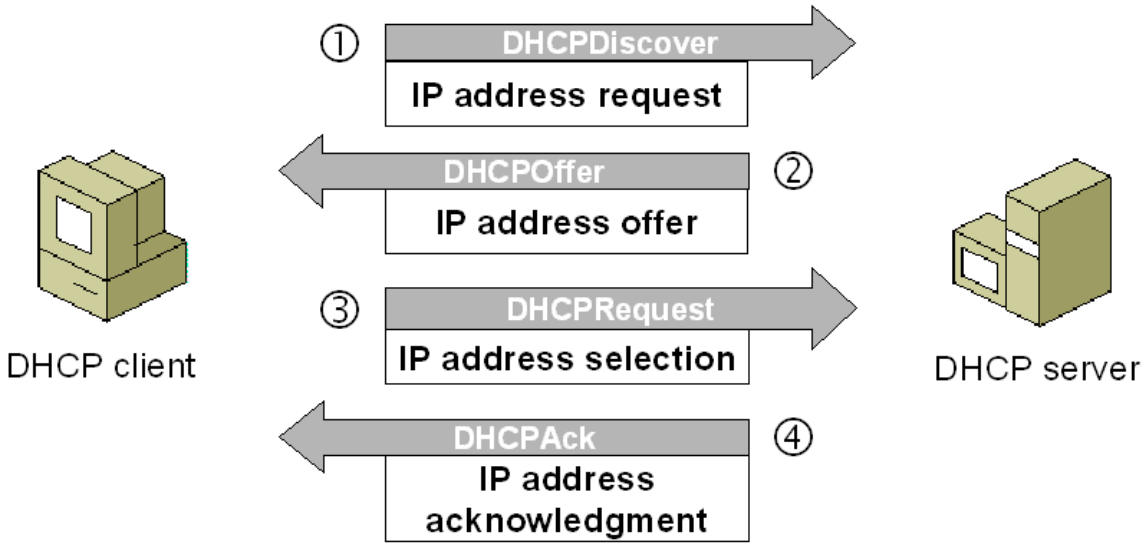
Department of Computer Engineering

Experiment: 09

Aim:
Implementation of DHCP using packet tracer.

Description:

DHCP is a service. It allows devices to acquire their IP configuration dynamically. It is defined in RFC 2131 and 2939. It works in the server/client model. The server offers and delivers IP configurations. Clients request and acquire their IP configurations.



Discover-The DHCP client broadcasts this message to find a DHCP server.

Offer-The DHCP server broadcasts this message to lease an IP configuration to the DHCP client.

Request-The DHCP client uses this message to notify the DHCP server whether it accepts the proposed IP configuration or not.

Acknowledgement- The DHCP server uses this message to confirm the DHCP client that it can use the offered IP configuration.

Static allocation

In this method, the administrator configures an allocation table on the DHCP server. In this table, the administrator fills the MAC addresses of all clients and assigns an IP configuration to each client.

The DHCP server uses the allocation table to provide IP configurations. When a client requests an IP configuration, the DHCP server checks the table and finds a match. If the DHCP server finds a match, the DHCP server offers the IP configuration that is associated with the MAC address of the client in the match.

Dynamic allocation

In this method, the administrator configures a range of IP addresses on the DHCP server. The DHCP server assigns an IP configuration from the configured range to each client that requests an IP configuration.

In this method, the DHCP offers the IP configuration only for a specific time. This specific time is known as the *lease*. The IP configuration remains valid until the lease duration is over. Once the lease duration is over, the client is required to obtain a new IP configuration from the server.

Automatic allocation

Same as the dynamic method, in this method, the administrator also configures a range of IP addresses on the DHCP server and the DHCP server assigns an IP configuration from the configured range to each client that requests an IP configuration.

Unlike the dynamic method, in this method, the DHCP server assigns the IP configuration permanently. To assign an IP configuration permanently, the DHCP server sets the lease duration to infinite. As a result, once the DHCP server chooses an IP configuration from the pool and assigns the IP configuration to a client, the IP configuration remains with that same client indefinitely.

Conclusion:

Using Cisco packet tracer demonstrated the working of DHCP service.