ST. XAVIER'S COLLEGE

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(Affiliated by Tribhuvan University)

(Department of Computer Science)

Business Data Communication and Networking [IT 240]

Lab Report 4

STATIC ROUTING

SUBMITTED BY:	**SUBMITTED TO:**	SIGNATURE
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LAB 4: LAB REPORT ON STATIC ROUTING CONFIGURATION IN CISCO PACKET TRACER

OBJECTIVE

- To configure static routing on routers in a network topology using Cisco Packet Tracer.

THEORY

Static Routing: Static routing is a simple and manually configured method of routing network traffic in which network administrators manually configure routing tables in routers. In static routing, routes to network destinations are explicitly defined, specifying the next hop IP address and the network interface through which packets should be forwarded. Unlike dynamic routing protocols, static routing does not involve the exchange of routing information between routers. This makes static routing suitable for small networks or for configuring specific routes in larger networks where the network topology is stable. However, static routing does not dynamically adapt to network changes, requiring manual updates to routing tables if network topology changes occur.

PROCEDURE

To setup static routing in CISCO Packet Tracer

1. **Setting Up the Topology:**

- Place three routers (Router0, Router1 and Router2) on the Packet Tracer workspace.
- Connect Router0 with
  - Router1 using serial cables, assigning IP addresses 172.16.10.9/30 in se0/0/0 port.
  - Router2 using serial cables, assigning IP addresses 172.16.10.1/30 in se0/1/0 port.
- Connect Router1 with
  - Router0 using serial cables, assigning IP addresses 172.16.10.10/30 in se0/0/0 port.
  - Router2 using serial cables, assigning IP addresses 172.16.10.6/30 in se0/1/0 port.
- Connect Router2 with
  - Router0 using serial cables, assigning IP addresses 172.16.10.2/30 in se0/1/0 port.
  - Router2 using serial cables, assigning IP addresses 172.16.10.5/30 in se0/0/0 port.
- Place two switches (Switch0 and Switch1) on the workspace.
- Connect Switch0 and Switch1 to Router0 and Router 1 respectively using appropriate cables, assigning IP addresses 192.168.1.1/24 and 192.168.10.1/24 to the router interfaces (fa0/0).
- Connect two end-devices (e.g., PCs) to each switch and assign the network addresses.

