PRACTICAL NO 6

Configuring DHCP server and client.

DHCP

The **Dynamic Host Configuration Protocol (DHCP)** is a client/server protocol designed to provide the four pieces of information for a diskless computer or a computer that is booted for the first time. DHCP is a successor to BOOTP and is backward compatible with it. Although BOOTP is considered deprecated, there may be some systems that may still use BOOTP for host configuration. The part of the discussion in this chapter that does not deal with the dynamic aspect of DHCP can also be applied to BOOTP.

The DHCP client and server can either be on the same network or on different networks.

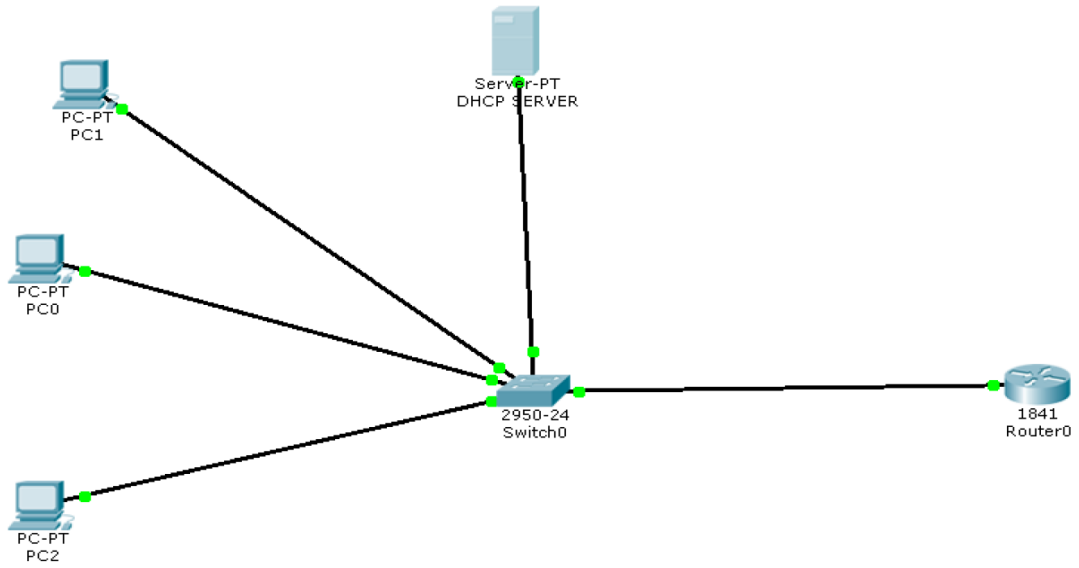
When on same network it works as follows.

1. The DHCP server issues a passive open command on UDP port number 67 and waits for a client.

2. A booted client issues an active open command on port number 68. The message is encapsulated in a UDP user datagram, using the destination port number 67 and the source port number 68. The UDP user datagram, in turn, is encapsulated in an IP datagram. The reader may ask how a client can send an IP datagram when it knows neither its own IP address (the source address) nor the server's IP address (the destination address). The client uses all 0s
as the source address and all 1s as the destination address.

