

# **INTERNETWORKING ESSENTIALS CA1**

## **BACHELOR OF TECHNOLOGY**

IN

Computer Science & Engineering

By

**LAVANYA PUPPALA**

SECTION-K23UP

Roll no: 50

Reg.No: 12300764

TO

**Mr. Simarjit Singh Malhi**

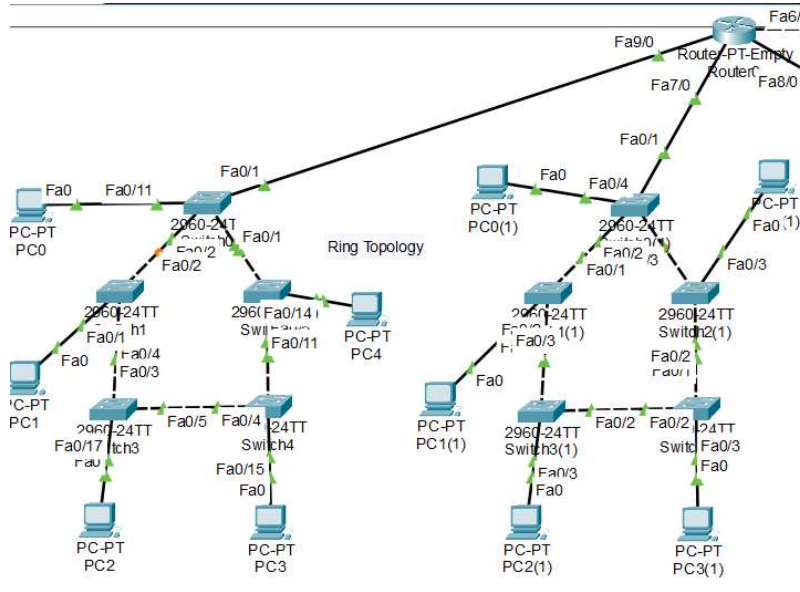


**LOVELY PROFESSIONAL UNIVERSITY**

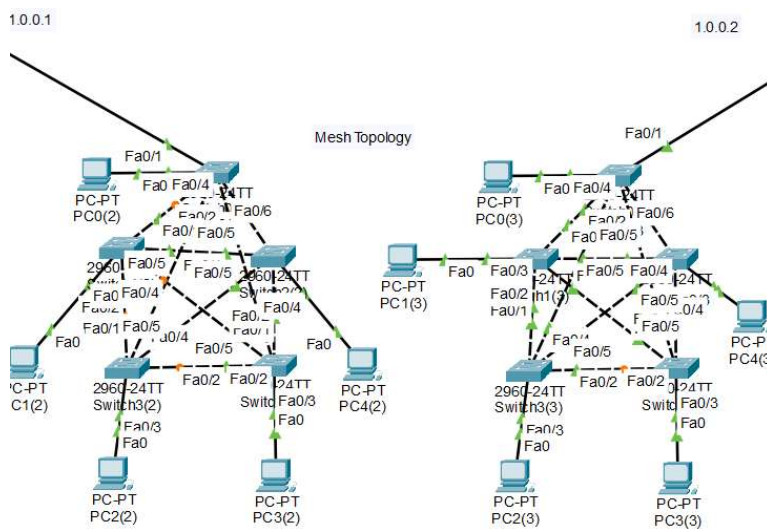
