**Practical-9**

**AIM:** Configure DHCP server using cisco packet tracer.

The Dynamic Host Configuration Protocol (DHCP) is a [network management protocol](https://en.wikipedia.org/wiki/Network_protocol) used on [Internet Protocol](https://en.wikipedia.org/wiki/Internet_Protocol) (IP) networks for automatically assigning [IP addresses](https://en.wikipedia.org/wiki/IP_address) and other communication parameters to devices connected to the network using a [client–server](https://en.wikipedia.org/wiki/Client%E2%80%93server) architecture.

The technology eliminates the need for individually configuring network devices manually, and consists of two network components, a centrally installed network DHCP [server](https://en.wikipedia.org/wiki/Server_(computing)) and client instances of the [protocol stack](https://en.wikipedia.org/wiki/Protocol_stack) on each computer or device. When connected to the network, and periodically thereafter, a client [requests](https://en.wikipedia.org/wiki/Request%E2%80%93response) a set of parameters from the server using DHCP.

The DHCP employs a [connectionless](https://en.wikipedia.org/wiki/Connectionless_communication) service model, using the [User Datagram Protocol](https://en.wikipedia.org/wiki/User_Datagram_Protocol) (UDP). It is implemented with two UDP port numbers for its operations which are the same as for the bootstrap protocol ([BOOTP](https://en.wikipedia.org/wiki/BOOTP)). UDP port number 67 is the port used by the server, and UDP port number 68 is used by the client.

DHCP operations fall into four phases: server discovery, IP lease offer, IP lease request, and IP lease acknowledgement. These stages are often abbreviated as DORA for discovery, offer, request, and acknowledgement.

The DHCP operation begins with clients [broadcasting](https://en.wikipedia.org/wiki/Broadcasting_(computing)) a request. If the client and server are in different [Broadcast Domains](https://en.wikipedia.org/wiki/Broadcast_domain), a [DHCP Helper or DHCP Relay Agent](https://en.wikipedia.org/wiki/Dynamic_Host_Configuration_Protocol#Relaying) may be used. Clients requesting renewal of an existing lease may communicate directly via UDP [unicast](https://en.wikipedia.org/wiki/Unicast), since the client already has an established IP address at that point. Additionally, there is a BROADCAST flag (1 bit in 2 byte flags field, where all other bits are reserved and so are set to 0) the client can use to indicate in which way (broadcast or unicast) it can receive the DHCPOFFER: 0x8000 for broadcast, 0x0000 for unicast.[[9]](https://en.wikipedia.org/wiki/Dynamic_Host_Configuration_Protocol#cite_note-droms41-9) Usually, the DHCPOFFER is sent through unicast. For those hosts which cannot accept unicast packets before IP addresses are configured, this flag can be used to work around this issue.

