Module 3 STP and RSTP

Lab 3-1 Configuring STP

Learning Objectives

As a result of this lab section, you should achieve the following tasks:

- Enable and disable STP.
- Change the STP mode that is used by a switch.
- Change the bridge priority to control root bridge election.
- Change the port priority to control election of the root port and designated port.
- Change the port cost to control election of the root port and designated port.
- Configure an edge port.

Topology

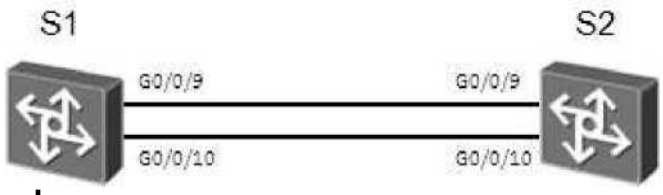


Figure 3.1 STP topology

Scenario

Assume that you are a network administrator of a company. The company network consists of two layers: core layer and access layer. The

network uses a design that supports network redundancy. STP will be used to prevent loops. The STP network should include setting the bridge priority to control STP root bridge election, and configuration of features to speed up STP route convergence.

Tasks

Step 1 **Configure STP and verify the STP configuration.**

In the lab, S1 and S2 are connected through two links, and STP is used. Enable STP on SI and S2 and set SI as the root.

```
<Quidway>systern-view
Enter system view, return user view with Ctrl+Z.
[Quidway]sysname S1

[Sl]stp mode stp
[S1]stp root primary

<Quidway>system-view
Enter system view, return user view with Ctrl+Z.
[Quidway]sysname S2
[S2]stp mode stp
[S2]stp root secondary
```

Run the **display stp brief** command to view brief information about STP.

```
<Sl>display stp brief
     MSTID   Port                      Role     STP State   Protection
     0       GigabitEthernetO/O/9      DESI     FORWARDING  NONE
             GigabitEthernet0/0/10     DESI     FORWARDING  NONE
     0


<S2>display stp brief
     MSTID   Port                      Role     STP State   Protection
     0       GigabitEthernetO/O/9      ROOT     FORWARDING  NONE
     0       GigabitEthernet0/0/10     ALTE     DISCARDING  NONE
```

Run the **display stp interface** command to view the STP status of a port.

```
<Sl>display stp interface GigabitEthernet 0/0/1
----[CIST][PortlO(GigabitEthernet0/0/10)][FORWARDING]----
Port Protocol        :Enabled
Port Role            :Designated Port
```

```
Port Priority        : 128
Port Cost(DotlT )    :Config=auto / Active=20000
Designated Bridge/Port      : 0.4clf-cc45-aace / 128.10
Port Edged    :Config=default / Active=disabled
Point-to-point       :Config=auto / Active=true
Transit Limit :147 packets/hello-time
Protection Type      :None
Port STP Mode : STP
Port Protocol Type :Config=auto / Active=dotls
BPDU Encapsulation :Config=stp / Active=stp
PortTimes            :Hello 2s MaxAge 20s FwDly 15s RemHop 20
TC or TCN send      :17
TC or TCN received :33
BPDU Sent           :221
         TCN: 0, Config: 221, RST: 0, MST: 0
BPDU Received        : 68
TCN: 0, Config: 68, RST: 0, MST: 0

<S2>display stp interface GigabitEthernet 0/0/10
----[CIST][Portl0(GigabitEthernet0/0/10)][DISCARDING]----
Port Protocol   :Enabled
Port Role   :Alternate Port
Port Priority   : 128
Port Cost(DotlT )   :Config=auto / Active=20000
Designated Bridge/Port :0.4clf-cc45-aace / 128.10
Port Edged    :Config=default / Active=disabled
Point-to-point       :Config=auto / Active=true
Transit Limit :147 packets/hello-time
Protection Type      : None
Port STP Mode : STP
Port Protocol Type   :Config=auto / Active=dotls
BPDU Encapsulation   :Config=stp / Active=stp
PortTimes     :Hello 2s MaxAge 20s FwDly 15s RemHop 0
TC or TCN send       : 17
TC or TCN received :17
BPDU Sent  :35
TCN: 0, Config: 35, RST: 0, MST: 0
BPDU Received        :158
          TCN: 0, Config: 158, RST: 0, MST: 0
```

