable immediately the PortFast mode.

Use the **spanning-tree portfast auto** to delay the PortFast mode for 3 seconds. The interface will turn into the PortFast mode if for this interval it does not receive a Spanning Tree protocol message.

Example

The following example enables the PortFast mode on gi1/0/15.

```
switchxxxxxx(config)#  interface gi1/0/15
switchxxxxxx(config-if)#  spanning-tree portfast
```

spanning-tree link-type

Use the **spanning-tree link-type** Interface (Ethernet, Port Channel) Configuration mode command to override the default link-type setting determined by the port duplex mode, and enable RSTP transitions to the Forwarding state. Use the **no** form of this command to restore the default configuration.

Syntax

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

no spanning-tree spanning-tree link-type

Parameters

- **point-to-point**—Specifies that the port link type is point-to-point.
- **shared**—Specifies that the port link type is shared.

Default Configuration

The device derives the port link type from the duplex mode. A full-duplex port is considered a point-to-point link and a half-duplex port is considered a shared link.

Command Mode

Interface (Ethernet, Port Channel) Configuration mode

Example

The following example enables shared spanning-tree on gi1/0/15.

```
switchxxxxxx(config)#  interface gi1/0/15
switchxxxxxx(config-if)#  spanning-tree link-type shared
```

spanning-tree pathcost method

Use the **spanning-tree pathcost method** Global Configuration mode command to set the default path cost method. Use the **no** form of this command to return to the default configuration.

Syntax

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

no spanning-tree pathcost method

Parameters

- **long**—Specifies that the default port path costs are within the range: 1–200,000,000.
- **short**—Specifies that the default port path costs are within the range: 1–65,535.

Default Configuration

Long path cost method.

Command Mode

Global Configuration mode

User Guidelines

This command applies to all the spanning tree instances on the switch.

- If the short method is selected, the switch calculates the default cost as 100.
- If the long method is selected, the switch calculates the default cost as 20000.

Example

The following example sets the default path cost method to Long.

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

spanning-tree bpdu (Global)

Use the **spanning-tree bpdu** Global Configuration mode command to define Bridge Protocol Data Unit (BPDU) handling when the spanning tree is disabled globally or on a single interface. Use the **no** form of this command to restore the default configuration.

Syntax

spanning-tree bpdu {**filtering** | **flooding**}

no spanning-tree bpdu

Parameters

- **filtering**—Specifies that BPDU packets are filtered when the spanning tree is disabled on an interface.
- **flooding**—Specifies that untagged BPDU packets are flooded unconditionally (without applying VLAN rules) to all ports with the spanning tree disabled and BPDU handling mode of flooding. Tagged BPDU packets are filtered.

Default Configuration

The default setting is **flooding**.

Command Mode

Global Configuration mode

User Guidelines

The **filtering** and **flooding** modes are relevant when the spanning tree is disabled globally or on a single interface.

Example

The following example defines the BPDU packet handling mode as **flooding** when the spanning tree is disabled on an interface.

```
switchxxxxxx(config)#  spanning-tree bpdu flooding
```

spanning-tree bpdu (Interface)

Use the **spanning-tree bpdu** Interface (Ethernet, Port Channel) Configuration mode command to define BPDU handling when the spanning tree is disabled on a single interface. Use the **no** form of this command to restore the default configuration.

Syntax

spanning-tree bpdu {**filtering** | **flooding**}

no spanning-tree bpdu

Parameters

- **filtering**—Specifies that BPDU packets are filtered when the spanning tree is disabled on an interface.
- **flooding**—Specifies that untagged BPDU packets are flooded unconditionally (without applying VLAN rules) to ports with the spanning tree disabled and BPDU handling mode of flooding. Tagged BPDU packets are filtered.

Default Configuration

The spanning-tree bpdu (Global), on page 15 command determines the default configuration.

Command Mode

Interface (Ethernet, Port Channel) Configuration mode

Example

The following example defines the BPDU packet as **flooding** when the spanning tree is disabled on gi1/0/3.

```
switchxxxxxx(config)#  interface gi1/0/3
switchxxxxxx(config-if)#  spanning-tree bpdu flooding
```

clear spanning-tree counters

Use the **clear spanning-tree counters** Privileged EXEC mode command to clear STP counters on all interfaces or on the specified interface

Syntax

clear spanning-tree counters [**interface** *interface-id*]

Parameters

- ***interface-id***— (O'ptional) Specifies an interface ID. The interface ID can be one of the following types: Ethernet port or Port-channel.

Default Configuration

All interfaces.

Command Mode

Privileged EXEC mode

User Guidelines

The **clear spanning-tree counters** command clears sent and received STP BPDU counters from the entire switch or from the specified interface

Example

This example shows how to clear STP counter on all interfaces.

switchxxxxxx# **clear spanning-tree counters**

clear spanning-tree detected-protocols

Use the **clear spanning-tree detected-protocols** Privileged EXEC mode command to restart the STP migration process (force renegotiation with neighboring switches) on all interfaces or on the specified interface

Syntax

clear spanning-tree detected-protocols [**interface** *interface-id*]

Parameters

- ***interface-id***—Specifies an interface ID. The interface ID can be one of the following types: Ethernet port or Port-channel.

Default Configuration

All interfaces.

Command Mode

Privileged EXEC mode

User Guidelines

This feature can only be used when working in the RSTP, MSTP, or Rapid PVST mode.

Example

This restarts the STP migration process on all interfaces.

```
switchxxxxxx#  clear spanning-tree detected-protocols
```

spanning-tree mst priority

Use the **spanning-tree mst priority** Global Configuration mode command to configure the device priority for the specified spanning-tree instance. Use the **no** form of this command to restore the default configuration.

