

#### Assignment - 4

Title : Study of DHCP.

Problem statement : Installing and configure DHCP server and write a program to install software on remote machine

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

#### 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 or removed from the network.

DHCP server maintains a pool of IP addresses and leases an IP address to any DHCP-enabled client when it starts up to network.

Because, the IP addresses are automatically or dynamic when the addresses are not used then addresses are 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 client for e.g. default gateway, DNS server



DHCP lease process overview.

- 1) 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 address and configuration information for lease to the client. If no DHCP server responds to the client request, the client sends DHCP discover msg 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 a DHCP server <sup>one</sup> ~~offer~~ <sup>the</sup> client can proceed in one of two ways.
    - If client is automatic private IP addressing, then client self configures on <sup>IP</sup> address of its interface.
    - If client does not support alternate configuration, such as automatic IP addressing, the client network initialization fails.
  - 3) The client indicates acceptance of the offer by selecting the offered address and broadcasting a DHCP request in response.
  - 4) The client is assigned the address & DHCP server broadcasts a DHCP ack in response finalizing the lease.
- In the case of the DHCP server failing to respond to DHCP discover, the host undergoes a new self sending DHCP discover requests every 5 minutes in the past as mentioned in step 2.



Setting up DHCP server steps:

1) `yum install dhcp.`

2) `vi /etc / dhcp / dhcp.conf`

3) Edit configuration file as below as similarly

```
subnet 192.168.8.0 netmask 255.255.255.0 {  
    range 192.168.8.1 192.168.8.20 ;  
    option domain-name server nol 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 ;  
}
```

4) "`chkconfig dhcp on`" : Run this to check dhcp config.

5) "`service dhcp restart`" : Run this to start dhcp server.

Conclusion:

We learnt about DHCP and usage & working of DHCP

