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# STP Configuration Commands

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# Chapter 1 STP Configuration Commands

## 1.1 SSTP Configuration Commands

### 1.1.1 spanning-tree

#### Syntax

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.

**`spanning-tree`**

**`no spanning-tree`**

#### Parameters

None

#### Default Value

RSTP is enabled by default.

#### Usage Guidelines

None

#### Command Mode

Global configuration mode

Physical interface configuration mode or aggregation port configuration mode

#### Example

None

### 1.1.2 spanning-tree mode sstp

#### Syntax

To configure the spanning-tree operation mode, run `spanning-tree mode sstp`. To return to the default setting, use the `no` form of this command.

**spanning-tree mode sstp**

**no spanning-tree mode**

#### Parameters

None

#### Default Value

The default STP mode is RSTP.

#### Usage Guidelines

None

#### Command Mode

Global configuration mode

#### Example

The following example shows how to enable the SSTP mode.

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

```
Switch_config#
```

### 1.1.3 spanning-tree sstp priority

#### Syntax

To configure the SSTP priority value, run `spanning-tree sstp priority value`. To resume the default value of the SSTP priority value, run `no spanning-tree sstp priority`.

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

**no spanning-tree sstp priority**

## Parameters

Parameters	Description
<i>value</i>	Priority value Value range: 0-61440

## Default Value

32768

## Usage Guidelines

When setting the priority value, you can make the switch as the root of the whole network 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 mode

## Example

The following example shows how to set the priority level of SSTP to 4096.

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

### 1.1.4 spanning-tree sstp hello-time

## Syntax

To configure the transmission interval of SSTP packets, run `spanning-tree sstp hello-time time`. To resume the default transmission interval, run `no spanning-tree sstp hello-time`.

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

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

## Parameters

Parameters	Description
<i>time</i>	Updates the interval. Range: 1-10 seconds

## Default Value

2s

## Usage Guidelines

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

## Command Mode

Global configuration mode

## Example

The following example shows how to configure the transmission interval of BPDU of SSTP to 8 seconds.

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

### 1.1.5 spanning-tree sstp max-age

## Syntax

To configure the maximum lifespan of the SSTP BPDU, run `spanning-tree sstp max-age time`. To resume the default interval time, run `no spanning-tree sstp max-age`.

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

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

## Parameters

Parameters	Description
<i>seconds</i>	Means the maximum lifespan of BPDU. Range: 6-40 seconds

## Default Value

20s

## Usage Guidelines

None

## Command Mode

Global configuration mode

## Example

The following example shows how to configure the maximum lifespan of SSTP to 24 seconds.

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

### 1.1.6 spanning-tree sstp forward-time

#### Syntax

To configure the forwarding delay, run `spanning-tree sstp forward-time time`. To resume the default forwarding delay, run `no spanning-tree sstp forward-time`.

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

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

#### Parameters

Parameters	Description
<i>time</i>	Time of the forwarding delay Value range: 4-30 seconds

#### Default Value

15 seconds

#### Usage Guidelines

None

#### Command Mode

Global configuration mode

## Example

The following example shows how to configure the forwarding delay of SSTP to 20 seconds.

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

### 1.1.7 spanning-tree sstp cost

#### Syntax

To configure the path cost of a port in SSTP mode, run `spanning-tree sstp cost value`. To resume the default path cost, run `no spanning-tree sstp cost`.

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

**`no spanning-tree sstp cost`**

#### Parameters

Parameters	Description
<i>value</i>	Value of the path cost Value range: 1-200000000

#### Default Value

The value of the path cost of the 10M Ethernet is 100.

The value of the path cost of the 100M Ethernet is 19.

The value of the path cost of the 1000M Ethernet is 1.

#### Usage Guidelines

None

#### Command Mode

Port configuration mode

#### Example

The following example shows how to set the path cost of port G0/1 to 100 in SSTP mode.

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

### 1.1.8 spanning-tree cost

#### Syntax

To configure the path cost of a port in all STP mode, run `spanning-tree cost value`. To resume the default path cost, run `no spanning-tree cost`.

**spanning-tree cost *value***

**no spanning-tree cost**

### Parameters

Parameters	Description
<i>value</i>	Value of the path cost of a port Value range: 1-200000000

### Default Value

The default value depends on the rate of each port in all STP mode.

