

Practical 4 : Setting Up and Configuring a LAN Using a Switch

AIM: To Setup and configure a LAN (Local area network) using a Switch and Ethernet cables

What is a LAN?

A Local Area Network (LAN) refers to a network that connects devices within a limited area, such as an office building, school, or home. It enables users to share resources, including data, printers, and internet access. LAN connects devices to promote collaboration and transfer information between users, such as computers, printers, servers, and switches. A local area network (LAN) switch serves as the primary connecting device, managing and directing communications within the local network. Each connected device on a LAN switch can communicate directly with each other, allowing for fast and secure data transfer.

Steps to Set up a LAN

Step 1: Plan and Design the Network

- Decide on the layout of the devices, placing the switch in a central location for easy connection.
- Determine the IP address range, subnet mask, and any other specific configurations based on network requirements.

Step 2: Connect Computers to the Network Switch

- Using Ethernet cables, connect each computer to the switch by plugging one end of the cable into the Ethernet port on the computer and the other end into a port on the switch.

Step 3: Assign IP Addresses to Computers

1. **Log in as Administrator** on each computer.
2. **Go to Network Settings:**
 - Open **Control Panel** -> **Network and Internet Connections**.
 - Right-click **Local Area Connection** (or **Ethernet**) and select **Properties**.
 - Select **Internet Protocol (TCP/IPv4)** and click on **Properties**.
3. **Assign IP Address:**
 - Choose **Use the following IP address**.
 - Assign IP addresses:
 - **PC1:** 10.1.1.1, Subnet Mask: 255.0.0.0
 - **PC2:** 10.1.1.2, Subnet Mask: 255.0.0.0
 - **PC3:** 10.1.1.3, Subnet Mask: 255.0.0.0

- **PC4:** 10.1.1.4, Subnet Mask: 255.0.0.0

Step 4: Configure the Network Switch

1. **Connect Computer to Switch:** Use an Ethernet cable to connect one of the computers to the switch.
2. **Access the Web Interface:**
 - Open a web browser and enter the switch's IP address in the address bar. This will open the login page for the switch's web interface.
 - Enter the username and password to log in.
3. **Configure Basic Settings:**
 - Set the switch's IP address to **10.1.1.5** and subnet mask to **255.0.0.0**.

Step 5: Verify Network Connectivity

- On each computer, open the **Command Prompt**.
- Use the ping command to check connectivity between devices:
 - ping 10.1.1.5 (ping the switch)
 - ping 10.1.1.1, 10.1.1.2, etc. (ping each PC)
- Successful replies indicate that the devices are connected.

Step 6: Share a Folder on the Network

1. Select a folder on one of the computers.
2. **Right-click the Folder**, select **Properties**.
3. Go to the **Sharing** tab and select **Share with Everyone** on the LAN.

Step 7: Access the Shared Folder from Other Computers

- On another computer, open **File Explorer**.
- Type the IP address of the computer with the shared folder (e.g., \\10.1.1.1) in the address bar.
- Access the shared folder and test file sharing.

OUTPUT:-

Internet Protocol Version 4 (TCP/IPv4) Properties ✕

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

☐ Obtain an IP address automatically

☒ Use the following IP address:

IP address:

Subnet mask:

Default gateway:

☐ Obtain DNS server address automatically

☒ Use the following DNS server addresses:

Preferred DNS server:

Alternate DNS server:

☐ Validate settings upon exit

Advanced...