LAB ASSIGNMENT-5

Lab 5: Static and Default Routing

Experiment Overview:

In this experiment, you will configure static and default routing on routers to enable communication between different network segments. Using Cisco Packet Tracer, you will create a network with multiple routers and PCs, and configure routing to ensure proper data transfer between devices.

Procedure:

Network Design:

- Router1 connected to Router2.
- PC0 connected to Router1.
- PC1 connected to Router2.

Step 1: Configure Network Addresses

1. Determine IP address scheme:
   - Router1 to Router2 link: 192.168.1.0/30
   - PC0 Network: 192.168.10.0/24
   - PC1 Network: 192.168.20.0/24

Step 2: Configuring Router1

1. Select Router1 and open CLI.
2. Press ENTER to start configuring Router1.
3. Activate privileged mode:
   - Type enable
4. Access the configuration menu:
   - Type config t (configure terminal)
5. Configure interfaces of Router1:

○ FastEthernet0/0 (connected to PC0):

■ Type interface FastEthernet0/0

■ Configure with the IP address 192.168.10.1 and Subnet mask

255.255.255.0

○ Serial0/0/0 (connected to Router2):

■ Type interface Serial0/0/0

■ Configure with the IP address 192.168.1.1 and Subnet mask

255.255.255.252

6. Activate interfaces:

○ Type no shutdown

Step 3: Configuring Router2

1. Select Router2 and open CLI.

2. Press ENTER to start configuring Router2.

3. Activate privileged mode:

○ Type enable

4. Access the configuration menu:

○ Type config t (configure terminal)

5. Configure interfaces of Router2:

○ FastEthernet0/0 (connected to PC1):

■ Type interface FastEthernet0/0

■ Configure with the IP address 192.168.20.1 and Subnet mask

255.255.255.0

○ Serial0/0/0 (connected to Router1):

■ Type interface Serial0/0/0

■ Configure with the IP address 192.168.1.2 and Subnet mask

255.255.255.252

6. Activate interfaces:

○ Type no shutdown

Step 4: Configuring PCs

1. Assign IP addresses to each PC:

○ PC0:

■ Go to the desktop, select IP Configuration, and assign the following:

■ IP address: 192.168.10.2

■ Subnet Mask: 255.255.255.0

■ Default Gateway: 192.168.10.1

○ PC1:

■ Go to the desktop, select IP Configuration, and assign the following:

■ IP address: 192.168.20.2

■ Subnet Mask: 255.255.255.0

■ Default Gateway: 192.168.20.1

Step 5: Static Routing Configuration

1. Configure static routes on Router1:

○ Access Router1 CLI and type the following commands:

■ ip route 192.168.20.0 255.255.255.0 192.168.1.2

2. Configure static routes on Router2:

○ Access Router2 CLI and type the following commands:

■ ip route 192.168.10.0 255.255.255.0 192.168.1.1

Step 6: Default Routing Configuration

1. Configure default route on Router1 (if Router1 needs to send packets to networks outside its knowledge):
   ○ ip route 0.0.0.0 0.0.0.0 192.168.1.2
2. Configure default route on Router2 (if Router2 needs to send packets to networks outside its knowledge):
   ○ ip route 0.0.0.0 0.0.0.0 192.168.1.1

Step 7: Verify Connectivity

1. Test the connectivity by pinging from PC0 to PC1:
   ○ Open the command prompt on PC0.
   ○ Type ping 192.168.20.2 and observe the response.
2. Test the connectivity by pinging from PC1 to PC0:
   ○ Open the command prompt on PC1.
   ○ Type ping 192.168.10.2 and observe the response.