### Usage Guidelines

The results of this command validates in all STP modes. In VLAN-based STP mode, the path cost of a port will be updated in all VLAN spanning trees; In MSTP mode, the path cost of a port will be updated in all STP cases.

However, the results of this command cannot affect independent configurations in each mode. For example, After you run `spanning-tree sstp cost 100` and `spanning-tree cost 110`, the path cost of the port is still 100 in SSTP mode.

### Command Mode

Port configuration mode

### Example

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

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

## 1.1.9 spanning-tree sstp port-priority

### Syntax

To configure the priority value of a port in SSTP mode, run `spanning-tree sstp port-priority value`. To resume the default value of the priority value, run `no spanning-tree sstp port-priority`.

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

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

### Parameters

Parameters	Description
------------	-------------

<i>value</i>	Means the priority level of a port. Value range: 0-240
--------------	--

### Default Value

128 (0x80)

### Usage Guidelines

The value of the priority level of a port must be the multiple of 16.

### Command Mode

Port configuration mode

### Example

The following example shows how to set the priority level of port g0/1 to 32:

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

## 1.1.10 spanning-tree port-priority

### Syntax

To configure the priority level of a port in all STP modes, run `spanning-tree port-priority value`. To resume the default priority level, run `spanning-tree port-priority`.

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

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

### Parameters

Parameters	Description
<i>value</i>	Means the priority level of a port. Value range: 0-240 Step: 16

### Default Value

The default value of the priority level of a port is 128 in all modes.

### Usage Guidelines

The results of this command validates in all STP modes. In VLAN-based STP mode, the priority level of a port will be updated in all VLAN spanning trees; In MSTP mode, the priority level of a port will be updated in all STP cases.

However, the results of this command cannot affect independent configurations in each mode. For example, After you run `spanning-tree sstp port-priority 128` and `spanning-tree port-priority 48`, the port-priority of the port is still 128 in SSTP mode.

### Command Mode

Port configuration mode

### Example

The following example shows how to set the priority level of port g0/1 to 16 in all STP modes.

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

## 1.1.11 show spanning-tree

### Syntax

To display the spanning-tree information, run the following command.

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

### Parameters

Parameters	Description
<i>intf-i</i>	interface name, for instance, G0/1

### Default Value

None

### Usage Guidelines

This command is used to display the state of the spanning tree.

### Command Mode

EXEC mode, Global configuration mode or interface mode

### 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 this command. To return to the default setting, use the no form of this command.

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

## Parameters

Parameters	Description
newroot	Stands for the newRoot trap type.
topologychange	Stands for the topologyChange trap type.

## Default Value

STP Trap is disabled.

## Usage Guidelines

None

## Command Mode

Global configuration mode

## Example

None

## 1.2 VLAN STP Configuration Commands

### 1.2.1 spanning-tree mode pvst

#### Syntax

To enable VLAN-based STP mode, run `spanning-tree mode pvst`. To disable all STP modes, run `no spanning-tree mode`.

**spanning-tree mode pvst**

**no spanning-tree mode**

#### Parameters

None

#### Default Value

The default STP mode is RSTP.

#### Usage Guidelines

None

#### Example

The following example shows how to enable PVST on the switch.

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

### 1.2.2 spanning-tree vlan

#### Syntax

To designate VLAN to distribute the STP case, run `spanning-tree vlan vlan-list`. To cancel the spanning tree of the designated VLAN, run `no spanning-tree vlan vlan-list`.

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

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

## Parameters

Parameters	Description
<i>vlan-list</i>	List of the VLAN numbers, such as 1,2,3-10,15

## Default Value

The switch only distributes spanning tree instances for certain VLANs. By default the exceeding VLANs will be added to STP forbidding list automatically.

## Usage Guidelines

None

## Command Mode

Global configuration mode

## Example

The following example shows how to cancel the spanning tree of VLAN 10, 11, 15-19 and then how to distribute the spanning trees to 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

To designate the priority level of the bridge of the VLAN STP, run `spanning-tree vlan vlan-list priority value`.

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

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

## Parameters

Parameters	Description
<i>vlan-list</i>	List of the VLAN numbers, such as 1,2,3-10,15
<i>value</i>	Value of the priority level, ranging between 0 and 61400 (step: 4096)

### Default Value

By default, the priority level of the bridge of each VLAN spanning tree is 32768 plus the VLAN number.

### Usage Guidelines

None

### Command Mode

Global configuration mode

### Example

The following example shows how to set the priority levels of the bridges 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

To set the Forward Delay parameter of the spanning tree in the designated VLAN, run `spanning-tree vlan vlan-list forward-time value`.