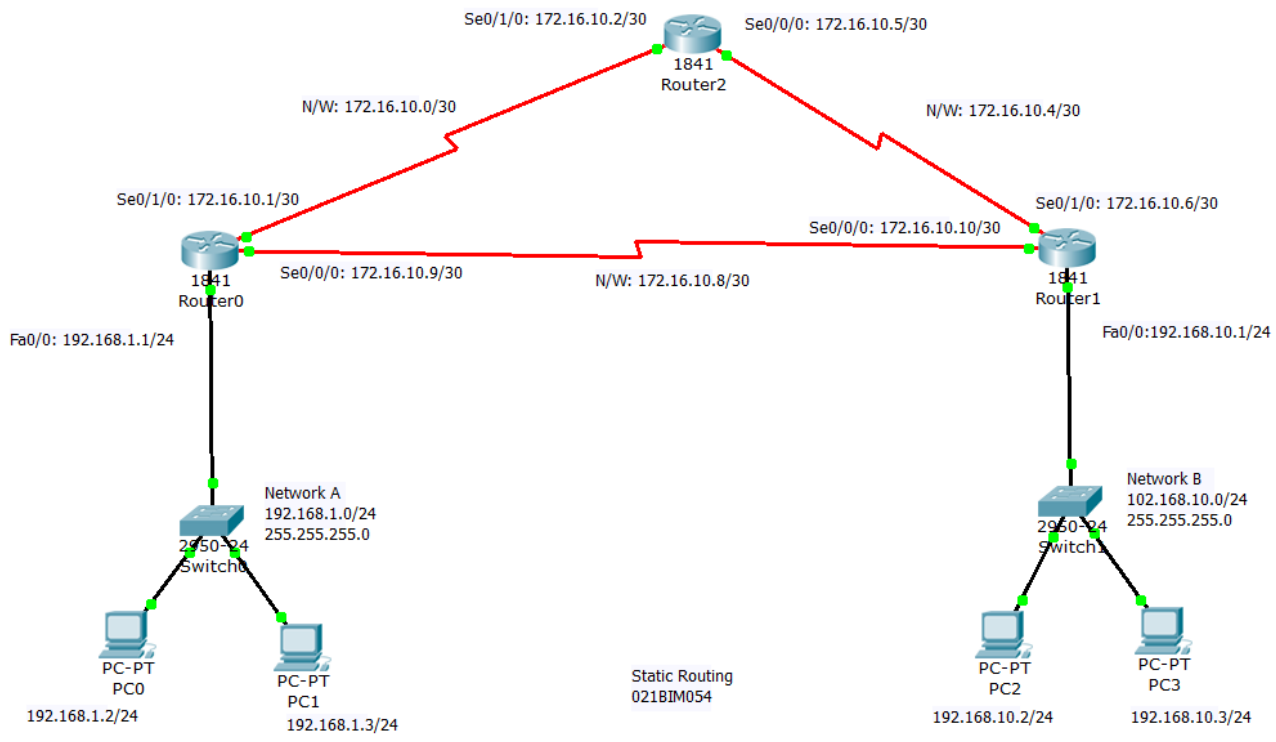

Figure 1: Network Topology

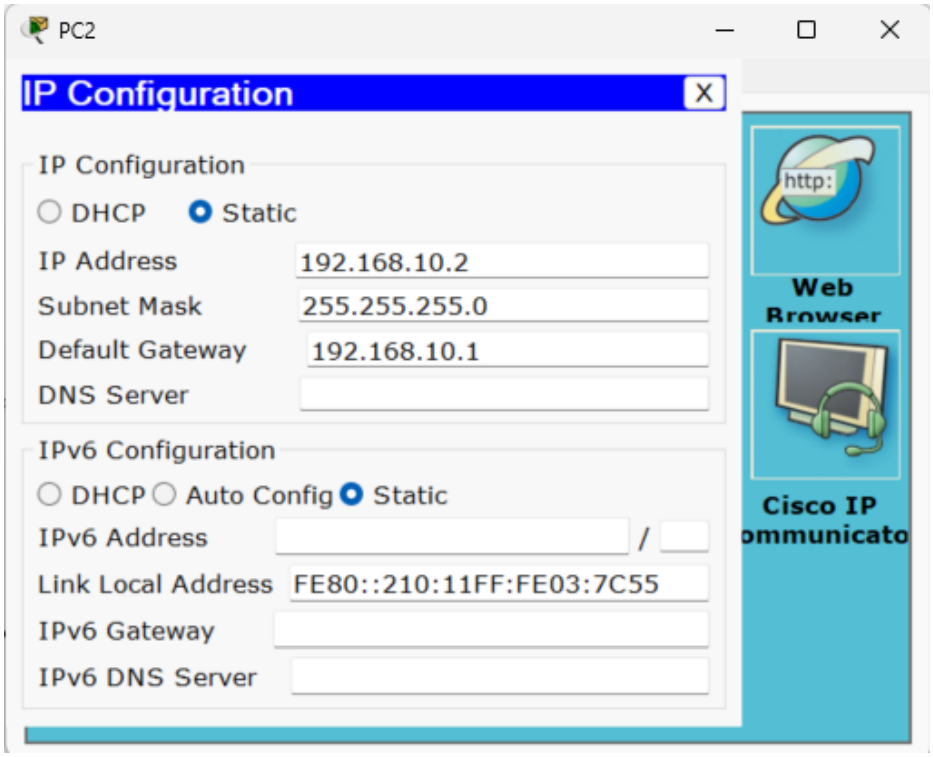

Figure 2: End-Device Ip Configuration

Figure 3: Router Ip Configuration

2. **Configuring Routers:**

- Enter privileged EXEC mode: enable.
- Enter global configuration mode: configure t.
- Configure static routes for networks using command:
  Ip route **<Destination Network Id> <Subnet Mask> <Route Network Id>**
- For Router 0
  - ip route 192.168.10.0 255.255.255.0 172.16.10.8
  - ip route 192.168.10.0 255.255.255.0 172.16.10.0
- For Router 1
  - ip route 192.168.1.0 255.255.255.0 172.16.10.8
  - ip route 192.168.10.0 255.255.255.0 172.16.10.4
- For Router 2
  - ip route 192.168.1.0 255.255.255.0 172.16.10.0
  - ip route 192.168.10.0 255.255.255.0 172.16.10.4

