



## STP Configuration Commands

As our products undergo continuous development the specifications are subject to change without prior notice.



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# Chapter 1 STP Configuration Commands

## 1.1 SSTP Configuration Commands

### 1.1.1 spanning-tree

#### Syntax

**spanning-tree**

**no spanning-tree**

To enable the default STP mode, run **spanning-tree**; to disable the STP, run **no spanning-tree**.

Enable or disable STP in interface configuration mode.

#### Parameter

None

#### Default

Enable RSTP mode by default.

#### Usage guidelines

None

#### Command Mode

Global configuration mode

Physical port or aggression port configuration mode.

#### Example

None

### 1.1.2 spanning-tree mode sstp

#### Syntax

**spanning-tree mode sstp**

**no spanning-tree mode**

To switch between RSTP and SSTP modes, use the **spanning-tree mode** command. To return to the default settings, use the no form of this command.

#### Parameter

None

#### Default

RSTP

#### Usage guidelines

None

#### Command Mode

Global configuration

#### Example

The following command shows how to enable SSTP mode:

```
Switch_config# spanning-tree mode sstp
Switch_config#
```

### 1.1.3 spanning-tree sstp priority

#### Syntax

To set the sstp bridge priority, use the spanning-tree sstp priority command. To return to the default settings, use the no form of this command.

**spanning-tree sstp priority *value***

**no spanning-tree sstp priority**

### Parameter

Parameter	Description
<i>value</i>	Value is from 0 to 61440.

### Default

32768

### Usage Guidelines

When setting the priority value, you can make the node as the root of the spanning tree. The configuration value takes 4096 as a step and its value is the multiple of 4096. The configurable values are 0, 4096, 8192, 3\*4096, 4\*4096, ...and 15\*4096.

### Command mode

Global configuration

### Example

This example shows how to set the SSTP priority to 4096:

```
Switch(config)# spanning-tree sstp priority 4096
```

```
Switch(config)#
```

## 1.1.4 spanning-tree sstp hello-time

### Syntax

To set the hello-time delay timer, use the spanning-tree sstp hello-time command. To return to the default settings, use the no form of this command.

**spanning-tree sstp hello-time *time***

**no spanning-tree sstp hello-time**

### Parameter

Parameter	Description
<i>time</i>	Number of seconds to set the hello-time delay timer; valid values are from 1 to 10 seconds.

### Default

2s

## Usage Guidelines

The hello-time configured by the local OLT is valid only when the local OLT is the root OLT.

## Command mode

Global configuration

## Example

The following example sets the SSTP hello-time to 8 seconds:

```
Switch(config)# spanning-tree sstp hello-time 8
Switch(config)#
```

### 1.1.5 spanning-tree sstp max-age

## Syntax

To set the SSTP max-age timer, use the `spanning-tree sstp max-age` command. To return to the default settings, use the `no` form of this command.

**`spanning-tree sstp max-age` *time***

**`no spanning-tree sstp max-age`**

## Parameter

Parameter	Description
<i>seconds</i>	Number of seconds to set the max-age timer; valid values are from 6 to 40 seconds.

## Default

20s

## Usage Guidelines

None

## Command mode

Global configuration



## Example

This example shows how to set the max-age timer to 24 seconds:

```
Switch(config)# spanning-tree sstp max-age 24
```

```
Switch(config)#
```

## 1.1.6 spanning-tree sstp forward-time

### Syntax

To set the forward-delay timer, use the `spanning-tree sstp forward-time` command in global configuration mode. To return to the default settings, use the `no` form of this command.

**`spanning-tree sstp forward-time` *time***

**`no spanning-tree sstp forward-time`**

### Parameter

Parameter	Description
<i>time</i>	Number of seconds to set the forward-delay timer; valid values are from 4 to 30 seconds.

### Default

15 seconds

### Usage Guidelines

None

### Command mode

Global configuration

## Example

The following example shows how to set forward delay timer to 20 seconds:

```
Switch_config# spanning-tree sstp forward-time 20
```

```
Switch_config#
```

### 1.1.7 spanning-tree sstp cost

#### Syntax

To set the path cost of the interface for SSTP calculations, use the spanning-tree sstp cost command in interface configuration mode. To return to the default value, use the no form of this command.

**spanning-tree sstp cost** *value*

**no spanning-tree sstp cost**

#### Parameter

Parameter	Description
<i>value</i>	Path cost. Valid values are from 1 to 200000000

#### Default

10M Ethernet: 100 .

100M Ethernet: 19 .

1000M Ethernet: 4 .

#### Usage Guidelines

None

#### Command mode

Interface configuration

#### Example

This example shows how to set a path cost value of 100 for the spanning tree VLAN associated with the interface G0/1:

```
Switch_config_g0/1#spanning-tree sstp cost 100
Switch_config_g0/1#
```

### 1.1.8 spanning-tree cost

#### Syntax

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

**spanning-tree cost** *value*

**no spanning-tree cost**

#### Parameter

Parameter	Description
<i>value</i>	Path cost; valid values are from 1 to 200000000

#### Default

The default path cost is computed from the bandwidth setting of the interface.

#### Usage Guidelines

The configuration result of this command is valid to all spanning-tree modes. In STP mode, the path cost of all VLAN spanning-trees on the interface will be updated. In MSTP mode, the path cost of all spanning-tree examples will be updated.

But the configuration result of the command will not influence the independent configuration in various modes. For example, the OLT respectively configured with the spanning-tree sstp cost 100 and the spanning-tree cost 110 in SSTP mode, the port priority will be 100.

#### Command mode

Interface configuration

#### Example

This example shows how to set a path cost value of 24 for the spanning tree VLAN associated with the interface g0/1:

```
Switch(config_f0/0)# spanning-tree cost 24
Switch_config_g0/1#
```

### 1.1.9 spanning-tree sstp port-priority

#### Syntax

To set the priority value in SSTP mode, use the `spanning-tree sstp port-priority` command. Use the `no` form of this command to restore the default value.

