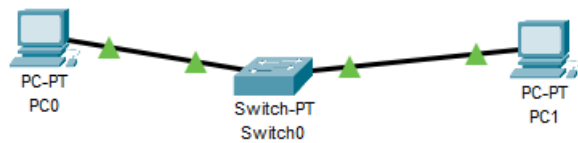


Question 3&4

3. Configure static IP addresses, modify MAC addresses, and verify network connectivity using ping and ifconfig commands.
4. Troubleshoot Ethernet Communication with ping and traceroute Using cisco packet tracer

Network topology:



2. Configuring Static IP Address:

The screenshot shows the configuration window for PC0 in Cisco Packet Tracer. The 'Desktop' tab is selected, and the 'IP Configuration' section is expanded. The 'Interface' dropdown is set to 'FastEthernet0'. Under 'IP Configuration', the 'Static' radio button is selected. The fields are filled with the following values:

Field	Value
IPv4 Address	192.168.1.11
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

Under 'IPv6 Configuration', the 'Static' radio button is also selected. The fields are filled with the following values:

Field	Value
IPv6 Address	
Link Local Address	FE80::260:3EFF:FE85:426
Default Gateway	
DNS Server	

Under '802.1X', the 'Use 802.1X Security' checkbox is unchecked. The 'Authentication' dropdown is set to 'MD5'. The 'Username' and 'Password' fields are empty.

PC1

Physical Config Desktop Programming Attributes

IP Configuration

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 192.168.1.12

Subnet Mask: 255.255.255.0

Default Gateway: 0.0.0.0

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::20A:F3FF:FE2E:2E5A

Default Gateway:

DNS Server:

802.1X

☐ Use 802.1X Security

Authentication: MD5

Username:

Password:

3)MAC ADDRESS:

PC1

Physical Config Desktop Programming Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

FastEthernet0

Bluetooth

FastEthernet0

Port Status: ☒ On

Bandwidth: ☒ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex: ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address: 000A.F32E.2E5A

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 192.168.1.12

Subnet Mask: 255.255.255.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::20A:F3FF:FE2E:2E5A

