

**Name: Aaditya Bhatt**

**Reg.No: 21BEC1531**

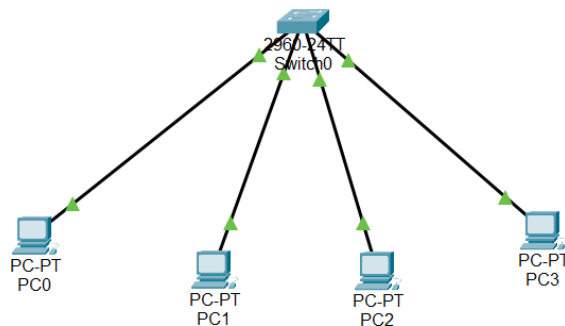
## **Experiment 1**

**Aim:** To create a Server Client Architecture (Webapp) using Cisco Packet Tracer.

**Software used:** Cisco Packet Tracer

### **Procedure:**

1. Create a network using multiple PCs and a switch. Connect them using wires.



## 2. Configure the IP addresses for all the PCs.

PC0

Physical Config Desktop Programming Attributes

IP Configuration [X]

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.1.10

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::2D0:BCFF:FE84:D859

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

☐ Top

PC1

Physical Config Desktop Programming Attributes

IP Configuration [X]

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.1.11

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::201:96FF:FE1E:3B6E

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

☐ Top

PC2

Physical

Config

Desktop

Programming

Attributes

IP Configuration

InterfaceFastEthernet0

IP Configuration

DHCP

Static

IPv4 Address192.168.1.12

Subnet Mask255.255.255.0

Default Gateway0.0.0.0

DNS Server0.0.0.0

IPv6 Configuration

Automatic

Static

IPv6 Address /

Link Local AddressFE80::204:9AFF:FE3E:3B21

Default Gateway

DNS Server

802.1X

Use 802.1X Security

AuthenticationMD5

Username

Password

Top

PC3

Physical Config **Desktop** Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.1.13

