

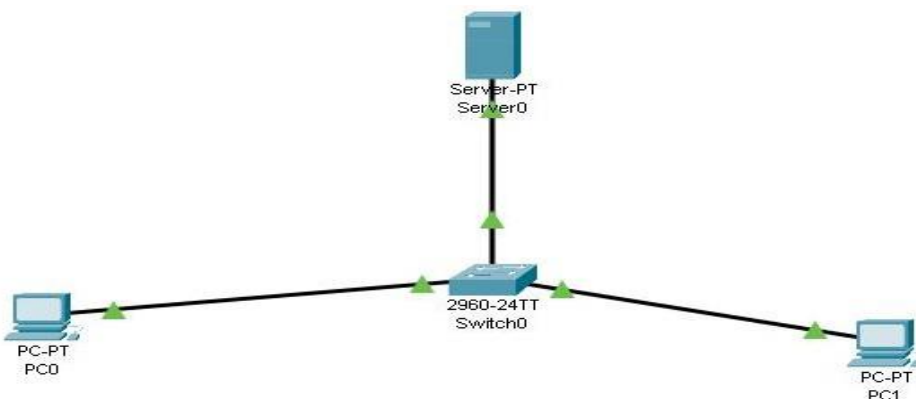
Practical No. 3

Aim: Using Packet Tracer, create a basic network of one server and two computers using appropriate network wire. Use Dynamic IP Address allocation and show connectivity.

Theory: For assigning IP Addresses dynamically, we use the DHCP protocol. Dynamic Host Configuration Protocol (DHCP) is a client/server protocol that automatically provides an Internet Protocol (IP) host with its IP Address and other related configuration information such as the subnet mask and default gateway. The DHCP server maintains a pool of IP Addresses and leases an address to any DHCP enabled client when it starts up on the network. Because the IP Addresses are dynamic (leased) rather than static (permanently assigned), addresses no longer in use are automatically returned to the pool for reallocation. DHCP provides the following benefits.

1. **Reliable IP Address configuration:** DHCP minimizes configuration errors caused by manual IP Address configuration, such as typographical errors, or address conflicts caused by the assignment of an IP Address to more than one computer at the same time.
2. **Reduced network administration:** DHCP includes the following features to reduce network administration. DHCP runs at the dynamically layer of the Transmission Control Protocol/IP (TCP/IP) stack to dynamically assign IP addresses to DHCP clients and to allocate TCP/IP configuration information to DHCP clients. This includes subnet mask information, default gateway IP Addresses and domain name system (DNS) addresses.

Program 1: Make this type of diagram



Program 2: (Now configure the Server-Pt Server 0)

The screenshot shows the configuration window for PC0, specifically the 'Desktop' tab. The 'P Configuration' window is open, showing the 'FastEthernet0' interface. The 'IP Configuration' section has 'Static' selected. The fields are filled with: IP Address: 10.0.0.2, Subnet Mask: 255.0.0.0, Default Gateway: 10.0.0.2, and DNS Server: 10.0.0.1. The 'IPv6 Configuration' section has 'Static' selected, with a Link Local Address of FE80::260:5CFF:FEBC:1434. The '802.1X' section has 'Use 802.1X Security' unchecked. A 'Top' button is at the bottom left.

PC0

Physical Config Desktop Programming Attributes

P Configuration

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IP Address: 10.0.0.2

Subnet Mask: 255.0.0.0

Default Gateway: 10.0.0.2

DNS Server: 10.0.0.1

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address: /

Link Local Address: FE80::260:5CFF:FEBC:1434

IPv6 Gateway:

IPv6 DNS Server:

802.1X

☐ Use 802.1X Security

Top

Program 3: (Now enable and set the DHCP Service on the server)

The screenshot shows the configuration window for Server0, specifically the 'Services' tab. The 'DHCP' service is enabled. The configuration fields are: Interface: FastEthernet0, Pool Name: serverPools, Default Gateway: 0.0.0.0, 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, and vWLC Address: 0.0.0.0. There are 'Add', 'Save', and 'Remove' buttons. A table at the bottom lists the configured pool.