PC0

Physical

Config

Desktop

Programming

Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

FastEthernet0

Bluetooth

FastEthernet0

Port Status

100 Mbps

10 Mbps

Auto

On

Bandwidth

Half Duplex

Full Duplex

Auto

Duplex

MAC Address

0060.3E85.0426

IP Configuration

DHCP

Static

IPv4 Address

192.168.1.11

Subnet Mask

255.255.255.0

IPv6 Configuration

Automatic

Static

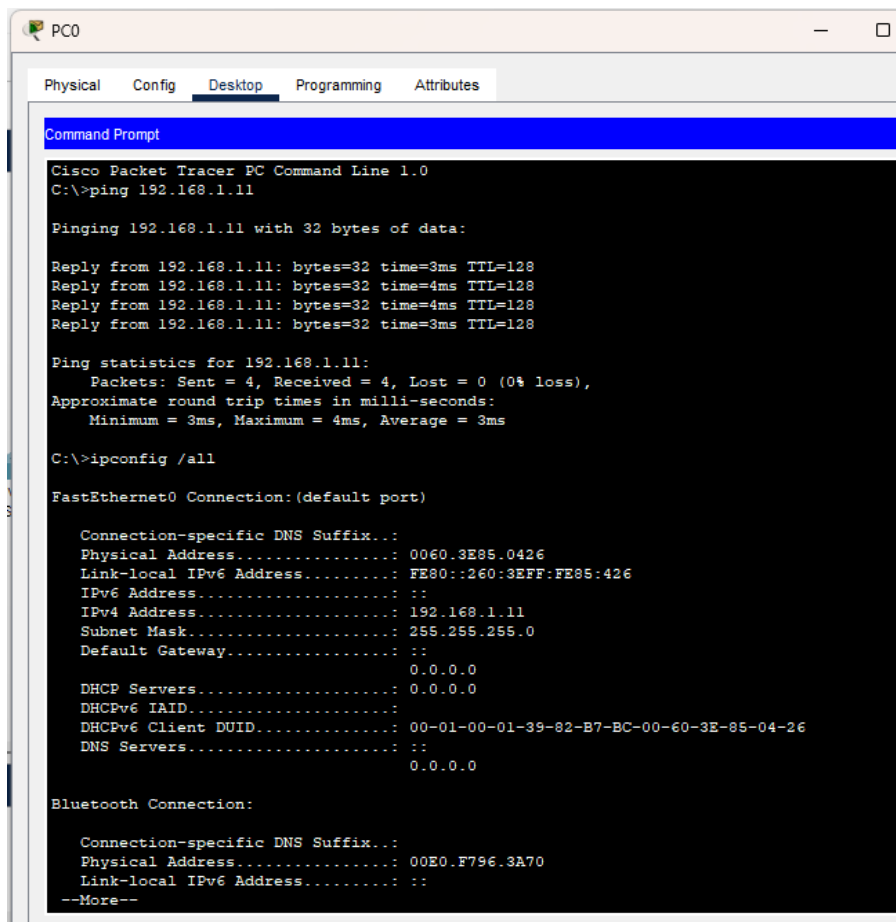
IPv6 Address

/

Link Local Address:

FE80::260:3EFF:FE85:426

4) Ping Connection and ipconfig Commands:



The screenshot shows the Command Prompt window for PC0 in Cisco Packet Tracer. The window has tabs for Physical, Config, Desktop, Programming, and Attributes, with Desktop selected. The Command Prompt displays the output of the 'ping 192.168.1.11' and 'ipconfig /all' commands. The ping command shows four successful replies with 32 bytes of data, times ranging from 3ms to 4ms, and a TTL of 128. The ipconfig /all command shows the configuration for the FastEthernet0 interface, including the physical address, link-local IPv6 address, IPv4 address (192.168.1.11), subnet mask (255.255.255.0), and default gateway (0.0.0.0). It also shows DHCP server information and DNS servers.

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.11

Pinging 192.168.1.11 with 32 bytes of data:

Reply from 192.168.1.11: bytes=32 time=3ms TTL=128
Reply from 192.168.1.11: bytes=32 time=4ms TTL=128
Reply from 192.168.1.11: bytes=32 time=4ms TTL=128
Reply from 192.168.1.11: bytes=32 time=3ms TTL=128

Ping statistics for 192.168.1.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 3ms, Maximum = 4ms, Average = 3ms