**`spanning-tree sstp port-priority value`**

**`no spanning-tree sstp port-priority`**

#### parameter

Parameter	Description
<i>value</i>	Port priority. Value is from 0 to 240.

#### Default

128 (0x80)

#### Usage Guidelines

The port priority must be set in increments of 16 only.

#### Command mode

Interface configuration

#### Example

The following example sets 32 as the priority value on interface g0/1:

```
Switch_config_g0/1# spanning-tree sstp port-priority 32
Switch_config_g0/1#
```

### 1.1.10 spanning-tree port-priority

#### Description

To prioritize an interface 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 value, use the `no` form of this command.

**`spanning-tree port-priority value`**

**`no spanning-tree port-priority`**

## Parameter

Parameter	Description
<i>value</i>	Port priority. Value is from 0 to 240. Step: 16

## default

Port priority value is 128

## Usage Guidelines

The configuration result of this command is valid to all spanning-tree modes. In STP mode, the priority of all VLAN spanning-trees on the interface will be updated. In MSTP mode, the priority of all spanning-tree examples will be updated.

But the configuration result of the command will not influence the independent configuration in various modes. For example, the OLT respectively configured with the spanning-tree sstp port-priority 128 and the spanning-tree port-priority 48 in SSTP mode, the port priority will be 128.

## Command mode

Interface configuration

## example

The following example shows how to set the priority value to g0/1:

```
Switch_config_g0/1#spanning-tree port-priority 16
Switch_config_g0/1#
```

## 1.1.11 show spanning-tree

## Syntax

To display spanning-tree information for the specified spanning-tree instances, use the show spanning-tree command.

**show spanning-tree** [**detail** | **interface** *intf-i*]

## Parameter

Parameter	Description
<i>intf-i</i>	Interface name, for instance, G0/1.

## Default

None

## Usage Guidelines

Show spanning-tree state.

## Command mode

EXEC/Global configuration/Interface configuration

## Example

```
Switch_config#show spanning-tree
```

```
Spanning tree enabled protocol SSTP
```

```
SSTP
```

```
Root ID      Priority    32768
             Address      00E0.0FCC.F775
             This bridge is the root
             Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
```

```
Bridge ID    Priority    32768
             Address      00E0.0FCC.F775
             Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
```

Interface	Role	Sts	Cost	Pri.	Nbr	Type
-----						
G0/1	Desg	FWD	19	128.16	P2p	

```
Switch_config#
```

### 1.1.12 spanning-tree management trap

#### Syntax

To enable STP Trap, run command **spanning-tree management trap [ newroot | topologychange ]**. To return to the default value, use the no form of this command.

**[no] spanning-tree management trap [ newroot | topologychange ]**

### Parameter

Parameter	Description
newroot	newRoot Trap type
topologychange	topologyChange Trap type

### Default

STP Trap is not enabled.

### Usage guidelines

None

### Command mode

Global configuration

### Example

None

## 1.2 VLAN STP Configuration Commands

### 1.2.1 spanning-tree mode pvst

#### Syntax

**spanning-tree mode pvst**

**no spanning-tree mode**

To enable STP modes, use the **spanning-tree mode pvst** command. To disable all STP modes, use the no form of this command.

#### Parameter

None

#### Default

RSTP mode

## Usage guidelines

None

## Example

The following command shows how to enable PVST in switch.

```
Switch_config# spanning-tree mode pvst
Switch_config#
```

### 1.2.2 spanning-tree vlan

## Syntax

**spanning-tree vlan** *vlan-list*

**no spanning-tree vlan** *vlan-list*

To configure a STP instance for a specified VLAN, use **spanning-tree vlan** *vlan-list* command. To remove the specified spanning-tree vlan, use no form of the command.

## Parameter

Parameter	Description
<i>vlan-list</i>	VLAN number list, such as: 1,2,3-10,15.

## Default

Switch can configure spanning-tree for a certain number of VLAN. In default mode, the exceeded VLAN will be prohibited.

## Usage guidelines

None

## Command Mode

Global configuration mode

## Example

The following command shows how to remove the spanning-tree of VLAN10, 11, 15-19, and configure the spanning-tree for VLAN 40-50:

```
Switch_config#no spanning-tree vlan 10,11,15-19
Switch_config#spanning-tree vlan 40-50
```



Switch\_config#

### 1.2.3 spanning-tree vlan priority

#### Syntax

**spanning-tree vlan *vlan-list* priority *value***

**no spanning-tree vlan *vlan-list* priority**

Use the command to configure the bridge priority value for the spanning-tree in specified VLAN.

#### Parameter

Parameter	Description
<i>vlan-list</i>	VLAN number list, such as: 1,2,3-10,15.
<i>value</i>	Priority values, ranging from 0 to 61440, step: 4096

#### Default

In default mode, the bridge priority value of the spanning-tree VLAN is 32768 plus VLAN number.

#### Usage guidelines

None

#### Command Mode

Global configuration mode

#### Example

The following command shows how to configure the bridge priority value of VLAN1-3, 5-10 to 4096:

```
Switch_config#spanning-tree vlan 1-3,5-10 priority 4096
Switch_config#
```

### 1.2.4 spanning-tree vlan forward-time

#### Syntax

**spanning-tree vlan *vlan-list* forward-time *value***

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

To set the Forward DelayParameter of the specified spanning-tree vlan, use **spanning-tree vlan *vlan-list* forward-time *value*** command. To return to the default settings, use the no form of this command.

## Parameter

Parameter	Description
<i>vlan-list</i>	VLAN number list, such as: 1,2,3-10,15.
<i>value</i>	Forward-Delay value, ranging from 4s to 30s. The default value is 15s.

## Default

All VLAN Forward Delay is 15s.

## Usage guidelines

None

## Command Mode

Global configuration mode

## Example

The following command shows how to configure the Forward Delay of VLAN1-3, 5-10 to 19s:

```
Switch_config#spanning-tree vlan 1-3,5-10 forward-time 19
Switch_config#
```

## 1.2.5 spanning-tree vlan max-age

## Syntax

**spanning-tree vlan *vlan-list* max-age *value***

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

To set the Max AgeParameter of the specified spanning-tree vlan, use **spanning-tree vlan *vlan-list* max-age *value*** command. To return to the default settings, use the no form of this command.