Step 2 **Control root bridge election.**

Run the **display stp** command to view information about the root bridge.

```
<S1>display stp
-------[CIST Global Info][Mode STP]--------
CIST Bridge         :0    .4clf-cc45-aace
Bridge Times        :Hello 2s MaxAge 20s FwDly 15s MaxHop 20
CIST Root/ERPC      :0 .4clf-cc45-aace / 0
CIST RegRoot/IRPC   :0 .4clf-cc45-aace / 0
CIST RootPortId     0.0
BPDU-Protection     :Disabled
CIST Root Type      :Primary root
TC or TCN received : 108
TC count per hello : 0
STP Converge Mode   :Normal
Share region-configuration :Enabled
Time since last TC :0 days Oh:9m: 23s
    output omit


<S2>display stp
-------[CIST Global Info][Mode STP]--------
CIST Bridge         :4096 .4clf-cc45-aacc
Bridge Times        :Hello 2s MaxAge 20s FwDly 15s MaxHop 20
CIST Root/ERPC      :0    .4clf-cc45-aace / 20000
CIST RegRoot/IRPC :4096 .4clf-cc45-aacc / 0
CIST RootPortId :128.9
BPDU-Protection :Disabled
CIST Root Type      :Secondary root
TC or TCN received :55
TC count per hello : 0
STP Converge Mode :Normal
Share region-configuration :Enabled
Time since last TC :0 days Oh:9m: 30s
... output omit ....
```

Configure S1 as the root bridge and S2 as the backup root bridge using priority values. The device with the same value for the **CIST Bridge** and **CIST Root/ERPC** is the root bridge. A smaller bridge priority value indicates a higher bridge priority. Change the priorities of S1 and S2 to 8192 and 4096 respectively so that S2 becomes the root bridge.

```
[S1]undo stp root
[S1]stp priority 8192

[S2]undo stp root
[S2]stp priority 4096
```

Run the **display stp** command to view information about the new root bridge.

```
<Sl>display stp
-------[CIST Global Info][Mode STP] --------
CIST Bridge          :8192 .4clf-cc45-aace
Bridge Times         :Hello 2s MaxAge 20s FwDly 15s 0
CIST Root/ERPC       :4096 .4clf-cc45-aacc / 20000
CIST RegRoot/IRPC :8192 .4clf-cc45-aace / 0
CIST RootPortld :128.9
BPDU-Protection :Disabled
TC or TCN received :143
TC count per hello : 0
STP Converge Mode :Normal
Share region-configuration :Enabled
Time since last TC :0 days 0h:0m:27s
...output omit.....

<S2>display stp
-------[CIST Global Info][Mode STP]--------
CIST Bridge          :4096 .4clf-cc45-aacc
Bridge Times         :Hello 2s MaxAge 20s FwDly 15s MaxHop 20
CIST Root/ERPC       :4096 .4clf-cc45-aacc / 0
CIST RegRoot/IRPC :4096 .4clf-cc45-aacc / 0
CIST RootPortld :0.0
BPDU-Protection :Disabled
TC or TCN received :55
TC count per hello : 0
STP Converge Mode :Normal
Share region-configuration :Enabled
Time since last TC :0 days Oh:14m:7s
...output omit.....
```

The highlighted lines in the preceding information indicate that S2 has become the new root bridge.