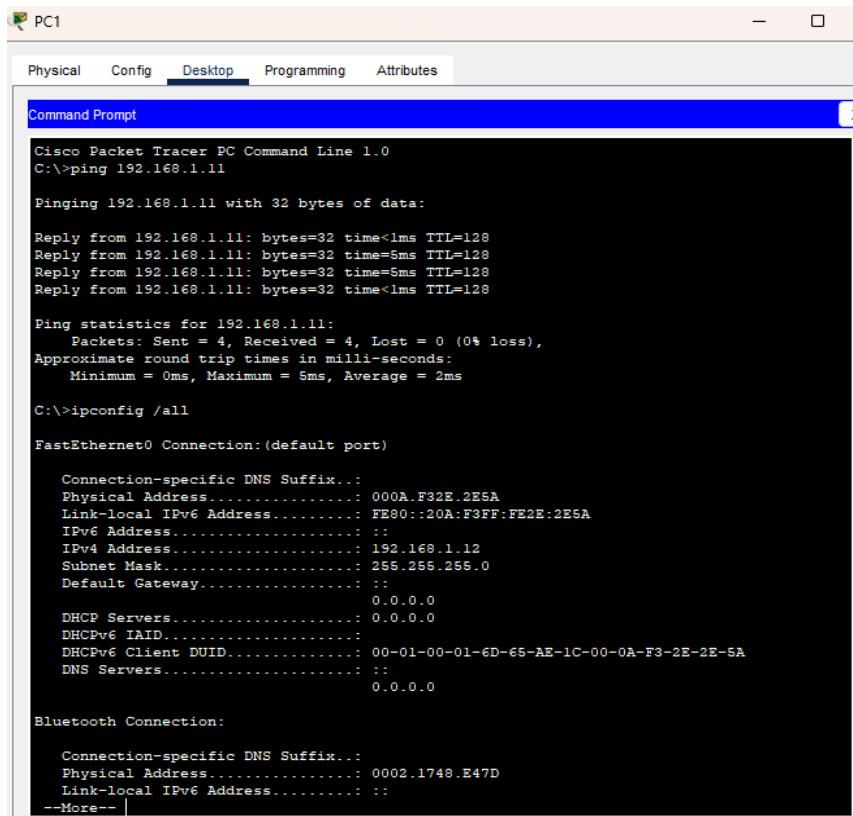
C:\>ipconfig /all

FastEthernet0 Connection: (default port)

    Connection-specific DNS Suffix...:
    Physical Address. . . . . : 0060.3E85.0426
    Link-local IPv6 Address . . . . . : FE80::260:3EFF:FE85:426
    IPv6 Address. . . . . : ::
    IPv4 Address. . . . . : 192.168.1.11
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : ::
                           : 0.0.0.0
    DHCP Servers . . . . . : 0.0.0.0
    DHCPv6 IAID . . . . . :
    DHCPv6 Client DUID. . . . . : 00-01-00-01-39-82-B7-BC-00-60-3E-85-04-26
    DNS Servers . . . . . : ::
                           : 0.0.0.0

Bluetooth Connection:

    Connection-specific DNS Suffix...:
    Physical Address. . . . . : 00E0.F796.3A70
    Link-local IPv6 Address . . . . . : ::
--More--
```



The screenshot shows the Command Prompt window for PC1 in Cisco Packet Tracer. The window has tabs for Physical, Config, Desktop, Programming, and Attributes, with Desktop selected. The Command Prompt displays the output of the 'ping 192.168.1.11' and 'ipconfig /all' commands. The ping command shows four successful replies with 32 bytes of data, times ranging from 1ms to 5ms, and a TTL of 128. The ipconfig /all command shows the configuration for the FastEthernet0 interface, including the physical address, link-local IPv6 address, IPv4 address (192.168.1.12), subnet mask (255.255.255.0), and default gateway (0.0.0.0). It also shows DHCP server information and DNS servers.

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.11

Pinging 192.168.1.11 with 32 bytes of data:

Reply from 192.168.1.11: bytes=32 time<1ms TTL=128
Reply from 192.168.1.11: bytes=32 time=5ms TTL=128
Reply from 192.168.1.11: bytes=32 time=5ms TTL=128
Reply from 192.168.1.11: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 5ms, Average = 2ms

C:\>ipconfig /all

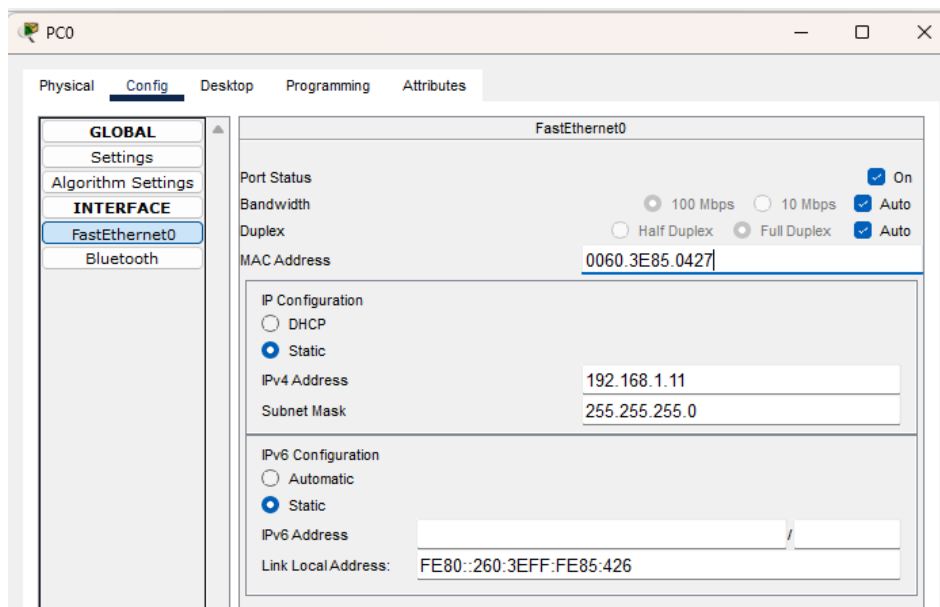
FastEthernet0 Connection: (default port)

    Connection-specific DNS Suffix...:
    Physical Address. . . . . : 000A.F32E.2E5A
    Link-local IPv6 Address . . . . . : FE80::20A:F3FF:FE2E:2E5A
    IPv6 Address. . . . . : ::
    IPv4 Address. . . . . : 192.168.1.12
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : ::
                           : 0.0.0.0
    DHCP Servers . . . . . : 0.0.0.0
    DHCPv6 IAID . . . . . :
    DHCPv6 Client DUID. . . . . : 00-01-00-01-6D-65-AE-1C-00-0A-F3-2E-2E-5A
    DNS Servers . . . . . : ::
                           : 0.0.0.0

Bluetooth Connection:

    Connection-specific DNS Suffix...:
    Physical Address. . . . . : 0002.1748.E47D
    Link-local IPv6 Address . . . . . : ::
--More--
```