**PUNJAB INDIA**

## 1. Physical Connection:

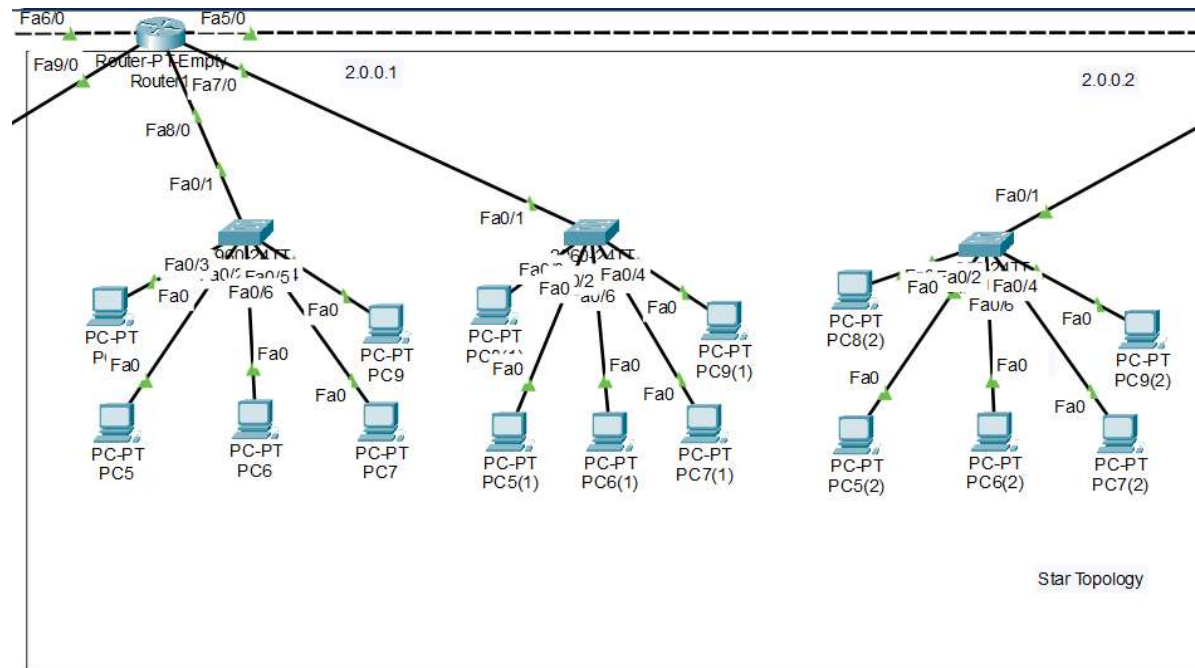
### Ring Topology for first 2 floors:



### Mesh Topology for next 2 floors:



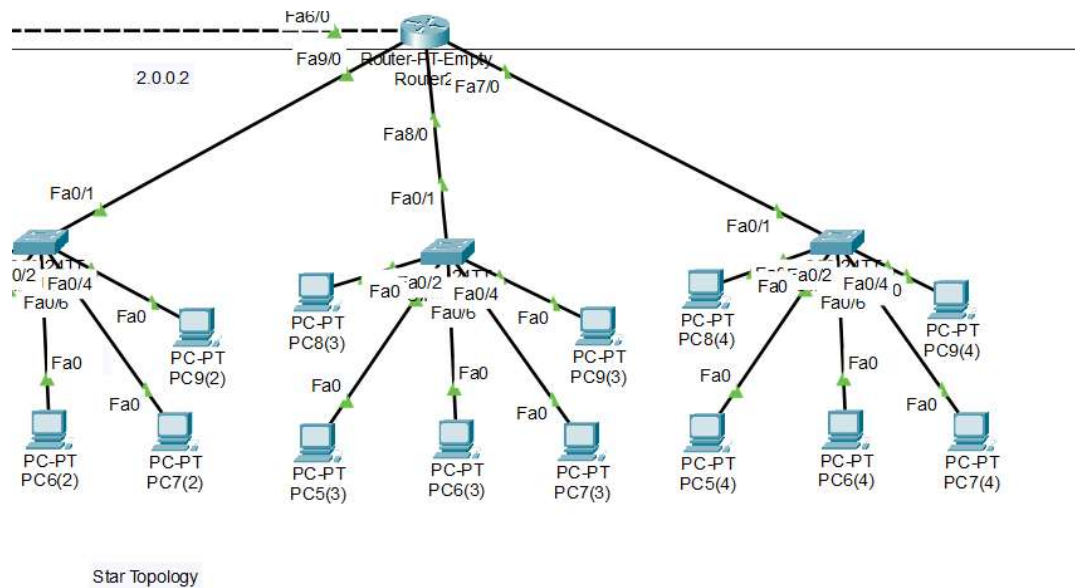
## Star Topology for next 5 floors:



IP address: 193.0.0.2 to 193.0.0.6  
Subnet mask : 255.255.255.0  
Default gateway:  
193.0.0.1