## Parameter

Parameter	Description
<i>vlan-list</i>	VLAN number list, such as: 1,2,3-10,15.
<i>value</i>	max-age value, ranging from 6s to 40s. Its default value is 20s.

## Default

All VLAN Max Age is 20s.

## Usage guidelines

None

## Command Mode

Global configuration mode

## Example

The following command shows how to configure the Max Age of VLAN1-3, 5-10 to 19s:

```
Switch_config#spanning-tree vlan 1-3,5-10 max-age 19
Switch_config#
```

## 1.2.6 spanning-tree vlan hello-time

## Syntax

**spanning-tree vlan *vlan-list* hello-time *value***

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

To set the hello-timeParameter of the specified spanning-tree vlan, use **spanning-tree vlan *vlan-list* hello-time *value*** command. To return to the default settings, use the no form of this command.

## Parameter

Parameter	Description
<i>vlan-list</i>	VLAN number list, such as: 1,2,3-10,15.
<i>value</i>	hello-time value, ranging from 1s to 10s. Its default value is 2s.

## Default

All VLAN Hello-Time is 2s.

## Usage guidelines

None

## Command Mode

Global configuration mode

## Example

The following command shows how to configure the Hello Time of VLAN1-3, 5-10 to 9s:

```
Switch_config#spanning-tree vlan 1-3,5-10 hello-time 9
Switch_config#
```

### 1.2.7 spanning-tree vlan cost

## Syntax

**spanning-tree vlan *vlan-list* cost *value***

**no spanning-tree vlan *vlan-list* cost**

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

## Parameter

Parameter	Description
<i>vlan-list</i>	VLAN number list, such as: 1,2,3-10,15.
<i>value</i>	The path cost of the interface rangings from 1 to 200000000.

## Default

The path cost depends on the connection rate of the port.

The path cost value of 10M Ethernet is 100.

The path cost value of 100M Ethernet is 19.

The path cost value of 1000M Ethernet is 1.

## Usage guidelines

None

## Command Mode

Interface configuration mode

## Example

The following command shows how to configure the path cost of VLAN1-3, 5-10 in the interface G0/1 to 100:

```
Switch_config_g0/1#spanning-tree vlan 1-3,5-10 cost 100
```

```
Switch_config_g0/1#
```

### 1.2.8 spanning-tree vlan port-priority

## Syntax

**spanning-tree vlan** *vlan-list* **port-priority** *value*

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

To set the interface priority for Spanning Tree Protocol (STP), use the **spanning-tree vlan *vlan-list* port-priority *value*** command. To return to the default value, use the no form of this command.

## Parameter

Parameter	Description
<i>vlan-list</i>	VLAN number list, such as: 1,2,3-10,15.
<i>value</i>	Interface priority, ranging from 0 to 240, step: 16.

## Default

128

## Usage guidelines

None

## Command Mode

Interface configuration mode

## Example

The following command shows how to configure the priority of VLAN1-3, 5-10 in the interface G0/1 to 32:

```
Switch_config_g0/1#spanning-tree vlan 1-3,5-10 port-priority 32
Switch_config_g0/1#
```

## 1.2.9 show spanning-tree vlan

### Syntax

**show spanning-tree vlan *vlan-list* [ **detail** ]**

Use the command to check the spanning-tree status of the specified VLAN.

### Parameter

Parameter	Description
<i>vlan-list</i>	VLAN number list, such as: 1,2,3-10,15.
<i>detail</i>	Displays the detailed information.

### Default

None

### Usage guidelines

None

### Command Mode

EXEC, global configuration mode or interface configuration mode

## Example

The following examples to check the spanning-tree of vlan 1-2:

```
Switch_config#show spanning-tree vlan 1-2
```

```
Spanning tree enabled protocol PVST
```

```
VLAN0001
```

```
Root ID    Priority    32769
Address    00E0.0FCC.F775
This bridge is the root
```

Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Bridge ID Priority 32769  
 Address 00E0.0FCC.F775  
 Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Interface	Role	Sts	Cost	Pri.	Nbr	Type
-----						
G0/1	Desg	FWD	19	128.1	P2p	

VLAN0002

Root ID Priority 32770  
 Address 00E0.0FCC.F775  
 This bridge is the root  
 Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Bridge ID Priority 32770  
 Address 00E0.0FCC.F775  
 Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Interface	Role	Sts	Cost	Pri.	Nbr	Type
-----						
G0/1	Desg	FWD	19	128.1	P2p	

Switch\_config#

### 1.2.10 show spanning-tree pvst instance-list

#### Syntax

##### **show spanning-tree pvst instance-list**

Use the command to check how the PVST instance corresponds to the VLAN.

#### Parameter

None

#### Default

None

Usage guidelines

None

Command Mode

EXEC, global configuration mode or interface configuration mode

Example

None



## Chapter 2 RSTP Configuration Commands

### 2.1 RSTP Configuration Commands

#### 2.1.1 spanning-tree mode rstp

##### Syntax

**spanning-tree mode rstp**

**no spanning-tree mode**

To enable the RSTP function, run `spanning-tree mode rstp`. To disable the RSTP, run `no spanning-tree mode`.

##### Parameter

None

##### Default

RSTP is enabled.

##### Usage Guidelines

None

##### Example

The following command shows how to enable rstp on switch.

```
Switch_config# spanning-tree mode rstp
Switch_config#
```

#### 2.1.2 spanning-tree rstp forward-time

##### Syntax

**spanning-tree rstp forward-time *time***

**no spanning-tree rstp forward-time**

To configure the forwarding delay of RSTP, run **spanning-tree rstp forward-time *time***. To resume the default forwarding delay of RSTP, run **no spanning-tree rstp forward-time**.

#### Parameter

Parameter	Description
<i>time</i>	Time of the forwarding delay whose value ranges between 4 and 30 seconds.