Server0

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: serverPools

Default Gateway: 0.0.0.0

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

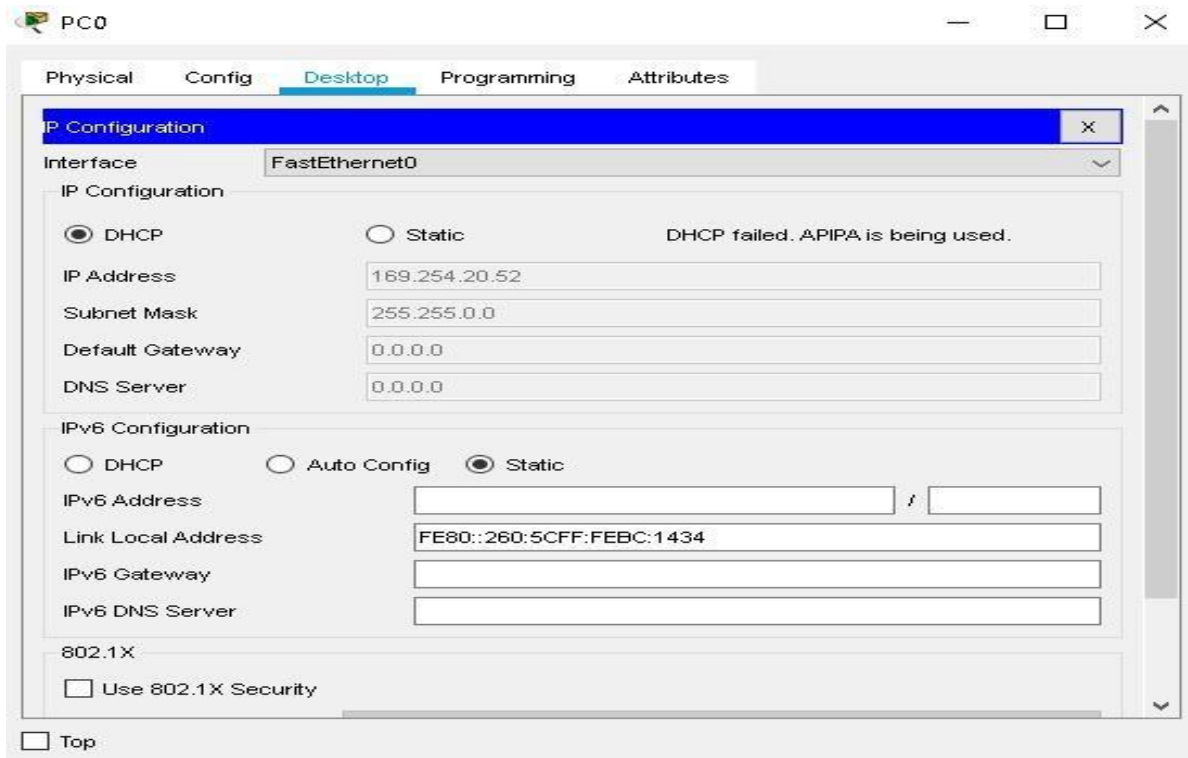
vWLC Address: 0.0.0.0

Add Save Remove

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	vWLC Address
serverPools	0.0.0.0	0.0.0.0	10.0.0.3	255.0.0.0	512	0.0.0.0	0.0.0.0