5) Mac address modification:



6) Ping and Switch MAC Table Check to ensure connectivity

```
Command Prompt
C:\>
C:\>ping 192.168.1.12

Pinging 192.168.1.12 with 32 bytes of data:

Reply from 192.168.1.12: bytes=32 time=6ms TTL=128
Reply from 192.168.1.12: bytes=32 time<1ms TTL=128
Reply from 192.168.1.12: bytes=32 time<1ms TTL=128
Reply from 192.168.1.12: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.12:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 6ms, Average = 1ms

C:\>ipconfig /all

FastEthernet0 Connection: (default port)

    Connection-specific DNS Suffix...:
    Physical Address. . . . .: 0060.3E85.0427
    Link-local IPv6 Address . . . . .: FE80::260:3EFF:FE85:426
    IPv6 Address. . . . .: ::
    IPv4 Address. . . . .: 192.168.1.11
    Subnet Mask . . . . .: 255.255.255.0
    Default Gateway . . . . .: ::
                                   0.0.0.0
    DHCP Servers. . . . .: 0.0.0.0
    DHCPv6 IAID. . . . .:
    DHCPv6 Client DUID. . . . .: 00-01-00-01-39-82-B7-BC-00-60-3E-85-04-27
    DNS Servers . . . . .: ::
                                   0.0.0.0

Bluetooth Connection:

    Connection-specific DNS Suffix...:
    Physical Address. . . . .: 00E0.F796.3A70
    Link-local IPv6 Address . . . . .: ::
--More-- |
```

8) Mac address table:

```
Switch>enable
Switch#show mac address-table
      Mac Address Table
-----
Vlan    Mac Address      Type    Ports
----    -
1       000a.f32e.2e5a   DYNAMIC Fa1/1
1       0060.3e85.0427   DYNAMIC Fa0/1
Switch#
```

9) Traceroute for troubleshooting

```
C:\>tracert 192.168.1.12

Tracing route to 192.168.1.12 over a maximum of 30 hops:

  0  0 ms    0 ms    0 ms    192.168.1.12

Trace complete.
```