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

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

### Parameters

Parameters	Description
<i>vlan-list</i>	List of the VLAN numbers, such as 1,2,3-10,15
<i>value</i>	Value of the forward-delay parameter Value range: 4-30 seconds Default value: 15 seconds

### Default Value

The value of the forward-delay parameter of all VLANs is 15 seconds.

### Usage Guidelines

None

## Command Mode

Global configuration mode

## Example

The following example shows how to set the forward delay parameter of VLAN 1-3, 5-10 to 19 seconds.

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

## 1.2.5 spanning-tree vlan max-age

### Syntax

To set the Max Age parameter of the spanning tree in the designated VLAN, run `spanning-tree vlan vlan-list max age value`. To resume the default value, run `no spanning-tree vlan vlan-list max age`.

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

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

### Parameters

Parameters	Description
<i>vlan-list</i>	List of the VLAN numbers, such as 1,2,3-10,15
<i>value</i>	Value of the max-age parameter Value range: 6-40 seconds Default value: 20 seconds

### Default Value

The default value of the max-age parameter for all VLANs is 20 seconds.

### Usage Guidelines

None

## Command Mode

Global configuration mode

## Example

The following example shows how to set the max age parameter of VLAN 1-3, 5-10 to 19 seconds.

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

## 1.2.6 spanning-tree vlan hello-time

### Syntax

To set the hello time parameter of the spanning tree in the designated VLAN, run `spanning-tree vlan vlan-list hello time value`. To resume the default value, run `no spanning-tree vlan vlan-list hello time`.

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

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

### Parameters

Parameters	Description
<i>vlan-list</i>	List of the VLAN numbers, such as 1,2,3-10,15
<i>value</i>	Value of the hello time parameter Value range: 1-10 seconds Default value: 2 seconds

### Default Value

The default value of the Hello-Time parameter for all VLANs is 2 seconds.

### Usage Guidelines

None

### Command Mode

Global configuration mode

### Example

The following example shows how to set the Hello Time parameter of VLAN 1-3, 5-10 to 9 seconds.

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

## 1.2.7 spanning-tree vlan cost

### Syntax

To set the path cost of the spanning tree in the designated VLAN, run `spanning-tree vlan vlan-list cost value`. To resume the default value, run `no spanning-tree vlan vlan-list cost`.

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

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

### Parameters

Parameters	Description
<i>vlan-list</i>	List of the VLAN numbers, such as 1,2,3-10,15
<i>value</i>	Path cost of a port, which ranges between 1 and 200,000,000

### Default Value

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

The value of the path cost of the 10M Ethernet is 100.

The value of the path cost of the 100M Ethernet is 19.

The value of the path cost of the 1000M Ethernet is 1.

### Usage Guidelines

None

### Command Mode

Port configuration mode

### Example

The following example shows how to set the path cost of port G0/1 VLAN1-3,5-10 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

To set the priority level of the spanning tree in the designated VLAN, run `spanning-tree vlan vlan-list port-priority value`. To resume the default value, run `no spanning-tree vlan vlan-list port-priority`.

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

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

### Parameters

Parameters	Description
<i>vlan-list</i>	List of the VLAN numbers, such as 1,2,3-10,15
<i>value</i>	Priority level of a port, which ranges between 0 and 240 and whose step is 16

### Default Value

128

### Usage Guidelines

None

### Command Mode

Port configuration mode

### Example

The following example shows how to set the priority level of port g0/1 VLAN1-3,5-10 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

To check the state of the spanning tree in the designated VLAN, run the following command:

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

## Parameters

Parameters	Description
<i>vlan-list</i>	List of the VLAN numbers, such as 1,2,3-10,15
<i>detail</i>	Displays the detailed information about the state of the spanning tree.

## Default Value

None

## Usage Guidelines

None

## Command Mode

EXEC mode, Global configuration mode or interface mode

## Example

The following example shows how 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

To check the corresponding relation between PVST instances and VLAN, run this command.

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

#### Parameters

None

#### Default Value

None

#### Usage Guidelines

None

#### Command Mode

EXEC mode, Global configuration mode or interface mode

#### Example

None

## Chapter 2 RSTP Configuration Commands

### 1.3 RSTP Configuration Commands

#### 1.3.1 spanning-tree mode rstp

##### Syntax

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

**`spanning-tree mode rstp`**

**`no spanning-tree mode`**

##### Parameters

None

##### Default Value

RSTP is enabled.

