Experiment - 2

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Branch: MCA **Section: 23MCA-4/A**

Semester: 4th **Subject Code: 23CAH-753**

Subject Name: NETWORK SYSTEM ADMINISTRATION **Date: 27/01/2025**

Aim: Create a LAN with IPv4 Addressing: Configuration, Verify and Troubleshoot.

Objective: To design, configure, and verify a LAN using IPv4 addressing, ensuring proper connectivity and troubleshooting network issues

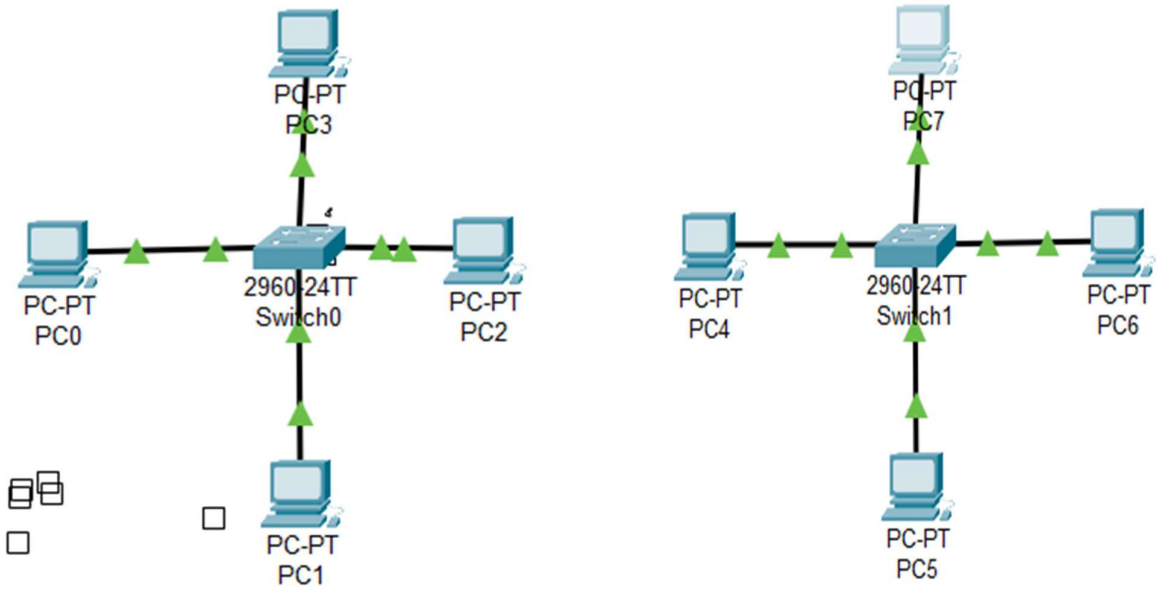
Connection Steps:

1. Connection Steps

1. **Open Cisco Packet Tracer.**
    - Drag and drop **two switches** and **eight PCs** onto the workspace.
2. **Connect PCs to Switches:**
    - Use the **copper straight-through cable**:
        - Connect each PC to a switch port (e.g., PC1 to Switch1 Port FastEthernet 0/1, PC2 to 0/2, etc.).
        - Repeat the process for the other set of PCs and the second switch.

Topology:

- Router: Connects two LANs.
- Switch: Connects PCs to the router.
- PCs: Two PCs on different subnets.



Steps to Configure:

1. Pc Configuration:

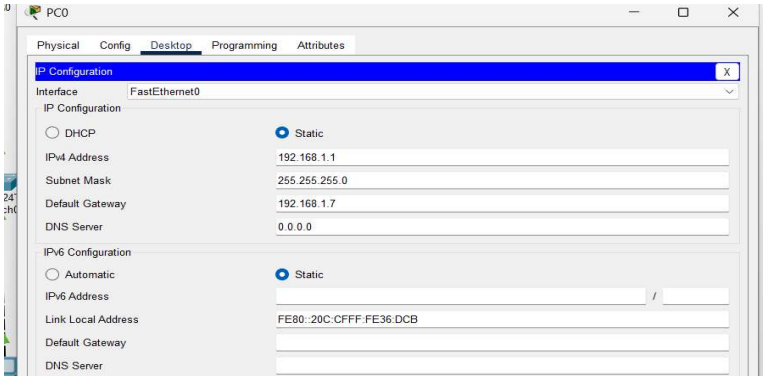
Click on each PC, go to **Desktop > IP Configuration**, and assign the following:

- For PCs connected to Switch1:

- PC0: IP: 192.168.1.1, Subnet Mask: 255.255.255.0
- PC1: IP: 192.168.1.2, Subnet Mask: 255.255.255.0
- PC2: IP: 192.168.1.3, Subnet Mask: 255.255.255.0
- PC3: IP: 192.168.1.4, Subnet Mask: 255.255.255.0