#### Default

15s

#### Usage Guidelines

None

#### Example

The following example shows how to set the forwarding delay of RSTP to 20 seconds.

```
Switch_config# spanning-tree rstp forward-time 20
Switch_config#
```

### 2.1.3 spanning-tree rstp hello-time

#### Syntax

**spanning-tree rstp hello-time *time***

**no spanning-tree rstp hello-time**

To configure the update interval of RSTP, run **spanning-tree rstp hello-time *time***. To resume the default update interval of RSTP, run **no spanning-tree rstp hello-time**.

#### Parameter

Parameter	Description
<i>time</i>	Update interval. The value ranges: 1-10s.

#### Default

2s

## Usage Guidelines

The Hello-Time configured on the local switch validates only when the local switch runs as a root switch.

## Example

The following example shows how to set the update interval of RSTP to 8 seconds.

```
Switch_config# spanning-tree rstp hello-time 8
Switch_config#
```

### 2.1.4 spanning-tree rstp max-age

## Syntax

**spanning-tree rstp max-age** *time*

**no spanning-tree rstp max-age**

To configure the maximum lifespan of the RSTP BPDU, run **spanning-tree rstp max-age time**. To resume the default interval time, run **no spanning-tree rstp max-age**.

## Parameter

Parameter	Description
<i>time</i>	Maximum interval of the lifespan. Value ranges: 6-40s.

## Default

20s

## Usage Guidelines

None

## Example

The following example shows how to set the maximum lifespan of RSTP to 24 seconds.

```
Switch_config# spanning-tree rstp max-age 24
Switch_config#
```

## 2.1.5 spanning-tree rstp priority

### Syntax

**spanning-tree rstp priority** *value*

**no spanning-tree rstp priority**

To configure the RSTP priority value, run **spanning-tree rstp priority** *value*. To resume the default value of the RSTP priority value, run **no spanning-tree rstp priority**.

### Parameter

Parameter	Description
<i>value</i>	Priority level of the bridge. The value ranges: 0-61440, step 4096.

### Default

32768

### Usage Guidelines

None

### Example

The following example shows how to configure the priority level of the bridge of rstp to 4096.

```
Switch_config# spanning-tree rstp priority 4096
Switch_config#
```

## 2.1.6 spanning-tree rstp cost

### Syntax

To configure the path cost of a port, run **spanning-tree rstp cost** *value*. To resume the default value, run **no spanning-tree rstp cost**.

**spanning-tree rstp cost** *value*

**no spanning-tree rstp cost**

## Parameter

Parameter	Description
<i>value</i>	Value of the path cost. The value ranges: 1-200000000.

## Default

The path cost depends on the connection rate of the port.

10 Mbps: 2000000

100 Mbps: 200000

1000 Mbps: 20000

## Usage Guidelines

None

## Example

The following example shows how to set the path cost of port g0/1 to 24:

```
Switch_config_g0/1# spanning-tree rstp cost 24
Switch_config_g0/1#
```

### 2.1.7 spanning-tree rstp port-priority

## Syntax

To configure the priority level of a port, run **spanning-tree rstp port-priority *value***. To resume the default value, run **no spanning-tree rstp port-priority**.

**spanning-tree rstp port-priority *value***

**no spanning-tree rstp port-priority**

## Parameter

Parameter	Description
<i>value</i>	Priority level of a port. The value ranges: 0-240, step 16.

## Default

128

## Usage Guidelines

None

## Example

The following example shows how to set the path cost of port g0/1 to 16:

```
Switch_config_g0/1# spanning-tree rstp port-priority 16
Switch_config_g0/1#
```

### 2.1.8 spanning-tree rstp edge

## Syntax

To configure the edge port, run **spanning-tree rstp edge**. To return to the default setting, run **no spanning-tree rstp edge**.

**spanning-tree rstp edge**

**no spanning-tree rstp edge**

## Parameter

None

## Default

Automatic check

## Usage Guidelines

None

## Command Mode

Interface configuration

## Example

None

## 2.1.9 spanning-tree rstp point-to-point

### Syntax

To set the point-to-point connection of a port to force-true, force-false or auto, run this command.

**spanning-tree rstp point-to-point [ force-true | force-false | auto ]**

### Parameter

Parameter	Description
<i>force-true</i>	To set the point-to-point connection of a port to force-true.
<i>force-false</i>	To set the point-to-point connection of a port to force-false.
<i>auto</i>	Sets the point-to-point connection to be automatic check (default).

### Default

Automatic check

### Usage Guidelines

None

### Command Mode

Interface Configuration

### Example

None

## 2.1.10 spanning-tree rstp migration-check

### Syntax

To restart checking protocol transfer of RSTP, run **spanning-tree rstp migration-check**.

**spanning-tree rstp migration-check**

## Parameter

None

## Default

None

## Usage Guidelines

This command is used to restart the protocol transfer check on a port and to change the port in STP-compatible mode to the RSTP mode, enabling RSTP BPDU to be transmitted.

## Command Mode

Global and interface configuration

## Example

The following example shows how to run protocol transfer check on interface G0/1:

```
Switch_config_g0/1#spanning-tree rstp migration-check
Switch_config_g0/1#
```



## Chapter 3 MSTP Configuration Commands

### 3.1 MSTP Configuration Command

#### 3.1.1 spanning-tree mode mstp

##### Syntax

To set the running mode of STP to **MSTP**, run **spanning-tree mode mstp**. To disable STP, Run **no spanning-tree mode**.

**spanning-tree mode mstp**

**no spanning-tree mode**

##### Parameter

None

##### Default

The MSTP mode is disabled, while the RSTP mode is running.

##### Usage Guidelines

None

##### Example

The following example shows how to enable MSTP protocol on the switch:

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

#### 3.1.2 spanning-tree mstp name

##### Syntax

**spanning-tree mstp name *string***

**no spanning-tree mstp name**

To configure the regional name of the STP, run **spanning-tree mstp name *string***. To resume the default name, run **no spanning-tree mstp**.