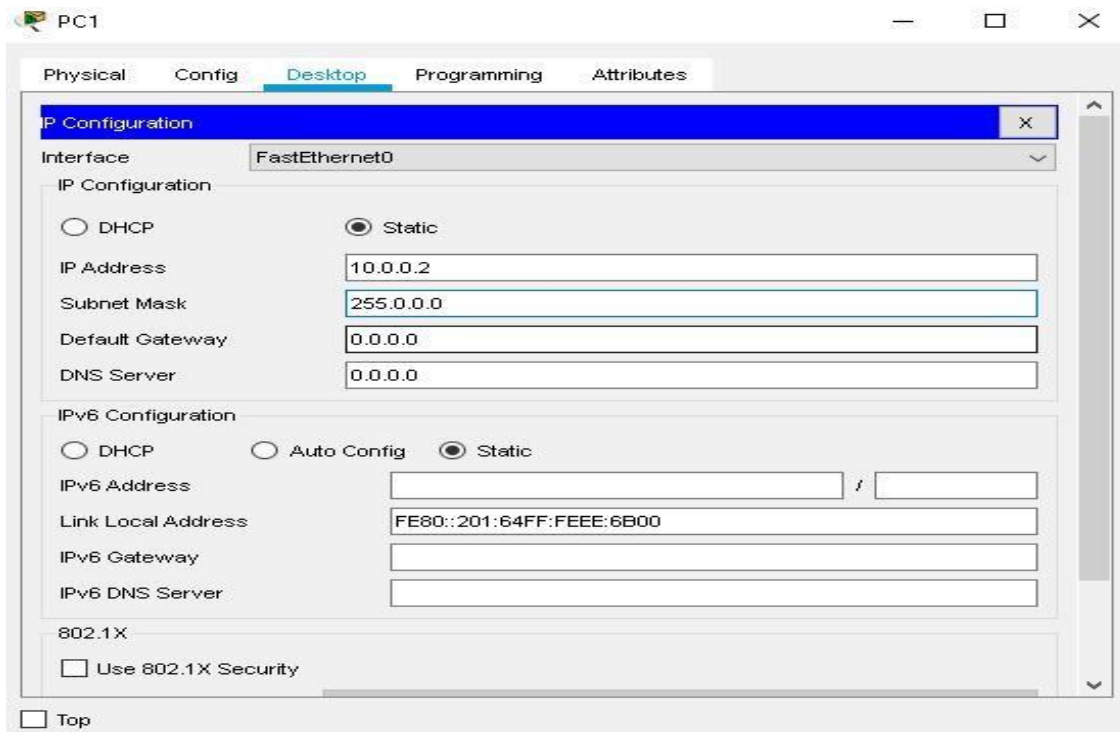
Program 4: (Change the IP Address on both the PC)

4A: PC-PT PC0: It will be set on static; you have to choose the DHCP option.



The screenshot shows the 'IP Configuration' window for PC0. The 'Interface' is 'FastEthernet0'. Under 'IP Configuration', the 'DHCP' radio button is selected, and a message states 'DHCP failed. APIPA is being used.' The IP Address is 169.254.20.52, Subnet Mask is 255.255.0.0, Default Gateway is 0.0.0.0, and DNS Server is 0.0.0.0. Under 'IPv6 Configuration', the 'Static' radio button is selected. The IPv6 Address is empty, Link Local Address is FE80::260:5CFF:FEBC:1434, IPv6 Gateway is empty, and IPv6 DNS Server is empty. The '802.1X' section has 'Use 802.1X Security' unchecked. A 'Top' button is at the bottom left.

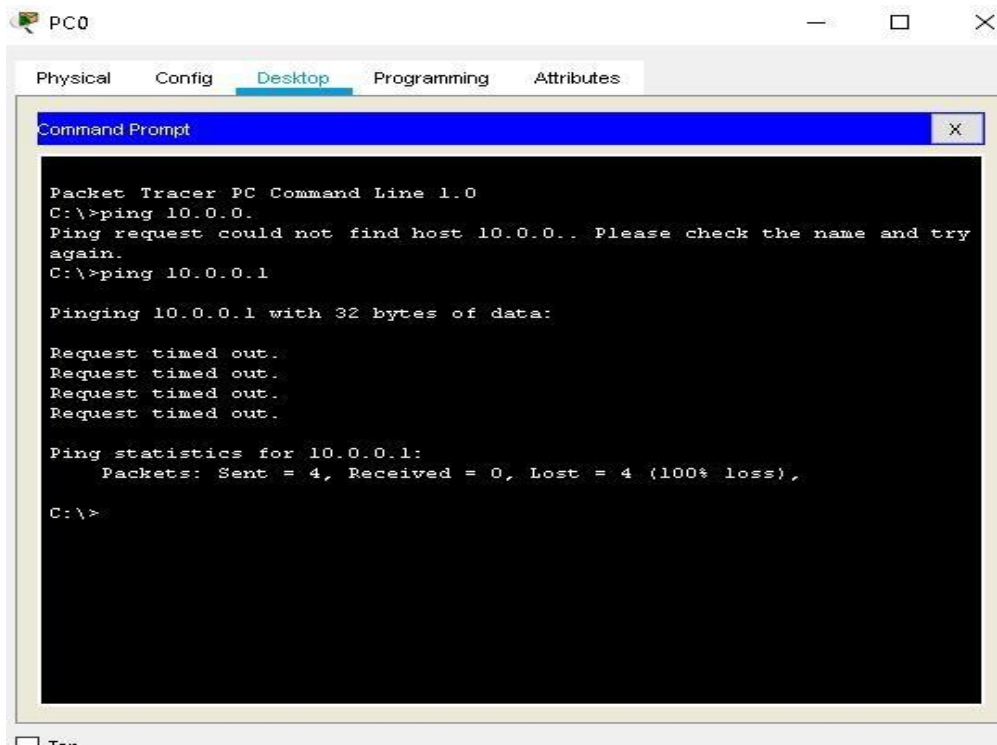
4B: PC-PT PC1: It will be set on static; you have to choose the DHCP option.



