Aarya Pandey
23107003
TY CE - Batch-C

Assignment

Aim:-

To configure a Dynamic Host Configuration protocol (DHCP) server on a network and demonstrate its use by automatically assigning IP addresses and related network parameters (like subnet mask, gateways & DNS) to client systems.

Theory:-

DHCP (Dynamic Host Configuration Protocol) is a network management protocol used to automate the process of configuring devices on IP networks. Instead of manually assigning IP addresses, a DHCP server dynamically allocates them to each device (client) as they connect to the network.

Working of DHCP.

The process follows four major steps; often remembered as DORA:.

1.) Discover: The client broadcasts a DHCP Discover message to locate available DHCP servers.

2.) Offers:- The server responds with a DHCP offer message containing an available IP address and configuration details.

3.) Request:- The client requests to accept the offered IP address by sending a DHCP request message

4.) Acknowledge:- The DHCP server confirms the allocation by sending a DHCP Acknowledgement (ACK) message, completing the configuration.

Advantages of DHCP:-

- Reduces manual configuration errors.
- Efficient IP address management and reuse.
- Centralized management of IP settings.
- Simplifies network scaling.

Configuration Components.

- DHCP Server : The device or software that manages the IP pool
- IP address pool: Range of addresses that can be assigned to clients.
- Lease Time: Duration for which an IP address is valid
- Exclusion Range: Addresses reversed for static use (eg., routers, Printers)
- Options : Default gateway, DNS, Subnet mask, etc.

Observation :-

- The DHCP Server was successfully configured with the IP Pool

  192. 168. 1. 10 - 192. 168. 1. 100.

- A client connected to the network obtained an IP address automatically using DHCP.
- Using the ipconfig (Windows) or ifconfig (Linux) command, the assigned IP and gateway were displayed.
- The DHCP logs confirmed the DORA process :-
  - DHCPDISCOVER → DHCPOFFER → DHCPREQUEST → DHCPACK.