Assignment - 04

* Title: Study of DHCP

* Problem Statement: Installing and configure DHCP Server and write a program to install software or remote machine.

* Objective: Student should be able to understand Dynamic Host Configuration Protocol.

* Software Requirements: Windows 10 (64 bit), Intel is processor, Cisco Packet Tracer.

* Theory:
DHCP is a client/server protocol that automatically provides host with its host IP address and other related configuration information such as subnet mask and default gateway.
Every device on TCP/IP based network must have a unique unicast IP address to access network resources with DHCP, the allocation is carried out easily and automatically for hosts added as removed from the network.
DHCP server maintains a pool of IP addresses and leases IP address to any DHCP-enable client when it start up to the network Because the IP are addresses are automatic dynamic when the addresses are not used

then returned to pool for reallocation.
A DHCP enabled client, upon accepting a lease offer, receives.

- A valid IP address for the subnet to which it is connecting
- Additional parameters that DHCP server is assigned to assign client for eg. dynamic gateway, DNS server.

DHCP lease overview process

① The DHCP client requests an IP address by broadcasting DHCP discover message to the local subnet

② The client is offered an address when a DHCP server responds with a DHCP offer message containing an IP addresses and configuration information for lease to the client. If no DHCP server responds to the client request, the client sends DHCP discover message at intervals of 0,4,8, 16 and 32 respectively plus a random interval between -1 and 1 seconds. If there is no response from DHCP server after one min the client can proceed in one of two ways.

- If client is using Automatic private IP addressing the client self configuration on IP address for its interface.
- If client does not support alternate configuration such as automatic IP addressing the client network intialization fails.

(5) the client indicate acceptance of the offer by selecting the offered address and broadcasting a DHCP message request in response.

(6) the client is assigned the address & DHCP server Broadcasting a DHCP acknowledge message in response finalizing the lease.

In the case of DHCP server failing to respond to DHCP discover, the hosts undergo a new of sending DHCP discover requests every 5 minutes in the as mentioned above.

Setting up DHCP server Steps:
i) yum install dhcp

ii) vi /etc/ dhcp / dhcp config

iii) Edit configuration file as given below.

```
subnet 192.168.8.0    netmask 255.255.255.0
range 192.168.8.1     192.168.8.20
option domain - name servers ns1 internal
                              example.org
option domain- name.   " internal example org"
option routers    192.168.8.254
option broadcast address    192.168.8.255;
default lease time   600;
max-lease-time    7200;
```

iv) 'chkconfig dhcpd on' : Run this to check dhcp
                                    config

v) 'service dhcp restart' : Run this to start dhcp service

* Conclusion:
     We learnt about DHCP and usage & working of
     DHCP.