Lab #2

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Designing and Simulation of Network Topology using Cisco Packet Tracer

Objectives:

- To understand the purpose of Cisco Packet Tracer.
- To navigate, choose network and end devices and customize them.
- To interconnect devices and configure them using simple interface.
- To become familiar with building topologies in Packet Tracer.
- To simulate data interactions traveling through a network.

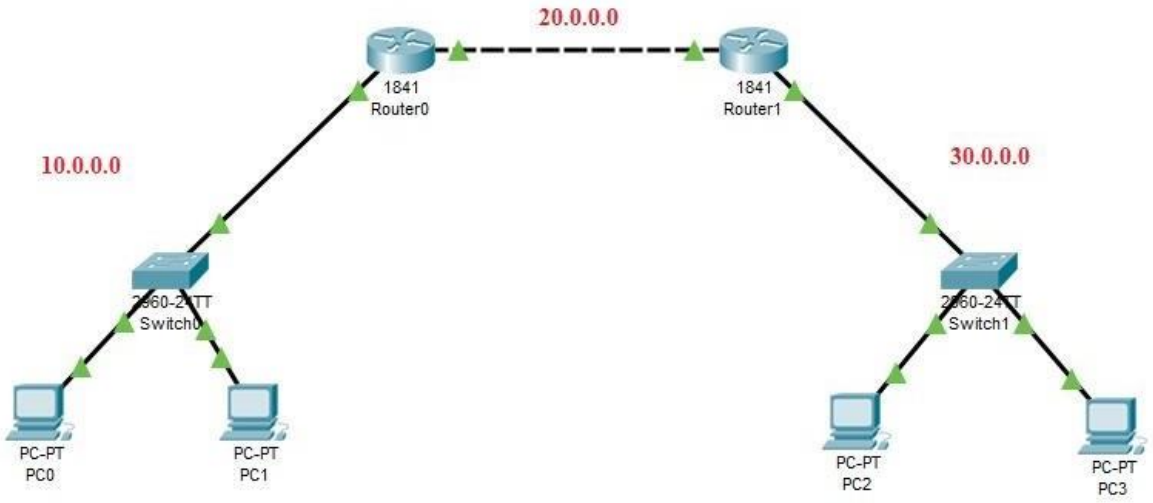
Prerequisites:

This lab assumes some understanding of the building blocks of communication networks and internet. At this point, we haven't discussed other protocols but you may use Packet Tracer in later labs to discuss those as well. Several types of devices and network connections can be used. For this experiment we will keep it simple by using end devices, switches, routers, and connections.

Task 1 (Demo)

Network Topology:

To replicate given scenario, create a topology in packet tracer, as shown in following image.



PC & Router Configuration Details:

PC0:

IP Address ---> 10.0.0.1

Gateway ---> 10.0.0.3

PC1:

IP Address ---> 10.0.0.2

Gateway ---> 10.0.0.3

Router 0:

FastEthernet0/0 ---> 10.0.0.3

FastEthernet0/1 ---> 20.0.0.1

Router 1:

FastEthernet0/0 ---> 20.0.0.2

FastEthernet0/1 ---> 30.0.0.1

PC2:

IP Address ---> 30.0.0.2

Gateway ---> 30.0.0.1

PC3:

IP Address ---> 30.0.0.3

Gateway ---> 30.0.0.1

Routing Table Entries:

Router	Network	Next Hop
Router 0	30.0.0.0	20.0.0.2
Router 1	10.0.0.0	20.0.0.1

Execution Procedure:

Task 1: Design a network topology with desktops, switches and routers similar to the network depicted in the above diagram.

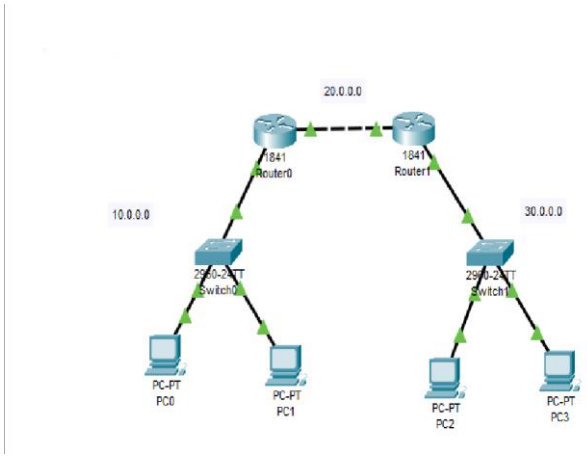
Task 2: Configure the PCs and routers with the details provided above.

Task 3: Send a simple PDU from any PC on network 10.0.1.0 to any other PC on other network 10.0.3.0 and vice-versa.

