

Assignment - IV

Problem Statement :- Install & configure DHCP server & write a program to install the software on remote machine

Theory :-

- DHCP stands for Dynamic Host Configuration Protocol. It is used on Internet protocol Network for dynamically distributing m/w config parameters such as IP address.
- It can be any server (windows or linux) that is used to distribute IP addresses automatically.
- The most common settings provided by a DHCP server to DHCP client include :
 - IP address & network
 - IP address & of default gateway to use.
 - IP address of DNS servers to use.
- A DHCP server can also supply configuration properties such as
 - Host name
 - Domain name
 - Time server
 - Print Server

Advantages :-

- It has become easier to integrate new computers into network.
- No need to check for IP address.
- Conflicts of IP address allocation are also reduced.

- A DHCP server can provide configuration settings using following methods.

i) MAC address (Manual allocation)

- This method entails using DHCP to identify the unique n/w address of each network & then continually supplying a constant configuration each time the DHCP client makes a request to server with ^{new} device.

ii) Address pool (Dynamic allocation)

- In this method the DHCP servers will assign an IP address from a pool of addresses for a lease, that is configured to server as until client informs server that it doesn't need address anymore.

iii) Automatic allocation :-

- Using this method, DHCP automatically assigns an IP addresses permanently to a device, selecting it from a pool of available addresses.
- Usually a DHCP server can assign a temporary address to a client but can allow an infinite lease time.
- Ubuntu is shipped with both server & client
- The server is 'dhcpd' & client is 'dhclient'
- Install DHCP server on Ubuntu.

To install enter full command
`sudo apt-get install isc-dhcp-server`.

Configuration:-

- First assign on what interfaces should the DHCP server (dhcpd) server DHCP request.
- In case you have only 1 interface, so assign that
- To do that, edit file `/etc/default/isc-dhcp-server`
`/sudo vi /etc/default/isc-dhcp-server`

Assign the n/w interface.

`/Interfaces = "enp0s3"`

- save & close the file.
- Now edit `dhcpd.conf` file.
`/sudo vi /etc/dhcp/dhcpd.conf`
- set domain name & domain servers
(or comment it)
`# option domain-name = " "`
`# option domain-name-servers server`

If this DHCP server is the official DHCP server for local n/w, you should uncomment the following line

`/authoritative`.

- Define the subnet, range of IP addresses, domain & domain name servers

```
subnet 10.0.2.0 netmask 255.255.255.0 {
```

```
range 10.0.2.10 10.0.2.20
```

```
# option domain-name-servers
```

```
# option domain-name "internal.example.org",
```

```
option routers 10.0.2.255
```

```
option broadcast-address 10.0.2.255
```

```
default-lease-time 600;
```

```
max-lease-time 7200; }
```

- If you want to assign a fixed IP address to your client, you should enter its MAC id & then IP address

```
host ubuntu-client {
```

```
hardware-ethernet 00:22:04:48:00:09, 3a;
```

```
fixed-address 10.0.2.15; }
```

- After making all changes you want, save & close the file comment all the unnecessary things, to avoid further issues while starting dhcp service.

* Configure DHCP clients:-

Go to client configuration network settings & change the IP settings to automatic (DHCP). Restart the network or reboot the client system to get IP address automatically from DHCP server.

Run : `sudo ifconfig`

- Now you can see that the IP address assigned is among the range mentioned at the server side.

Conclusion :

In this assignment, we learn + how to install DHCP server + its configuration.