Syntax

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

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

Parameters

- ***instance-id***—Specifies the spanning-tree instance ID. (Range:1– 7 **)**
- ***priority***—Specifies the device priority for the specified spanning-tree instance. This setting determines the likelihood that the switch is selected as the root switch. A lower value increases the probability that the switch is selected as the root switch. (Range: 0–61440)

Default Configuration

The default priority is 32768.

Command Mode

Global Configuration mode

User Guidelines

The priority value must be a multiple of 4096.

The switch with the lowest priority is the root of the spanning tree.

Example

The following example configures the spanning tree priority of instance 1 to 4096.

```
switchxxxxxx(config)#  spanning-tree mst 1 priority 4096
```

spanning-tree mst max-hops

Use the **spanning-tree mst max-hops** Global Configuration mode command to configure the number of hops in an MST region before the BDPU is discarded and the port information is aged out. Use the **no** form of this command to restore the default configuration.

Syntax

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

no spanning-tree mst max-hops

Parameters

- ***hop-count***—Specifies the number of hops in an MST region before the BDPU is discarded. (Range: 1–40)

Default Configuration

The default number of hops is 20.

Command Mode

Global Configuration mode

Example

The following example configures the maximum number of hops that a packet travels in an MST region before it is discarded to 10.

```
switchxxxxxx(config)#  spanning-tree mst max-hops 10
```

spanning-tree mst port-priority

Use the **spanning-tree mst port-priority** Interface (Ethernet, Port Channel) Configuration mode command to configure the priority of a port. Use the **no** form of this command to restore the default configuration.

Syntax

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

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

Parameters

- ***instance-id***—Specifies the spanning tree instance ID. (Range:1– 7 **)**
- ***priority***—Specifies the port priority. (Range: 0–240 in multiples of 16)

Default Configuration

The default port priority is 128.

Command Mode

Interface (Ethernet, Port Channel) Configuration mode

User Guidelines

The priority value must be a multiple of 16.

Example

The following example configures the port priority of gi1/0/1 to 144.

```
switchxxxxxx(config)#  interface gi1/0/1
switchxxxxxx(config-if)#  spanning-tree mst 1 port-priority 144
```

spanning-tree mst cost

Use the **spanning-tree mst cost** Interface (Ethernet, Port Channel) Configuration mode command to configure the path cost for MST calculations. If a loop occurs, the spanning tree considers path cost when selecting an interface to put in the Forwarding state. Use the **no** form of this command to restore the default configuration.

Syntax

spanning-tree mst *instance-id* **cost** *cost*

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

Parameters

- ***instance-id***—Specifies the spanning-tree instance ID. (Range:1– 7 **)**
- ***cost***—Specifies the port path cost. (Range: 1–200000000)

Default Configuration

Default path cost is determined by the port speed and path cost method (long or short) as shown below:

Command Mode

Interface (Ethernet, Port Channel) Configuration mode

Example

The following example configures the MSTP instance 1 path cost for port gi1/0/9 to 4.

```
switchxxxxxx(config)#  interface gi1/0/9
switchxxxxxx(config-if)#  spanning-tree mst 1 cost 4
```

spanning-tree mst configuration

Use the **spanning-tree mst configuration** Global Configuration mode command to enable configuring an MST region by entering the MST mode.

Syntax

spanning-tree mst configuration

Command Mode

Global Configuration mode

User Guidelines

For two or more switches to be in the same MST region, they must contain the same VLAN mapping, the same configuration revision number, and the same name.

Example

The following example configures an MST region.

```
switchxxxxxx(config)#  spanning-tree mst configuration
switchxxxxxx(config-mst)# instance 1 vlan 10-20
switchxxxxxx(config-mst)# name region1
switchxxxxxx(config-mst)# revision 1
```

instance (MST)

Use **instance** MST Configuration mode command to map VLANs to an MST instance. Use the **no** form of this command to restore the default mapping.

Syntax

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

no **instance** *instance-id* ***vlan*** *vlan-range*

Parameters

- ***instance-id***—MST instance (Range:1– 7**)**
- ***vlan-range***—The specified range of VLANs is added to the existing ones. To specify a range, use a hyphen. To specify a series, use a comma. (Range: 1–4094)

Default Configuration

All VLANs are mapped to the common and internal spanning tree (CIST) instance (instance 0).

Command Mode

MST Configuration mode

User Guidelines

Before mapping VLANs to an instance, the instance needs to be created using the spanning-tree mst instance, on page 30 command (up to 15 instances can be created).

All VLANs that are not explicitly mapped to an MST instance are mapped to the common and internal spanning tree (CIST) instance (instance 0) and cannot be unmapped from the CIST.

For two or more devices to be in the same MST region, they must have the same VLAN mapping, the same configuration revision number, and the same name.

Examples

Example 1. The following example maps VLANs 10-20 to MST instance 1000.

```
switchxxxxxx(config)# spanning-tree mst instance 1000
switchxxxxxx(config)#  spanning-tree mst configuration
switchxxxxxx(config-mst)# instance 1000 vlan 10-20
```

Example 2. In the following example the attempt to map VLANs to MST instance ID 1001 fails, since instance ID 1001 was not created by user:

```
switchxxxxxx(config)# spanning-tree mst configuration
switchxxxxxx(config-mst)# instance 1000 vlan 30-40
Cannot map VLANs to instance 1001. Instance 1001 does not exist.
```

name (MST)

Use the **name** MST Configuration mode command to define the MST region name. Use the **no** form of this command to restore the default setting.

Syntax

name *string*

no name

Parameters

- ***string***—Specifies the MST region name. (Length: 1–32 characters)

Default Configuration

The default name is the bridge MAC address.

Command Mode

MST Configuration mode

Example

The following example defines the region name as Region1.

```
switchxxxxxx(config)#  spanning-tree mst configuration
switchxxxxxx(config-mst)# name region1
```

revision (MST)

Use the **revision** MST Configuration mode command to define the MST configuration revision number. Use the **no** form of this command to restore the default configuration.