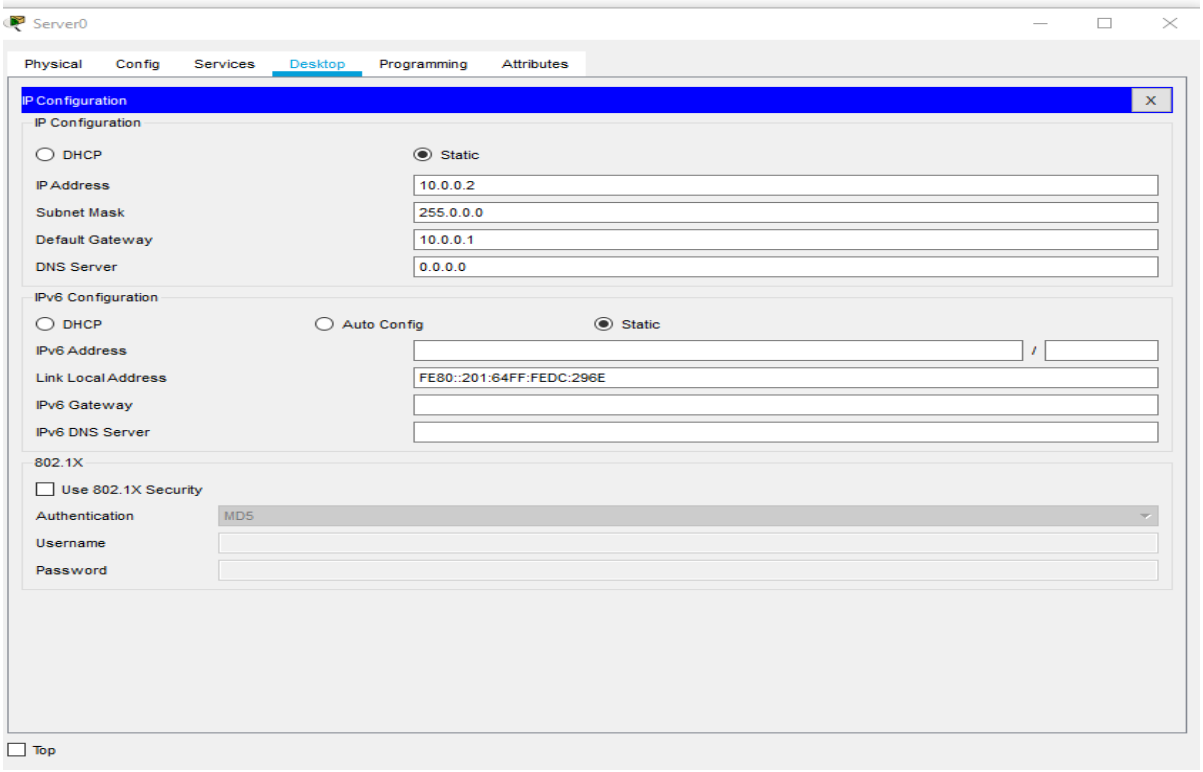
3. The server responds with either a broadcast or a unicast message using UDP source port number 67 and destination port number 68. The response can be unicast because the server knows the IP address of the client. It also knows the physical address of the client, which means