Shut down interfaces Gigabit Ethernet 0/0/9 and Gigabit Ethernet 0/0/10 on S2 to isolate S2.

```
[S2]interface GigabitEthernet 0/0/9
[S2-GigabitEthernet0/0/9]shutdown
```

```
[S2-GigabitEthernet0/0/9]quit
[S2]interface GigabitEthernet 0/0/10
[S2-GigabitEthernet0/0/10]shutdown

[S1]display stp
-------[CIST Global Info][Mode STP] --------
CIST Bridge          :8192 .4clf-cc45-aace
Bridge Times         :Hello 2s MaxAge 20s FwDly 15s MaxHop 20
CIST Root/ERPC       :8192  .4clf-cc45-aace  / 0
CIST RegRoot/IRPC    :8192   .4clf-cc45-aace  / 0
CIST RootPortId      :0.0
BPDU-Protection :Disabled
TC or TCN received   :146
TC count per hello   : 0
STP Converge Mode :Normal
Share region-configuration :Enabled
Time since last TC :0 days 0h:0m:11s
...output omit.....
```

The highlighted lines in the preceding information indicate that S1 becomes the root bridge when S2 is faulty.

Re-enable the interfaces that have been disabled on S2.

```
[S2]interface GigabitEthernet 0/0/9
[S2-GigabitEthernet0/0/9]undo shutdown
[S2-GigabitEthernet0/0/9]quit
[S2]interface GigabitEthernet 0/0/10
[S2-GigabitEthernet0/0/10]undo shutdown

<Sl>display stp
-------[CIST Global Info][Mode STP]--------
CIST Bridge          :8192  .4clf-cc45-aace
Bridge Times         :Hello 2s MaxAge 20s FwDly 15s 0
CIST Root/ERPC       :4096  .4clf-cc45-aacc   / 20000
CIST RegRoot/IRPC :8192 .4clf-cc45-aace / 0
CIST RootPortId      : 128.9
BPDU-Protection :Disabled
TC or TCN received :143
TC count per hello : 0
STP Converge Mode :Normal
Share region-configuration :Enabled
Time since last TC :0 days 0h:0m:27s
...output omitted....
```

```
<S2>display stp
-------[CIST Global Info][Mode STP]--------
CIST Bridge          :4096  .4clf-cc45-aacc
Bridge Times         :Hello 2s MaxAge 20s FwDly 15s MaxHop 20
CIST Root/ERPC       :4096 .4clf-cc45-aacc / 0
CIST RegRoot/IRPC :4096 .4clf-cc45-aacc / 0
CIST RootPortId      : 0.0
BPDU-Protection :Disabled
TC or TCN received :55
TC count per hello : 0
STP Converge Mode :Normal
Share region-configuration :Enabled
Time since last TC :0 days Oh:14m:7s
...output omitted....
```

The highlighted lines in the preceding information indicate that S2 has been restored and has become the root bridge once again.

Step 3 **Control root port election.**

Run the **display stp brief** command on SI to view the roles of the interfaces.

```
<Sl>display stp brief
         MSTID    Port                      Role     STP State   Protection
         0        GigabitEthernetO/O/9      ROOT     FORWARDING  NONE
         0        GigabitEthernet0/0/10     ALTE     DISCARDING  NONE
```

The preceding information shows that G0/0/9 is the root port and G0/0/10 is the alternate port. You can change port priorities so that port interface G0/0/10 will become the root port and G0/0/9 will become the alternate port.

Change priorities of G0/0/9 and G0/0/10 on S2.

The default port priority is 128. A larger port priority value indicates a lower priority. The priorities of G0/0/9 and G0/0/10 on S2 are set to 32 and 16; therefore, G0/0/10 on S1 becomes the root port.

```
[S2]interface GigabitEthernet 0/0/9
[S2-GigabitEthernet0/0/9]stp port priority 32
[S2-GigabitEthernet0/0/9]quit
[S2]interface GigabitEthernet 0/0/10
[S2-GigabitEthernet0/0/10]stp port priority 16
```

