CN Lab Experiment 5

Objective:

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.

Requirements:

- Cisco Packet Tracer software.
- A GitHub account and a repository for lab assignments.
- Access to Google Classroom for submission.

Procedure:

Network Design:

● Router1 connected to Router2.

● PC0 connected to Router1.

● PC1 connected to Router2.

Step 1:

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 the router 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 255.255.192.0

    ○ Serial 0/0/0: (connected to Router2)

        ■ Type interface Serial 0/0/0

        - Configure with the IP address 192.168.1.1 and Subnet mask 255.255.255.252

6. Finish configuration:
    - Type no shutdown to activate the interfaces

Step 3: Configuring Router1

1. Select the router 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 PC1)
        - Type interface FastEthernet0/0
        - Configure with the IP address 192.168. 20.1 and Subnet mask 255.255.255.0
    - Serial 0/0/0: (connected to Router1)
        - Type interface Serial 0/0/0
        - Configure with the IP address 192.168.1.2 and Subnet mask 255.255.255.252
6. Finish configuration:
    - Type no shutdown to activate the interfaces

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.

Configuration Tables

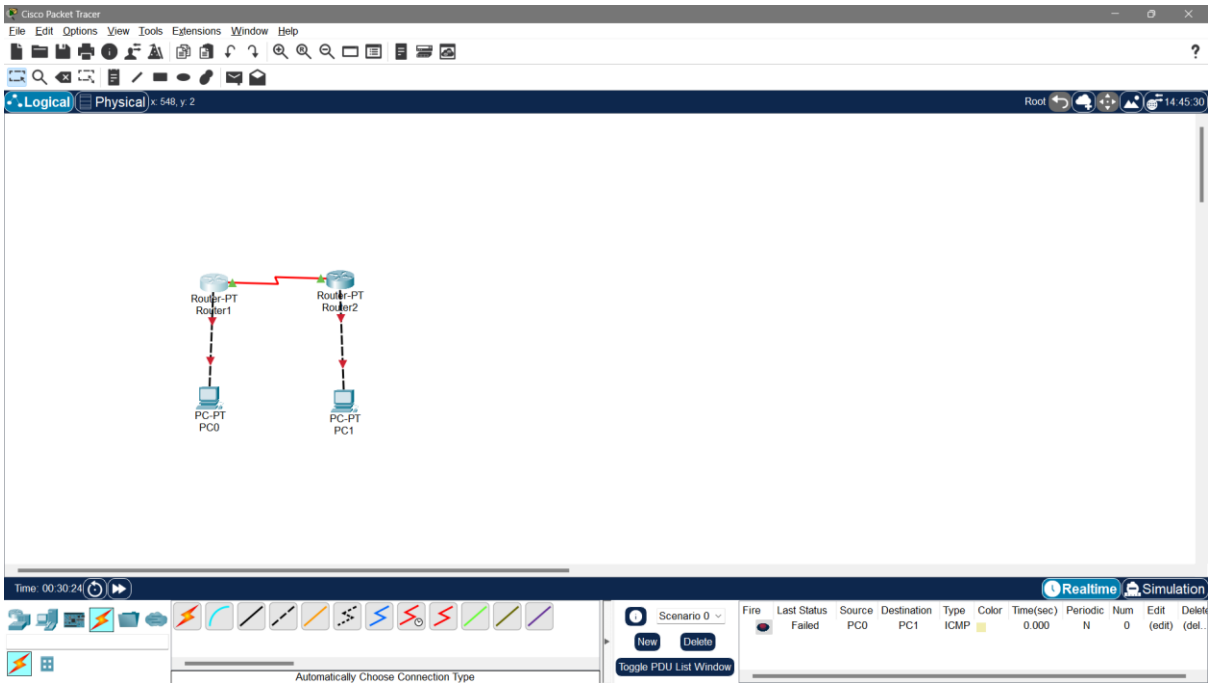
Router Configuration Table:

Device Name	Interface	IP Address	Subnet Mask
Router1	FastEthernet0/0	192.168.10.1	255.255.255.0
Router1	Serial0/0/0	192.168.1.1	255.255.255.252
Router2	FastEthernet0/0	192.168.20.1	255.255.255.0
Router2	Serial0/0/0	192.168.1.2	255.255.255.252

PC Configuration Table:

Device Name	IP Address	Subnet Mask	Gateway
PC0	192.168.10.2	255.255.255.0	192.168.10.1
PC1	192.168.20.2	255.255.255.0	192.168.20.1

Results:



- We Observe the packet traveling from PC0 to Router1, then Router2, and finally to PC1.