

## Packet Tracer - Investigate STP Loop Prevention

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### 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.

### Background / Scenario

In this activity you will use Packet Tracer 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: Verify Connectivity.

Ping from PC1 to PC2 to verify connectivity between the hosts. Your ping should be successful.

##### Step 2: 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 Gigabit trunk ports. The Fast Ethernet 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	G0/1	<i>FWD</i>	<i>No</i>
	G0/2	<i>FWD</i>	<i>No</i>
S2	G0/1	<i>FWD</i>	<i>Yes</i>
	G0/2	<i>FWD</i>	<i>Yes</i>
S3	G0/1	<i>FWD</i>	<i>No</i>
	G0/2	<i>BLK</i>	<i>No</i>

Packet Tracer uses a different link light on one of the connections between the switches.

What do you think this link light means?

*These signify the port status (Green -> forwarding; Orange -> blocked)*

What path will frames take from PC1 to PC2?

*PC1 -> S1 -> S2 -> PC2*

Why do the frames not travel through S3?

*S3 is blocked.*

Why has spanning tree placed a port in blocking state?

*To eliminate redundancy problems and improve the quality of the network performance.*

### Part 2: Observe spanning-tree convergence

#### Step 1: Remove the connection between S1 and S2.

- Open a CLI window on switch S3 and issue the command **show spanning-tree vlan 1**. Leave the CLI window open.
- Select the delete tool from the menu bar and click the cable that connects S1 and S2.

#### Step 2: Observe spanning-tree convergence.

- Quickly return to the CLI prompt on switch S3 and issue the **show spanning-tree vlan 1** command.
- 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 port G0/2.

What do you see happen to the status of the G0/2 port during this process?

*BLK -> LSN -> LRN -> FWD*

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

- 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?

*No. There are no more blocked paths since there are no longer any redundant paths in the network.*

### Part 3: Post your screenshots

On the PT Activity window, make sure that the completion grade is **100%**. Click on the **Check Results** button and select the **Assessment Items** tab. Take a screen shot of the whole window, showing the table of assessment items, and the score/item count. Own your photo by placing a watermark on your photo with your name and USC ID Number. Paste your screenshot below:

## Packet Tracer - Investigate STP Loop Prevention

Cisco Packet Tracer - D:\InBus\CpE 3212\5.1.9 Packet Tracer - Investigate STP Loop Prevention.pka

File Edit Options View Tools Extensions Window Help

Logical Physical 745,769

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What do you think this link light means?

What path will frames take from PC1 to PC2?

Why do the frames not travel through S3?

Why has spanning tree placed a port in blocking state?

**Part 2: Observe spanning-tree convergence**

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What do you see happen to the status of the G0/2 port during this process?

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

- 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?

Time Elapsed: 00:28:22

✓ Dock Check Results Back 1/1 Next

Time: 00:28:58

Scenario 0

Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit Delete

Now Delete

Toggle PDU List Window

829

Realtime Simulation

Interface Locked -- Cisco Packet Tracer

Check Results is locked by author's design for this activity.

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