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::260:3EFF:FEDA:3D1B

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

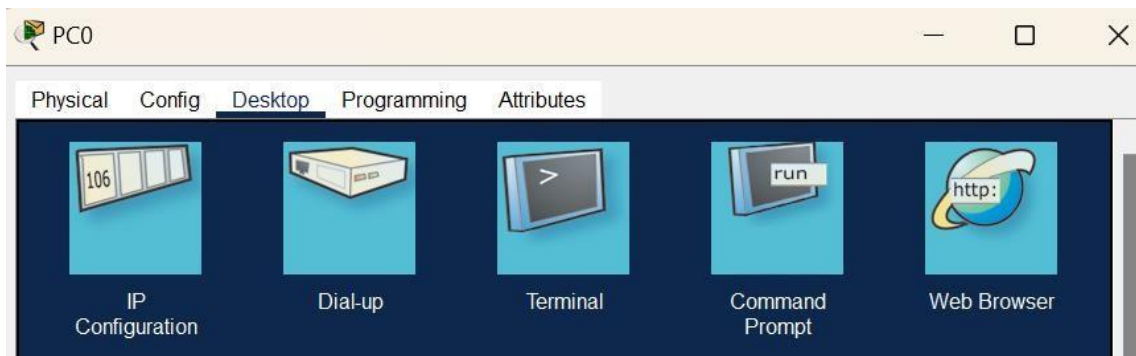
Authentication MD5

Username

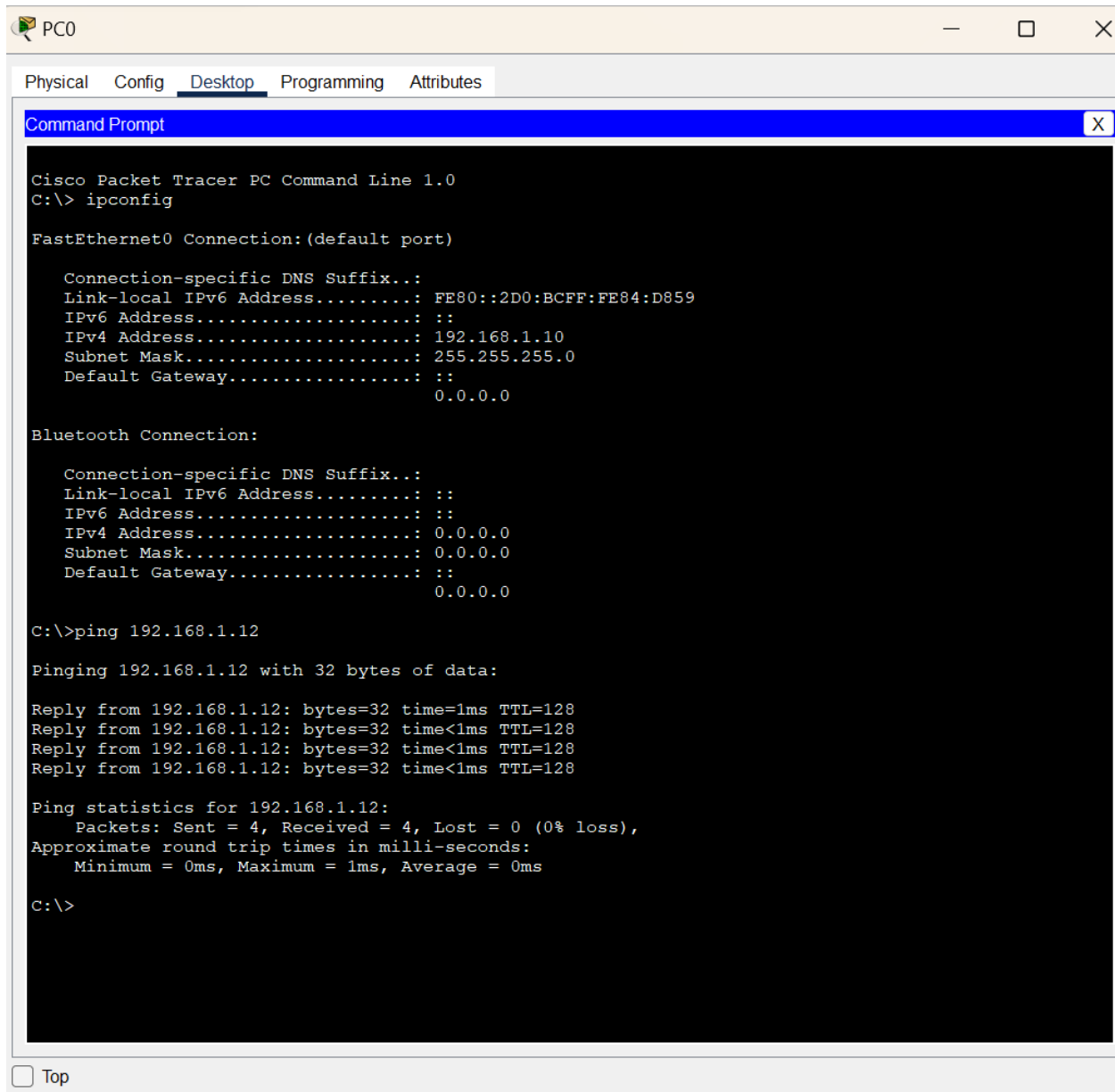
Password

☐ Top

### 3. PC0 -> Desktop -> Command Prompt



#### 4. Ping PC3 to check for the successful establishment of network.



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

FastEthernet0 Connection:(default port)

    Connection-specific DNS Suffix...:
    Link-local IPv6 Address . . . . .: FE80::2D0:BCFF:FE84:D859
    IPv6 Address . . . . .: ::
    IPv4 Address . . . . .: 192.168.1.10
    Subnet Mask . . . . .: 255.255.255.0
    Default Gateway . . . . .: ::
                                0.0.0.0

Bluetooth Connection:

    Connection-specific DNS Suffix...:
    Link-local IPv6 Address . . . . .: ::
    IPv6 Address . . . . .: ::
    IPv4 Address . . . . .: 0.0.0.0
    Subnet Mask . . . . .: 0.0.0.0
    Default Gateway . . . . .: ::
                                0.0.0.0

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

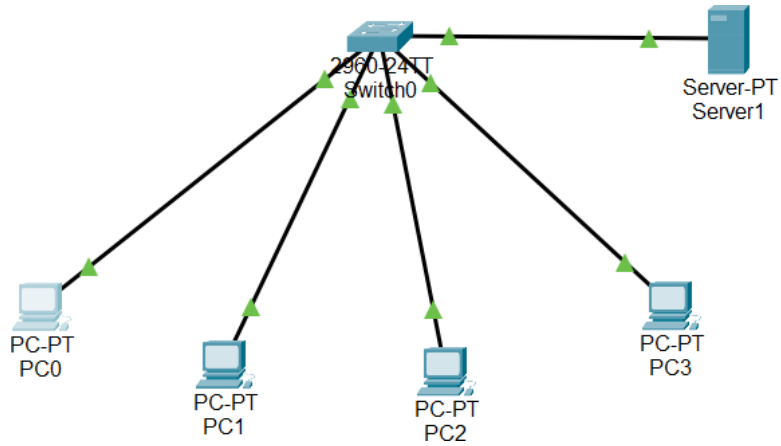
Ping statistics for 192.168.1.12:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>
```

☐ Top

#### 5. Check the same for all the PCs.

## 6. Add a server to the network.



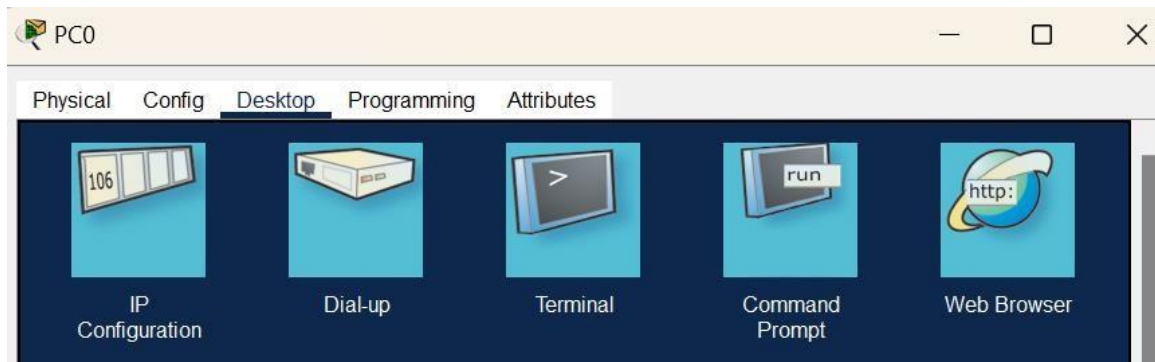
## 7. Configure the IP address and Default Gateway.

The screenshot shows the 'Server1' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is expanded, showing the following settings:

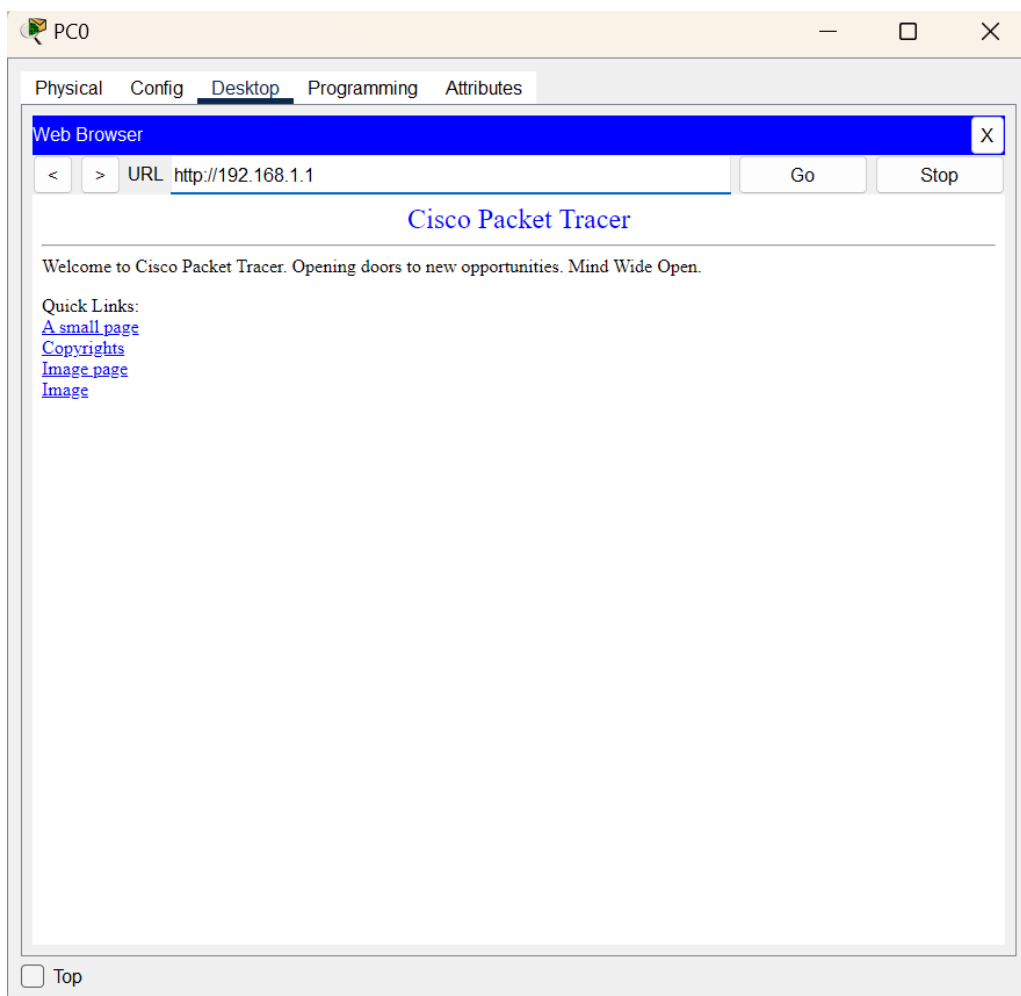
Configuration Type	Field	Value
IP Configuration	<input type="radio"/> DHCP	
	<input checked="" type="radio"/> Static	
	IPv4 Address	192.168.1.1
	Subnet Mask	255.255.255.0
	Default Gateway	0.0.0.0
IPv6 Configuration	<input type="radio"/> Automatic	
	<input checked="" type="radio"/> Static	
	IPv6 Address	
	Link Local Address	FE80::290:CFF:FE44:30E3