#### Parameter

Parameter	Description
String	Configures the character string of the name. The character string can have up to 32 characters, capital sensitive. The default value is in the form of character string like the MAC address of the switch.

#### Default

Character string form of the switch's MAC address

#### Usage Guidelines

None

#### Example

The following example shows how to set the configuration name of the switch's STP to **reg-01**.

```
switch(config)# spanning-tree mstp name reg-01
switch(config)#
```

### 3.1.3 spanning-tree mstp revision

#### Syntax

To generate the revision number of STP, run **spanning-tree mstp revision *value***. To return to the default value, run **no spanning-tree mstp revision**.

**spanning-tree mstp revision *value***

**no spanning-tree mstp revision**

#### Parameter

Parameter	Description
Value	Revision number: 0 ~65535. Its default value is 0.

#### Default

The default value of the revision number is **0**.

## Usage Guidelines

None

## Example

The following commands are used to set the regional revision number of STP to **100**.

```
switch(config)# spanning-tree mstp revision 100
switch(config)#
```

### 3.1.4 spanning-tree mstp instance

## Syntax

To map the VLAN to the MSTI, run **spanning-tree mstp instance *instance-id* vlan *vlan-list***. To re-map the VLAN to the CIST, run **no spanning-tree mstp instance *instance-id***.

**spanning-tree mstp instance *instance-id* vlan *vlan-list***

**no spanning-tree mstp instance *instance-id***

## Parameter

Parameter	Description
instance-id	Instance number of the STP, meaning an MSTI which ranges from 1 to 15.
vlan-list	VLAN list which is mapped to the STP, ranging from 1 to 4094.

## Default

All VLANs are mapped to the CIST (MST00).

## Usage Guidelines

**instance-id** is an unique value representing an STP instance.

**vlan-list** represents a VLAN group, such as "1,2,3", "1-5" and "1,2,5-10".

## Example

The following commands map VLAN1 to instance 1 of STP, and VLAN5,7,10-20 to instance 2 of STP, and then re-map these VLANs to MST00.

```
Switch_config# spanning-tree mstp instance 1 vlan 2
Switch_config# spanning-tree mstp instance 2 vlan 5,7,10-20
```

```
Switch_config# no spanning-tree mstp instance 1
Switch_config# no spanning-tree mstp instance 2
```

### 3.1.5 spanning-tree mstp root

#### Syntax

**spanning-tree mstp** *instance-id* **root** {**primary** | **secondary**}

[ **diameter** *net-diameter* [ **hello-time** *seconds* ] ]

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

To configure the specified MSTP instance to the primary/secondary root, run **spanning-tree mstp** *instance-id* **root** {**primary** | **secondary**}. To return to the default setting, run the negative form of the above command.

Both the **diameter** command and the **hello-time** command can modify the network diameter and the **HelloTime** parameter of the MSTP when they are setting the root.

#### Parameter

Parameter	Description
instance-id	MSTP instance, ranging from 0 to 15
primary	Sets the MSTP instance to the primary root.
secondary	Sets the MSTP instance to the secondary root.
net-diameter	Network diameter, which is optional  When the <b>instance-id</b> parameter is <b>0</b> , it is effective.  It ranges from 2 to 7.
seconds	Hello time, an optional parameter, which ranges from 1 to 10 seconds

#### Default

The priority value of all default roots of all MSTP instances are 32768, the network diameter is 7 and the HelloTime is 2 seconds.

#### Usage Guidelines

Both the **diameter** command and the **hello-time** command are valid only when **instanc-id** is **0**.

Generally, after you run the command to set the primary root, the protocol automatically checks the ID of the current network root and then sets the priority field of the root identifier to 24576 if this value guarantees the current OLT to be the root of the MSTP instance. If the priority value of the root is smaller than 24576, the protocol

will automatically set the MSTP priority of the current root to a value which is 4096 smaller than the root's priority. Here, 4069 is the step of the root priority.

Different from the configuration of the primary root, the protocol directly sets the MSTP priority of the OLT to **28672** after the command for configuring the secondary root is run. Thus, the current OLT can be the secondary root when the priorities of other OLTs are the default value **32768**.

### Example

The following commands are used to set the OLT to the primary root in the CIST and recalculate the time parameter of the MSTP through network diameter 3 and HelloTime3, and at last set the OLT to the secondary root in the MST01.

```
Switch_config# spanning-tree mstp 0 root primary diameter 3 hello-time 3
Switch_config# spanning-tree mstp 1 root secondary
```

### 3.1.6 spanning-tree mstp priority

#### Syntax

To configure the bridge priority of the MSTP instance, run **spanning-tree mstp *instance-id* *priority* *value***. To return to the default setting, run **no spanning-tree mstp *instance-id* *priority***.

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

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

#### Parameter

Parameter	Description
instance-id	MSTP instance number, ranging from 0 to 15
value	Bridge priority, which can be one of the given values: 0, 4096, 8192, 12288, 16384, 20480, 24576, 28672, 32768, 36864, 40960, 45056, 49152, 53248, 57344, 61440.

#### Default

The default priority of the bridges of all MSTP instances is 32768.

#### Usage Guidelines

Each priority value in the MSTP instance is independent and can be configured independently.

## Example

The following commands are used to set the priority of the switch in the CIST and MST01 to 4096 and 8192 respectively.

```
Switch_config# spanning-tree mstp 0 priority 4096
```

```
Switch_config# spanning-tree mstp 1 priority 8192
```

### 3.1.7 spanning-tree mstp hello-time

## Syntax

**spanning-tree mstp hello-time** *seconds*

**no spanning-tree mstp hello-time**

It is used to configure the hello-time of the MSTP, and its negative form is used to resume the default settings of the HelloTime.

## Parameter

Parameter	Description
seconds	It ranges from 1 to 10 seconds. Its default value is 2 seconds.

