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31 118

Assignment-10

Title: DHCP

Problem Statement:
Installing & configuring DHCP server & write a
program to install the software on remote machine.
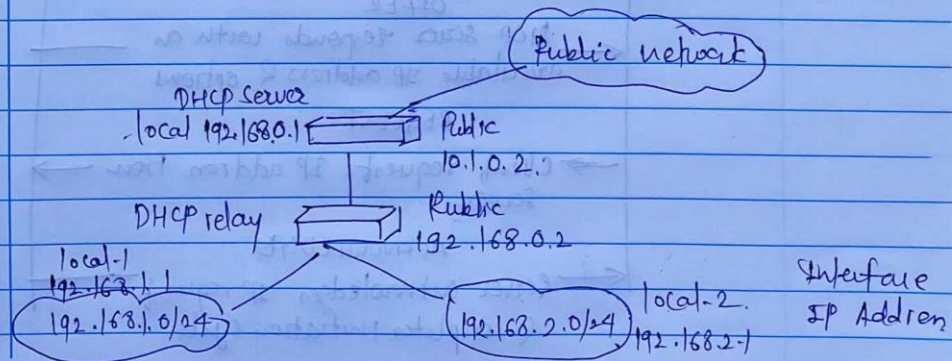
Prerequisite:
~~Student will be~~
Application layer: Protocols & Roles
DHCP

Learning Objectives:
Student will be able to understand & configure DHCP
servers

Theory:
Dynamic host configuration Protocol (DHCP) is defined
as a network protocol that initiates/ enables a
server to automatically allocate an IP address of
numbers (scope) which is configured for a
required network.

DHCP Server
local 192.168.0.1 | Public
                     10.1.0.2
Public network

DHCP relay | Public
             192.168.0.2
local-1
192.168.1.1
192.168.1.0/24   192.168.2.0/24 | local-2.
                                         192.168.2.1

Interface
IP Address

DHCP available for IPV4 & IPV6.

Need of DHCP:

- Avoid manual entry of IP address & configuration information for all computers/network devices individually.
- Provide a central mechanism to keep track of all assigned IP address in a network.
- To reclaim unused IP address & reassign.
- To make central configuration / topology / changes in the network easier.
- To dynamically allocate IP addresses to portable clients that keeps moving from place to place in the network.

DHCP Handshake.

DHCP Client   DHCP Server

DISCOVER
Client sends out DHCP discover message to identify DHCP server.

OFFER
DHCP server responds with an available IP address & options

REQUEST.
Client requests IP address from server

ACKNOWLEDGE
Server acknowledges IP request & completes initiation cycle

Conclusion

Successfully installed & configured DHCP server & also created a program to install software on remote machine.

Server terminal (left):

```
Shubham@Shubham-AcerSwift MINGW64 /d/College-Stuff-5th-Sem/CNSL/A10 (main)
$ py 31118_Shubham_AssignmentC02_Server.py
Binding the port: 9999
Listening...
turtle> connection: <socket.socket fd=512, family=AddressFamily.AF_INET, typ
e=SocketKind.SOCK_STREAM, proto=0, laddr=('172.20.10.2', 9999), raddr=('172.
20.10.2', 57883)>
address: ('172.20.10.2', 57883)
connection: <socket.socket fd=516, family=AddressFamily.AF_INET, type=Socket
Kind.SOCK_STREAM, proto=0, laddr=('172.20.10.2', 9999), raddr=('172.20.10.2'
, 58752)>
address: ('172.20.10.2', 58752)

turtle> list
<socket.socket fd=512, family=AddressFamily.AF_INET, type=SocketKind.SOCK_ST
REAM, proto=0, laddr=('172.20.10.2', 9999), raddr=('172.20.10.2', 57883)> ('
172.20.10.2', 57883)
<socket.socket fd=516, family=AddressFamily.AF_INET, type=SocketKind.SOCK_ST
REAM, proto=0, laddr=('172.20.10.2', 9999), raddr=('172.20.10.2', 58752)> ('
172.20.10.2', 58752)
turtle> 1
turtle> select
> 1
<socket.socket fd=516, family=AddressFamily.AF_INET, type=SocketKind.SOCK_ST
REAM, proto=0, laddr=('172.20.10.2', 9999), raddr=('172.20.10.2', 58752)> ('
172.20.10.2', 58752)
available?
yes
downloading a file on that client...
turtle> quit
[]
```

Client terminal (top right):

```
Shubham@Shubham-AcerSwift MINGW64 /d/College-Stuff-5th-Sem/CNSL/A10 (main)
$ py 31118_Shubham_AssignmentC02_Client.py
[]
```

Client terminal (bottom right):

```
Shubham@Shubham-AcerSwift MINGW64 /d/College-Stuff-5th-Sem/CNSL/A10 (main)
$ py 31118_Shubham_AssignmentC02_Client.py
performed...

Shubham@Shubham-AcerSwift MINGW64 /d/College-Stuff-5th-Sem/CNSL/A10 (main)
$

Shubham@Shubham-AcerSwift MINGW64 /d/College-Stuff-5th-Sem/CNSL/A10 (main)
$ []
```