

## EXPERIMENT NUMBER: 8

Date of Performance:

Date of Submission :

**Aim:** To study and configure DHCP using Cisco packet tracer

**Software Used:** - PC, Cisco packet tracer

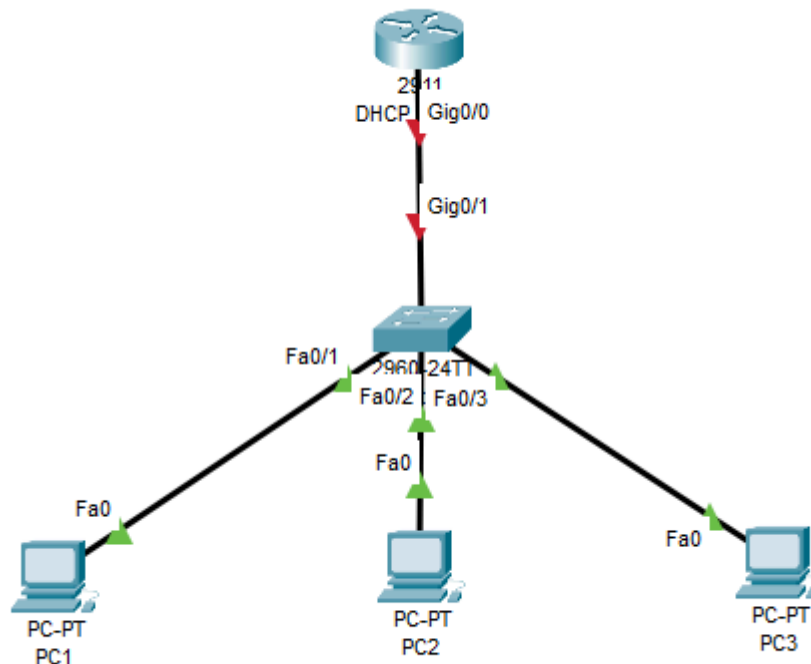
**Theory:** What is DHCP?

### **Procedure:**

Configure DHCP on the Cisco Router to assign a dynamic IP address to host systems deployed in the network:

#### **Step-1 :**

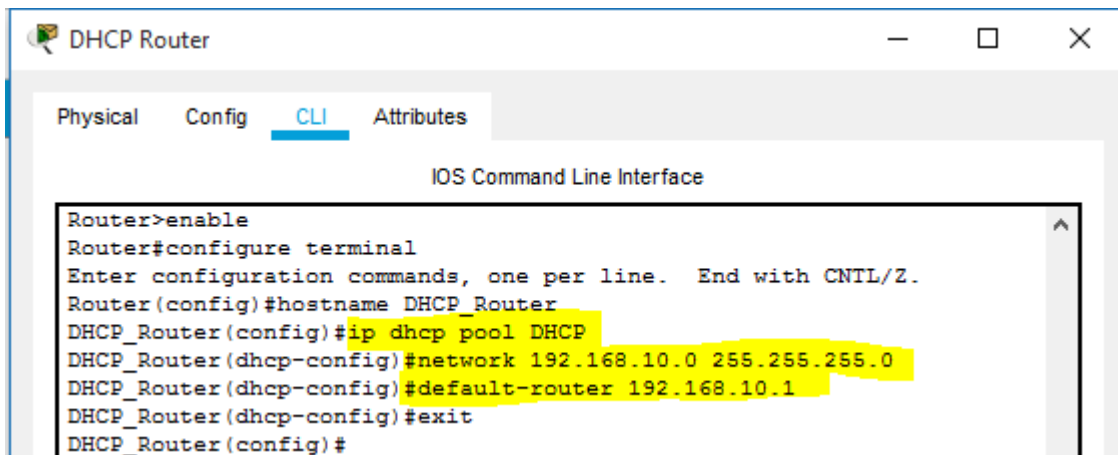
A network topology is created in the Cisco Packet Tracer, which includes a router, a switch, and three host systems connected to a network



#### **Step-2 :**

Command Line Interface(CLI) of the router is accessed and high-lighted commands are executed to successfully configure the DHCP. At first, the 'IP DHCP