IP address: 194.0.0.2 to 194.0.0.6  
Subnet mask : 255.255.255.0  
Default gateway:  
194.0.0.1

IP address: 195.0.0.2 to 195.0.0.6  
Subnet mask : 255.255.255.0  
Default gateway:  
195.0.0.1

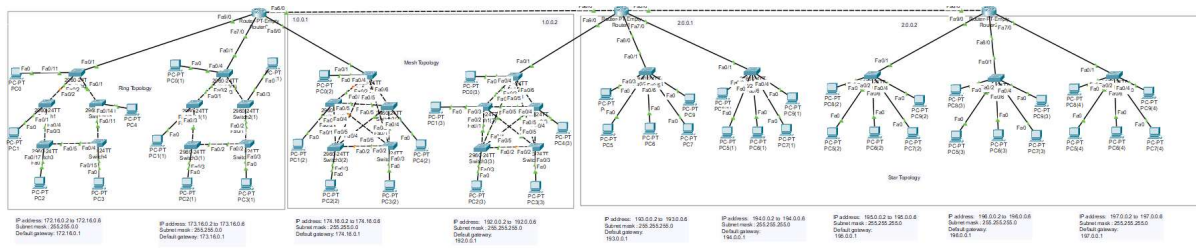


IP address: 195.0.0.2 to 195.0.0.6  
Subnet mask : 255.255.255.0  
Default gateway:  
195.0.0.1

IP address: 196.0.0.2 to 196.0.0.6  
Subnet mask : 255.255.255.0  
Default gateway:  
196.0.0.1

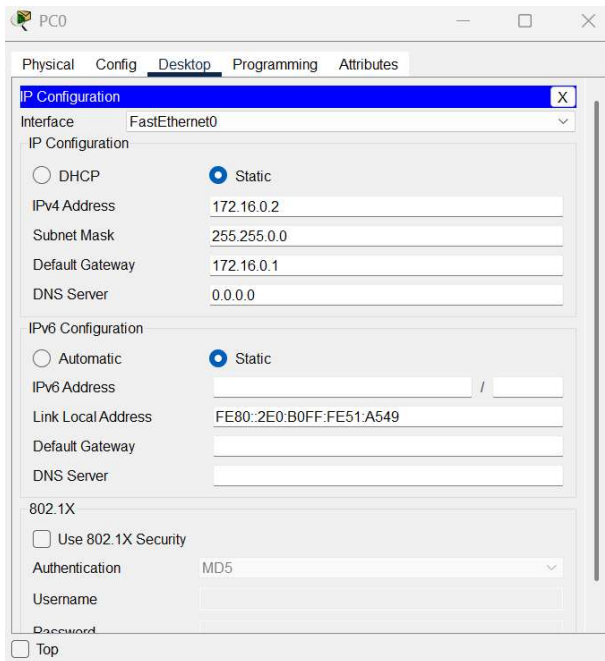
IP address: 197.0.0.2 to 197.0.0.6  
Subnet mask : 255.255.255.0  
Default gateway:  
197.0.0.1

## Full connection:



## 2. Allocation of IP Address:

1<sup>st</sup> Floor:

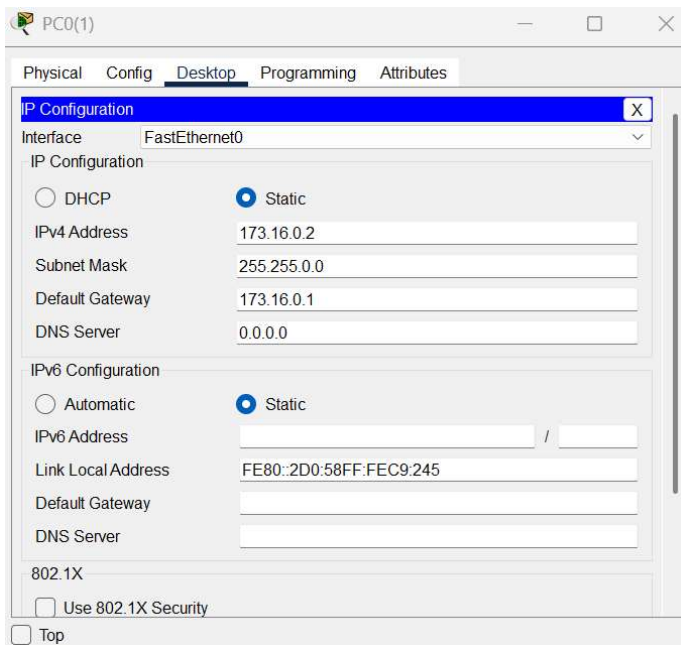


The screenshot shows the configuration window for PC0. The 'Desktop' tab is selected. The 'IP Configuration' section is expanded, showing the 'FastEthernet0' interface. The 'Static' radio button is selected under 'IP Configuration'. The 'IPv4 Address' is set to 172.16.0.2, 'Subnet Mask' is 255.255.0.0, 'Default Gateway' is 172.16.0.1, and 'DNS Server' is 0.0.0.0. The 'IPv6 Configuration' section is also expanded, showing 'Static' selected, with 'IPv6 Address' set to FE80::2E0:B0FF:FE51:A549, 'Link Local Address' set to FE80::2E0:B0FF:FE51:A549, and 'Default Gateway' and 'DNS Server' are empty. The '802.1X' section is expanded, showing 'Use 802.1X Security' unchecked, 'Authentication' set to MD5, and 'Username' and 'Password' are empty. A 'Top' button is at the bottom left.

Interface	FastEthernet0
<b>IP Configuration</b>	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	172.16.0.2
Subnet Mask	255.255.0.0
Default Gateway	172.16.0.1
DNS Server	0.0.0.0
<b>IPv6 Configuration</b>	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	FE80::2E0:B0FF:FE51:A549
Link Local Address	FE80::2E0:B0FF:FE51:A549
Default Gateway	
DNS Server	
<b>802.1X</b>	
<input type="checkbox"/> Use 802.1X Security	
Authentication	MD5
Username	
Password	

☐ Top

2<sup>nd</sup> Floor:

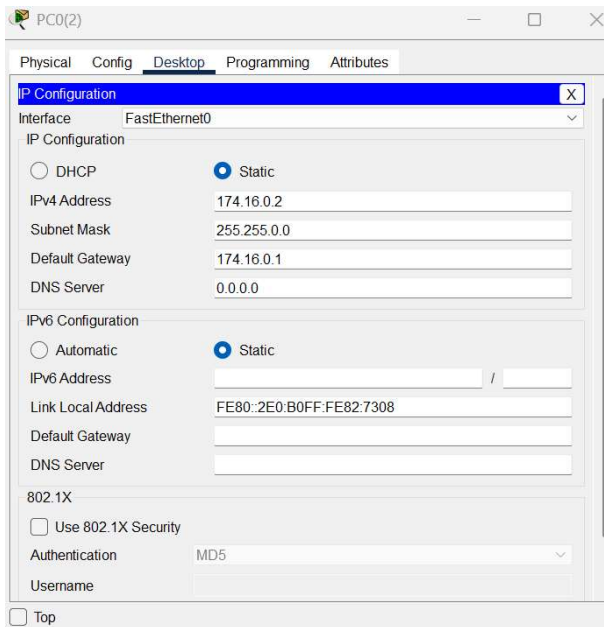


The screenshot shows the configuration window for PC0(1). The 'Desktop' tab is selected. The 'IP Configuration' section is expanded, showing the 'FastEthernet0' interface. The 'Static' radio button is selected under 'IP Configuration'. The 'IPv4 Address' is set to 173.16.0.2, 'Subnet Mask' is 255.255.0.0, 'Default Gateway' is 173.16.0.1, and 'DNS Server' is 0.0.0.0. The 'IPv6 Configuration' section is also expanded, showing 'Static' selected, with 'IPv6 Address' set to FE80::2D0:58FF:FEC9:245, 'Link Local Address' set to FE80::2D0:58FF:FEC9:245, and 'Default Gateway' and 'DNS Server' are empty. The '802.1X' section is expanded, showing 'Use 802.1X Security' unchecked. A 'Top' button is at the bottom left.