## Default

2 seconds

## Usage Guidelines

None

## Example

The following commands are used to set the HelloTime of the MSTP to **10**.

```
switch(config)# spanning-tree mstp hello-time 10
```

```
switch(config)# no spanning-tree mstp hello-time
```

### 3.1.8 spanning-tree mstp forward-time

## Syntax

**spanning-tree mstp forward-time** *seconds*

**no spanning-tree mstp forward-time**

It is used to configure the Forward Delay of the MTSP. Its negative is used to resume the default settings.

#### Parameter

Parameter	Description
seconds	It ranges from 4 to 30 seconds. Its default value is 15 seconds.

#### Default

15 seconds

#### Usage Guidelines

None

#### Example

The following commands are used to set the **Forward Delay** parameter of the MTSP to **10**.

```
Switch_config# spanning-tree mstp forward-time 10
```

```
Switch_config# no spanning-tree mstp forward-time
```

### 3.1.9 spanning-tree mstp max-age

#### Syntax

To configure the Max Age parameter of the MSTP, run **spanning-tree mstp max-age seconds**. To return to the default setting, run the negative form of the command.

**spanning-tree mstp max-age seconds**

**no spanning-tree mstp max-age**

#### Parameter

Parameter	Description
Seconds	Range: 6-40 seconds The default value is 20 seconds.

#### Default

20 seconds

## Usage Guidelines

None

## Example

The following commands are used to set the **MaxAge** parameter of the MSTP to **10**.

```
Switch_config# spanning-tree mstp max-age 10
```

```
Switch_config# no spanning-tree mstp max-age
```

### 3.1.10 spanning-tree mstp diameter

## Syntax

To configure the network diameter of the MSTP, run **spanning-tree mstp diameter *net-diameter***. To return to the default setting, run **no spanning-tree mstp diameter**.

**spanning-tree mstp diameter *net-diameter***

**no spanning-tree mstp diameter**

Parameter	Description
net-diameter	Range: 2 - 7 Its default value is 7.

## Default

The default network diameter is 7.

## Usage Guidelines

The **net-diameter** parameter is not saved as an independent settings in the OLT. The time parameter that is modified through network diameter configuration can be saved. The **net-diameter** parameter is valid in the CIST. After settings, the three time parameters of the STP can be automatically updated to a relatively advantageous value.

It is recommended to set the time parameters of the STP through root configuration or network diameter configuration. In this way, the reasonability of the time parameters can be assured.

## Example

The following first command is to set the bridge diameter of MSTP to 5. The second command is to resume the default value of the bridge diameter.



```
Switch_config# spanning-tree mstp diameter 5
Switch_config# no spanning-tree mstp diameter
```

### 3.1.11 spanning-tree mstp max-hops

#### Syntax

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

**no spanning-tree mstp max-hops**

The **spanning-tree mstp max-hops *hop-count*** command is used to set the maximum number of hops of the MSTP BPDU. Its negative is used to resume the default settings.

#### Parameter

Parameter	Description
hop-count	Ranges from: 6 -40 Its default value is 20.

#### Default

The default value of the maximum hop counts is 20.

#### Usage Guidelines

None

#### Example

The first command is to set the maximum hop counts of the MSTP BPDU to 6. The second command is to restore the default value of the maximum hop counts.

```
Switch_config# spanning-tree mstp max-hops 6
Switch_config# no spanning-tree mstp max-hops
```

### 3.1.12 spanning-tree mstp port-priority

#### Syntax

To designate the priority of the spanning-tree STP instance, run **spanning-tree mstp *instance-id* port-priority *value***. To return to the default setting, run the no form of the command.

**spanning-tree mstp *instance-id* port-priority *value***

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

## Parameter

Parameter	Description
instance-id	Number of the STP instance, ranging from 0 to 31.
Value	Port priority, which is one of the following values: 0, 16, 32, 48, 64, 80, 96, 112 128, 144, 160, 176, 192, 208, 224, 240

## Default

The default priority value of the port in all STP instances is 128.

## Usage Guidelines

None

## Example

The first command is to set the priority of port G0/1 in the CIST to 16. The second command is to resume the default value.

```
Switch_config_g0/1# spanning-tree mstp 0 port-priority 16
```

```
Switch_config_g0/1# no spanning-tree mstp 0 port-priority
```

## 3.1.13 spanning-tree mstp cost

## Syntax

The command **spanning-tree mstp *instance-id* cost value** is used to set the path cost of the port in the specified STP instance. Its negative is used to resume the default settings.

**spanning-tree mstp *instance-id* cost value**

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

## Parameter

Parameter	Description
instance-id	Number of the STP instance, ranging from 0 to 15.
value	Path cost of the port, ranging from 1 to 200000000

## Default

It depends on the connection rate of the port:

10 Mbps: 2000000

100 Mbps: 200000

1000 Mbps: 20000

## Usage Guidelines

None

## Example

The following commands are used to set the path cost of port G0/1 in the CIST to 200.

```
Switch_config_g0/1# spanning-tree mstp 0 cost 200
Switch_config_g5/1#
```

### 3.1.14 spanning-tree mstp edge

## Syntax

**spanning-tree mstp edge**

**no spanning-tree mstp edge**

To configure the edge port, run **spanning-tree mstp edge**. To return to the default setting, run **no spanning-tree mstp edge**.

## Parameter

None

## Default

Automatic check edge port

## Usage Guidelines

None

## Example

None

### 3.1.15 spanning-tree mstp point-to-point

#### Syntax

**spanning-tree mstp point-to-point { force-true | force-false | auto }**

**no spanning-tree mstp point-to-point**

To configure the connection type of a port, run **spanning-tree mstp point-to-point { force-true | force-false | auto }**. To resume the connection type to auto-check, run **no spanning-tree mstp point-to-point**.

#### Parameter

Parameter	Description
force-true	Sets the port connection mode to point-to-point.
force-false	Sets the port connection mode to sharing.
auto	Sets the port connection mode to auto-check (the default mode).

#### Default

MSTP will automatically check the port connection mode by default.