- For PCs connected to Switch2:

- PC4: IP: 192.168.2.1, Subnet Mask: 255.255.255.0
- PC5: IP: 192.168.2.2, Subnet Mask: 255.255.255.0
- PC6: IP: 192.168.2.3, Subnet Mask: 255.255.255.0
- PC7: IP: 192.168.2.4, Subnet Mask: 255.255.255.0



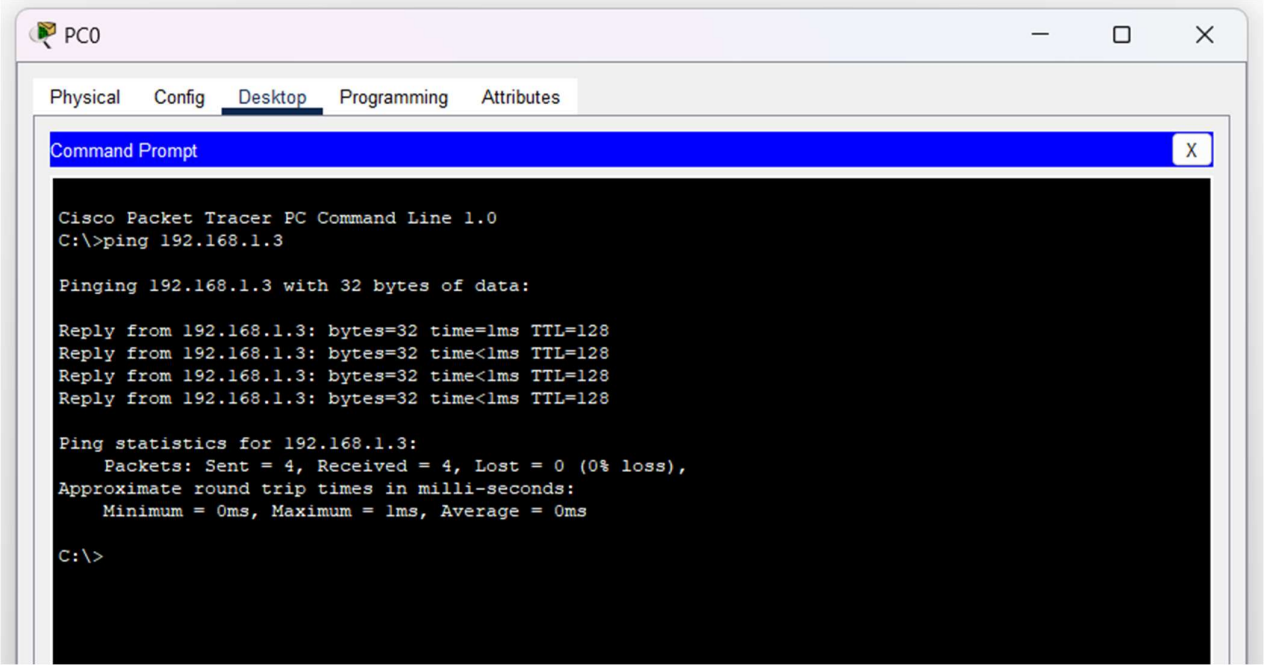
2. **Test Connectivity:**

   1. Ping Command

   The ping command is used to test connectivity between devices in the network.

   How to Use Ping:

   1. Open the Command Prompt of a PC in Cisco Packet Tracer:
      - Go to the PC, click on Desktop > Command Prompt.
   2. Type the ping command followed by the IP address of the device you want to test connectivity with: ping <destination_IP>



Troubleshooting Steps

1. **Check Physical Connections:**
   - Ensure all devices are properly connected with the correct cable type (straight-through or crossover).
   - Verify the link lights on the switches and PCs.
2. **Check IP Configuration:**
   - Ensure the IP addresses and subnet masks are configured correctly and belong to the correct subnet.

- Example: PCs on Switch1 should use the subnet 192.168.1.0/24.

3. **Check for Duplicate IPs:**
   - Ensure no two devices have the same IP address.
4. **Test Ping:**
   - Use the ping command on different PCs to verify connectivity:

ping <destination_IP>

Learning Outcomes:-

1. **Setting Up Networks:**
   Learned how to connect and configure devices like switches, hubs, routers, and PCs for smooth communication.

2. **IP Addressing & Subnetting:**
   Understood how IP addresses and subnets work to help devices communicate properly.

3. **Router Configuration:**
   Gained hands-on experience in setting up routers using Cisco Packet Tracer to manage network traffic.

4. **Fixing Network Issues:**
   Learned how to find and solve network problems using tools like the ping command and simulation mode.

5. **Applying Networking Concepts:**

   Used networking knowledge to design and manage a working network simulation.