Exercise: Configuring a Router to Connect Two Networks

Objectives:

In this exercise, you will **learn how to use a router** in Cisco Packet Tracer by connecting **two separate networks**. You will:

- Add a **router** and configure its **interfaces**.
- Set up **default gateways** on PCs.
- Test connectivity between the **192.168.1.0 and 172.16.1.0 networks**.

Part 1: Setting Up the Network

Step 1: Open the Provided File

1. Open **Cisco Packet Tracer**.
2. Load the file: **"Router in Cisco Packet Tracer.pkt"**.

Step 2: Add and Connect a Router

1. **Add a Router (Model: 1941)** from *Network Devices* > *Routers*.
2. **Remove the existing network connection** between the two switches.
3. **Connect the Router and Switches** using **Copper Straight-Through Cables**:
    - **Switch0 (Left) GE 0/1 → Router GE 0/0**
    - **Switch1 (Right) GE 0/1 → Router GE 0/1**

Part 2: Configuring the Router

Step 3: Assign IP Addresses to Router Interfaces

1. Click **Router0**, go to the **Config** tab.
2. Configure the following settings in the **INTERFACE** section:

Interface	Port Status	IPv4 Address	Subnet Mask
GigabitEthernet0/0	ON	192.168.1.1	255.255.255.0
GigabitEthernet0/1	ON	172.16.1.1	255.255.0.0

3. Click **Save**.

Part 3: Configuring the PCs

Step 4: Assign IP Addresses and Default Gateways

1. Click **each PC**, go to the **Config** tab.
2. Set the **Default Gateway** under **GLOBAL Settings**.
3. Configure the **IP Address and Subnet Mask** in the **INTERFACE - FastEthernet0** section.

Device	Default Gateway	IPv4 Address	Subnet Mask
PC0	192.168.1.1	192.168.1.10	255.255.255.0
PC1	192.168.1.1	192.168.1.11	255.255.255.0
PC4	192.168.1.1	192.168.1.12	255.255.255.0
PC2	172.16.1.1	172.16.1.10	255.255.0.0
PC3	172.16.1.1	172.16.1.11	255.255.0.0

Part 4: Testing Network Connectivity

Step 5: Verify Connection Using Ping

Test 1: Ping from PC0 to PC2

1. Click **PC0**, go to **Desktop > Command Prompt**.
2. Run the command: ping 172.16.1.10

Test 2: Ping from PC3 to PC1

1. Click **PC3**, go to **Desktop > Command Prompt**.
2. Run the command: ping 192.168.1.12

Part 5: Configure DHCP servers

Step 7: Add 2 servers

1. Add 2 servers from *End Devices* > *End Devices* > *Server*.
   Place one server0 on the right side of the router, and the other server1 on the left side of the router.
2. Connect the serves and Switches using Copper Straight-Through Cables:

   - Switch0 (Left) FE any → Server (Left) FE0
   - Switch1 (Right) FE any → Server (Right) FE0

3. Configure the **IP Address and Subnet Mask** in the **INTERFACE - FastEthernet0** section.

Device	Default Gateway	IPv4 Address	Subnet Mask
Server0(Right)	172.16.1.1	172.16.1.5	255.255.0.0
Server1(Left)	192.168.1.1	192.168.1.5	255.255.255.0

Step 8: Configure DHCP server

4. Select Server - Services – DHCP
5. Configure DHCP service of each server as below.
6. Save

Device	Service	Default Gateway	Start IP Address	SubnetMasi	Maxun Number of Users
Server0(Right)	On	172.16.1.1	172.16.1.20	255.255.0.0	50
Server1(Left)	On	192.168.1.1	192.168.1.20	255.255.255.0	50

Step 9: Change PCs' IP configuration from Static to DHCP

1. Select PC - Config – Settings.
2. Gateway/DNS Ipv4: Change from Static to DHCP.
3. Observe how the IP addresses are assigned.
4. Select PC Config – FastEthernet0
5. IP configuration: Change from Static to DHCP
6. Change the DHCP settings and observe how the IP addresses are assigned.

Device	Default Gateway	IPv4 Address	Subnet Mask
PC0			
PC1			
PC4			
PC2			
PC3			

Close the Packet Tracer