

## **25-2 Spanning Tree Configuration - Answer Key**

You discovered that switch Acc3 is the Root Bridge in the previous Spanning Tree Troubleshooting lab and traffic is not taking the most direct path across the network. You will correct the configuration in this lab.

### **Spanning Tree Root Bridge Configuration**

- 1) Configure the network so that traffic between the PCs and the Internet travels along the shortest available path. If a core/distribution switch fails traffic should failover to the next shortest available path. Do not change any Layer 3 configuration such as HSRP settings.

We need to configure the Spanning Tree so it aligns with the HSRP configuration. R1 is the HSRP active gateway. R1 is directly connected to the core/distribution switch CD1 (but not CD2) so we should make this the Spanning Tree Root Bridge.

```
CD1(config)#spanning-tree vlan 10 root primary
```

If CD1 fails we need to ensure that the Spanning Tree Root Bridge will failover to CD2 rather than an access layer switch.

```
CD2(config)#spanning-tree vlan 10 root secondary
```

Verify CD1 has the best Bridge Priority and becomes the Root Bridge.

```
CD1#show spanning-tree vlan 10
VLAN0010
  Spanning tree enabled protocol ieee
  Root ID    Priority    24586
             Address     0090.0CA0.3902
             This bridge is the root
             Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    24586 (priority 24576 sys-id-ext 10)
             Address     0090.0CA0.3902
             Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec
             Aging Time  20

Interface                Role Sts Cost          Prio.Nbr Type
-----
Fa0/21                   Desg FWD 19           128.21 P2p
Fa0/24                   Desg FWD 19           128.24 P2p
Gi0/1                    Desg FWD 4           128.25 P2p
Gi0/2                    Desg FWD 4           128.26 P2p
```

Check the other switches to verify CD2 has the next best Bridge Priority.

```
CD2#show spanning-tree vlan 10
VLAN0010
  Spanning tree enabled protocol ieee
  Root ID    Priority    24586
             Address     0090.0CA0.3902
             Cost         4
             Port         26(GigabitEthernet0/2)
             Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    28682 (priority 28672 sys-id-ext 10)
             Address     0090.0C16.7A9B
             Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec
             Aging Time  20

Interface                Role Sts Cost          Prio.Nbr Type
-----
Gi0/2                    Root FWD 4           128.26 P2p
Fa0/21                   Desg FWD 19           128.21 P2p
Gi0/1                    Desg FWD 4           128.25 P2p
Fa0/24                   Desg FWD 19           128.24 P2p
```

```
Acc3#show spanning-tree vlan 10
```

```
VLAN0010
```

```
Spanning tree enabled protocol ieee
```

```
Root ID      Priority      24586
             Address      0090.0CA0.3902
             Cost        19
             Port        24 (FastEthernet0/24)
             Hello Time   2 sec    Max Age 20 sec    Forward Delay 15 sec
```

```
Bridge ID    Priority      32778 (priority 32768 sys-id-ext 10)
             Address      0001.C962.D43D
             Hello Time   2 sec    Max Age 20 sec    Forward Delay 15 sec
             Aging Time   20
```

Interface	Role	Sts	Cost	Prio.Nbr	Type
Fa0/1	Desg	FWD	19	128.1	P2p
Fa0/21	Altn	BLK	19	128.21	P2p
Fa0/24	Root	FWD	19	128.24	P2p

```
Acc4#show spanning-tree vlan 10
```

```
VLAN0010
```

```
Spanning tree enabled protocol ieee
```

```
Root ID      Priority      24586
             Address      0090.0CA0.3902
             Cost        19
             Port        21 (FastEthernet0/21)
             Hello Time   2 sec    Max Age 20 sec    Forward Delay 15 sec
```

```
Bridge ID    Priority      32778 (priority 32768 sys-id-ext 10)
             Address      0060.708A.D564
             Hello Time   2 sec    Max Age 20 sec    Forward Delay 15 sec
             Aging Time   20
```

Interface	Role	Sts	Cost	Prio.Nbr	Type
Fa0/1	Desg	FWD	19	128.1	P2p
Fa0/21	Root	FWD	19	128.21	P2p
Fa0/24	Altn	BLK	19	128.24	P2p

Verify the end to end traffic path between the PCs and the Internet by using the 'show spanning-tree vlan 10' and 'show mac address-table' commands as shown in the last lab exercise.

## **Portfast and BPDU Guard Configuration**

- 2) A Layer 2 loop cannot be formed on a port where a single end host is connected. Disable spanning tree on these ports.

You are concerned that a user may introduce a loop into the network by adding additional switches or changing the cabling. Also ensure that the ports where Spanning Tree is disabled will be automatically shut down if a switch is detected on the other side of the link.

```
Acc3(config)#int f0/1
Acc3(config-if)#spanning-tree portfast
Acc3(config-if)#spanning-tree bpduguard enable
```

```
Acc4(config)#int f0/1
Acc4(config-if)#spanning-tree portfast
Acc4(config-if)#spanning-tree bpduguard enable
```

```
CD1(config)#int g0/1
CD1(config-if)#spanning-tree portfast
CD1(config-if)#spanning-tree bpduguard enable
```

```
CD2(config)#int g0/1
CD2(config-if)#spanning-tree portfast
CD2(config-if)#spanning-tree bpduguard enable
```