Note that the port priorities are changed on S2, not SI.

```
<S2>display stp interface GigabitEthernet 0/0/9
```

```
--- [CIST][Port9(GigabitEthernetO/O/9)][FORWARDING]—
  Port Protocol       :Enabled
  Port Role           :Designated Port
Port Priority         :32
Port Cost(DotlT ) :Config=auto / Active=20000
Designated Bridge/Port : 4096.4clf-cc45-aacc / 32.9
Port Edged            :Config=default   / Active=disabled
Point-to-point        :Config=auto /   Active=true
Transit Limit         :147 packets/hello-time
Protection Type       :None
Port STP Mode         :STP
Port Protocol Type :Config=auto / Active=dotls
BPDU Encapsulation :Config=stp / Active=stp
PortTimes           :Hello 2s MaxAge 20s FwDly 15s RemHop 20
TC or TCN send      :22
TC or TCN received : 1
BPDU Sent          :164
         TCN: 0, Config: 164, RST: 0, MST: 0
BPDU Received        :2
         TCN: 1, Config: 1, RST: 0, MST: 0

<S2>display stp interface GigabitEthernet 0/0/10
--- [CIST][PortlO(GigabitEthernet0/0/10)][FORWARDING] ------
Port Protocol:Enabled
Port Role designated Port
Port Priority: 16
Port Cost(DotlT ) :Config=auto / Active=20000
Designated Bridge/Port : 4096.4clf-cc45-aacc / 16.10
Port Edged:Config=default / Active=disabled
Point-to-point:Config=auto / Active=true
Transit Limit:147 packets/hello-time
Protection Type: None
Port STP Mode: STP
Port Protocol Type :Config=auto / Active=dotls
BPDU Encapsulation :Config=stp / Active=stp
PortTimes           :Hello 2s MaxAge 20s FwDly 15s RemHop 20
TC or TCN send      :35
TC or TCN received : 1
BPDU Sent           :183
         TCN: 0, Config: 183, RST: 0, MST: 0
BPDU Received        :2
         TCN: 1, Config: 1, RST: 0, MST: 0
```

Run the **display stp brief** command on **S1** to view the role of the interfaces.

```
<Sl>display  stp brief
     MSTID   Port                        Role    STP State     Protection
     0       GigabitEthernetO/O/9        ALTE    DISCARDING    NONE
     0       GigabitEthernet0/0/10       ROOT    FORWARDING    NONE
```

The highlighted lines in the preceding information indicate that G0/0/10 on S1 has become the root port and G0/0/9 has become the alternate port.

Shut down G0/0/10 on SI and view the port roles.

```
[S1]interface GigabitEthernet 0/0/10
[Sl-GigabitEthernet0/0/10]shutdown
<Sl>display stp brief
     MSTID Port                        Role    STP State Protection
     0       GigabitEthernetO/O/9      ROOT    FORWARDING NONE
```

The highlighted line in the preceding information indicates that G0/0/9 has become the root port. Resume the default priorities of G0/0/9 and G0/0/10 on S2 and re-enable the shutdown interfaces on S1.

```
[S2]interface GigabitEthernet 0/0/9
[S2-GigabitEthernet0/0/9]undo stp port priority
[S2-GigabitEthernet0/0/9]quit
[S2]interface GigabitEthernet 0/0/10
[S2-GigabitEthernet0/0/10]undo stp port priority


[S1]interface GigabitEthernet 0/0/10
[Sl-GigabitEthernet0/0/10]undo shutdown
```