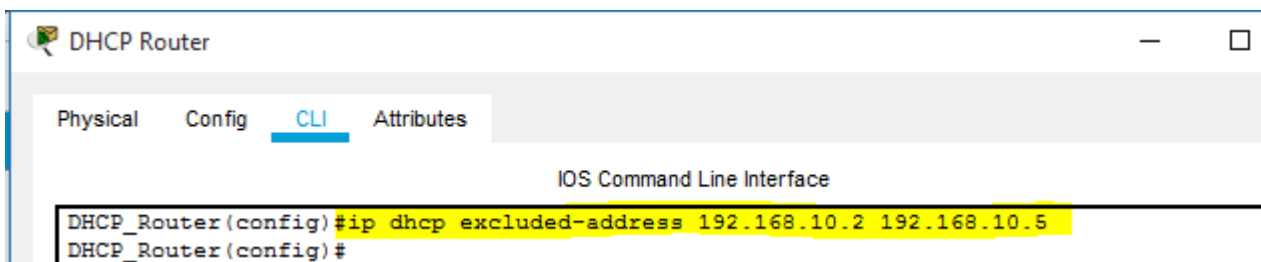
pool pool\_name' command is executed. After this, the network address is defined along with its subnet mask. And further, the 'default-router IP-address' command is used to define the default route address.



```
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname DHCP_Router
DHCP_Router(config)#ip dhcp pool DHCP
DHCP_Router(dhcp-config)#network 192.168.10.0 255.255.255.0
DHCP_Router(dhcp-config)#default-router 192.168.10.1
DHCP_Router(dhcp-config)#exit
DHCP_Router(config)#
```

### Step-3 :

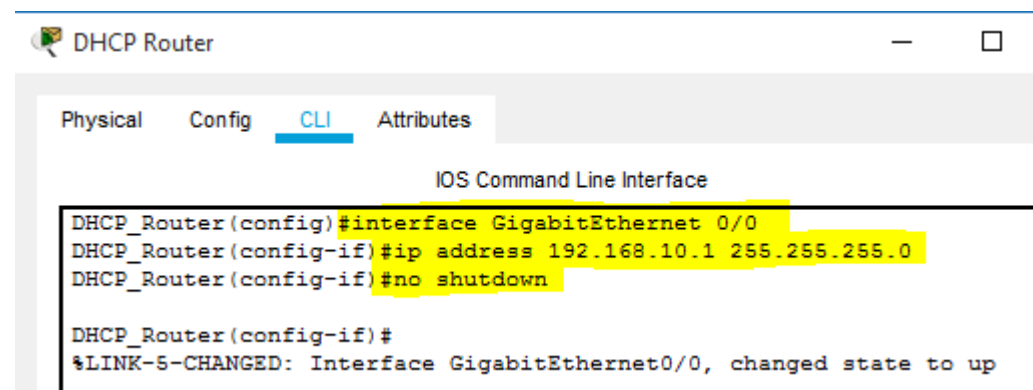
In this step, a range of IP addresses is excluded from the addresses defined in the subnet mask of the DHCP pool. Excluded IP addresses will be not assigned to any host system in the network.



```
DHCP_Router(config)#ip dhcp excluded-address 192.168.10.2 192.168.10.5
DHCP_Router(config)#
```

### Step-4 :

The interface of the router connected with the switch is assigned with the IP address defined as the default router during the DHCP configuration. This route will be taken by the data packets to reach their destination system. Also, the 'no shutdown' command is used to change the state of the connected interface to up.



```
DHCP_Router(config)#interface GigabitEthernet 0/0
DHCP_Router(config-if)#ip address 192.168.10.1 255.255.255.0
DHCP_Router(config-if)#no shutdown

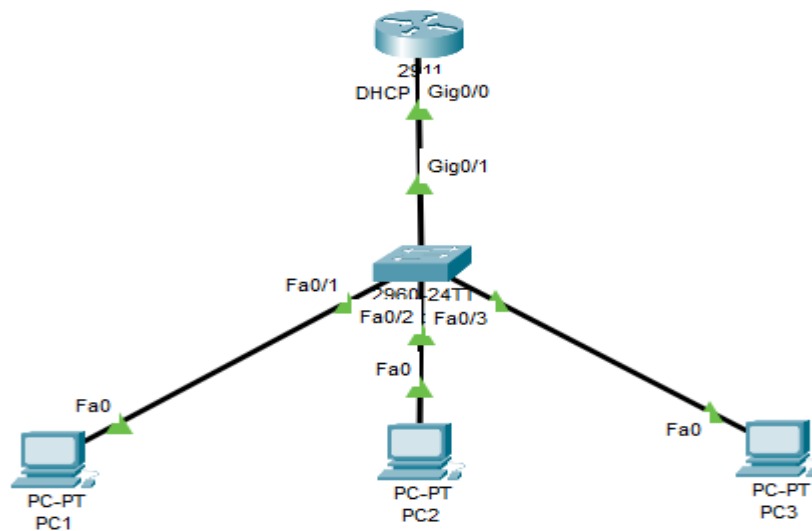
DHCP_Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up
```