Interface	FastEthernet0
<b>IP Configuration</b>	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	173.16.0.2
Subnet Mask	255.255.0.0
Default Gateway	173.16.0.1
DNS Server	0.0.0.0
<b>IPv6 Configuration</b>	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	FE80::2D0:58FF:FEC9:245
Link Local Address	FE80::2D0:58FF:FEC9:245
Default Gateway	
DNS Server	
<b>802.1X</b>	
<input type="checkbox"/> Use 802.1X Security	

☐ Top

### 3rd Floor:



PC0(2)

Physical Config **Desktop** Programming Attributes

IP Configuration [X]

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 174.16.0.2

Subnet Mask 255.255.0.0

Default Gateway 174.16.0.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::2E0:B0FF:FE82:7308

Default Gateway

DNS Server

802.1X

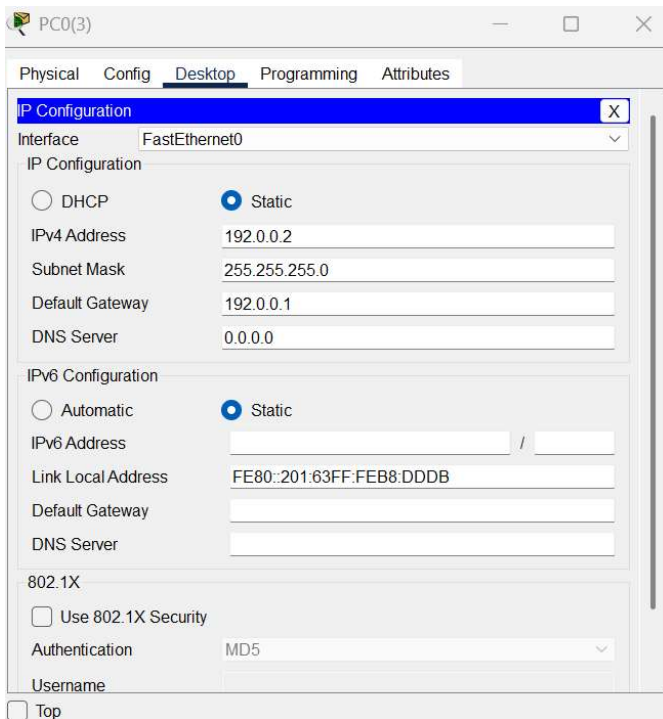
☐ Use 802.1X Security

Authentication MD5

Username

☐ Top

### 4th Floor:



PC0(3)

Physical Config **Desktop** Programming Attributes

IP Configuration [X]

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.0.0.2

Subnet Mask 255.255.255.0

Default Gateway 192.0.0.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::201:63FF:FE88:DDDB

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

☐ Top

5<sup>th</sup> Floor:

PC8

Physical Config **Desktop** Programming Attributes

IP Configuration

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 193.0.0.2

Subnet Mask: 255.255.255.0

Default Gateway: 193.0.0.1

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::207:ECFF:FECC:3D06

Default Gateway:

DNS Server:

802.1X

☐ Use 802.1X Security

Authentication: MD5

Username:

☐ Top

6th Floor:

PC8(1)

Physical Config **Desktop** Programming Attributes

IP Configuration

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 194.0.0.2

Subnet Mask: 255.255.255.0

Default Gateway: 194.0.0.1

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::204:9AFF:FE91:22C6

Default Gateway:

DNS Server:

802.1X

☐ Use 802.1X Security

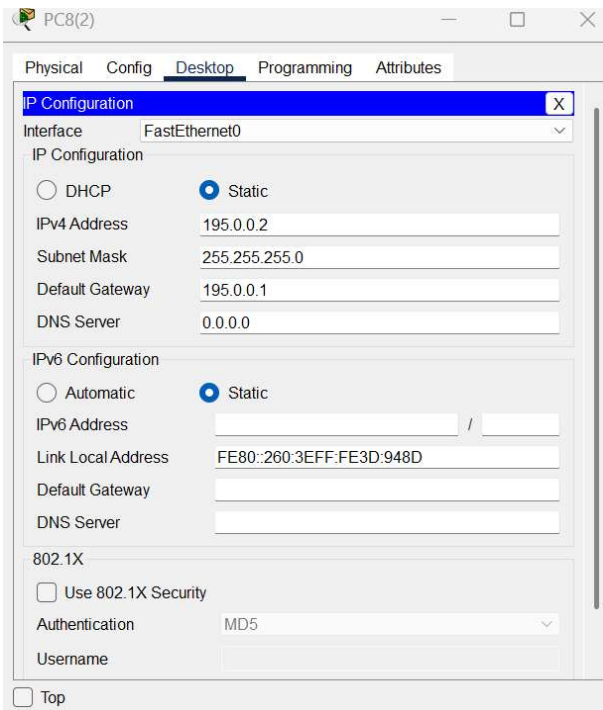
Authentication: MD5

Username:

Password:

☐ Top

7th Floor:



PC8(2)

Physical Config **Desktop** Programming Attributes

IP Configuration [X]

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 195.0.0.2

Subnet Mask: 255.255.255.0

Default Gateway: 195.0.0.1

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::260:3EFF:FE3D:948D

Default Gateway:

DNS Server:

802.1X

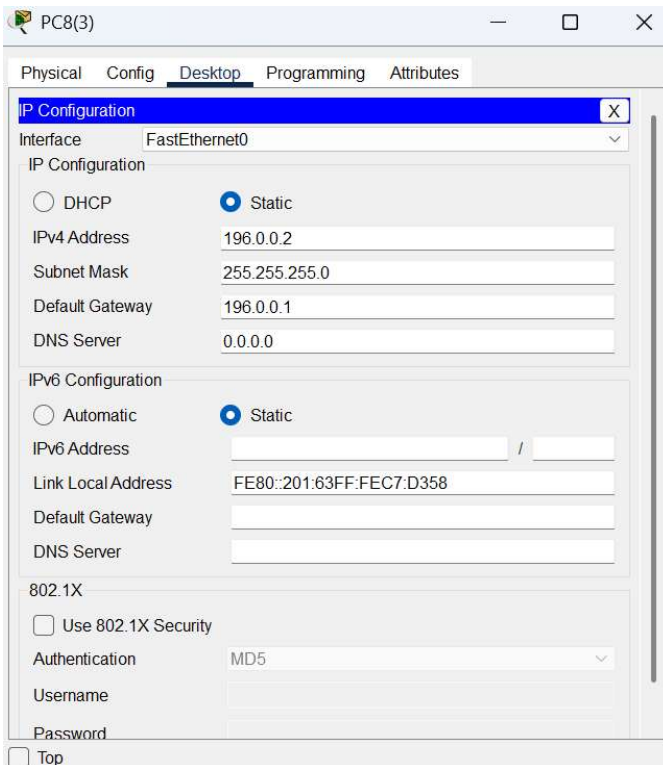
☐ Use 802.1X Security

Authentication: MD5

Username:

☐ Top

8<sup>TH</sup> FLOOR:



PC8(3)

Physical Config **Desktop** Programming Attributes

IP Configuration [X]

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 196.0.0.2

Subnet Mask: 255.255.255.0

Default Gateway: 196.0.0.1

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::201:63FF:FEC7:D358

Default Gateway:

DNS Server:

802.1X

☐ Use 802.1X Security

Authentication: MD5

Username:

Password:

☐ Top

9<sup>TH</sup> FLOOR:



PC8(4)

Physical Config Desktop Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 197.0.0.2

Subnet Mask 255.255.255.0

Default Gateway 197.0.0.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::2D0:97FF:FE6D:1EC9

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

☐ Top

### 3. Dynamic Routing:

#### 1<sup>st</sup> Router:

Router0

Physical Config CLI Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

INTERFACE

FastEthernet5/0

FastEthernet6/0

FastEthernet7/0

FastEthernet8/0

FastEthernet9/0

RIP Routing

Network

Add

Network Address

1.0.0.0

172.16.0.0

173.16.0.0

174.16.0.0

Remove

Equivalent IOS Commands

Press RETURN to get started!

Router>enable

Router#

Router#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#router rip

Router(config-router)#

☐ Top

## 2<sup>nd</sup> Router:

Router1

Physical Config CLI Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

INTERFACE

FastEthernet5/0

FastEthernet6/0

FastEthernet7/0

FastEthernet8/0

FastEthernet9/0

RIP Routing

Network

Network Address

1.0.0.0

2.0.0.0

192.0.0.0

193.0.0.0

194.0.0.0

Add

Remove

Equivalent IOS Commands

Press RETURN to get started!