Run the **display stp brief** and **display stp interface** command on **SI** to view the roles of interfaces.

```
<Sl>display stp brief
MSTID    Port                    Role     STP State   Protection
0        GigabitEthernet0/0/9    ROOT     FORWARDING  NONE
0        GigabitEthernet0/0/10   ALTE     DISCARDING  NONE


[S1]display stp interface GigabitEthernet 0/0/9
--- [CIST][Port9(GigabitEthernet0/0/9)][FORWARDING] ------
Port Protocol :Enabled
Port Role:Root Port
Port Priority: 128
```

```
Port Cost(DotlT ):Config=auto / Active=20000
Designated Bridge/Port : 4096.4clf-cc45-aacc / 128.9
Port Edged:Config=default / Active=disabled
Point-to-point:Config=auto / Active=true
Transit Limit:147 packets/hello-time
Protection Type: None
Port STP Mode: STP
Port Protocol Type :Config=auto / Active=dotls
BPDU Encapsulation :Config=stp / Active=stp
PortTimes           :Hello 2s MaxAge 20s FwDly 15s RemHop 0
TC or TCN send      :4
TC or TCN received : 90
BPDU Sent           :5
         TCN: 4, Config: 1, RST: 0, MST: 0
BPDU Received       :622
         TCN: 0, Config: 622, RST: 0, MST: 0

[S1]display stp interface GigabitEthernet 0/0/10
--- [CIST][Port10(GigabitEthernet0/0/10)][DISCARDING] ------
Port Protocol:Enabled
Port Role:Alternate Port
Port Priority: 128
Port Cost(DotlT ):Config=auto / Active=20000
Designated Bridge/Port :4096.4clf-cc45-aacc / 128.10
Port Edged:Config=default / Active=disabled
Point-to-point:Config=auto / Active=true
Transit Limit:147 packets/hello-time
Protection Type: None
Port STP Mode: STP
Port Protocol Type :Config=auto / Active=dotls
BPDU Encapsulation :Config=stp / Active=stp
PortTimes           :Hello 2s MaxAge 20s FwDly 15s RemHop 0
TC or TCN send      :3
TC or TCN received : 90
BPDU Sent           :4
         TCN: 3, Config: 1, RST: 0, MST: 0
BPDU Received       : 637
         TCN: 0, Config: 637, RST: 0, MST: 0
```

The greyed line in the preceding information indicates that G0/0/9 and G0/0/10 cost is 20000 by default.

Change the cost of G0/0/9 to 200000 on S1.

```
[S1]interface GigabitEthernet 0/0/9
```

```
[Sl-GigabitEthernet0/0/9]stp cost 200000
```

Run the **display stp brief** and **display stp interface** command on **SI** to view the roles of interfaces.

```
<Sl>display stp interface GigabitEthernet 0/0/9
--- [CIST][Port9(GigabitEthernet0/0/9)][DISCARDING] ------
Port Protocol       :Enabled
Port Role           :Alternate Port
Port Priority       :128
Port Cost(DotlT )   :Config=200000 / Active=200000
Designated Bridge/Port : 4096.4clf-cc45-aacc / 128.9
Port Edged:Config=default / Active=disabled
Point-to-point:Config=auto / Active=true
Transit Limit:147 packets/hello-time
Protection Type: None
Port STP Mode: STP
Port Protocol Type :Config=auto / Active=dotls
BPDU Encapsulation :Config=stp / Active=stp
PortTimes           :Hello 2s MaxAge 20s FwDly 15s RemHop 0
TC or TCN send      :4
TC or TCN received :108
BPDU Sent           : 5
         TCN: 4, Config: 1, RST: 0, MST: 0
BPDU Received       :818
         TCN: 0, Config: 818, RST: 0, MST: 0

<Sl>display stp brief
MSTID    Port                    Role     STP State   Protection
0        GigabitEthernetO/O/9    ALTE     DISCARDING  NONE
0        GigabitEthernet0/0/10   ROOT     FORWARDING  NONE
```

The highlighted lines in the preceding information indicates that G0/0/10 has become the root port.

Final Configuration

```
<Sl>display current-configuration
#
!Software Version V100R006C00SPC800
sysname S1
#
stp mode stp
stp instance 0 priority 8192
```

```
#
interface GigabitEthernet0/0/9
stp instance 0 cost 200000
#
interface GigabitEthernet0/0/10
#
user-interface con 0
user-interface vty 0 4
#
return

<S2>display current-configuration
#
[Software Version V100R006C00SPC800
sysname S2
#
stp mode stp
stp instance 0 priority 4096
#
interface GigabitEthernetO/O/9
#
interface GigabitEthernet0/0/10
#
user-interface con 0
user-interface vty 0 4
#
return
```

Lab 3-2 Configuring RSTP

Learning Objectives

As a result of this lab section, you should achieve the following tasks:

- Enable and disable RSTP.
- Configuration of an edge port.
- Configuration of RSTP BPDU protection.
- Configuration of RSTP loop protection.