### Step-5 :

successful

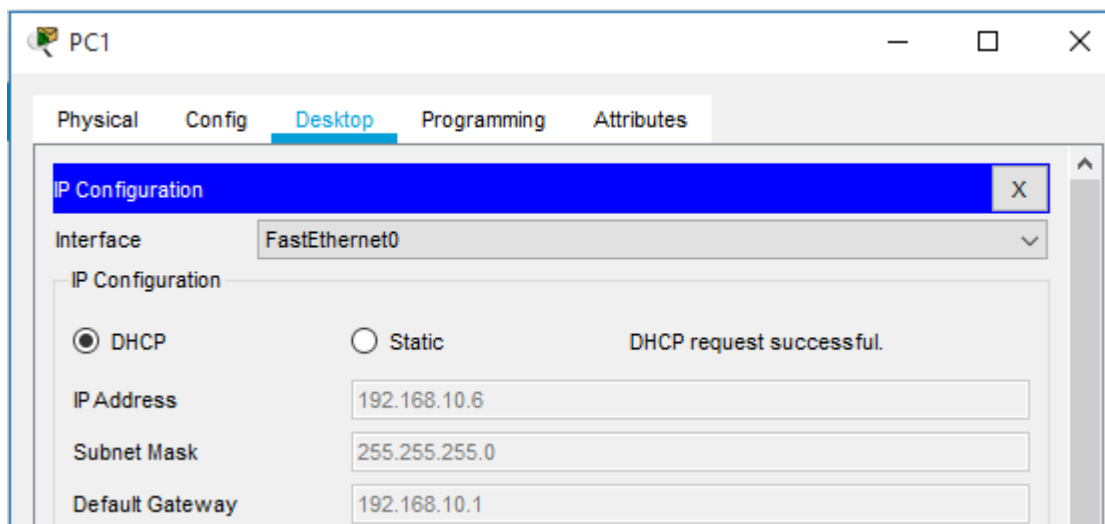
A connection is established between all the devices connected in a network. In further

steps, host systems in the network are assigned with dynamic IP and default gateway address by the DHCP service configured on the router.



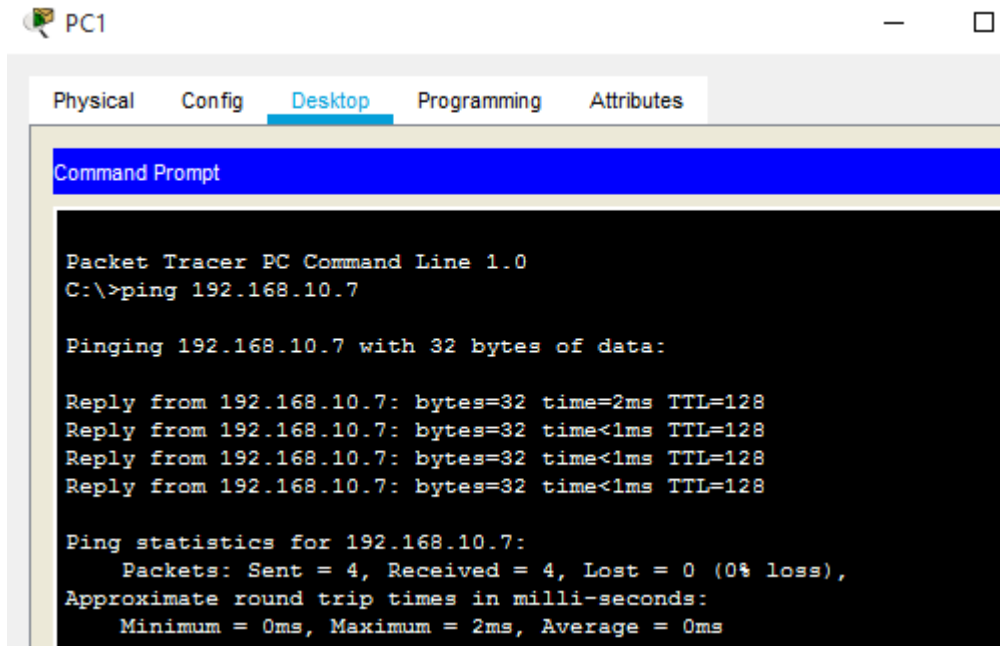
#### Step-6 :

Desktop settings of a host system are accessed and the DHCP option is selected. DHCP request forwarded by the system is acknowledged and IP address, associated subnet mask, and default gateway address are assigned to it.



### Step-7 :

To check the connectivity between the host systems, the 'ping' command is used to exchange data packets. All the data packets are successfully transferred, which ensures that a communication channel is established.



The screenshot shows the Packet Tracer interface for PC1. The 'Desktop' tab is selected, displaying a 'Command Prompt' window. The command prompt shows the execution of the 'ping 192.168.10.7' command. The output indicates that four packets were sent and received successfully with 0% loss. The round trip times are very low, with a minimum of 0ms, a maximum of 2ms, and an average of 0ms.

```
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.10.7

Pinging 192.168.10.7 with 32 bytes of data:

Reply from 192.168.10.7: bytes=32 time=2ms TTL=128
Reply from 192.168.10.7: bytes=32 time<1ms TTL=128
Reply from 192.168.10.7: bytes=32 time<1ms TTL=128
Reply from 192.168.10.7: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.10.7:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 2ms, Average = 0ms
```

### Conclusion:

### MARKS & SIGNATURE:

R1 (3 Marks)	R2 (5 Marks)	R3 (4 Marks)	R4 (3 Marks)	Total (15 Marks)	Signature