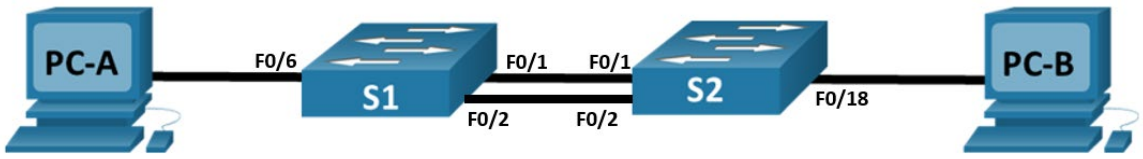
Lab - Investigate STP Loop Prevention



Addressing Table

Device	Interface	IP Address	Subnet Mask
S1 and S2	VLAN 1	192.168.1.1 and 2	255.255.255.0
PC-A	NIC	192.168.1.11	255.255.255.0
PC-B	NIC	192.168.1.12	255.255.255.0

Objectives

In this lab, you will observe spanning-tree port states and watch the spanning-tree convergence process.

- Describe the operation of Spanning Tree Protocol.
- Explain how Spanning Tree Protocol prevents switching loops while allowing redundancy in switched networks.

Required Resources

- 2 Switches (Cisco 2960 with Cisco IOS Release 15.2(2) lanbasek9 image or comparable)
- 2 PCs (Windows with a terminal emulation program, such as Tera Term)
- Console cables to configure the Cisco IOS devices via the console ports
- Ethernet cables as shown in the topology

Background / Scenario

In this activity you will use physical lab to observe the operation of Spanning Tree Protocol in a simple switched network that has redundant paths.

Instructions

Part 1: Observe a Converged Spanning-Tree Instance

Step 1: Configure basic settings for each switch.

a. Console into the switch and enable privileged EXEC mode.

b. Assign a device name to the switch.

c. Disable DNS lookup.

d. Assign **cisco** as the privileged EXEC encrypted password.

e. Assign **cisco** as the console password and enable login.

f. Assign **cisco** as the VTY password and enable login.

g. Encrypt the plaintext passwords.

h. Create a banner that warns anyone accessing the device that unauthorized access is prohibited.

Copy the running configuration to the startup configuration

Step 2: Verify Connectivity.

Configure PC hosts, refer to the Addressing Table for PC host address information.

Ping from PCA to PCB to verify connectivity between the hosts. Your ping should be successful.

Step 3: View spanning-tree status on each switch.

Use the **show spanning-tree vlan 1** command to gather information about the spanning tree status of each switch. Complete the table. For the purposes of the activity, only consider information about the trunk ports. The ports are access ports that have end devices connected and are not part of the inter-switch trunk-based spanning tree.

Switch	Port	Status (FWD, BLK…)	Root Bridge?
S1	F0/1		
	F0/2		
S2	F0/1		
	F0/2		

The switches have a different link light on one of the connections between the switches.

What do you think this this link light means?

What path will frames take from PCA to PCB?

Why has spanning tree placed a port in blocking state?

Part 2: Observe spanning-tree convergence

Step 1: Remove the connection between S1 and S2.

a. On switch S2 and issue the command **show spanning-tree vlan 1**. Leave the CLI window open.

b. Remove the cable that connects S1 and S2 that has the status ***FWD***.

Step 2: Observe spanning-tree convergence.

a. Quickly return to the CLI prompt on switch S2 and issue the **show spanning-tree vlan 1** command.

b. Use the up-arrow key to recall the **show spanning-tree vlan 1** command and issue it repeatedly until the orange link light on the cable turns green. Observe the status of the ports .

What do you see happen to the status of the ports during this process?

You have observed the transition in port status that occurs as a spanning-tree port moves from blocking to forwarding state.

c. Verify Connectivity by pinging from PC1 to PC2. Your ping should be successful.

Are any ports showing an orange link light that indicates that the port is in a spanning-tree state other than forwarding? Why or why not?