Real-Life Networking Scenarios

Website is Not Loading — How Do You Troubleshoot?

◆ Step 1: Is the server reachable?

```
ping <server-ip>
```

◆ Step 2: Is DNS resolving?

```
nslookup example.com
dig example.com
```

◆ Step 3: Check port availability

```
telnet example.com 80
nc -zv example.com 80
```

◆ Step 4: Is Nginx/Apache running?

```
sudo systemctl status nginx
```

◆ Step 5: Check firewall rules

```
sudo ufw status
```

Check Which Ports Are Open

```
sudo ss -tuln
```

or

```
sudo netstat -tuln
```

🔻 Useful flags:

- `-t` = TCP
- `-u` = UDP
- `-l` = Listening
- `-n` = Show port numbers instead of names

Assign a Static IP Address (Ubuntu)

1. Edit Netplan config:

```
sudo nano /etc/netplan/01-netcfg.yaml
```

2. Example:

```
network:
  version: 2
  ethernets:
    eth0:
      dhcp4: no
      addresses:
        - 192.168.1.50/24
      gateway4: 192.168.1.1
      nameservers:
        addresses: [8.8.8.8, 1.1.1.1]
```

3. Apply it:

```
sudo netplan apply
```

Check Your Public IP from the Terminal

```
curl ifconfig.me
```

Other commands:

```
curl ipinfo.io/ip
dig +short myip.opendns.com @resolver1.opendns.com
```

Restart Network Services (Linux)

For Ubuntu:

```
sudo systemctl restart NetworkManager
```

Or if using Netplan:

```
sudo netplan apply
```

For RHEL/CentOS:

```
sudo systemctl restart network
```

Scan Your Network for Live Hosts (using `nmap`)

```
sudo apt install nmap  # if not installed
nmap -sn 192.168.1.0/24
```

This shows all active devices in your network.

SSH into a Server and Test Web Port

```
ssh user@remote-server-ip
curl localhost:80
```

This checks if the **web server is running** and reachable internally.

Block/Allow Port using UFW (Linux Firewall)

```
sudo ufw allow 22        # Allow SSH
sudo ufw deny 80         # Block HTTP
sudo ufw allow 443/tcp   # Allow HTTPS
```

Check status:

```
sudo ufw status verbose
```

Check Routing Table

```
ip r
```

or

```
route -n
```

Shows the path your traffic takes.

Test Internet Speed/Connectivity via CLI

Install `speedtest-cli`:

```
sudo apt install speedtest-cli
```

Run:

`speedtest-cli`

Bonus: Networking Interview-Style Questions (With Short Answers)

Question	Quick Answer
What is ARP?	ARP maps IP to MAC addresses
What is default gateway?	Device/router used to reach other networks
What is traceroute?	Shows the hops taken to reach a destination
What port does DNS use?	Port 53
How to find IP in Linux?	`ip a` or `hostname -I`

What You've Mastered So Far

✅ Fundamentals of networking
✅ IP, Subnetting, CIDR
✅ Routing basics
✅ DNS, DHCP, NAT, VPN
✅ OSI model
✅ Linux networking hands-on
✅ Real-world troubleshooting
✅ Firewall, port scanning, IP assignment