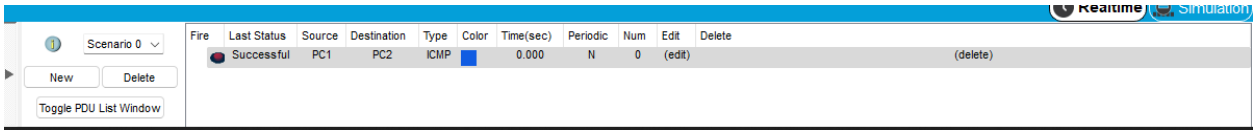
Task 4: Simulate the network and observe the packet flow from one network to other.

Screenshots :

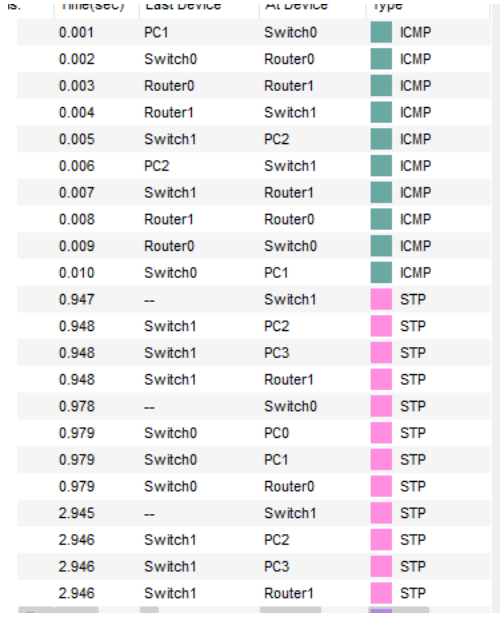
Network topology :



PDU :

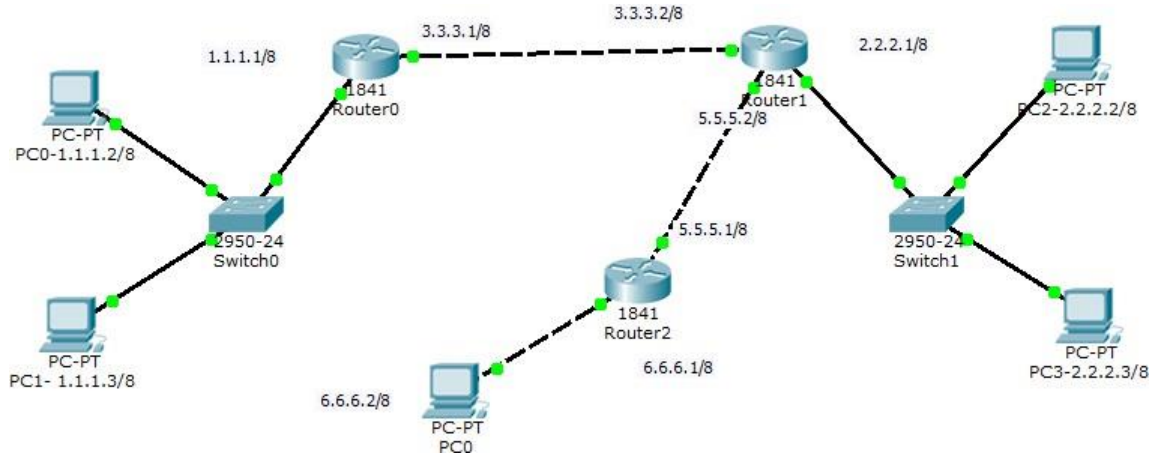


Simulation :



Time(sec)	Last Device	At Device	Type
0.001	PC1	Switch0	ICMP
0.002	Switch0	Router0	ICMP
0.003	Router0	Router1	ICMP
0.004	Router1	Switch1	ICMP
0.005	Switch1	PC2	ICMP
0.006	PC2	Switch1	ICMP
0.007	Switch1	Router1	ICMP
0.008	Router1	Router0	ICMP
0.009	Router0	Switch0	ICMP
0.010	Switch0	PC1	ICMP
0.947	--	Switch1	STP
0.948	Switch1	PC2	STP
0.948	Switch1	PC3	STP
0.948	Switch1	Router1	STP
0.978	--	Switch0	STP
0.979	Switch0	PC0	STP
0.979	Switch0	PC1	STP
0.979	Switch0	Router0	STP
2.945	--	Switch1	STP
2.946	Switch1	PC2	STP
2.946	Switch1	PC3	STP
2.946	Switch1	Router1	STP

Task 2 (Mandatory for Week-2)



PC & Router Configuration Details:

PC0:

IP Address:1.0.0.2
Gateway:1.0.0.1

PC1:

IP Address:1.0.0.3
Gateway:1.0.0.1

Router0:

FastEthernet0/0 : 1.0.0.1
FastEthernet0/1: 3.0.0.1

Router1:

FastEthernet0/0 : 3.0.0.2
FastEthernet0/1: 5.0.0.2
FastEthernet0/1/0: 2.0.0.1

Router2:

FastEthernet0/0 : 5.0.0.1
FastEthernet0/1: 6.0.0.1

PC2:

IP Address: 6.0.0.2
Gateway: 6.0.0.1

PC3:

IP Address: 2.0.0.2
Gateway: 2.0.0.1

PC4:

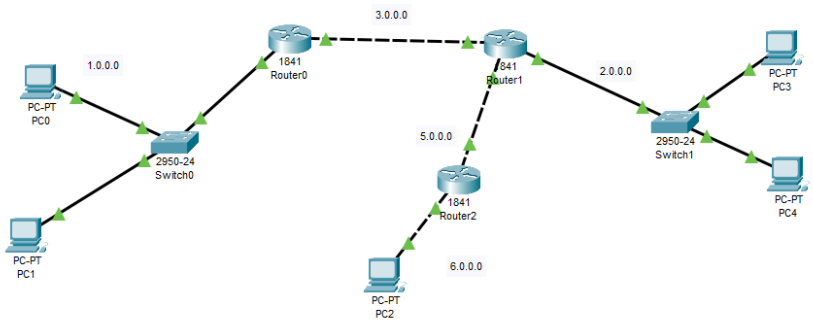
IP Address: 2.0.0.3
Gateway: 2.0.0.1

Routing table entries :

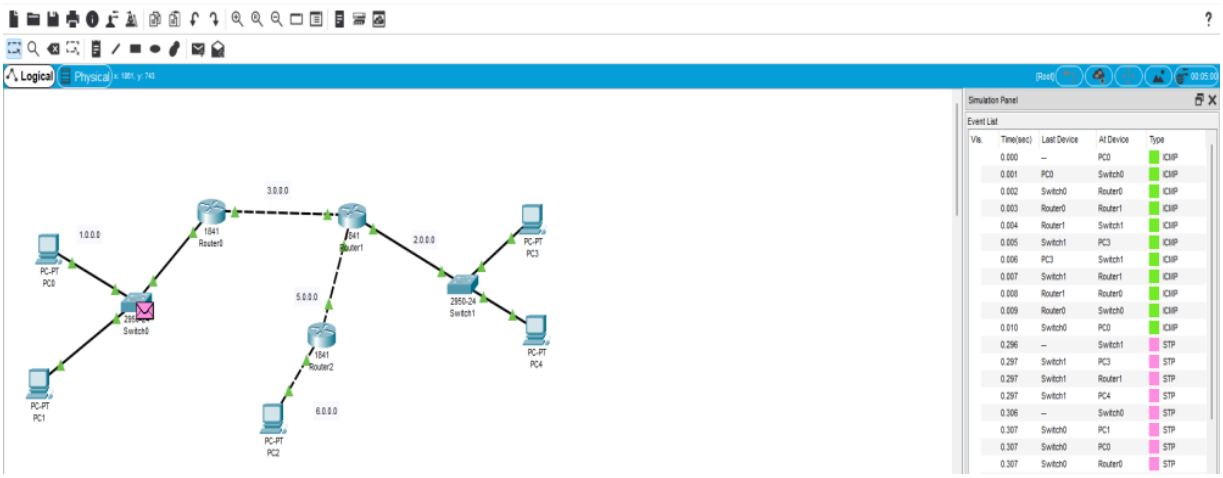
Router	Network	Next Hop
Router0	2.0.0.0	3.0.0.3
Router0	5.0.0.0	3.0.0.2
Router1	1.0.0.0	3.0.0.1
Router1	6.0.0.0	5.0.0.1
Router2	1.0.0.0	5.0.0.2
Router2	2.0.0.0	5.0.0.2

Screenshots :

Network topology :



Simulation :


Logical
Physical
Simulation Panel
Event List
Vis.
Time(sec)
Last Device
At Device
Type
0.000 -- PC0 ICMP
0.001 PC0 Switch0 ICMP
0.002 Switch0 Router0 ICMP
0.003 Router0 Router1 ICMP
0.004 Router1 Switch1 ICMP
0.005 Switch1 PC3 ICMP
0.006 PC3 Switch1 ICMP
0.007 Switch1 Router1 ICMP
0.008 Router1 Router0 ICMP
0.009 Router0 Switch0 ICMP
0.010 Switch0 PC0 ICMP
0.296 -- Switch1 STP
0.297 Switch1 PC3 STP
0.297 Switch1 Router1 STP
0.297 Switch1 PC4 STP
0.306 -- Switch0 STP
0.307 Switch0 PC1 STP
0.307 Switch0 PC0 STP
0.307 Switch0 Router0 STP
1.0.0.0
3.0.0.0
2.0.0.0
5.0.0.0
6.0.0.0
1841
Router0
1841
Router1
1841
Router2
2950-24
Switch1
PC-PT
PC0
PC-PT
PC1
PC-PT
PC2
PC-PT
PC3
PC-PT
PC4