##### Usage Guidelines

None

##### Example

The following example shows how to enable RSTP on the switch.

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

#### 1.3.2 spanning-tree rstp forward-time

##### Syntax

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`.

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

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

#### Parameters

Parameters	Description
<i>time</i>	Time of the forwarding delay Value Range:4-30s.

#### Default Value

15 seconds

#### 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#
```

### 1.3.3 spanning-tree rstp hello-time

#### Syntax

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**.

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

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

#### Parameters

Parameters	Description
<i>time</i>	Updates the interval. Range: 1-10 seconds

#### Default Value

2 seconds

## 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#
```

### 1.3.4 spanning-tree rstp max-age

## Syntax

To configure the maximum lifespan of the SSTP BPDU, run `spanning-tree sstp max-age time`. To resume the default interval time, run `no spanning-tree sstp max-age`.

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

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

## Parameters

Parameters	Description
<i>time</i>	Maximum interval of the lifespan Range: 6-40 seconds

## Default Value

20 seconds

## 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#
```

### 1.3.5 spanning-tree rstp priority

#### Syntax

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`.

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

**`no spanning-tree rstp priority`**

#### Parameters

Parameters	Description
<i>value</i>	Priority level of the bridge Value range: 0-61440 Step: 4096

#### Default Value

32768

#### Usage Guidelines

None

#### Example

The following example shows how to set the bridge priority of RSTP to 4096.

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

### 1.3.6 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`**

## Parameters

Parameters	Description
<i>value</i>	Value of the path cost Value range: 1-200000000

## Default Value

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#
```

### 1.3.7 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**

## Parameters

Parameters	Description
<i>value</i>	Priority level of a port Value range: 0-240 Step: 16

## Default Value

128

## Usage Guidelines

None

## Example

The following example shows how to set the priority level of port g0/1 to 16:

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

```
Switch_config_g0/1#
```

### 1.3.8 spanning-tree rstp edge

#### Syntax

To set the port to the edge port. To return to the default setting, use the no form of this command.

**spanning-tree rstp edge**

**no spanning-tree rstp edge**

#### Parameters

None

#### Default Value

Auto-detection

#### Usage Guidelines

None

#### Command Mode

Port configuration mode

#### Example

None

### 1.3.9 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 ]**

#### Parameters

Parameters	Description
<i>force-true</i>	Sets the point-to-point connection to be forcedly effective.
<i>force-false</i>	Sets the point-to-point connection to be forcedly ineffective.
<i>auto</i>	Sets the point-to-point connection to be automatic check (default).

#### Default Value

Auto-detection

#### Usage Guidelines

None

#### Command Mode

Port configuration mode

#### Example

None

### 1.3.10 spanning-tree rstp migration-check

#### Syntax

To restart checking protocol transfer of RSTP, run the following command.

**spanning-tree rstp migration-check**

### Parameters

None

### Default Value

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 or port configuration mode

### Example

The following example shows how to check protocol transfer on port G0/1.

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

## Chapter 3 MSTP Configuration Commands

### 1.4 MSTP Configuration Commands

#### 1.4.1 spanning-tree mode mstp

##### Syntax

To set the operation mode of the spanning tree to MSTP, run `spanning-tree mode mstp`. To return to the default set, run `no spanning-tree mode`.

**`spanning-tree mode mstp`**

**`no spanning-tree mode`**

##### Parameters

None

##### Default Value

MSTP is disabled, while SSTP is enabled.

##### Usage Guidelines

None

##### Example

The following example shows how to enable MSTP on a switch.

```
Switch_config# spanning-tree mode mstp
Switch_config#
```

#### 1.4.2 spanning-tree mstp name

##### Syntax

To configure the MSTP name, run `spanning-tree mstp name string`. To resume the default name, run `no spanning-tree mstp name`.

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

**no spanning-tree mstp name**

#### Parameters

Parameters	Description
string	A character string to configure the name, which contains up to 32 characters and is capital sensitive. The default value is the character string of the MAC address.

#### Default Value

Its default value is the MAC address of a switch.

#### Usage Guidelines

None

#### Example

The following example shows how to set the name of MSTP for a switch to reg-01.

```
Switch_config# spanning-tree mstp name reg-01
Switch_config#
```

### 1.4.3 spanning-tree mstp revision

#### Syntax

To configure the MSTP revision number, run **spanning-tree mstp revision value**. To resume the default revision number, run **no spanning-tree mstp revision**.