Syntax

revision *value*

no revision

Parameters

- ***value***—Specifies the MST configuration revision number. (Range: 0–65535)

Default Configuration

The default configuration revision number is 0.

Command Mode

MST Configuration mode

Example

The following example sets the configuration revision to 1.

```
switchxxxxxx(config)#  spanning-tree mst configuration
switchxxxxxx(config-mst) # revision 1
```

show (MST)

Use the **show** MST Configuration mode command to display the current or pending MST region configuration.

Syntax

show {**current** | **pending**}

Parameters

- **current**—Displays the current MST region configuration.
- **pending**—Displays the pending MST region configuration.

Command Mode

MST Configuration mode

Example

The following example displays a pending MST region configuration

```
switchxxxxxx(config-mst)# show pending
Gathering information ..........
Current MST configuration
Name: Region1
Revision: 1
Digest: 0xB41829F9030A054FB74EF7A8587FF58D
Instance  VLANs Mapped               State
--------  -------------------------  -----
0         1-4094                     Disabled
switchxxxxxx(config-mst)#
```

exit (MST)

Use the **exit** MST Configuration mode command to exit the MST region Configuration mode and apply all configuration changes.

Syntax

exit

Command Mode

MST Configuration mode

Example

The following example exits the MST Configuration mode and saves changes.

```
switchxxxxxx(config)#  spanning-tree mst configuration
switchxxxxxx(config-mst)# exit
switchxxxxxx(config)#
```

abort (MST)

Use the **abort** MST Configuration mode command to exit the MST Configuration mode without applying the configuration changes.

Syntax

abort

Command Mode

MST Configuration mode

Example

The following example exits the MST Configuration mode without saving changes.

```
switchxxxxxx(config)#  spanning-tree mst configuration
switchxxxxxx(config-mst)# abort
```

spanning-tree mst instance

Use the spanning-tree mst instance Global Configuration mode command to create an MST instance to which VLANs can be mapped. To delete an instance use the no form of command.

Syntax

spanning-tree mst instance *instance-id*

no spanning-tree mst instance *instance-id*

Parameters

- ***instance-id***—Specifies the spanning-tree instance ID. (range 1-4094)

Default Configuration

Instance IDs 1-4094 do not exist.

Command Mode

Global Configuration mode

User Guidelines

Use the spanning-tree mst instance command to create an MST instance. Up to 15 can be created. Instance 0 (the common and internal spanning tree (CIST) instance) exists by default on device and cannot be removed.

Creating an MST instance allows to map VLANs to this instance in MST Configuration mode) and to configure the following settings on the created instance:

- Configure instance priority - command spanning-tree mst priority, on page 19.
- Configure port priority per instance - command spanning-tree mst port-priority, on page 21
- Configure port cost per instance - command spanning-tree mst cost, on page 22

Use the no form of command to delete an instance. An instance cannot be deleted if one or more VLANs are still mapped to it. Deleting an instance removes all STP configuration related to that instance.

Example

Example 1. The following example creates an MST instance with instance ID of 248:

```
switchxxxxxx(config)#spanning-tree mst instance 248
```

Example 2:The following example removes MST instance 248 from device.

```
switchxxxxxx(config)# no spanning-tree mst instance 248
```

Example 3:In the following example removal of instance ID 365 fails because VLANs are still mapped to this instance:

```
switchxxxxxx(config)# no spanning-tree mst instance 365
Cannot delete instance 365. One or more VLANs are mapped to this instance.
```

show spanning-tree

Use the **show spanning-tree** Privileged EXEC mode command to display the spanning-tree configuration.

Syntax

show spanning-tree [*interface-id*] [**{instance** *instance-id*} | {**vlan** *vlan-id*}]

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

show spanning-tree inconsistentports

show spanning-tree mst-configuration

show spanning-tree mst-configuration digest

Parameters

- ***interface-id***—Specifies an interface ID (optional). The interface ID can be one of the following types: Ethernet port or Port-channel.
- **detail**—Displays detailed information.
- **active**—Displays active ports only. Active ports are ports that are STP enabled and in the operational status of up. If device mode is PVST+ or Rapid PVST+ - ports also need to be members of the displayed VLAN.
- **blockedports**—Displays blocked ports only.
- ***instance-id***—MST instance (Range:1– 7**)**. The parameter could be defined only when mode MSTP is enabled.
- **vlan** *vlan-id*—Specifies the VLAN ID. (Range: 1–4094). The parameter could be defined only when mode PVST or RPVST is enabled.
- **inconsistentports** - Displays the ports that are in an inconsistent STP state. Command is relevant only when in PVST+ or Rapid PVST mode.
- **mst-configuration**—Displays the MST configuration information.
- **mst-configuration digest**—Displays the MST configuration digest information.

Default Configuration

If no interface is specified, the default is all interfaces.

Command Mode

Privileged EXEC mode

User Guidelines

This command only works when MST is enabled.

Example

The following examples display spanning-tree information in various configurations:

- **Display examples for a device that is in STP** or RSTP mode -

```
switchxxxxxx#  show spanning-tree
Spanning tree enabled mode RSTP
Default port cost method: long
Loopback guard: Disabled
```

Root ID	Priority Address Cost Port	32768 00:01:42:97:e0:00 20000 gi1/0/1		
	Hello Time 2 sec		Max Age 20 sec	Forward Delay 15 sec
Bridge ID	Priority Address	36864 00:02:4b:29:7a:00		
	Hello Time 2 sec		Max Age 20 sec	Forward Delay 15 sec