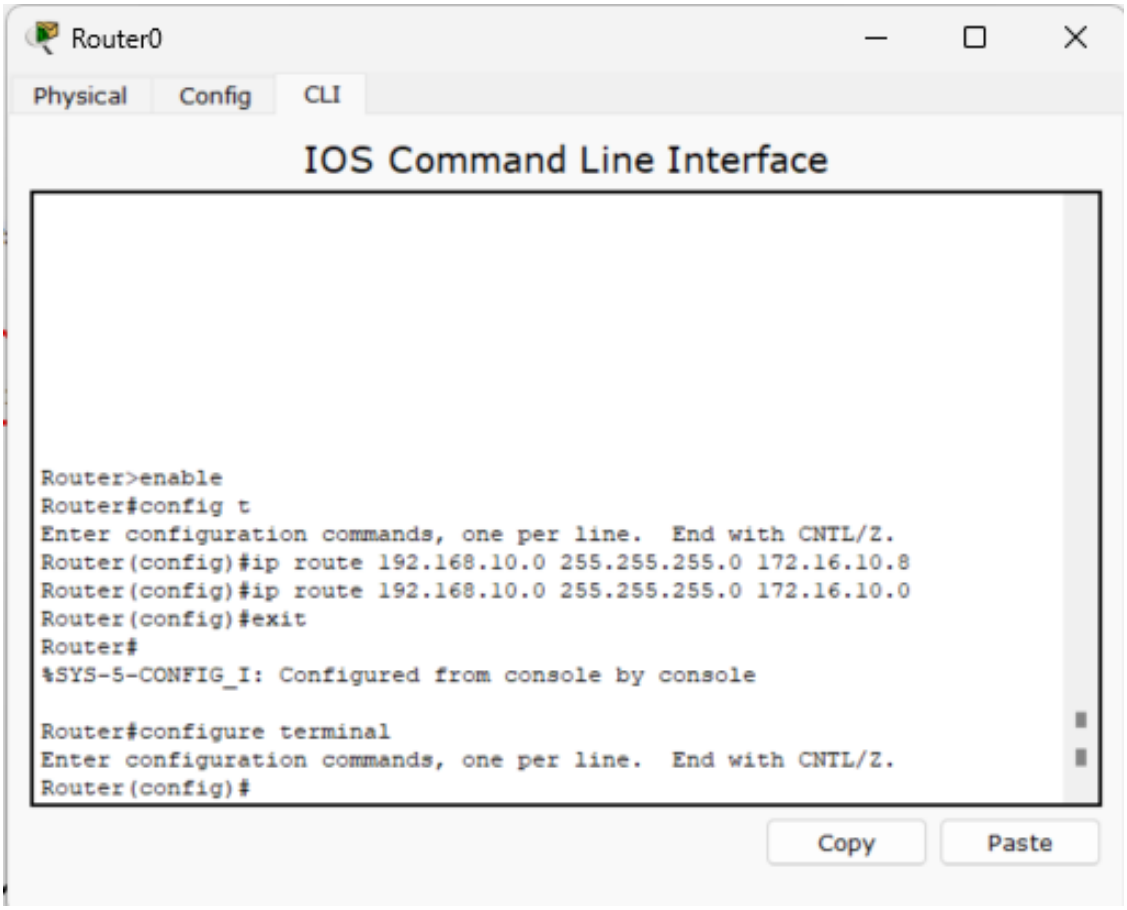

Figure 4: Ip Routing on Router

3. Testing Connectivity:

Verify connectivity between devices in different networks by pinging from one device to another.

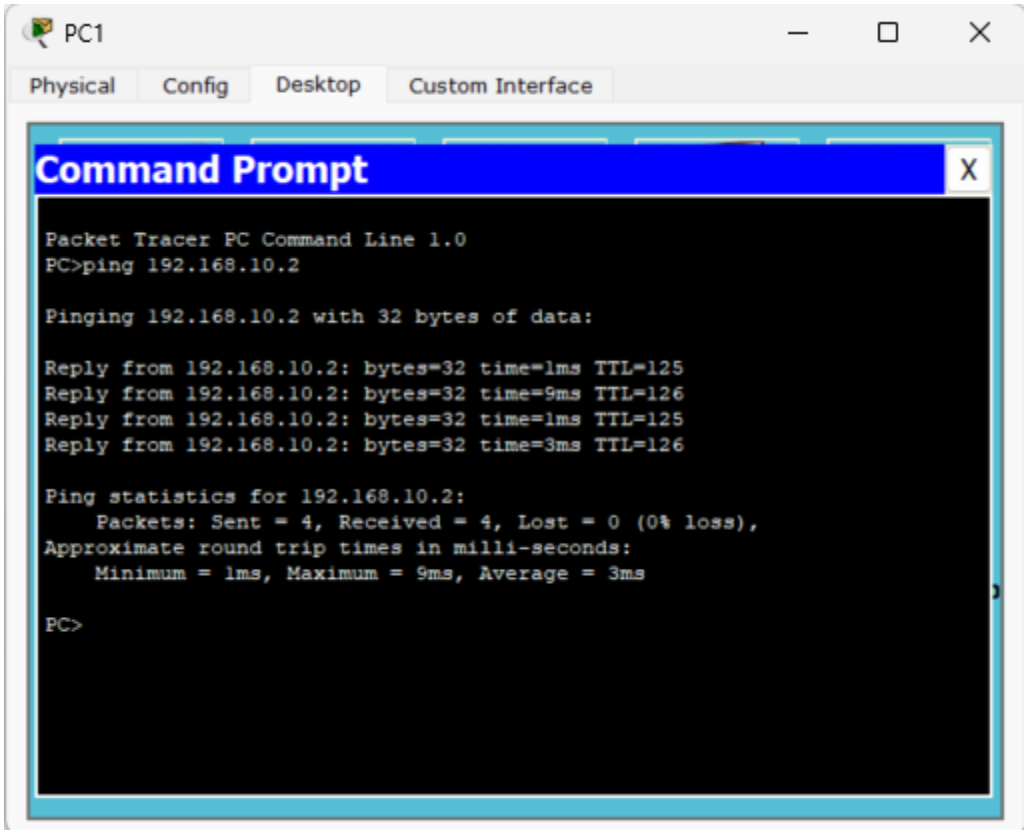

Figure 5: Testing Connectivity

CONCLUSION

In this lab, we successfully configured the static routes between the router and enabled connectivity between the routers.