PRESENTATION TOPIC: DHCP/DHCPV6

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WHAT IS DHCP

- DHCP means **Dynamic Host Configuration Protocol**.
- It **gives IP addresses automatically** to computers.
- It works on **IPv4 networks**.
- It helps devices **connect to the Internet easily**.

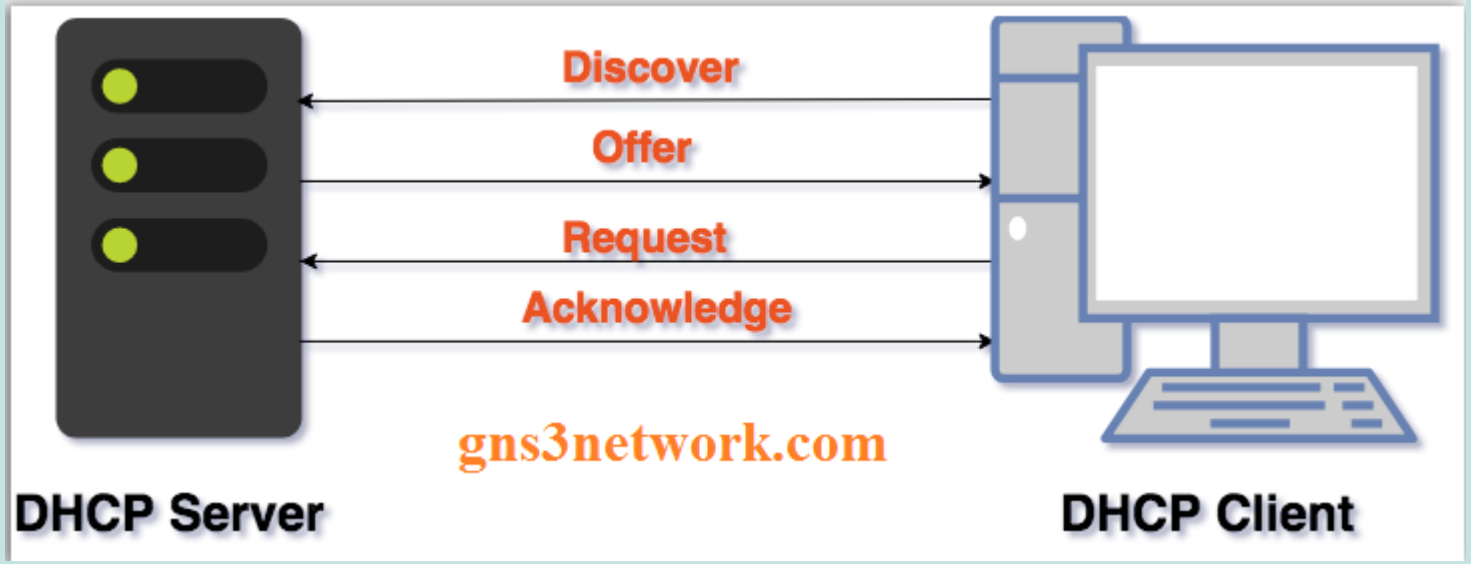
WHY DHCP IS USED

- Without DHCP, we must **set IPs manually**.
- Manual setup is **slow** and may cause **mistakes**.
- DHCP makes the process **fast and automatic**.
- Used in **homes, schools, and offices.**

HOW DHCP WORKS

- DHCP has **four steps** called **DORA**:
- **Discover** – Client asks for IP.
- **Offer** – Server offers IP.
- **Request** – Client asks to use it.
- **Acknowledge** – Server approves it.

DORA PROCESS DIAGRAM



WHAT DHCP GIVES TO CLIENT

- IP address
- Subnet mask
- Default gateway
- DNS server address
- Lease time (valid duration)

DHCP SERVER AND CLIENT

- **DHCP Server:** Sends IP and settings.
- **DHCP Client:** Receives and uses them.
- **Example:** Router = server, laptop = client.

EXAMPLE OF DHCP IN REAL LIFE

- When we **connect to Wi-Fi**, our phone gets an IP automatically.
- That’s because the router uses DHCP.
- The router assigns an **IP address, subnet mask, gateway, and DNS** to the device.
- We can connect to the Internet **without entering any settings manually**.

PROBLEMS WITH OLD DHCP (IPV4)

- IPv4 has limited addresses.
- With more devices today, **many networks face IP shortages**.
- Cannot handle new IPv6 networks.
- It was designed for older Internet systems.
- **DHCPv6 is needed** for newer, faster, and more secure IPv6 networks.

WHAT IS DHCPv6

- DHCPv6 = DHCP for IPv6 networks.
- Supports **128-bit IPv6 addresses**.
- Can give **IPv6 address, DNS, and prefix**.
- Works better for modern Internet devices.

HOW DHCPv6 WORKS

Steps in DHCPv6 are called **SARR**:

1. Solicit – Client asks for info.
2. Advertise – Server offers details.
3. Request – Client requests address.
4. Reply – Server confirms it.

HOW DHCPv6 WORKS

Feature	DHCP (IPv4)	DHCPv6 (IPv6)
Address Size	32-bit	128-bit
Process	DORA	SARR
Uses	Broadcast	Multicast
Default Gateway	Given by server	Given by router
Version	IPv4	IPv6 only

ADVANTAGES OF DHCPv6

- Handles **many devices** easily
- Gives **unique addresses** automatically.
- Works with **stateful and stateless** modes.
- **Faster** and **more secure** network setup.

DHCPV6 IN DAILY LIFE

• New routers use DHCPv6 to assign IPv6 addresses automatically.

•Works with for smartphones and IoT devices.

• Internet providers also use it for home connections.

•Helps manage **a large number of connected devices** efficiently.

BENEFITS OF USING DHCP

- Saves time and reduces errors.
- Easy for network admins to manage.
- Makes IP assignment automatic.
- Keeps the network organized.

SUMMARY

- DHCP → IPv4, DHCPv6 → IPv6.
- Both give IP addresses automatically.
- Make network setup **simple and fast**.
- Important for **every modern network**.

THANK YOU