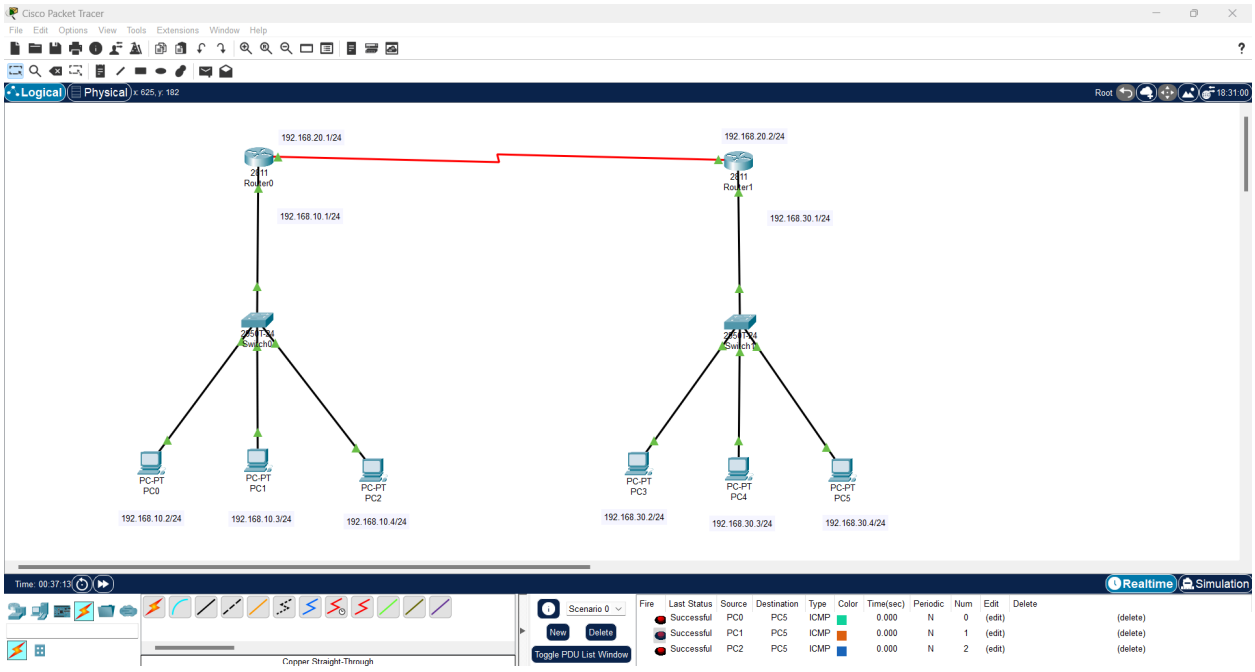
Simulation of Designed Network Topology

Sending a PDU from PC0 to PC1

1. Open the simulation mode in Packet Tracer.
2. Send a PDU from PC0 to PC1:
   ○ Observe the packet traveling from PC0 to Router1, then Router2, and finally to PC1.

Acknowledgment from PC1 to PC0

1. Observe the acknowledgment packet:
   ○ Ensure that the acknowledgment packet travels back from PC1 to PC0, confirming successful communication.


Cisco Packet Tracer
File Edit Options View Tools Extensions Window Help
Logical Physical x: 625, y: 182
Root 18:31:00
192.168.20.1/24
192.168.20.2/24
2811
Router0
2811
Router1
192.168.10.1/24
192.168.30.1/24
2950-24
Switch0
2950-24
Switch1
PC-PT
PC0
PC-PT
PC1
PC-PT
PC2
PC-PT
PC3
PC-PT
PC4
PC-PT
PC5
192.168.10.2/24
192.168.10.3/24
192.168.10.4/24
192.168.30.2/24
192.168.30.3/24
192.168.30.4/24
Time: 00:37:13
Realtime
Simulation
Copper Straight-Through
Scenario 0
New
Delete
Toggle PDU List Window
Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit Delete
Successful PC0 PC5 ICMP 0.000 N 0 (edit) (delete)
Successful PC1 PC5 ICMP 0.000 N 1 (edit) (delete)
Successful PC2 PC5 ICMP 0.000 N 2 (edit) (delete)