Interfaces

Name	State	Prio. No	Cost	Sts	Role	PortFast	Type
gi1/0/1	Enabled	128.1	20000	FRW	Root		P2p (RSTP)
gi1/0/2	Enabled	128.2	20000	FRW	Desg	No	Shared (STP)
gi1/0/3	Disabled	128.3	20000	-	-	No	-
gi1/0/4	Enabled	128.4	20000	BLK	Altn	-	Shared (STP)
gi1/0/5	Enabled	128.5	20000	DIS	-	No -	-

```
switchxxxxxx# show spanning-tree
Spanning tree disabled (BPDU filtering) mode RSTP
Default port cost method: long
Loopback guard: Disabled
Interfaces
```

Name	State	Prio.Nbr	Cost	Sts	Role	PortFast	Type
gi1/0/1	Enabled	128.1	20000	FRW	Desg	No	P2p (RSTP)
gi1/0/2	Enabled	128.2	20000	FRW	Desg	No	Shared (STP)
gi1/0/3	Disabled	128.3	20000	-	-	-	-
gi1/0/4	Enabled	128.4	20000	FRW	Desg	No	Shared (STP)
gi1/0/5	Enabled	128.5	20000	DIS	-	-	-

```
switchxxxxxx#  show spanning-tree
Spanning tree disabled (BPDU filtering) mode RSTP
Default port cost method: long
Loopback guard: Disabled
```

Root ID	Priority Address Path Cost Root Port Hello Time	N/A N/A N/A N/A N/A	Max Age N/A	Forward Delay N/A
Bridge ID	Priority Address	36864 00:02:4b:29:7a:00		
	Hello Time 2 sec		Max Age 20 sec	Forward Delay 15 sec

Interfaces

Name	State	Prio.Nb	Cost	Sts	Role	PortFast	Type
gi1/0/1	Enabled	128.1	20000	-	-	-	-
gi1/0/2	Enabled	128.2	20000	-	-	-	-
gi1/0/3	Disabled	128.3	20000	-	-	-	-
gi1/0/4	Enabled	128.4	20000	-	-	-	-
gi1/0/5	Enabled	128.5	20000	-	-	-	-

```
switchxxxxxx#  show spanning-tree active
Spanning tree enabled mode RSTP
Default port cost method: long
Loopback guard: Disabled
```

Root ID	Priority Address Path Cost Root Port	32768 00:01:42:97:e0:00 20000 gi1/0/1		
	Hello Time 2 sec		Max Age 20 sec	Forward Delay 15 sec
Bridge ID	Priority Address	36864 00:02:4b:29:7a:00		
	Hello Time 2 sec		Max Age 20 sec	Forward Delay 15 sec

Interfaces

Name	State	Prio.Nbr	Cost	Sts	Role	PortFast	Type
gi1/0/1	Enabled	128.1	20000	FRW	Root	No	P2P (RSTP)
gi1/0/2	Enabled	128.2	20000	FRW	Desg	No	Shared (STP)
gi1/0/4	Enabled	128.4	20000	BLK	Altn	No	Shared (STP)

```
switchxxxxxx#  show spanning-tree blockedports
Spanning tree enabled mode RSTP
Default port cost method: long
Loopback guard: Disabled
```

Root ID	Priority Address Path Cost Root Port	32768 00:01:42:97:e0:00 20000 gi1/0/1		
	Hello Time 2 sec		Max Age 20 sec	Forward Delay 15 sec
Bridge ID	Priority	36864		
	Address	00:02:4b:29:7a:00		
	Hello Time 2 sec		Max Age 20 sec	Forward Delay 15 sec

Interfaces

Name	State	Prio.Nbr	Cost	Sts	Role	PortFast	Type
gi1/0/4	Enabled	128.4	19	BLK	Altn	No	Shared (STP)

```
switchxxxxxx#  show spanning-tree detail
Spanning tree enabled mode RSTP
Default port cost method: long
Loopback guard: Disabled
```

Root ID	Priority Address Path Cost Root Port	32768 00:01:42:97:e0:00 20000 gi1/0/1		
	Hello Time 2 sec		Max Age 20 sec	Forward Delay 15 sec
Bridge ID	Priority Address	36864 00:02:4b:29:7a:00		
	Hello Time 2 sec		Max Age 20 sec	Forward Delay 15 sec
Number of topology changes 2 last change occurred 2d18h ago				
Times:	hold 1, topology change 35, notification 2 hello 2, max age 20, forward delay 15			

Port 1 (gi1/0/1) enabled State: Forwarding Port id: 128.1 Type: P2p (configured: auto) RSTP Designated bridge Priority: 32768 Designated port id: 128.25 Guard root: Disabled	Role: Root Port cost: 20000 Port Fast: No (configured:no) Address: 00:01:42:97:e0:00 Designated path cost: 0 BPDU guard: Disabled
Number of transitions to forwarding state: 1 BPDU: sent 2, received 120638	

Port 2 (gi1/0/2) enabled State: Forwarding Port id: 128.2 Type: Shared (configured: auto) STP Designated bridge Priority: 32768 Designated port id: 128.2 Guard root: Disabled	Role: Designated Port cost: 20000 Port Fast: No (configured:no) Address: 00:02:4b:29:7a:00 Designated path cost: 20000 BPDU guard: Disabled
Number of transitions to forwarding state: 1 BPDU: sent 2, received 170638	
Port 3 (gi1/0/3) disabled State: N/A Port id: 128.3 Type: N/A (configured: auto) Designated bridge Priority: N/A Designated port id: N/A Guard root: Disabled	Role: N/A Port cost: 20000 Port Fast: N/A (configured:no) Address: N/A Designated path cost: N/A BPDU guard: Disabled
Number of transitions to forwarding state: N/A BPDU: sent N/A, received N/A	
Port 4 (gi1/0/4) enabled State: Blocking Port id: 128.4 Type: Shared (configured:auto) STP Designated bridge Priority: 28672 Designated port id: 128.25 Guard root: Disabled	Role: Alternate Port cost: 20000 Port Fast: No (configured:no) Address: 00:30:94:41:62:c8 Designated path cost: 20000 BPDU guard: Disabled
Number of transitions to forwarding state: 1 BPDU: sent 2, received 120638	
Port 5 (gi1/0/5) enabled State: Disabled Port id: 128.5 Type: N/A (configured: auto) Designated bridge Priority: N/A Designated port id: N/A Guard root: Disabled	Role: N/A Port cost: 20000 Port Fast: N/A (configured:no) Address: N/A Designated path cost: N/A BPDU guard: Disabled

```
Number of transitions to forwarding state: N/A
BPDU: sent N/A, received N/A
switchxxxxxx#  show spanning-tree ethernet gi1/0/1
```