it does not need the services of ARP for logical to physical address mapping. However, some systems do not allow the bypassing of ARP, resulting in the use of the broadcast address

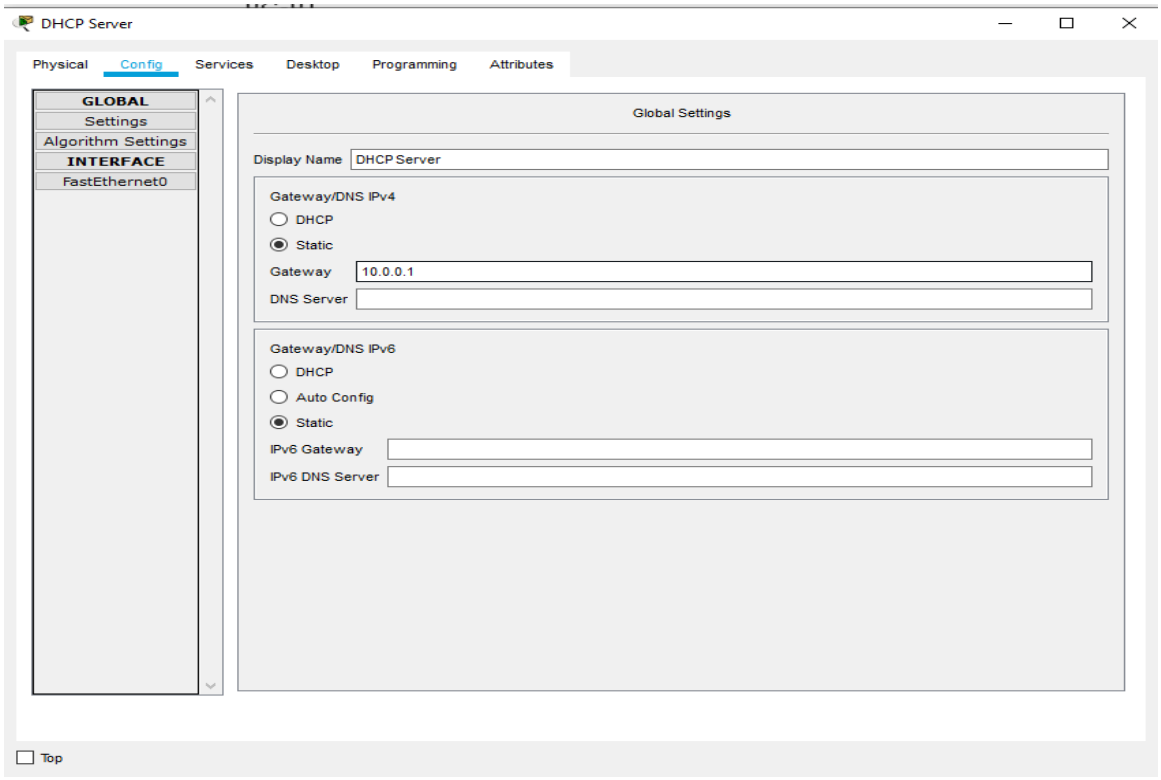
We can study the working of DHCP using the cisco packet tracer using
the following example.