☐ Top

### 3rd Router:

Router2

Physical Config CLI Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

INTERFACE

FastEthernet5/0

FastEthernet6/0

FastEthernet7/0

FastEthernet8/0

FastEthernet9/0

RIP Routing

Network

Add

Network Address

2.0.0.0

195.0.0.0

196.0.0.0

197.0.0.0

Remove

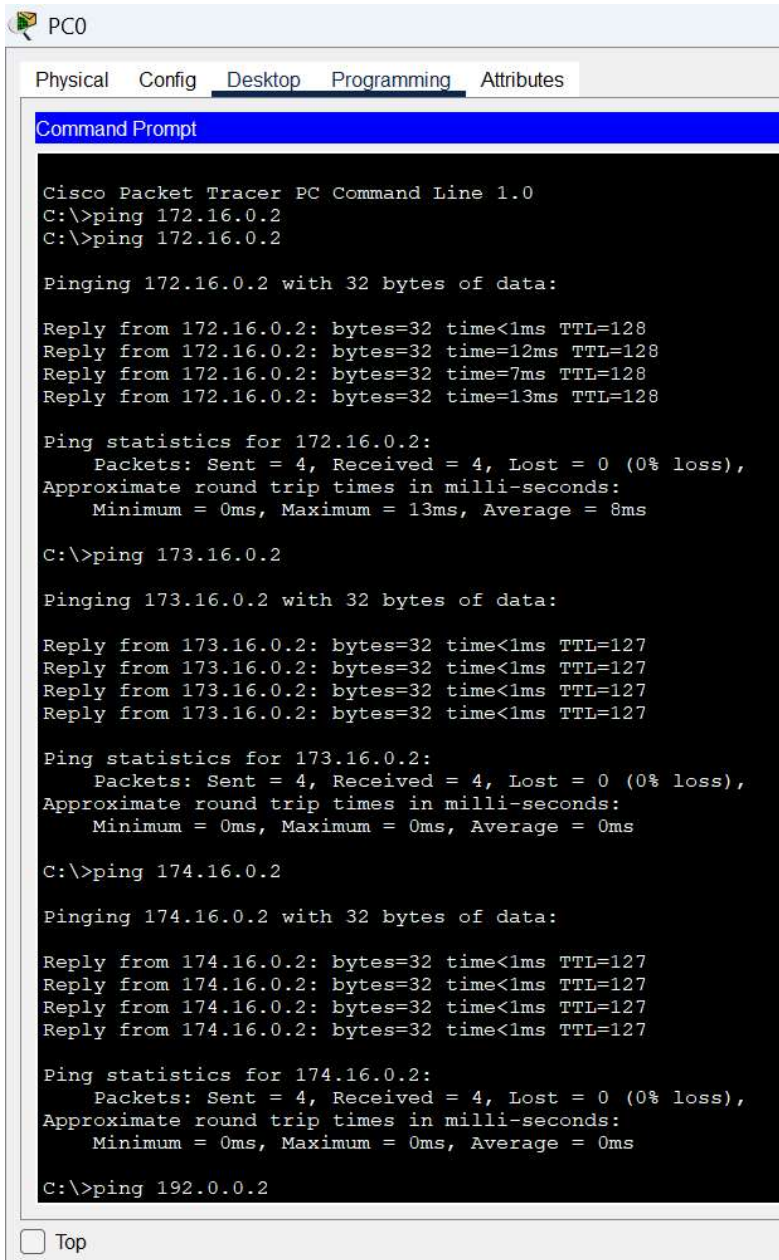
Equivalent IOS Commands

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#
Router(config)#
Router(config)#router rip
Router(config-router)#
```

☐ Top

## 4. Communication between all computers:

### 1<sup>st</sup> Floor PC to Floor to all PC's:



PC0

Physical Config Desktop Programming Attributes

Command Prompt

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 172.16.0.2
C:\>ping 172.16.0.2

Pinging 172.16.0.2 with 32 bytes of data:

Reply from 172.16.0.2: bytes=32 time<1ms TTL=128
Reply from 172.16.0.2: bytes=32 time=12ms TTL=128
Reply from 172.16.0.2: bytes=32 time=7ms TTL=128
Reply from 172.16.0.2: bytes=32 time=13ms TTL=128

Ping statistics for 172.16.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 13ms, Average = 8ms

C:\>ping 173.16.0.2

Pinging 173.16.0.2 with 32 bytes of data:

Reply from 173.16.0.2: bytes=32 time<1ms TTL=127
Reply from 173.16.0.2: bytes=32 time<1ms TTL=127
Reply from 173.16.0.2: bytes=32 time<1ms TTL=127
Reply from 173.16.0.2: bytes=32 time<1ms TTL=127

Ping statistics for 173.16.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 174.16.0.2

Pinging 174.16.0.2 with 32 bytes of data:

Reply from 174.16.0.2: bytes=32 time<1ms TTL=127
Reply from 174.16.0.2: bytes=32 time<1ms TTL=127
Reply from 174.16.0.2: bytes=32 time<1ms TTL=127
Reply from 174.16.0.2: bytes=32 time<1ms TTL=127

Ping statistics for 174.16.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.0.0.2
```

☐ Top

PC0

Physical Config Desktop Programming Attributes

Command Prompt

```
C:\>ping 192.0.0.2

Pinging 192.0.0.2 with 32 bytes of data:

Reply from 192.0.0.2: bytes=32 time<1ms TTL=126
Reply from 192.0.0.2: bytes=32 time<1ms TTL=126
Reply from 192.0.0.2: bytes=32 time=1ms TTL=126