Port 1 (gi1/0/1) enabled State: Forwarding Port id: 128.1 Type: P2p (configured: auto) RSTP Designated bridge Priority: 32768 Designated port id: 128.25 Guard root: Disabled	Role: Root Port cost: 20000 Port Fast: No (configured:no) Address: 00:01:42:97:e0:00 Designated path cost: 0 BPDU guard: Disabled

```
Number of transitions to forwarding state: 1
BPDU: sent 2, received 120638
```

- **Display examples for a device that is in PVST or Rapid PVST mode-**

```
switchxxxxxx#  show spanning-tree
Spanning tree enabled mode Rapid-PVST
Default port cost method: long
Loopback guard: Disabled
VLAN 1
```

Root ID	Priority Address Path Cost Root Port	4096 00:01:42:97:e0:00 20000 gi1/0/1		
	Hello Time 2 sec		Max Age 20 sec	Forward Delay 15 sec
Bridge ID	Priority Address	36864 00:02:4b:29:7a:00		
	Hello Time 2 sec		Max Age 20 sec	Forward Delay 15 sec

Interfaces

Name	State	Prio.Nbr	Cost	Sts	Role	PortFast	Type
gi1/0/1	Enabled	128.1	20000	Frw	Root	No	P2P (RPVST)
gi1/0/2	Enabled	128.2	20000	DSCR	Bkup	No	P2P (RVPST)
gi1/0/3	Disabled	128.3	20000	-	-	No	-
gi1/0/4	Enabled	128.4	20000	Dsbl	Dsbl	No	-
gi1/0/5	Enabled	128.5	20000	DSCR	Altn	Yes	P2P (RPVST)
gi1/0/6	Enabled	128.6	20000	Frw	Desg		Shared(PVST)

* Port Type or PVID Inconsistency
VLAN 20

Root ID	Priority Address	4096 00:02:4b:29:7a:00		
	This switch is the root			
	Hello Time 2 sec		Max Age 20 sec	Forward Delay 15 sec

Interfaces

Name	State	Prio.Nbr	Cost	Sts	Role	PortFast	Type
gi1/0/1	Enabled	128.1	20000	FRW	Desg	No	P2p (RPVST)
gi1/0/2	Enabled	128.2	20000	Dscr*	Desg	No	P2p (RPVST)
gi1/0/3	Disabled	128.3	20000	Dsbl	Dsbl	No	-
gi1/0/4	Enabled	128.4	20000	Dsbl	Dsbl	no	-
gi1/0/5	Enabled	128.5	20000	Dsbl	Dsbl	Yes	P2P (RPVST)
gi1/0/6	Enabled	128.6	20000	Frw	Desg		Shared(PVST)

* Port Type or PVID Inconsistency
switchxxxxxx# **show spanning-tree active**
Spanning tree enabled mode Rapid-PVST
Default port cost method: long
Loopback guard: Disabled
VLAN 1

Root ID	Priority Address Path Cost Root Port	4096 00:01:42:97:e0:00 20000 gi1/0/1

	Hello Time 2 sec	Max Age 20 sec	Forward Delay 15 sec
Bridge ID	Priority Address	36864 00:02:4b:29:7a:00	
	Hello Time 2 sec	Max Age 20 sec	Forward Delay 15 sec

Interfaces

Name	State	Prio.Nbr	Cost	Sts	Role	PortFast	Type
						No	
gi1/0/1	Enabled	128.1	20000	Frw	Root	No	P2p (RPVST)
gi1/0/2	Enabled	128.2	20000	DSCR	Bkup	No	P2p (RPVST)
gi1/0/5	Enabled	128.5	20000	DSCR	Altn	Yes	P2p (RPVST)
gi1/0/6	Enabled	128.6	20000	Frw	Desg		Shared(PVST)

* Port Type or PVID Inconsistency
VLAN 20

Root ID	Priority Address	4096 00:02:4b:29:7a:00		
	This switch is the root			
	Hello Time 2 sec	Max Age 20 sec	Forward Delay 15 sec	

Interfaces

Name	State	Prio.Nbr	Cost	Sts	Role	PortFast	Type
						No	
gi1/0/1	Enabled	128.1	20000	FRW	Desg	No	P2p (RPVST)
gi1/0/2	Enabled	128.2	20000	Dscr*	Desg	Yes	P2p (RPVST)
gi1/0/6	Enabled	128.6	20000	Frw	Desg		Shared(PVST)

* Port Type or PVID Inconsistency
switchxxxxxx# **show spanning-tree VLAN 20**
Spanning tree enabled mode PVST
Default port cost method: long
Loopback guard: Disabled
VLAN 20

Root ID	Priority Address	4096 00:02:4b:29:7a:00		
	This switch is the root			
	Hello Time 2 sec	Max Age 20 sec	Forward Delay 15 sec	

Interfaces

Name	State	Prio.Nbr	Cost	Sts	Role	PortFast	Type
						No	
gi1/0/1	Enabled	128.1	20000	FRW	Desg	No	P2p (RPVST)
gi1/0/2	Enabled	128.2	20000	Dscr*	Desg	No	P2p (RPVST)
gi1/0/3	Disabled	128.3	20000	Dsbl	Dsbl	No	-
gi1/0/4	Enabled	128.4	20000	Dsbl	Dsbl	no	-
gi1/0/5	Enabled	128.5	20000	Dsbl	Dsbl	Yes	P2P (RPVST)
gi1/0/6	Enabled	128.6	20000	Frw	Desg		Shared(PVST)

```
* Port Type or PVID Inconsistency
switchxxxxxx#  show spanning-tree gi1/0/2
```