	Default Gateway	
802.1X	<input type="checkbox"/> Use 802.1X Security	
	Authentication	MD5
	Username	
	Password	

At the bottom left of the window, there is a 'Top' button.

## 8. PC0 -> Desktop -> Web Browser



## 9. Ping the server.



## **Inference:**

- 1) **Network Configuration:** Through this experiment, you will learn how to configure network devices such as pc, switches, and servers using Cisco Packet Tracer. This includes setting up IP addresses, subnetting, routing.
- 2) We ping the pc's which are present in our network and added a server to them.
- 3) **Client-Server Interaction:** Exploring how clients interact with the server helps in understanding request-response mechanisms. Clients send requests to the server, which processes them and sends back responses containing the requested data or resources.
- 4) Now in the web browser we ping the server 192.168.1.1 and got our output.

## **Conclusion:**

Through this experiment, you will develop a deeper understanding of networking concepts and gain practical experience in configuring and managing network devices and services. Overall, this experiment provides a hands-on approach to learning essential skills for designing, implementing, and maintaining robust network infrastructures. This experiment tells us managing and pinging the server and the overall network.



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**Reg.No:** 21BEC1531

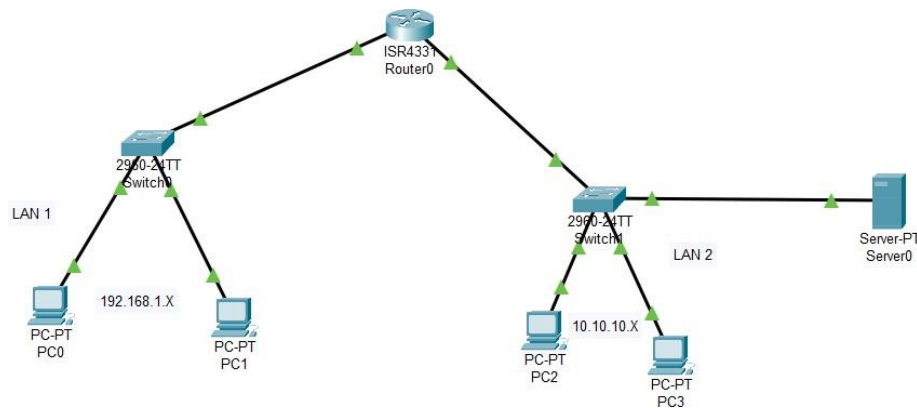
## **Experiment:2**

**Aim:** To configure and setup a Wide Area Network in Cisco Packet Tracer.

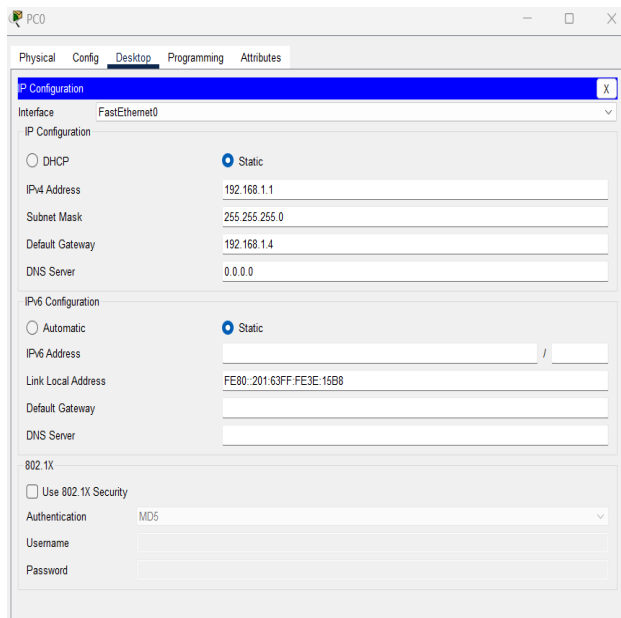
**Software used:** Cisco Packet Tracer

### **Procedure:**

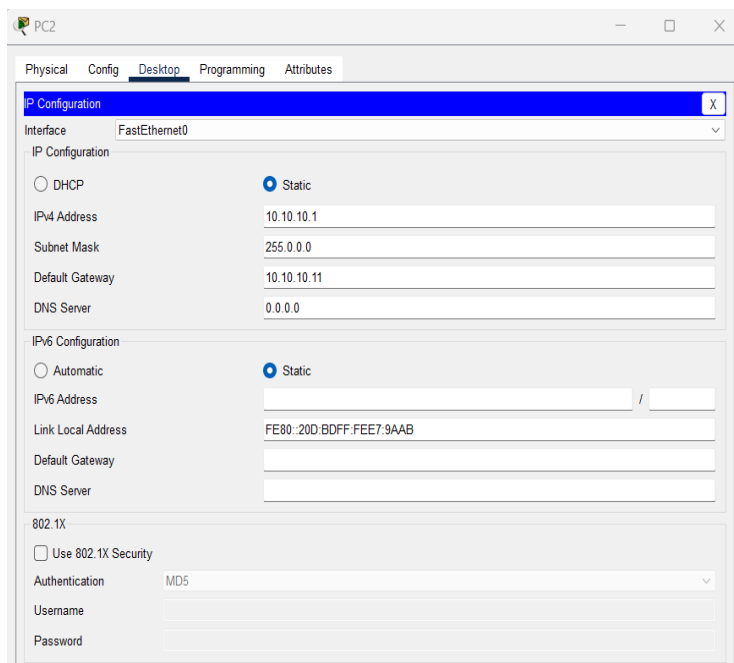
1. Set up two different LAN network through a router and connect one LAN with a server.



2. Assign the IP addresses to all the devices.



LAN 1 is assigned with 192.168.1.X with default gateway 192.168.1.4



LAN 2 is assigned with 10.10.10.X with default gateway 10.10.10.11

Server's IP address and DNS server is 10.10.10.10 and 10.10.10.10 respectively.

The screenshot shows the 'Server0' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is expanded, showing settings for both IPv4 and IPv6. The IPv4 configuration is set to 'Static' with an IP address