The screenshot shows the 'IP Configuration' window for PC1. The 'Interface' is 'FastEthernet0'. Under 'IP Configuration', the 'Static' radio button is selected. The IP Address is 10.0.0.2, Subnet Mask is 255.0.0.0, Default Gateway is 0.0.0.0, and DNS Server is 0.0.0.0. Under 'IPv6 Configuration', the 'Static' radio button is selected. The IPv6 Address is empty, Link Local Address is FE80::201:64FF:EEEE:6B00, IPv6 Gateway is empty, and IPv6 DNS Server is empty. The '802.1X' section has 'Use 802.1X Security' unchecked. A 'Top' button is at the bottom left.

Program 5: (Check the connectivity)

5A: PC-PT PC0: Write the command in cmd: 'ping 10.0.0'



The screenshot shows a Packet Tracer PC window for PC0. The 'Desktop' tab is active, displaying a 'Command Prompt' window. The command prompt shows the following text:

```
Packet Tracer PC Command Line 1.0
C:\>ping 10.0.0.
Ping request could not find host 10.0.0.. Please check the name and try again.
C:\>ping 10.0.0.1

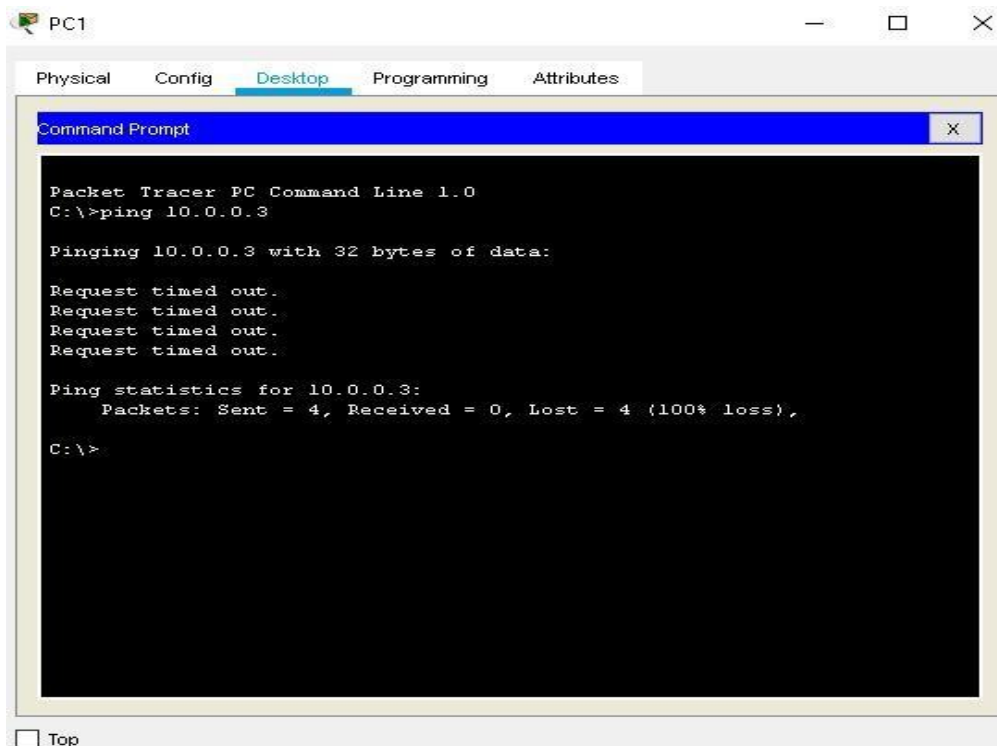
Pinging 10.0.0.1 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 10.0.0.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

5B: PC-PT PC 1: Write the command in cmd: 'ping 10.0.0.4'



The screenshot shows a Packet Tracer PC window for PC1. The 'Desktop' tab is active, displaying a 'Command Prompt' window. The command prompt shows the following text:

```
Packet Tracer PC Command Line 1.0
C:\>ping 10.0.0.3

Pinging 10.0.0.3 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 10.0.0.3:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```