INSTITUTE OF ENGINEERING

ADVANCED COLLEGE OF ENGINEERING AND MANAGEMENT
Kupondole, Lalitpur
(AFFILIATED TO TRIBHUVAN UNIVERSITY)

Lab no:6
Subject: Computer Network

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Date: 09/07/2021

Submitted To:

Department of Computer
and
Electronics Engineering

Lab 6

Title: Dynamic Host Configuration Protocol (DHCP)

Objective:

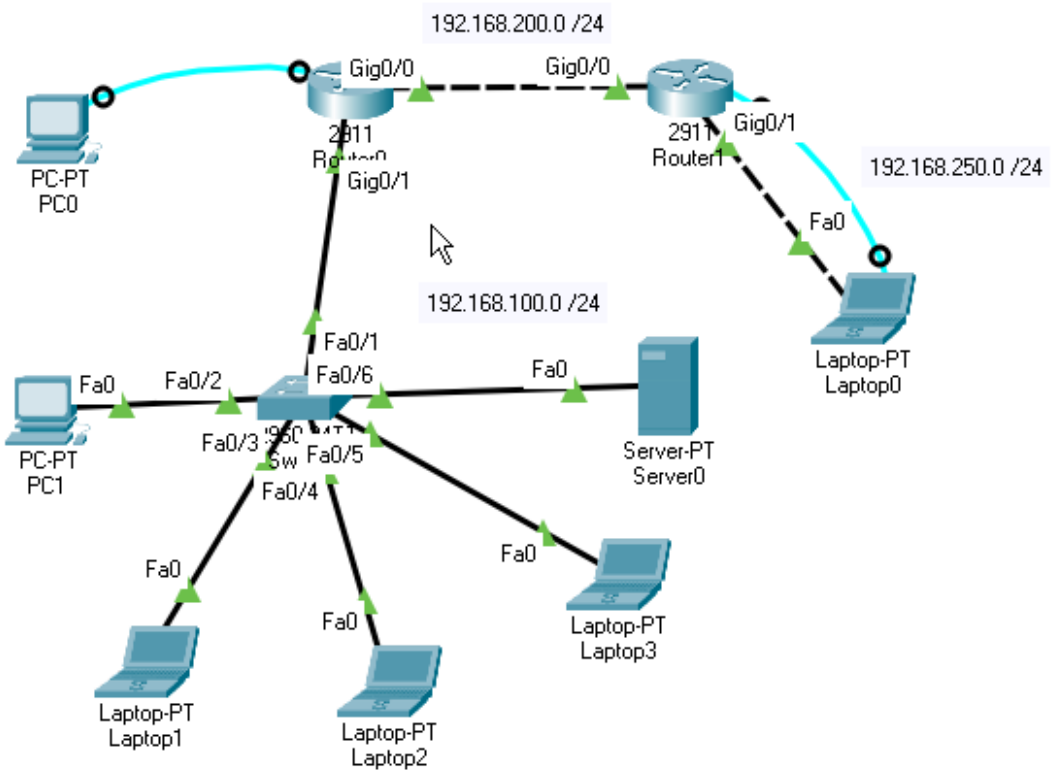
- To Learn about automatically providing the Ip address to devices on same network

Introduction:

The Dynamic Host Configuration Protocol (DHCP) is a network management protocol used on Internet Protocol (IP) networks for automatically assigning IP addresses and other communication parameters to devices connected to the network using a client-server architecture.

The technology eliminates the need for individually configuring network devices manually, and consists of two network components, a centrally installed network DHCP server and client instances of the protocol stack on each computer or device. When connected to the network, and periodically thereafter, a client requests a set of parameters from the DHCP server using the DHCP protocol.

Design:



Procedure:

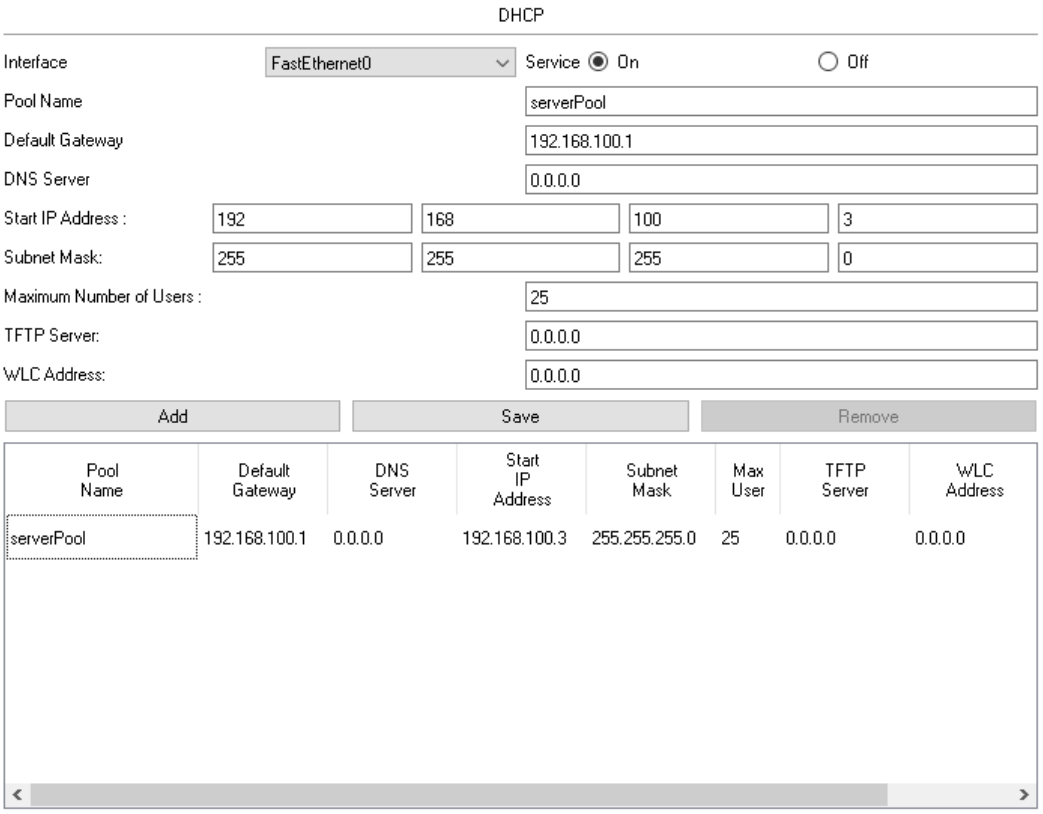
1. First the required tools are selected.
2. The required ports of the routers were turned on.
3. Then Ip and subnet mask of the routers and server were set
    a. For each laptop and pc this was done by going to the desktop and Ip configurations and enabling the DHCP, which will provide the Ip addresses to devices
    b. For routers this was done by going to the configuration and selecting the required port
4. Required connections were made between the routers and laptops.
5. Then Static routing is done for the connection of the devices in different network.

Code:

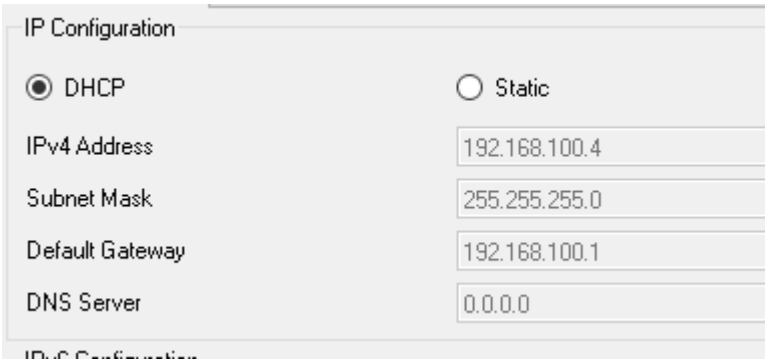
```
Router0> en
Router0# conf t
Router0(config)#host R1
R1(config)#int g0/1
R1(config-if)#ip add 192.168.100.1 255.255.255.0
R1(config-if)#no shut
R1(config-if)#int g0/0
R1(config-if)#ip add 192.168.200.1 255.255.255.0
R1(config-if)#no shut
R1(config-if)#exit
R1(config)#ip route 192.168.250.0 255.255.255.0 192.168.200.2
R1(config)#end
R1#wr

Router1>enable
Router1#configure terminal
Router1(config)#host R2
R2(config)#interface GigabitEthernet0/0
Router(config-if)#ip address 192.168.200.2 255.255.255.0
R2(config-if)#no shutdown
R2(config-if)#exit
R2(config)#interface GigabitEthernet0/1
R2(config-if)#ip address 192.168.250.1 255.255.255.0
R2(config-if)#no shutdown
R2(config-if)#exit
R2(config)#ip route 192.168.100.0 255.255.255.0 192.168.200.1
R2#wr
```

Output:

Server 0


DHCP
Interface
FastEthernet0
Service
On
Off
Pool Name
serverPool
Default Gateway
192.168.100.1
DNS Server
0.0.0.0
Start IP Address :
192
168
100
3
Subnet Mask:
255
255
255
0
Maximum Number of Users :
25
TFTP Server:
0.0.0.0
WLC Address:
0.0.0.0
Add
Save
Remove
Pool Name
Default Gateway
DNS Server
Start IP Address
Subnet Mask
Max User
TFTP Server
WLC Address
serverPool
192.168.100.1
0.0.0.0
192.168.100.3
255.255.255.0
25
0.0.0.0
0.0.0.0