#### Usage Guidelines

None

#### Example

The following example shows how to set the connection mode of port G0/1 to sharing.

```
Switch_config_g0/1# spanning-tree mstp point-to-point force-false
Switch_config_g0/1#
```

### 3.1.16 spanning-tree mstp mst-compatible

#### Syntax

**spanning-tree mstp mst-compatible**

**no spanning-tree mstp mst-compatible**

Enable/disable the MST-compatible mode, the global configuration mode.

**spanning-tree mstp mst-compatible {enable | disable}**

**no spanning-tree mstp mst-compatible**

Enable/disable the MST-compatible mode, the interface configuration mode.

**Parameter**

Parameter	Description
<b>enable</b>	Enable the MST-compatible mode
<b>disable</b>	Disable the MST-compatible mode

**Default**

The compatible mode is not activated by default and OLT cannot establish an area with other switches which transmit BPDU in compatible mode.

**Usage Guidelines**

After the MST-compatible mode is enabled, configure other connected switches that are running other MSTP protocols to the roots of CIST, ensuring that the OLT can enter the MSTP-compatible mode by receiving the message.

**Example**

The following command is to activate the MST-compatible mode in global configuration mode:

```
switch(config)#spanning-tree mstp mst-compatible
```

**3.1.17 spanning-tree mstp migration-check****Syntax****spanning-tree mstp migration-check**

Clear the STP information that is checked by the port, and restart the protocol conversion process.

**Parameter**

None

**Default**

None

## Usage Guidelines

The command is valid in global configuration mode and in port configuration mode.

## Example

The following commands are used to check the protocol conversion on all ports first, and then check the protocol conversion on port G0/1 again.

```
Switch_config# spanning-tree mstp migration-check
```

```
Switch_config# interface g0/1
```

```
Switch_config_g0/1# spanning-tree mstp migration-check
```

### 3.1.18 spanning-tree mstp restricted-role

## Syntax

**[no] spanning-tree mstp restricted-role**

Enable/disable the role restriction on the port.

## Parameter

None

## Default

Disable the port's role restriction.

## Command Mode

Interface Configuration

## Usage Guidelines

Enable the role restriction and the port will not be chosen as the root port.

## Example

None

### 3.1.19 spanning-tree mstp restricted-tcn

#### Syntax

**[no] spanning-tree mstp restricted-tcn**

Enable/disable the TCN restriction on the port.

#### Parameter

None

#### Default

Disable the TCN restriction on the port.

#### Command Mode

Interface Configuration

#### Usage Guidelines

Enable the TCN restriction on the port and do not transmit topology changes to other ports.

#### Example

None

### 3.1.20 show spanning-tree mstp

#### Syntax

**show spanning-tree mstp [ instance *instance-id* ]**

The command above is used to check the MSTP information. If you run the command **show spanning-tree mstp**, the information about all STP instances is displayed.

#### Parameter

Parameter	Description
instance-id	Number of the STP instance, ranging from 0 to 15

## Default

None

## Usage Guidelines

It is valid in monitoring mode, global configuration mode or port mode.

## Example

The following shows how to view all STP instances through the command. Here, **MST00** stands for CIST, and the **Type** field stands for the port connection type.

Switch#show spanning-tree mstp

```
MST00      Vlans Mapped: 1,4-4094
Bridge      Address 00E0.0F64.8365 Priority 32768 (32768 mst-id 0)
Root        This bridge is the CIST and regional root
Configured  Hello Time 2, Forward Delay 15, Max Age 20, Max Hops 20
Root Times  Hello Time 2, Forward Delay 15, Max Age 20
```

Interface	Role Sts Cost	Pri.Nbr Type
G0/1	Desg FWD 200000	128.1 P2p
G0/2	Desg FWD 200000	128.2 Edge

```
MST01      Vlans Mapped: 2
Bridge      Address 00E0.0F64.8365 Priority 32769 (32768 mst-id 1)
Root        This bridge for MST01
```

Interface	Role Sts Cost	Pri.Nbr Type
G0/1	Desg FWD 200000	128.1 P2p

```
MST02      Vlans Mapped: 3
Bridge      Address 00E0.0F64.8365 Priority 32770 (32768 mst-id 2)
Root        This bridge for MST02
```

Interface	Role Sts Cost	Pri.Nbr Type
G0/1	Desg FWD 200000	128.1 P2p



### 3.1.21 show spanning-tree mstp region

#### Syntax

##### **show spanning-tree mstp region**

Check the regional configuration information about the MSTP.

#### Parameter

None

#### Default

None

#### Usage Guidelines

None

#### Example

See the following information. **MST Config Table** shows the relation between VLAN and STP instance.

```
switch(config)# show spanning-tree mstp region
```

MST Region:

Name: [reg01]

Revision:[0]

MST Config Table:

Instance	VLAN IDs
-----	-----
0	1,4-4094
1	2
2	3

### 3.1.22 show spanning-tree mstp detail

#### Syntax

##### **show spanning-tree mstp detail**

The command above is used to check the detailed information about MSTP.

## Parameter

None

## Default

None

## Usage Guidelines

None

## Example

The following example shows the detailed STP information after the command is run, including the port connection type and optional characteristics:

Switch#show spanning-tree mstp detail

```

MST00      Vlans Mapped: 1,4-4094
Root       Address 00E0.0F64.8365 Priority 32768 (32768 mst-id 0)
Root       This root is the CIST and regional root
Configured Hello Time 2, Forward Delay 15, Max Age 20, Max Hops 20
Root Times Hello Time 2, Forward Delay 15, Max Age 20

FastEthernet0/1 of MST00 is designated forwarding
Port Info      Port ID 128.1      Priority 128      Cost 200000
Designated Root Address 00E0.0F64.8365 Priority 32768 Cost 0
CIST Regional Root Address 00E0.0F64.8365 Priority 32768 Cost 0
Designated Root Address 00E0.0F64.8365 Priority 32768 Port ID 128.1
Edge Port: disabled Link Type: point-to-point (auto)
Bpdu Guard: disabled (default) Root Guard: disabled (default)
Loop Guard: disabled (default)
Timers: message expires in 0 sec, forward delay 0 sec, up time 662 sec
Number of transitions to forwarding state: 1
Bpdu sent 335, received 5

