



## Assignment 5

Install and Configure DHCP server using Cisco Packet Tracer tool (Windows Server).

### What is DHCP?

Dynamic Host Configuration Protocol is an application layer protocol, which is used to provide-

1. Subnet mask •
2. Router Address •
3. DNS Address •
4. Vendor Class Identification •

DHCP is based on a client server model and is based on discovery, offer, request and ACK.

DHCP is a network management protocol that is used to automate the process of configuring devices on IP networks thus allowing them to use network services like DNS, NTP and any communication protocol based on UDP or TCP.

A DHCP server auto dynamically assigns an IP address and other network configuration parameters to each device on a network so that they can communicate with other IP networks. DHCP is an enhancement of BOOTP.

DHCP Working - DHCP employs a connectionless service model using the UDP. It is implemented with 2 UDP port numbers for its operations. UDP port no. 67 is destination port of server. UDP port no. 68 is used by the Client. DHCP operation fall into 4 phases → server discovery, IP lease offer, IP request,

IP lease acknowledgement. These stages are often abbreviated as DORA - discovery, offer, request and acknowledgement.

**Discover** - The message is sent by DHCP client to discover a DHCP server.

**Offer** - Sent by a DHCP server to lease a unique IP address & other parameters to a client.

**Request** - Sent by DHCP ~~server~~ <sup>client</sup> to ~~assign~~ DHCP server to lease the parameters listed in offer msg.

**Acknowledgement** - Sent by DHCP server to assign IP address, mask, default router & DNS server address to the client.

What is the DHCP process for Client machine?

A DHCP client ~~sends~~ ~~DHCP server~~ broadcasts a DHCP discovery message searching for a DHCP server. If a DHCP server exists in the network, it will respond with a DHCP offer containing the offered IP address, subnet mask, etc. Once the client receives the offer, it will respond with a DHCP request indicating that it wants to accept the offered IP information. Finally the server sends a DHCP acknowledgement back to the client.





Benefits of DHCP ?

Advantages of using DHCP -

- 1) centralized management of IP addresses
- 2) ease of adding new clients to a network
- 3) reuse of IP addresses reduce the total no. of IP addresses required.
- 4) simple reconfiguration of the IP address space on the DHCP server without needing to reconfigure each client.

