Setting up a Small Network and Configuring Network Devices

Here we are going to setup a network system for a small startup containing about 20-30 computers or network devices. We are gonna set it up in following steps:-

1.Planning and Designing the Network

Devices Count: 20–30 (PCs, printers, IP phones, Wi-Fi clients)

Topology: Star topology (centralized and scalable)

IP Range: Use a Class C private IP range
192.168.10.0/24

- Router: 192.168.10.1

- DHCP Range: 192.168.10.100 – 192.168.10.200

- Static: 192.168.10.2 – 192.168.10.99

2.Gathering Equipments and Materials

Equipment	Qty	Purpose
Router (with firewall)	1	Internet access + DHCP/DNS/NAT

Switch (24/48 port)	1	Connect wired devices
Wireless Access Points	2–3	For Wi-Fi coverage
Ethernet Cables	30	Connectivity (Cat6 recommended)

3. Setup Steps

i) Router Setup

- Connect WAN port to ISP modem

- LAN IP: 192.168.10.1

- DHCP: enabled for 192.168.10.100–200

- Enable NAT, basic firewall

- Setup guest VLAN if needed

ii) Switch Setup

- Connect router LAN to switch (via uplink port)

- Connect PCs, printers, and access points to switch ports

iii) Access Points

- Connect to switch or router

- Set SSIDs:

    - OfficeNet (WPA3, hidden optional)

    - GuestNet (VLAN isolated, internet-only)

- Assign static IPs (e.g., 192.168.10.10, 10.11, etc.)

4. Device Configuration

- Static IPs: for printers, server, access points

- DHCP: for laptops, mobiles, etc.

- DNS: Use router's IP or external (8.8.8.8, 1.1.1.1)

- Hostname Scheme: e.g., workstation-01, printer-01

5. Security Setup

- Change all default admin credentials

- Enable firewall rules (block unused ports)

- WPA3 encryption on Wi-Fi

- Disable WPS on access points

- Use VLANs if you want isolation (e.g., guests or IoT)

6. Testing & Verification

- **Use ping, traceroute, and ipconfig/ifconfig**

- **Test:**

    - **Internet connectivity**

    - **Inter-device communication (printer, file shares)**

    - **Speed tests on Wi-Fi & LAN**

7. Documentation

- **IP Plan: document static and DHCP ranges**

- **Record all credentials and hardware MACs**

- **Maintain a simple network diagram (can use Draw.io or Lucidchart)**