STP CLI Reference Guide

Model: S3700-24T4F

CLI REFERENCE GUIDE

Table of Contents

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
value	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
time	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
seconds	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
time	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
value	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
value	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
value	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
value	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
intf-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
vlan-list	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
vlan-list	List of the VLAN numbers, such as 1,2,3-10,15
value	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
vlan-list	List of the VLAN numbers, such as 1,2,3-10,15
value	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
vlan-list	List of the VLAN numbers, such as 1,2,3-10,15
value	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

vlan-list	List of the VLAN numbers, such as 1,2,3-10,15
value	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
vlan-list	List of the VLAN numbers, such as 1,2,3-10,15
value	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
vlan-list	List of the VLAN numbers, such as 1,2,3-10,15
value	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
vlan-list	List of the VLAN numbers, such as 1,2,3-10,15
detail	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
time	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
time	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
time	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
value	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
value	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
value	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-truce, force-false or auto, run this command.

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

Parameters

Parameters	Description
force-true	Sets the point-to-point connection to be forcedly effective.
force-false	Sets the point-to-point connection to be forcedly ineffective.
auto	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 times 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
enable	The mst-compatible mode is enabled.
disable	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 configuaration 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
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 662 sec
Number of transitions to forwarding state: 1
Bpdu sent 335, received 5

GigaEthernet0/2 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 Bridge          Address 00E0.0F64.8365    Priority 32768    Port ID 128.2
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
Bridge           Address    00E0.0F64.8365    Priority    32769 (32768 mst-id 1)
Root             This bridge for MST01

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 662 sec
Number of transitions to forwarding state: 1
MST Config Message transmitted 335, received 0

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

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 662 sec
Number of transitions to forwarding state: 1
MST Config Message transmitted 335, received 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
```

https://www.fs.com

The information in this document is subject to change without notice. FS has made all efforts to ensure the accuracy of the information, but all information in this document does not constitute any kind of warranty.