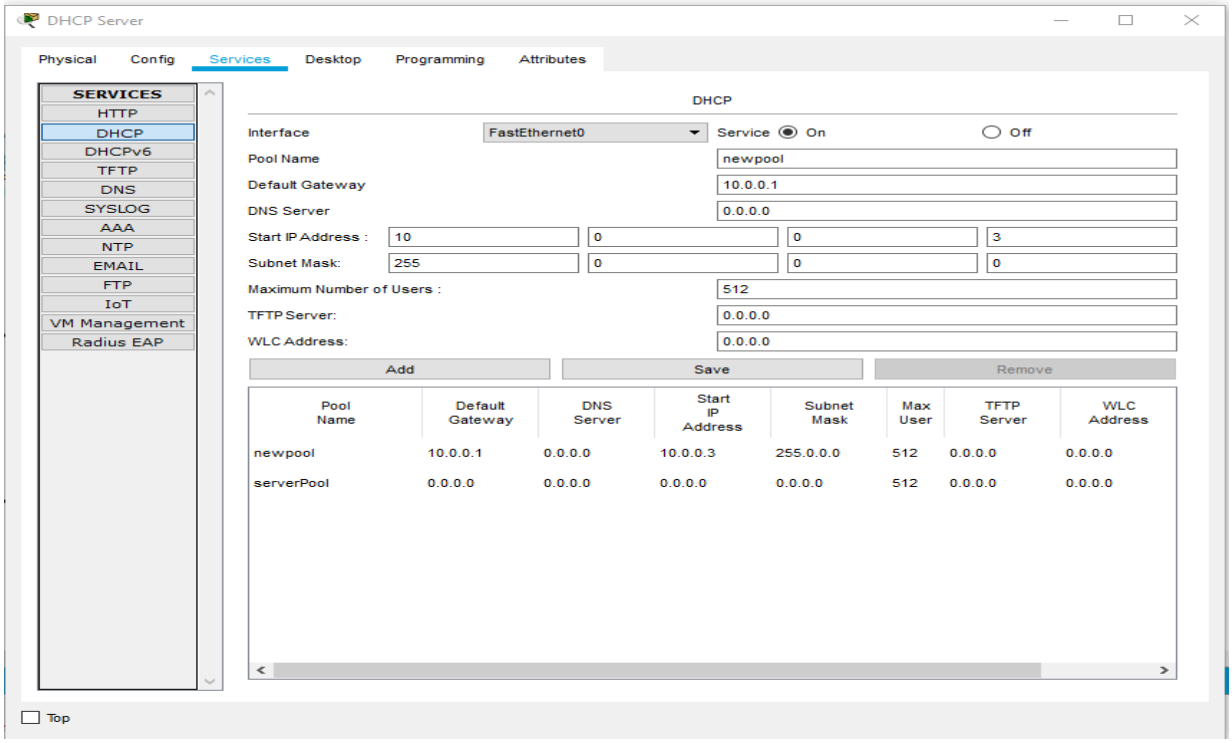


We configure the various components through the following steps

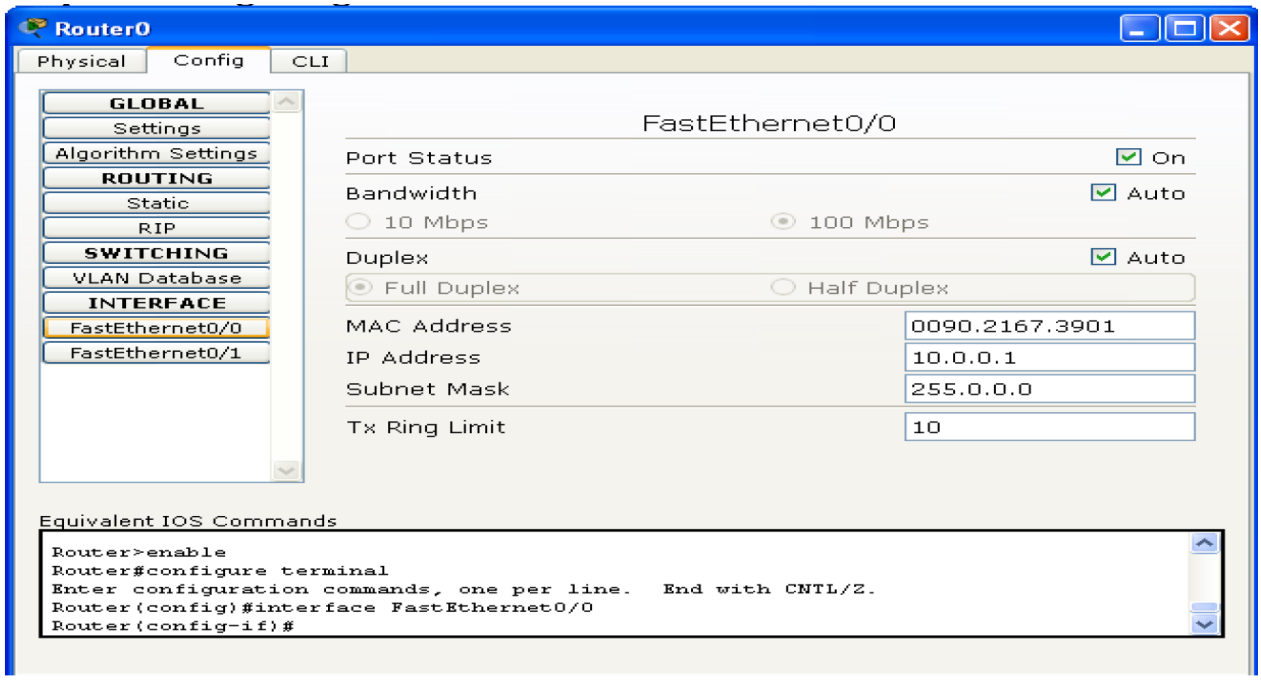
Step 1: Configuring the DHCP server




DHCP Server
Physical
Config
Services
Desktop
Programming
Attributes
GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0
Global Settings
Display Name
DHCP Server
Gateway/DNS IPv4
DHCP
Static
Gateway
10.0.0.1
DNS Server
Gateway/DNS IPv6
DHCP
Auto Config
Static
IPv6 Gateway
IPv6 DNS Server
Top