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

**no spanning-tree mstp revision**

#### Parameters

Parameters	Description
value	Revision number, which ranges between 0 and 65535 and whose default value is 0

### Default Value

The default value of the revision number is 0.

### Usage Guidelines

None

### Example

The following example shows how to set the revision number of MSTP to 100.

```
Switch_config# spanning-tree mstp revision 100
Switch_config#
```

## 1.4.4 spanning-tree mstp instance

### Syntax

To map VLAN to MSTI, run `spanning-tree mstp instance instance-id vlan vlan-list`. To remap VLAN to 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*

### Parameters

Parameters	Description
instance-id	Instance ID of the spanning-tree, which stands for an MSTI Value range: 1-15
vlan-list	A VLAN list which is mapped to a spanning tree It ranges from 1 to 4094.

### Default Value

All VLANs are mapped to CIST (MST00).

### Usage Guidelines

Instance ID is an independent value which stands for an STP instance.

The `vlan-list` parameter can stand for a VLAN group, such as VLANs 1,2 and3, VLANs 1-5 or VLANs 1,2,5-10.

## Example

The following example shows how to map VLAN2 to STP instance 1, and VLANs 5, 7, 10-20 to STP instance 2 and then remap 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
```

### 1.4.5 spanning-tree mstp root

#### Syntax

To set a designated STP instance to a primary or secondary root, run `spanning-tree mstp instance-id root {primary | secondary}`. To resume the default value of the bridge priority of an STP instance, run `no spanning-tree mstp root`.

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

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

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

The diameter command and the hello time command are allowed to modify the network diameter and the hello-time parameter.

#### Parameters

Parameters	Description
instance-id	Number of the STP instance, which ranges between 0 and 15
primary	Sets an STP instance to a primary root.
secondary	Sets an STP instance to a secondary root.
net-diameter	An optional parameter which presents the network diameter. When instance-id is 0, net-diameter ranges between 2 and 7.
seconds	An optional parameter standing for the value of the Hello Time parameter, which ranges between 1 and 10 seconds

#### Default Value

The default value of the bridge priority for all STP instances is 32768. The network diameter is 7, while Hello Time is 2 seconds.

#### Usage Guidelines

The diameter command and the hello-time command validate only when the instance-id parameter is 0.

In general, after the command to set the primary root is executed, the protocol automatically check the bridge ID of the current network's root and then sets the priority of the bridge ID to 24576, which guarantees that the current switch serves as the root of the STP instance. If the priority value of the network root is less than 24576, the protocol will automatically set the STP priority of the current bridge to a value which is 4096 smaller than the priority of the root. It deserves attention that 4096 is the step of the priority value of the bridge.

Different from primary root configuration, after the command to set the secondary root is executed, the protocol directly set the STP priority of the switch to 28672. In case that the priority value of other switches in the network is 32768 by default, the current switch serves as the secondary root.

### Example

The following example shows how to set a switch to the primary root in CIST, and how to recalculate the time parameter of STP through diameter 3 and hello-time 3, and then set the switch to the secondary root in MST01.

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

## 1.4.6 spanning-tree mstp priority

### Syntax

To configure the value of the bridge priority of a designated STP instance, run `spanning-tree mstp instance-id priority value`. To resume the default value of the bridge priority, run `no spanning-tree mstp priority`.

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

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

### Parameters

Parameters	Description
instance-id	Number of the STP instance, which ranges between 0 and 15
value	Value of the bridge priority, which can be one of the following values: 0, 4096, 8192, 12288, 16384, 20480, 24576, 28672, 32768, 36864, 40960, 45056, 49152, 53248, 57344, 61440,

### Default Value

The default value of the bridge priority for all STP instances is 32768.

## Usage Guidelines

The priority values in each STP instance are independent and can be configured independently.

## Example

The following example shows how to set the priority values of a switch in CIST and MST01 to 4096 and 8192 respectively.

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

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

## 1.4.7 spanning-tree mstp hello-time

### Syntax

To configure the Hello Time of MSTP, run `spanning-tree mstp hello-time seconds`. To resume the default value of the Hello Time of MSTP, run `no spanning-tree mstp hello-time`.

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

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

### Parameters

Parameters	Description
seconds	Value range: 1-10 seconds Default value: 2 seconds

### Default Value

2 seconds

### Usage Guidelines

None

### Example

The following example shows how to set the Hello Time parameter of MSTP to 10.

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

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

## 1.4.8 spanning-tree mstp forward-time

### Syntax

To configure the forward delay parameter of MSTP, run `spanning-tree mstp forward-time seconds`. To resume the default value of the forward delay parameter of MSTP, run `no spanning-tree mstp forward-time`.

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

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

### Parameters

Parameters	Description
seconds	Value range: 4-30 seconds Default value: 15 seconds

### Default Value

15 seconds

### Usage Guidelines

None

### Example

The following example shows how to set the Forward Delay parameter of MSTP to 10.

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

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

## 1.4.9 spanning-tree mstp max-age

### Syntax

To configure the max age parameter of MSTP, run `spanning-tree mstp max-age seconds`. To resume the default value of the forward delay parameter of MSTP, run `no spanning-tree mstp max-age`.

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

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

### Parameters

Parameters	Description
------------	-------------

seconds	Value range: 6-40 seconds Default value: 20 seconds
---------	---

### Default Value

20 seconds

### Usage Guidelines

None

### Example

The following example shows how to set the max age parameter of MSTP to 10.

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

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

## 1.4.10 spanning-tree mstp diameter

### Syntax

To configure the network diameter of MSTP, run `spanning-tree mstp diameter net-diameter`. To resume the default value of the network diameter, run `no spanning-tree mstp diameter`.

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

**no spanning-tree mstp diameter**

### Parameters

Parameters	Description
net-diameter	Value range: 2-7 Default value: 7

### Default Value

The default value of the network diameter is 7.

### Usage Guidelines

The `net-diameter` parameter is not saved as an independent configuration in the switch. Only the time parameter which is modified through network diameter configuration can be saved. The `net-diameter` parameter is effective only to CIST. After configuration, the three time parameters of STP are automatically updated to a prior value.

It is recommended to modify the time parameter of STP through setting the root or network diameter, ensuring the rationality of the time parameter.

### Example

The following example shows how to set the network diameter of MSTP to 5 and then resume its default value.

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

## 1.4.11 spanning-tree mstp max-hops

### Syntax

To set the maximum hops of MSTP BPDU, run `spanning-tree mstp max-hops hop-count`. To resume the default settings, run `no spanning-tree mstp max-hops`.

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

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

### Parameters

Parameters	Description
hop-count	Value range: 6-40 Default value: 20

### Default Value

The default value of the maximum hops is 20.

### Usage Guidelines

None

### Example

The following example shows how to set the maximum hops of MSTP BPDU to 5 and then resume the default value.