VLAN	State	Prio.Nbr	Cost	Sts	Role	PortFast	Type
						No	
1	Enabled	128.1	2000	FRW	Root	No	P2p (RPVST)
2	Enabled	128.2	2000	Dscr*	Desg	No	P2p (RPVST)
3	Enabled	128.3	2000	Dscr	Altr	Yes	P2p (RPVST)
6	Enabled	128.6	2000	Frw	Desg		Shared(PVST)

```
* Port Type or PVID Inconsistency
switchxxxxxx#  show spanning-tree gi1/0/2 vlan 3
```

(gi1/0/2) enabled	Role: Alternate
State: Discarding	Port cost: 2000
Port id: 128.3	Port Fast: No (configured:Auto)
Type: P2p (configured: auto) RPVST	Address: 00:01:42:97:e0:00
Designated bridge Priority: 32768	Designated path cost: 0
Designated port id: 128.22	BPDU guard: Disabled
Guard root: Disabled	

```
switchxxxxxx#  show spanning-tree inconsistentports
```

name	interface	inconsistency
VLAN 10	gi1/0/2	Port Type Inconsistency
VLAN 10	gi1/0/7	PVID Inconsistency
VLAN 20	gi1/0/7	PVID Inconsistency
VLAN 20	gi1/0/8	Port Type Inconsistency

```
Number of inconsistent ports (segments) in the system : 4
```

- **Display examples for a device that is in MSTP mode -**

```
switchxxxxxx#  show spanning-tree mst-configuration
Name: Region1
Revision: 1
```

Instance	Vlans mapped	State
1	1-9, 21-4094	Enabled
2	10-20	Enabled

```
switchxxxxxx#  show spanning-tree mst-configuration digest
Name: Region1
Revision: 1
Format selector: 0
Digest: 0xB41829F9030A054FB74EF7A8587FF58D
Number of instances configured: 3
switchxxxxxx#  show spanning-tree
Spanning tree enabled mode MSTP
Default port cost method: long
Loopback guard: Disabled
###### MST 0 Vlans Mapped: 1-9
```

CST Root ID	Priority Address Path Cost Root Port	32768 00:01:42:97:e0:00 20000 gi1/0/1	
	Hello Time 2 sec	Max Age 20 sec	Forward Delay 15 sec
IST Master ID	Priority Address	32768 00:02:4b:29:7a:00	
	This switch is the IST master.		
	Hello Time 2 sec	Max Age 20 sec	Forward Delay 15 sec
	Max hops 20		

Interfaces

Name	State	Prio.Nbr	Cost	Sts	Role	PortFast	Type
gi1/0/1	Enabled	128.1	20000	FRW	Root	No	P2p Bound
gi1/0/2	Enabled	128.2	20000	FRW	Desg	No	(RSTP)
gi1/0/3	Enabled	128.3	20000	FRW	Desg	No	Shared Bound
gi1/0/4	Enabled	128.4	20000	FRW	Desg	No	(STP) P2p P2p

```
###### MST 1 Vlans Mapped: 10-20
```

Root ID	Priority Address Path Cost Root Port Rem hops	24576 00:02:4b:29:89:76 20000 gi1/0/4 19
Bridge ID	Priority Address	32768 00:02:4b:29:7a:00

Interfaces

Name	State	Prio.Nbr	Cost	Sts	Role	PortFast	Type
gi1/0/1	Enabled	128.1	20000	FRW	Boun	No	P2p Bound
gi1/0/2	Enabled	128.2	20000	FRW	Boun	No	(RSTP)
gi1/0/3	Enabled	128.3	20000	BLK	Altn	No	Shared Bound
gi1/0/4	Enabled	128.4	20000	FRW	Root	No	(STP)
							P2p
							P2p

switchxxxxxx# **show spanning-tree detail**
Spanning tree enabled mode MSTP
Default port cost method: long
Loopback guard: Disabled
MST 0 Vlans Mapped: 1-9

CST Root ID	Priority Address Path Cost Root Port	32768 00:01:42:97:e0:00 20000 gi1/0/1		
	Hello Time 2 sec		Max Age 20 sec	Forward Delay 15 sec
IST Master ID	Priority Address	32768 00:02:4b:29:7a:00		
	This switch is the IST master.			
	Hello Time 2 sec		Max Age 20 sec	Forward Delay 15 sec
	Max hops 20 Number of topology changes 2 last change occurred 2d18h ago Times: hold 1, topology change 35, notification 2 hello 2, max age 20, forward delay 15			

Port 1 (gi1/0/1) enabled State: Forwarding Port id: 128.1 Type: P2p (configured: auto) Boundary RSTP Designated bridge Priority: 32768 Designated port id: 128.25 Number of transitions to forwarding state: 1 BPDU: sent 2, received 120638	Role: Root Port cost: 20000 Port Fast: No (configured:no) Address: 00:01:42:97:e0:00 Designated path cost: 0
Port 2 (gi1/0/2) enabled State: Forwarding Port id: 128.2 Type: Shared (configured: auto) Boundary STP Designated bridge Priority: 32768 Designated port id: 128.2 Number of transitions to forwarding state: 1 BPDU: sent 2, received 170638	Role: Designated Port cost: 20000 Port Fast: No (configured:no) Address: 00:02:4b:29:7a:00 Designated path cost: 20000