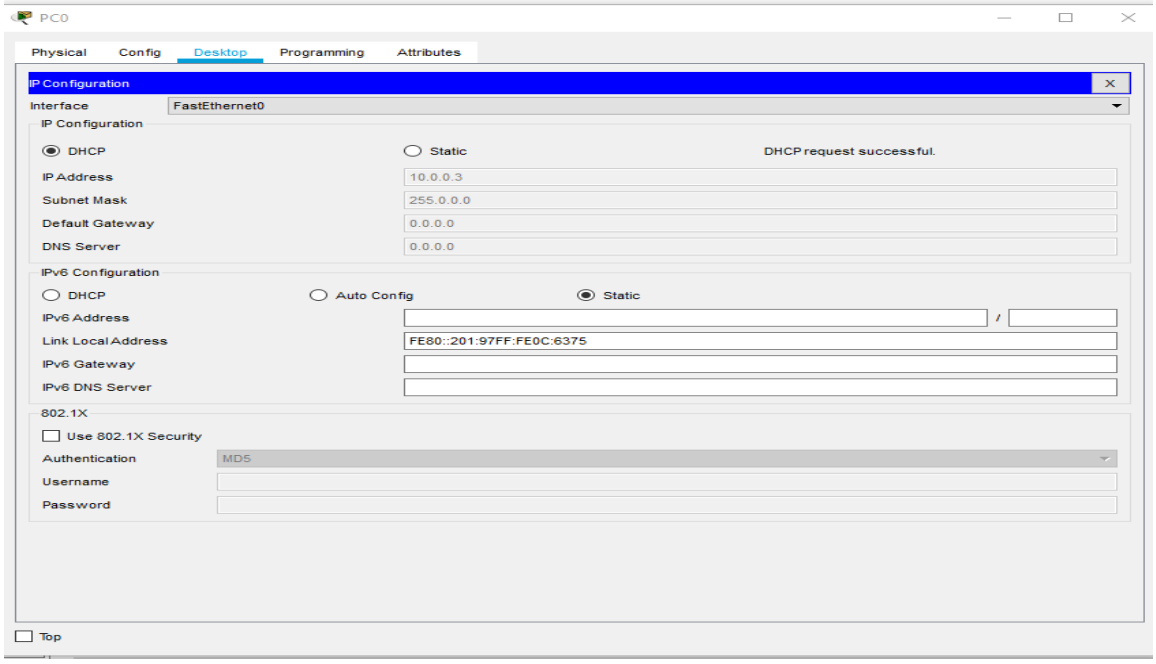

DHCP Server
Physical
Config
Services
Desktop
Programming
Attributes
SERVICES
HTTP
DHCP
DHCPv6
TFTP
DNS
SYSLOG
AAA
NTP
EMAIL
FTP
IoT
VM Management
Radius EAP
DHCP
Interface
FastEthernet0
Service
On
Off
Pool Name
newpool
Default Gateway
10.0.0.1
DNS Server
0.0.0.0
Start IP Address :
10
0
0
3
Subnet Mask:
255
0
0
0
Maximum Number of Users :
512
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
newpool
10.0.0.1
0.0.0.0
10.0.0.3
255.0.0.0
512
0.0.0.0
0.0.0.0
serverPool
0.0.0.0
0.0.0.0
0.0.0.0
0.0.0.0
512
0.0.0.0
0.0.0.0
Top