```
Switch_config# spanning-tree mstp max-hops 5
Switch_config# no spanning-tree mstp max-hops
```

### 1.4.12 spanning-tree mstp port-priority

#### Syntax

To configure the port priority in the designated spanning-tree instance, run `spanning-tree mstp instance-id port-priority value`. To resume the port priority to the default settings, run `no spanning-tree mstp instance-id port-priority`.

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

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

#### Parameters

Parameters	Description
instance-id	Number of the STP instance, which ranges between 0 and 15
value	Value of the port priority, which can be one of the following values 0, 16, 32, 48, 64, 80, 96, 112 128, 144, 160, 176, 192, 208, 224, 240,

#### Default Value

The port priority in all STP instances is 128 by default.

#### Usage Guidelines

None

#### Example

The following example shows how to set the priority value of port G0/1 in CIST to 16 and then 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
```

### 1.4.13 spanning-tree mstp cost

#### Syntax

To set the path cost of the spanning tree in the designated STP instance, run `spanning-tree mstp instance-id cost value`. To resume the default value, run `no spanning-tree mstp instance-id cost`.

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

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

### Parameters

Parameters	Description
instance-id	Number of the STP instance, which ranges between 0 and 15
value	Path cost of a port, which ranges between 1 and 200,000,000

### Default Value

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 200 in CIST.

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

```
Switch_config_g0/1#
```

## 1.4.14 spanning-tree mstp edge

### Syntax

To set the port to the edge port. To return to the default setting, use the no form of this command.

**spanning-tree mstp edge**

**no spanning-tree mstp edge**

### Parameters

None

### Default Value

Automatically checks the edge port.

### Usage Guidelines

None

### Example

None

## 1.4.15 spanning-tree mstp point-to-point

### Syntax

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`.