Topology

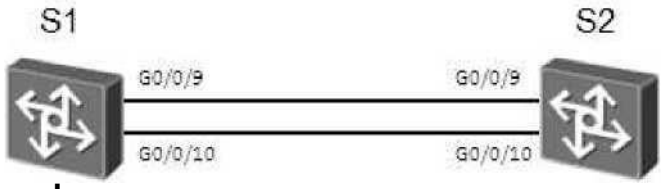


Figure 3.2 RSTP topology

Scenario

Assume that you are a network administrator of a company. The company network consists of two layers: core layer and access layer. The network uses a redundancy design. RSTP will be used to prevent loops. You can configure features to speed up RSTP route convergence at the edge network and configure RSTP protection function.

Tasks

Step 1 Clean up the previous configuration.

Remove the configured STP priority from SI and S2, and assigned cost on S1.

```
[S1]undo stp priority
```

```
[S1]inter GigabitEthernet 0/0/9
[Sl-GigabitEthernetO/O/9]undo stp cost

[S2]undo stp priority
```

Step 2 **Configure RSTP and verify the RSTP configuration.**

Configure SI and S2 to use RSTP as the spanning tree protocol.

```
[S1]stp mode rstp

[S2]stp mode rstp
```

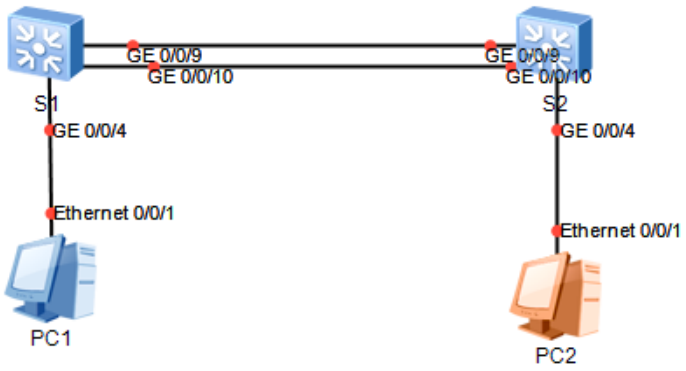
Run the **display stp** command to view brief information about RSTP.

```
[S1]display stp
----- [CIST Global Info][Mode RSTP]-----------
CIST Bridge          : 32768.4clf-cc45-aace
Bridge Times :..... Hello 2s MaxAge 20s FwDly   15s    MaxHop 20
CIST Root/ERPC..... :32768.4clf-cc45-aacc / 20000
CIST RegRoot/IRPC... :32768.4clf-cc45-aace / 0
CIST RootPortld..... : 128.9
BPDU-Protection..... :Disabled
TC or TCN received.. : 28
TC count per hello.. : 0
STP Converge Mode... :Normal
Share region-configuration :Enabled
Time since last TC.. :0 days Oh:11m:Is
...output omitted-"
[S2]display stp.....
...[CIST Global .... Info][Mode RSTP]
CIST Bridge :..... 32768.4clf-cc45-aacc
Bridge Times :..... Hello 2s MaxAge 20s FwDly   15s    MaxHop 20
CIST Root/ERPC..... :32768.4clf-cc45-aacc / 0
CIST RegRoot/IRPC... : 327 68.4clf-cc45-aacc / 0
CIST RootPortld..... : 0.0
BPDU-Protection..... :Disabled
TC or TCN received.. : 14
TC count per hello.. : 0
STP Converge Mode... :Normal
Share region-configuration :Enabled
```

```
Time since last TC :0 days Oh:12m:23s
...output omitted ..
```

Step 3 **Configure an edge port.**

Connect end devices according to following topology:



Configure ports connected to the user terminals as edge ports. An edge port can transition to the forwarding state without participating in the RSTP calculation. In this example, interface Gigabit Ethernet 0/0/4 on SI and S2 connect to a router and can be configured as edge ports.

```
[S1]interface GigabitEthernet 0/0/4
[Sl-GigabitEthernetO/O/4]stp edged-port enable
[S2]interface GigabitEthernet 0/0/4
[S2-GigabitEthernet0/0/4]stp edged-port enable
```

Step 5 **Configure BPDU protection.**

Edge ports are directly connected to user terminal and will not receive BPDUs. Attackers may send pseudo BPDUs to attack the switching device. If the edge ports receive the BPDUs, the switching device configures the edge ports as non-edge ports and triggers a new spanning tree calculation. Network flapping then occurs. BPDU protection can be used to protect switching devices against malicious attacks.