Reply from 192.0.0.2: bytes=32 time<1ms TTL=126

Ping statistics for 192.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>ping 193.0.0.2

Pinging 193.0.0.2 with 32 bytes of data:

Reply from 193.0.0.2: bytes=32 time=10ms TTL=126
Reply from 193.0.0.2: bytes=32 time=1ms TTL=126
Reply from 193.0.0.2: bytes=32 time=13ms TTL=126
Reply from 193.0.0.2: bytes=32 time<1ms TTL=126

Ping statistics for 193.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 13ms, Average = 6ms

C:\>ping 194.0.0.2

Pinging 194.0.0.2 with 32 bytes of data:

Request timed out.
Reply from 194.0.0.2: bytes=32 time<1ms TTL=126
Reply from 194.0.0.2: bytes=32 time=1ms TTL=126
Reply from 194.0.0.2: bytes=32 time=21ms TTL=126

Ping statistics for 194.0.0.2:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 21ms, Average = 7ms

C:\>ping 195.0.0.2

Pinging 195.0.0.2 with 32 bytes of data:
```

☐ Top

PCO

Physical Config **Desktop** Programming Attributes

Command Prompt

```
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 21ms, Average = 7ms

C:\>ping 195.0.0.2

Pinging 195.0.0.2 with 32 bytes of data:

Reply from 195.0.0.2: bytes=32 time<1ms TTL=125
Reply from 195.0.0.2: bytes=32 time<1ms TTL=125
Reply from 195.0.0.2: bytes=32 time<1ms TTL=125
Reply from 195.0.0.2: bytes=32 time=1ms TTL=125

Ping statistics for 195.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>ping 196.0.0.2

Pinging 196.0.0.2 with 32 bytes of data:

Reply from 196.0.0.2: bytes=32 time<1ms TTL=125
Reply from 196.0.0.2: bytes=32 time<1ms TTL=125
Reply from 196.0.0.2: bytes=32 time=25ms TTL=125
Reply from 196.0.0.2: bytes=32 time=2ms TTL=125

Ping statistics for 196.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 25ms, Average = 6ms

C:\>ping 197.0.0.2

Pinging 197.0.0.2 with 32 bytes of data:

Reply from 197.0.0.2: bytes=32 time<1ms TTL=125
Reply from 197.0.0.2: bytes=32 time<1ms TTL=125
Reply from 197.0.0.2: bytes=32 time<1ms TTL=125
Reply from 197.0.0.2: bytes=32 time<1ms TTL=125

Ping statistics for 197.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```