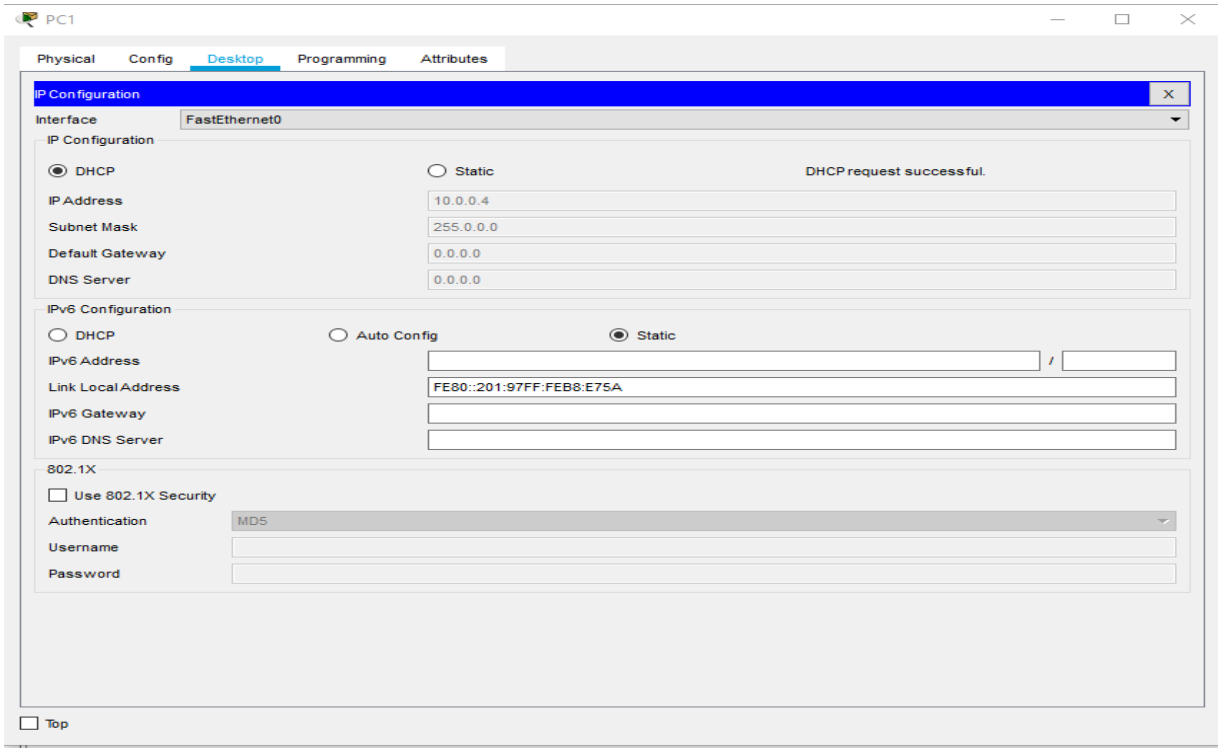
Step 2: Configuring the Router

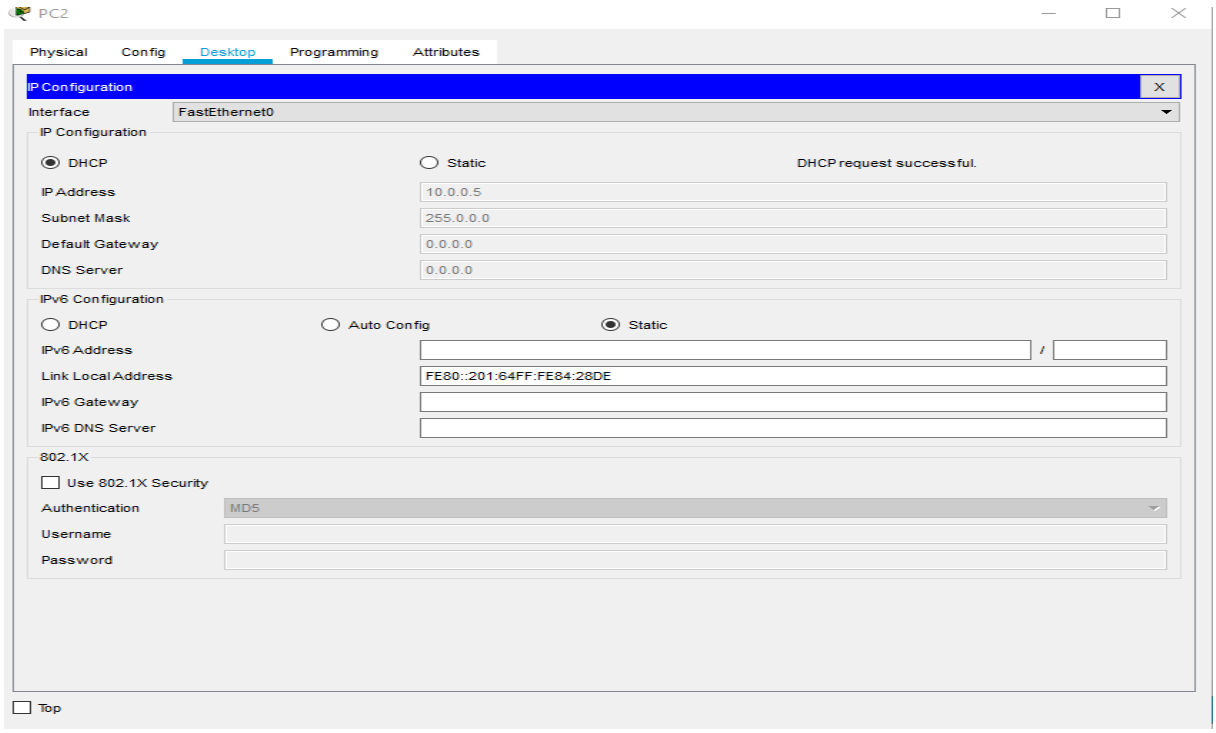


Now we test the working of the DHCP server by sending a DHCP request from any of the PC as shown

Step 3: Sending DHCP request







Hence, we have configured the DHCP server and also verified its operation