Port 3 (gi1/0/3) enabled State: Forwarding Port id: 128.3 Type: Shared (configured: auto) Internal Designated bridge Priority: 32768 Designated port id: 128.3 Number of transitions to forwarding state: 1 BPDU: sent 2, received 170638	Role: Designated Port cost: 20000 Port Fast: No (configured:no) Address: 00:02:4b:29:7a:00 Designated path cost: 20000
Port 4 (gi1/0/4) enabled State: Forwarding Port id: 128.4 Type: Shared (configured: auto) Internal Designated bridge Priority: 32768 Designated port id: 128.2 Number of transitions to forwarding state: 1 BPDU: sent 2, received 170638	Role: Designated Port cost: 20000 Port Fast: No (configured:no) Address: 00:02:4b:29:7a:00 Designated path cost: 20000

MST 1 Vlans Mapped: 10-20

Root ID	Priority Address Path Cost Root Port	24576 00:02:4b:29:89:76 20000 gi1/0/4
	Rem hops 19	
Bridge ID	Priority Address	32768 00:02:4b:29:7a:00
	Number of topology changes 2 last change occurred 1d9h ago	
	Times: hold 1, topology change 2, notification 2 hello 2, max age 20, forward delay 15	

Port 1 (gi1/0/1) enabled State: Forwarding Port id: 128.1 Type: P2p (configured: auto) Boundary RSTP Designated bridge Priority: 32768 Designated port id: 128.1 Number of transitions to forwarding state: 1 BPDU: sent 2, received 120638	Role: Boundary Port cost: 20000 Port Fast: No (configured:no) Address: 00:02:4b:29:7a:00 Designated path cost: 20000
Port 2 (gi1/0/2) enabled State: Forwarding Port id: 128.2 Type: Shared (configured: auto) Boundary STP Designated bridge Priority: 32768 Designated port id: 128.2 Number of transitions to forwarding state: 1 BPDU: sent 2, received 170638	Role: Designated Port cost: 20000 Port Fast: No (configured:no) Address: 00:02:4b:29:7a:00 Designated path cost: 20000

Port 3 (gi1/0/3) disabled State: Blocking Port id: 128.3 Type: Shared (configured: auto) Internal Designated bridge Priority: 32768 Designated port id: 128.78 Number of transitions to forwarding state: 1 BPDU: sent 2, received 170638	Role: Alternate Port cost: 20000 Port Fast: No (configured:no) Address: 00:02:4b:29:1a:19 Designated path cost: 20000
Port 4 (gi1/0/4) enabled State: Forwarding Port id: 128.4 Type: Shared (configured: auto) Internal Designated bridge Priority: 32768 Designated port id: 128.2 Number of transitions to forwarding state: 1 BPDU: sent 2, received 170638	Role: Designated Port cost: 20000 Port Fast: No (configured:no) Address: 00:02:4b:29:7a:00 Designated path cost: 20000

show spanning-tree bpdu

Use the **show spanning-tree bpdu** User EXEC mode command to display the BPDU handling when spanning-tree is disabled.

Syntax

show spanning-tree bpdu [*interface-id* | **detailed**]

Parameters

- ***interface-id***—Specifies an interface ID. The interface ID can be one of the following types: Ethernet port or Port-channel.
- **detailed**—Displays information for non-present ports in addition to present ports.

Default Configuration

Show information for all interfaces. If detailed is not used, only present ports are displayed.

Command Mode

User EXEC mode

Example

The following examples display spanning-tree BPDU information:

```
switchxxxxxx#  show spanning-tree bpdu
```

```
The following is the output if the global BPDU handling command is
not supported.
```

```
Interface          Admin Mode         Oper Mode
---------          ----------         ---------
gi1/0/1            Filtering          Filtering
gi1/0/2            Filtering          Filtering
gi1/0/3            Filtering          Guard
```

```
The following is the output if both the global BPDU handling command
 and the per-interface BPDU handling command are supported.
```

```
Global: Flooding
```

```
Interface          Admin Mode         Oper Mode
---------          ----------         ---------
gi1/0/1            Global             Flooding
gi1/0/2            Global             STP
gi1/0/3            Flooding           STP
```

spanning-tree loopback-guard

Use the **spanning-tree loopback-guard global configuration** command to shut down an interface if it receives a loopback BPDU. Use the **no** form of this command to return the default setting.

Syntax

spanning-tree loopback-guard

no spanning-tree loopback-guard

Command Mode

Global

User Guidelines

This enables shutting down all interfaces if a loopback BPDU is received on it.

Example

```
switchxxxxxx(config)#  spanning-tree loopback-guard
```

spanning-tree vlan forward-time

To configure the spanning-tree bridge forward time for a VLAN, use the **spanning-tree vlan forward-time** command in Global Configuration mode. To return to the default settings, use the **no** form of this command.

Syntax

spanning-tree vlan *vlan-range* **forward-time** *seconds*

no spanning-tree vlan *vlan-range* **forward-time**

Parameters

- ***vlan-range***—Specifies a range of VLANs to configure. To specify a range, use a hyphen. To specify a series, use a comma. (Range: 2–4094)
- ***seconds***—Specifies the spanning-tree forward time in seconds. (Range: 4–30)

Default Configuration

The default forward time is 15 seconds.

Command Mode

Global Configuration mode

User Guidelines

The spanning-tree bridge forward time is the amount of time a port remains in the listening and learning states before entering the forwarding state.

When configuring the forwarding time, the following relationship should be maintained:

- 2*(Forward-Time - 1) >= Max-Age

Use this command to configure the forward time for the specified VLAN instance. Setting will take effect if Spanning-tree mode is set to PVST or Rapid PVST .

Example

The following example configures the spanning tree bridge forwarding time to 25 seconds for VLAN 100:

```
switchxxxxxx(config)#  spanning-tree vlan 100 forward-time 25
```

spanning-tree vlan hello-time

To configure the spanning-tree bridge hello time for a VLAN, use the **spanning-tree vlan hello-time** command in Global Configuration mode. To return to the default settings, use the **no** form of this command.

