Lab 5 : Creating a LAN and testing the connectivity using Packet Tracer

Theory

a. LAN & its Architecture

Local Area Network (LAN): A LAN connects devices within a limited area, such as a building, using technologies like Ethernet or Wi-Fi. It allows for high-speed data transfer and resource sharing among connected devices.

- **Architecture:** LANs typically involve switches, routers, and end devices. The network is designed to ensure efficient communication and scalability while managing traffic flow and connectivity.

b. Component Used

- **Hardware:**
    - **Switch (2960 IOS15):** Connects multiple devices within the LAN.

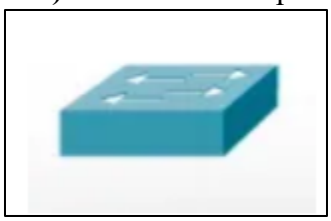

Fig: Switch (2960 IOS15)

    - **End Devices (PC-PT):** Computers or servers that interact over the network.

Fig: PC-PT

    - **Ethernet Cables (Copper straight through):** Used to connect devices to the switch.

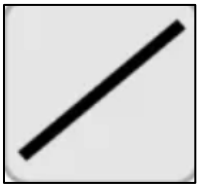

Fig: **(**Copper straight through)

Software:

- **Cisco Packet Tracer:** Simulation tool for designing and testing network topologies.

c. Network Diagram

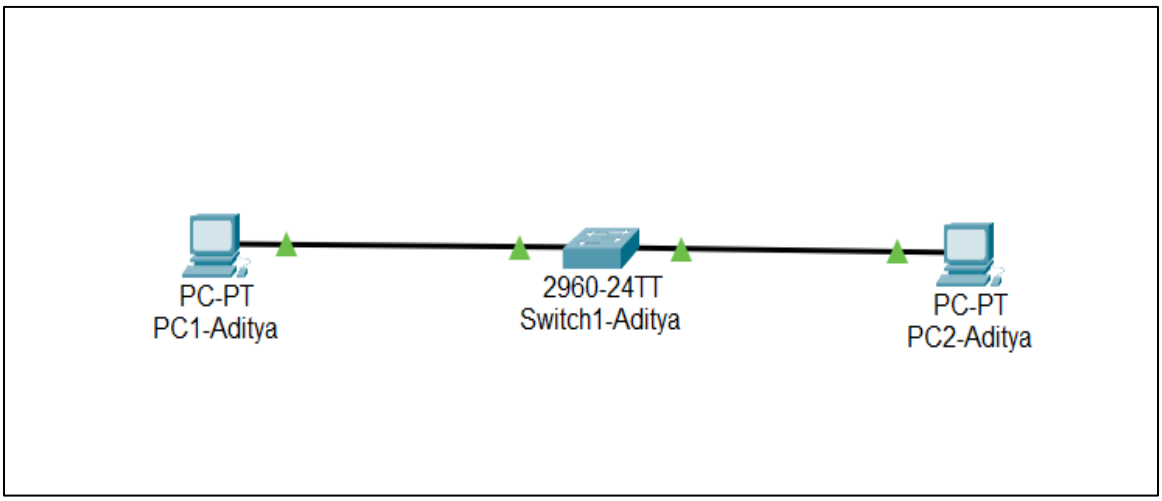

Fig: LAN simulation on cisco packet tracer

Implementation Sequence:

To implement a LAN, follow these steps:

Step 1: Select necessary nodes and network devices from device-type selection panel.

Fig: Selection of nodes and network devices.

Step 2: Select and drop pc and a switch in the workspace from device selection.