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

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

### Parameters

Parameters	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 Value

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#
```

### 1.4.16 spanning-tree mstp mst-compatible

#### Syntax

To enable or disable multiple spanning tree compatible mode, run this command in global configuration mode.

**spanning-tree mstp mst-compatible**

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

To enable or disable multiple spanning tree compatible mode, run this command in interface configuration mode.

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

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

#### Parameters

Parameters	Description
<b>enable</b>	The mst-compatible mode is enabled.
<b>disable</b>	The mst-compatible mode is disabled.

#### Default Value

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

#### Usage Guidelines

After the compatible mode is enabled, you are recommended to set a connected switch which runs other MSTP to the root of CIST, securing that the switch can enter the compatible mode through receiving packets.

#### Example

The following example shows how to activate the MST-compatible mode of a switch in global configuration mode.

```
Switch_config#spanning-tree mstp mst-compatible
```

### 1.4.17 spanning-tree mstp migration-check

#### Syntax

To remove the STP information which is checked on a port and then restart the protocol transform process, run the following command.

**spanning-tree mstp migration-check**

#### Parameters

None

#### Default Value

None

#### Usage Guidelines

This command validates both in global configuration mode and in port configuration mode.

#### Example

The following example shows how to conduct the protocol transfer check on all ports and then conduct the second protocol transfer check on port G0/1.

```
Switch_config# spanning-tree mstp migration-check
Switch_config# interface g0/1
Switch_config_g0/1# spanning-tree mstp migration-check
```

### 1.4.18 spanning-tree mstp restricted-role

#### Syntax

To enable role restriction of the port, run the following command. To return to the default setting, use the no form of this command.

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

#### Parameters

None

### Default Value

The role restriction of the port is disabled by default.

### Command Mode

Port configuration mode

### Usage Guidelines

The port will not be selected as the root port if the role restriction of the port is enabled.

### Example

None

## 1.4.19 spanning-tree mstp restricted-tcn

### Syntax

To enable TCN restriction of the port, run the following command. To return to the default setting, use the no form of this command.

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

### Parameters

None

### Default Value

TCN restriction of the port is disabled by default.

### Command Mode

Port configuration mode

### Usage Guidelines

The topology change will not be transferred to other port if TCN restriction of the port is enabled.

## Example

None

### 1.4.20 show spanning-tree mstp

## Syntax

To browse the MSTP information, run `show spanning-tree mstp [instance instance-id]`. If the instance parameter is not in the command syntax, the information about all spanning-tree instances will be displayed.

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

## Parameters

Parameters	Description
instance-id	Number of the STP instance, which ranges between 0 and 15

## Default Value

None

## Usage Guidelines

This command can be used in monitoring mode, global configuration mode or port mode.

## Example

The following example shows how to browse all spanning-tree instances. MST00 stands for CIST, while Type stands for the connection type of the corresponding port.

```
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

```

#### 1.4.21 show spanning-tree mstp region

##### Syntax

To browse the area configuration information about MSTP, run the following command.

**show spanning-tree mstp region**

##### Parameters

None

##### Default Value

None

##### Usage Guidelines

None

##### Example

In the following example, MST Config Table is to display the relationship between VLAN and spanning-tree 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

#### 1.4.22 show spanning-tree mstp detail

##### Syntax

To browse the detailed information about MSTP, run the following command.

**show spanning-tree mstp detail**

##### Parameters

None

##### Default Value

None

##### Usage Guidelines

None

##### Example

The following example shows how to browse the detailed information about MSTP, which includes the port connection types and the configuration of optional attributes.

```
Switch#show spanning-tree mstp detail
```

```
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

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
```



### 1.4.23 show spanning-tree mstp interface

#### Syntax

To browse the information about a port under MSTP, run the following command.

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

#### Parameters

Parameters	Description
interface-id	interface name, for instance, "G0/1", "GigaEthernet0/2".

#### Default Value

None

#### Usage Guidelines

None

#### Example

The following example shows how to browse the information about interface G0/1.

```
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

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

##### Syntax

To browse the protocol transfer information on an interface under MSTP, run the following command.

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

##### Parameters

None

##### Default Value

None

##### Usage Guidelines

None

##### Example

The following example shows how to browse the information about protocol transfer on an interface. In the following example, interface G0/1 is running in 802.1D STP mode.

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

```
MSTP Port Protocol Migration
```

Interface	Protocol
G0/1	802.1D