Syntax

spanning-tree vlan *vlan-range* **hello-time** *seconds*

no spanning-tree vlan *vlan-range* **hello-time**

Parameters

- ***vlan-range***—Specifies a range of VLANs to configure. To specify a range, use a hyphen. To specify a series, use a comma. (Range: 2–4094)
- ***seconds***—Specifies the spanning-tree Hello time in seconds. (Range: 1–10)

Default Configuration

The default hello time is 2 seconds.

Command Mode

Global Configuration mode

User Guidelines

The spanning-tree bridge hello time is the time between two sequential sent Hello messages.

When configuring the Hello time, the following relationship should be maintained:

Max-Age >= 2*(Hello-Time + 1)

Use this command to configure the hello time for the specified VLAN instance. Setting will take effect if Spanning-tree mode is set to PVST or Rapid PVST .

Example

The following example configures the spanning-tree bridge hello time to 5 seconds for VLANs 100-101:

```
switchxxxxxx(config)#  spanning-tree vlan 100-101 hello-time 5
```

spanning-tree vlan max-age

To configure the spanning-tree bridge maximum age time for a VLAN, use the **spanning-tree vlan max-age** command in Global Configuration mode. To return to the default settings, use the **no** form of this command.

Syntax

spanning-tree vlan *vlan-range* **max-age** *seconds*

no spanning-tree vlan *vlan-range* **max-age**

Parameters

- ***vlan-range***—Specifies a range of VLANs to configure. To specify a range, use a hyphen. To specify a series, use a comma. (Range: 2–4094)
- ***seconds***—Specifies the spanning-tree bridge maximum age in seconds. (Range: 6–40)

Default Configuration

The default max-age value is 15 seconds.

Command Mode

Global Configuration mode

User Guidelines

When configuring the maximum age, the following relationships should be maintained:

2*(Forward-Time - 1) >= Max-Age

Max-Age >= 2*(Hello-Time + 1)

Use this command to configure the maximum age for the specified VLAN instance. Setting will take effect if Spanning-tree mode is set to PVST or Rapid PVST .

Example

The following example configures the spanning-tree bridge maximum age to 10 seconds for VLAN 100:

```
switchxxxxxx(config)#  spanning-tree vlan 100 max-age 10
```

spanning-tree vlan priority

To configure the spanning-tree bridge priority for a VLAN, use the **spanning-tree vlan priority** command in Global Configuration mode. To return to the default settings, use the **no** form of this command.

Syntax

spanning-tree vlan *vlan-range* **priority** *priority*

no spanning-tree vlan *vlan-range* **priority**

Parameters

- ***vlan-range***—Specifies a range of VLANs to configure. To specify a range, use a hyphen. To specify a series, use a comma. (Range: 2–4094)
- ***priority***—Specifies the bridge priority. (Range: 0–61440)

Default Configuration

The default priority equal to 32768.

Command Mode

Global Configuration mode

User Guidelines

The priority value must be a multiple of 4096.

The switch with the lowest priority is the root of the spanning tree. When more than one switch has the lowest priority, the switch with the lowest MAC address is selected as the root.

Use this command to configure the bridge priority for the specified VLAN instance. Setting will take effect if Spanning-tree mode is set to PVST or Rapid PVST .

Example

The following example configures the spanning-tree priority to 12288 for VLAN 100-105:

```
switchxxxxxx(config)#  spanning-tree vlan 100-105 priority 12288
```

spanning-tree vlan cost

To configure the spanning-tree bridge path cost for a port and a VLAN, use the **spanning-tree vlan cost** command in Interface (Ethernet, Port Channel) Configuration mode. To return to the default settings, use the **no** form of this command.

Syntax

spanning-tree vlan *vlan-range* **cost** *cost*

no spanning-tree vlan *vlan-range* **cost**

Parameters

- ***vlan-range***—Specifies a range of VLANs to configure. To specify a range, use a hyphen. To specify a series, use a comma. (Range: 2–4094)
- ***cost***—Specifies the port path cost. (Range: 1–200000000)

Default Configuration

Default path cost is determined by port speed and path cost method (long or short).

Command Mode

Interface (Ethernet, Port Channel) Configuration mode

User Guidelines

Use this command to configure the port cost for the specified VLAN instance. Setting will take effect if Spanning-tree mode is set to PVST or Rapid PVST .

The VLAN instances that can be specified are VLAN ID 2-4094.

Example

The following example configures the spanning-tree cost to 35000 for port gi1/0/15 and VLAN 100:

```
switchxxxxxx(config)#  interface gi1/0/15
switchxxxxxx(config-if)#  spanning-tree vlan 100 cost 35000
```

spanning-tree vlan port-priority

To configure the spanning-tree port priority for a VLAN, use the **spanning-tree vlan port-priority** command in Interface (Ethernet, Port Channel) Configuration mode. To return to the default settings, use the **no** form of this command.

Syntax

spanning-tree vlan *vlan-range* **port-priority** *priority*

no spanning-tree vlan *vlan-range* **port-priority**

Parameters

- ***vlan-range***—Specifies a range of VLANs to configure. To specify a range, use a hyphen. To specify a series, use a comma. (Range: 2–4094)
- ***priority***—Specifies the port priority. (Range: 0–240)

Default Configuration

The default port priority is 128.

Command Mode

Interface (Ethernet, Port Channel) Configuration mode

User Guidelines

The priority value must be a multiple of 16.

Use this command to configure the port priority for the specified VLAN instance. Setting will take effect if Spanning-tree mode is set to PVST or Rapid PVST .

Example

The following example configures the spanning priority on gi1/0/15 to 16 for VLANs 100-102:

```
switchxxxxxx(config)#  interface gi1/0/15-16
switchxxxxxx(config-if)#  spanning-tree vlan 100-102 port-priority 96
```