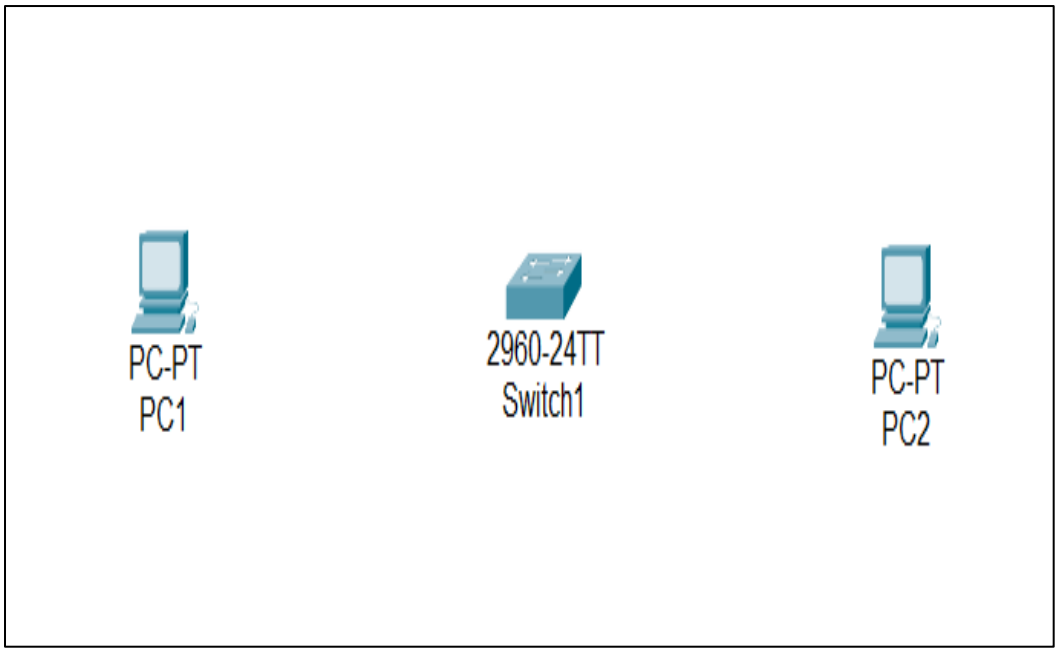

Fig: Placing nodes and network devices.

Step 3: Now connect the nodes and network devices using copper straight-through cable by clicking the nodes and selecting Fast Ethernet port option.

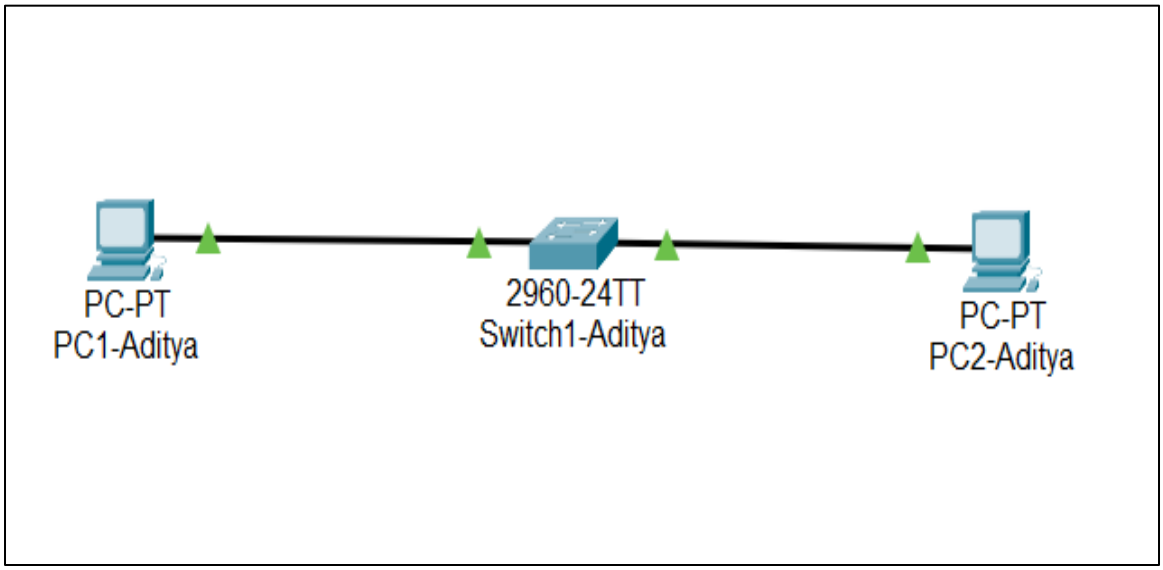

Fig: Establishment of connection between nodes and switch

Step 4: Click on each PCs and laptops, go to desktop option and assign IP address to each of them such as:

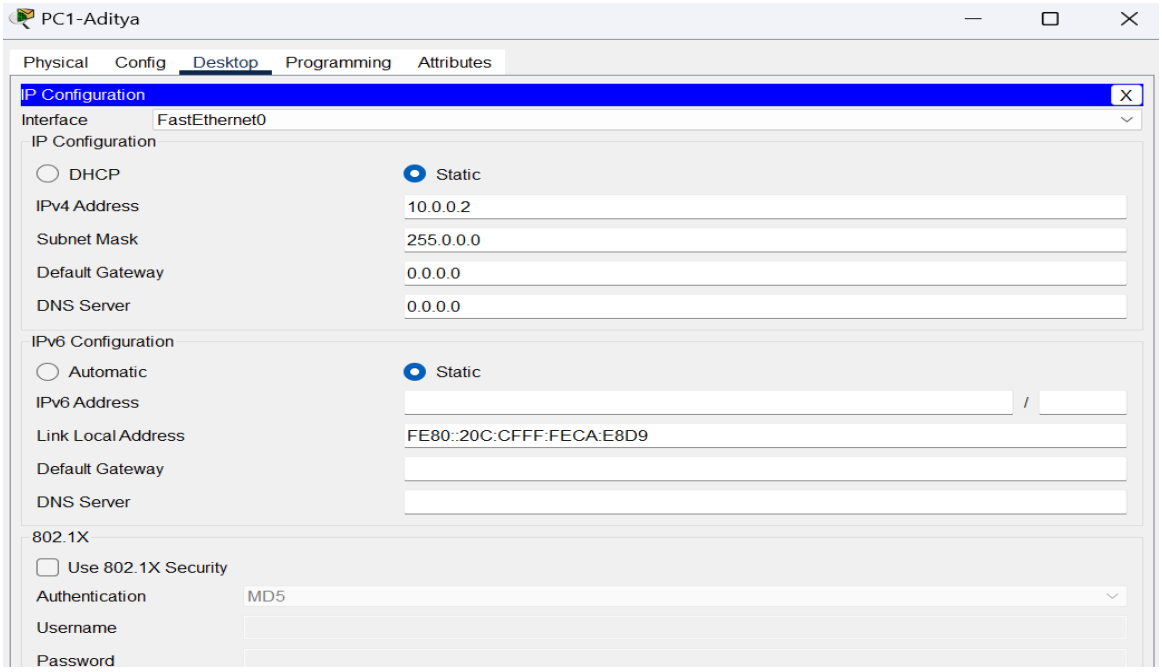

Fig: Configuring IP address

Step 5: Now, Ping each device from every node on the network to check connectivity. If replies are received, the connection is successfully established between the PCs.

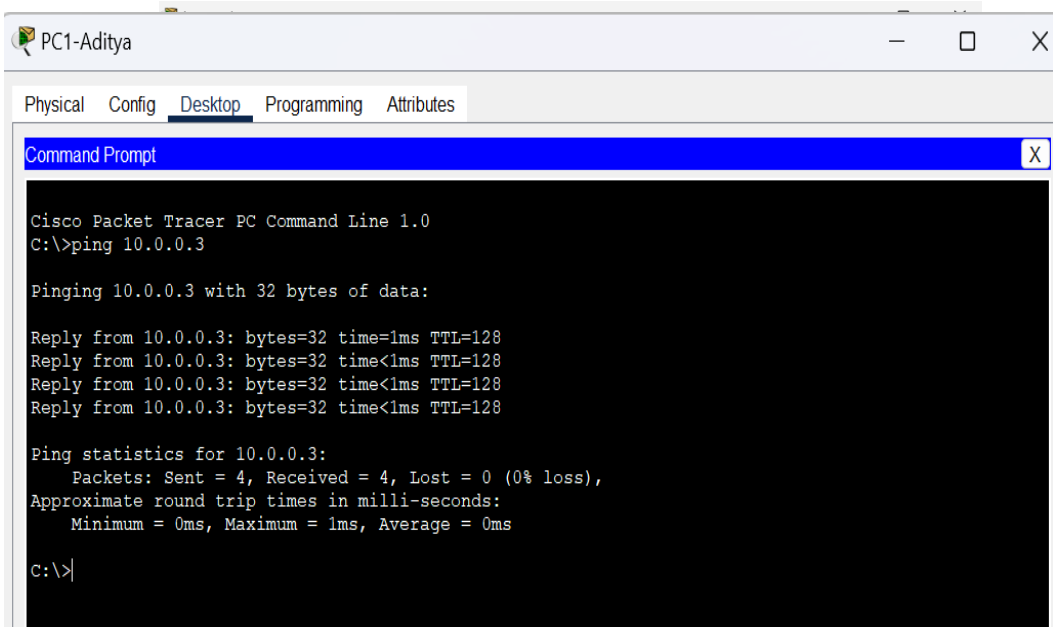

Fig: Test connectivity between pc1 and pc2

Conclusion:

From this lab, we successfully created and tested a basic LAN network using Cisco Packet Tracer. The process highlighted key steps in configuring devices, assigning IP addresses, and verifying connectivity. This lab reinforced the importance of proper setup and testing to ensure effective communication within a LAN environment.