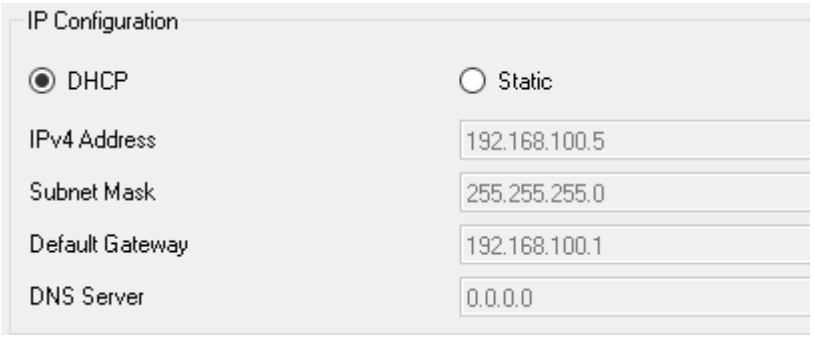
1.PC1


IP Configuration
DHCP
Static
IPv4 Address
192.168.100.4
Subnet Mask
255.255.255.0
Default Gateway
192.168.100.1
DNS Server
0.0.0.0

Ping Pc1 to Laptop 0

```
C:\>ping 192.168.250.2

Pinging 192.168.250.2 with 32 bytes of data:

Reply from 192.168.250.2: bytes=32 time<1ms TTL=126
Reply from 192.168.250.2: bytes=32 time<1ms TTL=126
Reply from 192.168.250.2: bytes=32 time<1ms TTL=126
Reply from 192.168.250.2: bytes=32 time<1ms TTL=126

Ping statistics for 192.168.250.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

2. Laptop1

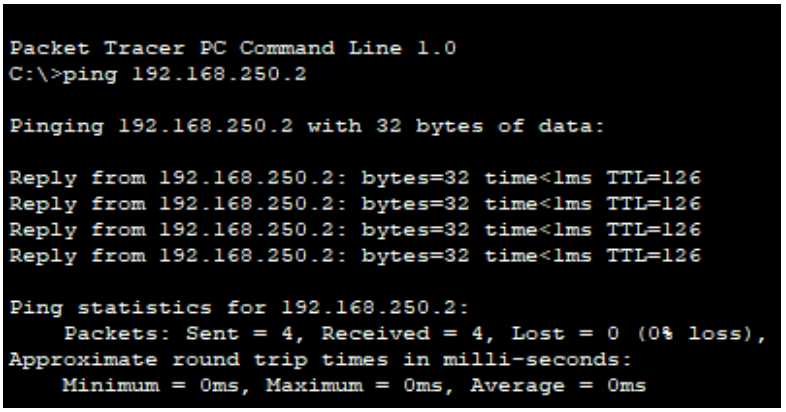


Ping Laptop1 to Laptop0

```
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.250.2

Pinging 192.168.250.2 with 32 bytes of data:

Reply from 192.168.250.2: bytes=32 time<1ms TTL=126
Reply from 192.168.250.2: bytes=32 time<1ms TTL=126
Reply from 192.168.250.2: bytes=32 time<1ms TTL=126
Reply from 192.168.250.2: bytes=32 time<1ms TTL=126

Ping statistics for 192.168.250.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

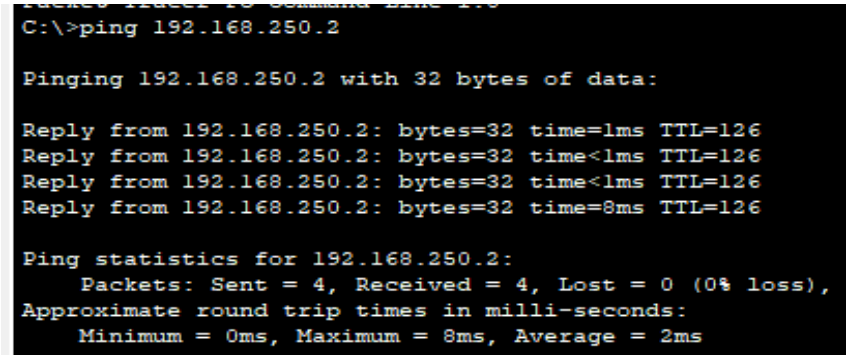
3. Laptop 2

Ping Laptop2 to Laptop0



4. Laptop 3

Ping Laptop3 to Laptop0



Result and Conclusion

In this Lab we were able to automatically provide Ip addresses to the devise on same network by enabling DHCP server and able to ping with devices on different network using static routing.