Configure BPDU protection on both SI and S2.

```
[SI]stp                                                    bpdu-protection
[S2]stp bpdu-protection
```

Run the **display stp brief** command to view the port protection.

```
<Sl>display stp brief
MSTID   Port                      Role STP State     Protection
  0   GigabitEthernet0/0/4          DESI FORWARDING      BPDU
  0   GigabitEthernetO/O/9          ROOT FORWARDING      NONE
  0   GigabitEthernet0/0/10         ALTE DISCARDING       NONE

<S2>display stp brief
MSTID   Port                      Role STP State     Protection
  0   GigabitEthernet0/0/4          DESI FORWARDING      BPDU
  0   GigabitEthernet0/0/9          DESI FORWARDING      NONE
  0   GigabitEthernet0/0/10         DESI FORWARDING       NONE
```

After the configuration is complete, interface Gigabit Ethernet 0/0/4 on SI and S2 shows as supporting BPDU protection.

Step 6 **Configure Loop protection.**

On a network running RSTP, a switching device maintains the root port status and status of alternate ports by receiving BPDUs from an upstream switching device. If the switching device cannot receive BPDUs from the upstream device because of link congestion or unidirectional-link failure, the switching device re-selects a root port. The original root port becomes a designated port and the original discarding ports change to the Forwarding state. This switching may cause network loops, which can be mitigated by configuring loop protection.

Configure loop protection on both the root port and the alternate port.

```
[SI]display stp brief
MSTID   Port                      Role STP State     Protection
  0   GigabitEthernet0/0/4          DESI FORWARDING      BPDU
  0   GigabitEthernetO/O/9          ROOT FORWARDING      NONE
  0   GigabitEthernet0/0/10         ALTE DISCARDING       NONE
```

G0/0/9 and G0/0/10 on SI are now the root port and alternate port. Configure loop protection on these two ports.

```
[SI]interface GigabitEthernet 0/0/9
[Sl-GigabitEthernetO/O/9]stp loop-protection
[Sl-GigabitEthernetO/O/9]quit
[SI]interface GigabitEthernet 0/0/10
[Sl-GigabitEthernet0/0/10]stp loop-protection
```

Run the **display stp brief** command to view the port protection.

```
<Sl>display stp brief
MSTID Port                      Role STP State Protection
   0   GigabitEthernet0/0/4          DESI  FORWARDING      BPDU
```

```
0   GigabitEthernet0/0/9          ROOT  FORWARDING      LOOP
0   GigabitEthernet0/0/10         ALTE  DISCARDING      LOOP
```

Since S2 is root, all the ports are designated ports and therefore do not need to configure loop protection. After completing the configuration, you may wish to set SI as the root, and configure loop protection on the root port and alternate port of S2 using the same process as with SI.

Final Configuration

```
<Sl>display current-configuration
#
!Software Version V100R006C00SPC800
sysname S1
#
stp mode rstp
stp bpdu-protection
#
interface GigabitEthernetO/O/4
stp edged-port enable
#
interface GigabitEthernetO/O/9
stp loop-protection
#
interface GigabitEthernet0/0/10
stp loop-protection
#
user-interface con 0
user-interface vty 0 4
#
return

<S2>display current-configuration
#
!Software Version V100R006C00SPC800
sysname S2
#
stp mode rstp
stp bpdu-protection
#
interface GigabitEthernetO/O/4
stp edged-port enable
#
user-interface con 0
```

```
user-interface vty 0 4
#
Return
```