

Lab. 10 Switching Loops

Lab Objective:

Learn how to spot a switching loop on your layer 2 networks.

Lab Purpose:

When a network is crashing all the time, it could be due to a switching loop (Spanning Tree).

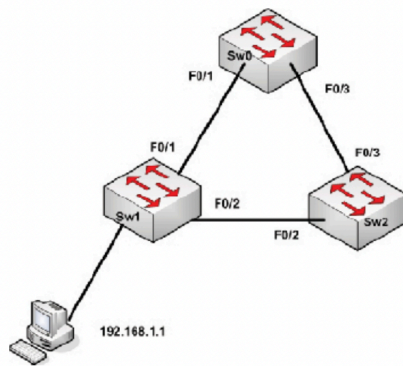
Note: Please never try this on a live network!!!!!!!!!!

Lab Tool:

Packet Tracer

Lab Topology:

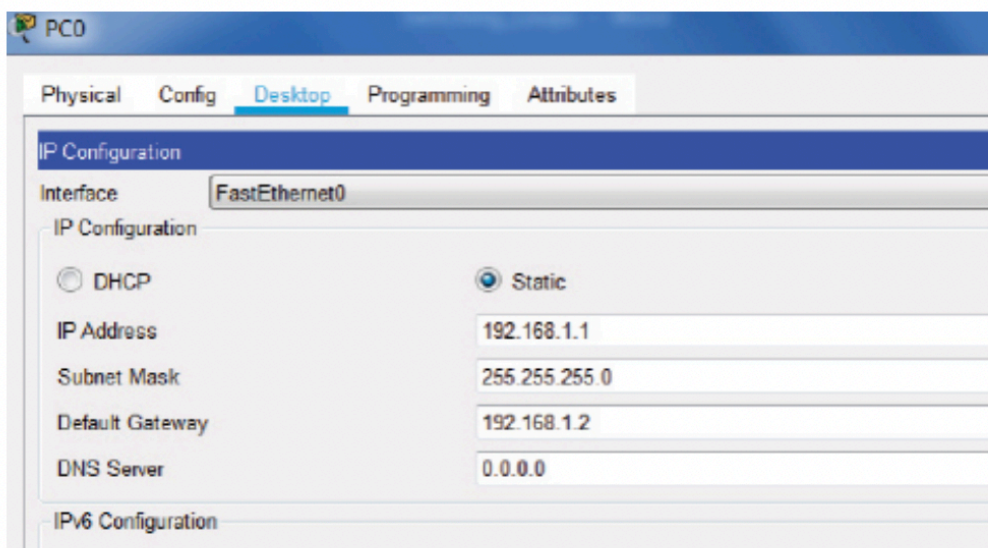
Please use the following topology to complete this lab exercise:



Lab Walkthrough:

Task 1:

Connect three switches and one PC onto the canvas. Connect them up as per the diagram. Add the IP address to the PC and default gateway of 192.168.1.2 (which doesn't exist on the network).



Task 2:

Name the switches and then turn off STP in order to create a switching loop. Here is how to do it on Switch0.

Do the same on the other two switches, but name them Switch1 and Switch2.

```
Switch>en
```

```
Switch#conf t
```

Enter configuration commands, one per line. End with CNTL/Z.

```
Switch(config)#hostname Sw0
```

```
Sw0(config)#interface range f0/1-3
```

```
Sw0(config-if-range)#no spanning-tree vlan 1
```

```
Sw0(config)#end
```

```
Sw0#
```

Task 3:

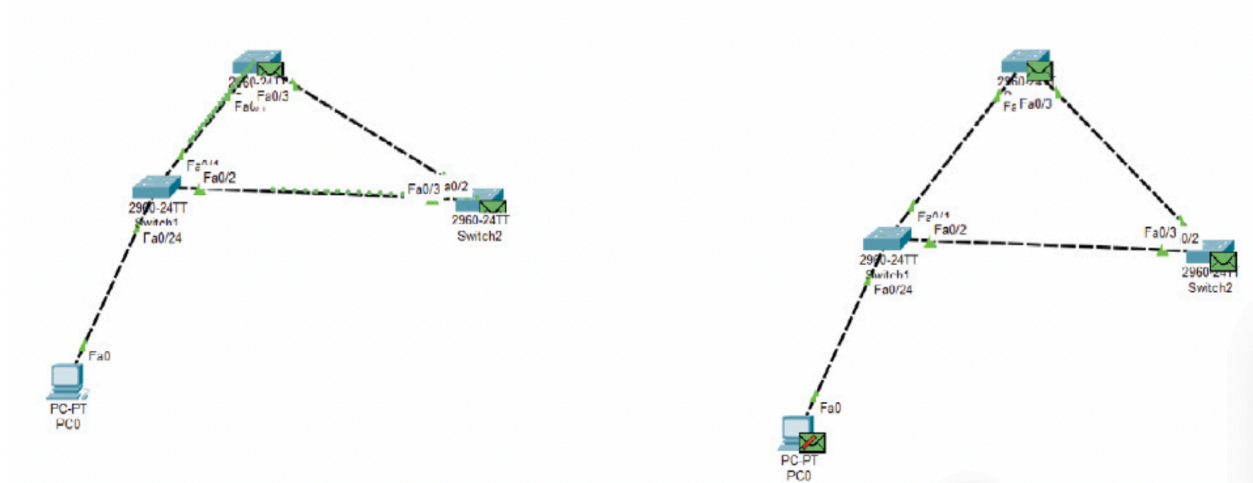
Set Packet Tracer to simulation mode so that you can see the packets moving across the network. Set “Edit Filters” to show only ARP and ICMP.



Click on ‘Show All/None’ and then tick the two you want.

Task 4:

From the PC, ping host 192.168.1.2. You can press the play button in the simulation mode. Keep pressing play and watch the packet travel around the network endlessly, never resolving the ARP request for the host.



Task 5:

The packet capture window quickly fills with ARP requests. This will slow your network to crawl and eventually lead to a crash.

Simulation Panel

Event List

Vis.	Time(sec)	Last Device	At Device	
	0.002	Switch0	Switch2	...
	0.002	Switch2	Switch0	ARP
	0.003	Switch2	Switch1	ARP
	0.003	Switch0	Switch1	ARP
	0.004	--	Switch1	ARP
	0.004	--	Switch1	ARP
	0.004	--	Switch1	ARP
	0.006	Switch1	PC0	ARP
	0.005	Switch1	Switch0	ARP
	0.006	Switch1	Switch2	ARP
	0.006	Switch0	Switch2	ARP
	0.006	Switch2	Switch0	ARP
	0.007	Switch2	Switch1	ARP
	0.007	Switch0	Switch1	ARP
	0.008	--	Switch1	ARP
	0.008	--	Switch1	ARP
	0.008	--	Switch1	ARP
Visible	0.009	Switch1	PC0	ARP
Visible	0.009	Switch1	Switch0	ARP
Visible	0.009	Switch1	Switch2	ARP

Reset Simulation ☒ Constant Delay Captured to: 0.009 s

Play Controls

Event List Filters - Visible Events
ARP, ICMP

Edit Filters Show All/None

Task 6:

You can fix this particular issue by reenabling STP on the switches for VLAN1. Here is how to do it on Switch0. Repeat the steps on the other switches.

```
Sw0#conf
Sw0(config)#interface range f0/1-3
Sw0(config-if-range)#spanning-tree vlan 1
Sw0(config-if-range)#end
```

Task 7:

You can redo the test, however, from the canvas you can see one of the switch ports has been shut down by STP and so will not forward traffic. You might end up having a different port than mine. This time around ARP lookup will fail, and ICMP will inform the PC of the timeout. Only 5 ping packets will be sent.