```

```

FastEthernet0/3 of MST00 is backup blocking
Port Info      Port ID 128.3      Priority 128      Cost 200000
Designated Root Address 00E0.0F64.8365 Priority 32768 Cost 0
CIST Regional Root Address 00E0.0F64.8365 Priority 32768 Cost 0
Designated Root Address 00E0.0F64.8365 Priority 32768 Port ID 128.1
Edge Port: disabled Link Type: point-to-point (auto)
Bpdu Guard: disabled (default) Root Guard: disabled (default)
Loop Guard: disabled (default)
Timers: message expires in 5 sec, forward delay 15 sec, up time 662 sec

```

Number of transitions to forwarding state: 0  
Bpdu sent 5, received 335

FastEthernet0/47 of MST00 is designated forwarding  
Port Info                      Port ID 128.47                      Priority 128                      Cost 200000  
Designated Root                      Address 00E0.0F64.8365                      Priority 32768                      Cost 0  
CIST Regional Root                      Address 00E0.0F64.8365                      Priority 32768                      Cost 0  
Designated Root                      Address 00E0.0F64.8365                      Priority 32768                      Port ID 128.47  
Edge Port:    enabled (auto)                      Link Type:    point-to-point (auto)  
Bpdu Guard:    disabled (default)                      Root Guard: disabled (default)  
Loop Guard:    disabled (default)  
Timers:    message expires in 0 sec, forward delay 0 sec, up time 1485 sec  
Number of transitions to forwarding state: 1  
Bpdu sent 744, received 0

MST01                      Vlans Mapped:    2  
Root                      Address    00E0.0F64.8365                      Priority    32769 (32768 mst-id 1)  
Root                      This root for MST01

FastEthernet0/1 of MST01 is designated forwarding  
Port Info                      Port ID 128.1                      Priority 128                      Cost 200000  
Designated Root                      Address 00E0.0F64.8365                      Priority 32769                      Cost 0  
Desingated Root                      Address 00E0.0F64.8365                      Priority 32769                      Port ID 128.1  
Timers:    message expires in 0 sec, forward delay 0 sec, up time 662 sec  
Number of transitions to forwarding state: 1  
MST Config Message transmitted 335, received 0

MST02                      Vlans Mapped:    3  
Root                      Address    00E0.0F64.8365                      Priority    32770 (32768 mst-id 2)  
Root                      This root for MST02

FastEthernet0/1 of MST02 is designated forwarding  
Port Info                      Port ID 128.1                      Priority 128                      Cost 200000  
Designated Root                      Address 00E0.0F64.8365                      Priority 32770                      Cost 0  
Desingated Root                      Address 00E0.0F64.8365                      Priority 32770                      Port ID 128.1  
Timers:    message expires in 0 sec, forward delay 0 sec, up time 662 sec  
Number of transitions to forwarding state: 1  
MST Config Message transmitted 335, received 0

### 3.1.23 show spanning-tree mstp interface

Syntax

**show spanning-tree mstp interface** *interface-id*

The command above is used to check the information about the port which is run under MSTP.

### Parameter

Parameter	Description
interface-id	Port name, such as "G0/1", "GigaEthernet0/2"

### Default

None

### Usage Guidelines

None

### Example

The following example shows the information about port G0/1 after you run the command `Switch#show spanning-tree mstp interface g0/1`

GigaEthernet0/1 of MST00 is designated forwarding

```
Port Info          Port ID 128.1          Priority 128    Cost 200000
Designated Root    Address 00E0.0F64.8365  Priority 32768  Cost 0
CIST Regional Root  Address 00E0.0F64.8365  Priority 32768  Cost 0
Designated Bridge   Address 00E0.0F64.8365  Priority 32768  Port ID 128.1
Edge Port:         disabled                      Link Type: point-to-point (auto)
Bpdu Guard:         disabled (default)          Root Guard: disabled (default)
Loop Guard:         disabled (default)
Timers:  message expires in 0 sec, forward delay 0 sec, up time 851 sec
Number of transitions to forwarding state: 1
Bpdu sent 430, received 5
```

GigaEthernet0/1 of MST01 is designated forwarding

```
Port Info          Port ID 128.1          Priority 128    Cost 200000
Designated Root    Address 00E0.0F64.8365  Priority 32769  Cost 0
Desingated Bridge   Address 00E0.0F64.8365  Priority 32769  Port ID 128.1
Timers:  message expires in 0 sec, forward delay 0 sec, up time 851 sec
Number of transitions to forwarding state: 1
MST Config Message transmitted 430, received 0
```

GigaEthernet0/1 of MST02 is designated forwarding

```
Port Info          Port ID 128.1          Priority 128    Cost 200000
Designated Root    Address 00E0.0F64.8365  Priority 32770  Cost 0
Desingated Bridge   Address 00E0.0F64.8365  Priority 32770  Port ID 128.1
Timers:  message expires in 0 sec, forward delay 0 sec, up time 851 sec
```

Number of transitions to forwarding state: 1  
MST Config Message transmitted 430, received 0

Instance	Role	Sts	Cost	Pri.	Nbr Vlans Mapped
0	Desg	FWD	200000	128.1	1,4-4094
1	Desg	FWD	200000	128.1	2
2	Desg	FWD	200000	128.1	3

### 3.1.24 show spanning-tree mstp protocol-migration

#### Syntax

The command above is used to check the protocol conversion information when the port is running under MSTP.

**show spanning-tree mstp protocol-migration**

#### Parameter

None

#### Default

None

#### Usage Guidelines

None

#### Example

The following example shows the information about protocol conversion after the command **show spanning-tree mstp protocol-migration** is run. Note that port G0/1 has transferred to the 802.1D STP mode.

```
Switch#show spanning-tree mstp protocol-migration
```

MSTP Port Protocol Migration

Interface	Protocol
G0/1	802.1D