of 10.10.10.10, a subnet mask of 255.0.0.0, a default gateway of 10.10.10.11, and a DNS server of 10.10.10.10. The IPv6 configuration is also set to 'Static' with a link local address of FE80::230:A3FF:FE13:1434. The 802.1X section is collapsed.

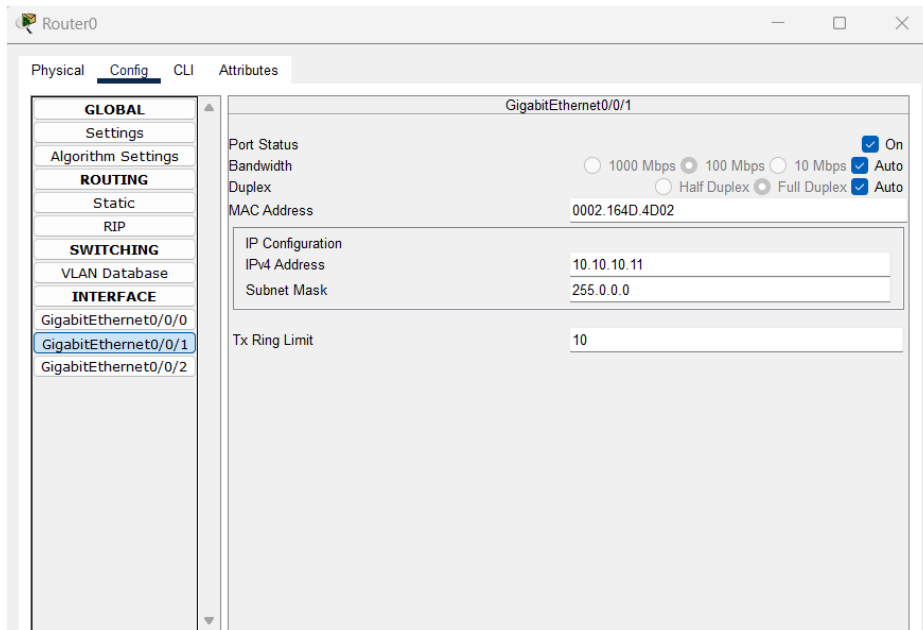
IP Configuration	
<input type="radio"/> DHCP <input checked="" type="radio"/> Static	
IPv4 Address	10.10.10.10
Subnet Mask	255.0.0.0
Default Gateway	10.10.10.11
DNS Server	10.10.10.10
<input type="radio"/> Automatic <input checked="" type="radio"/> Static	
IPv6 Address	
Link Local Address	FE80::230:A3FF:FE13:1434
Default Gateway	
DNS Server	
<input type="checkbox"/> Use 802.1X Security	
Authentication	MD5
Username	
Password	

### 3. Set up the router configuration

The screenshot shows the 'Router0' configuration window with the 'Config' tab selected. The 'GigabitEthernet0/0/0' interface is selected in the left sidebar. The main configuration area shows settings for the interface, including port status (100 Mbps, Full Duplex), MAC address (0002.164D.4D01), and IP configuration (192.168.1.4, 255.255.255.0). The 'Tx Ring Limit' is set to 10.

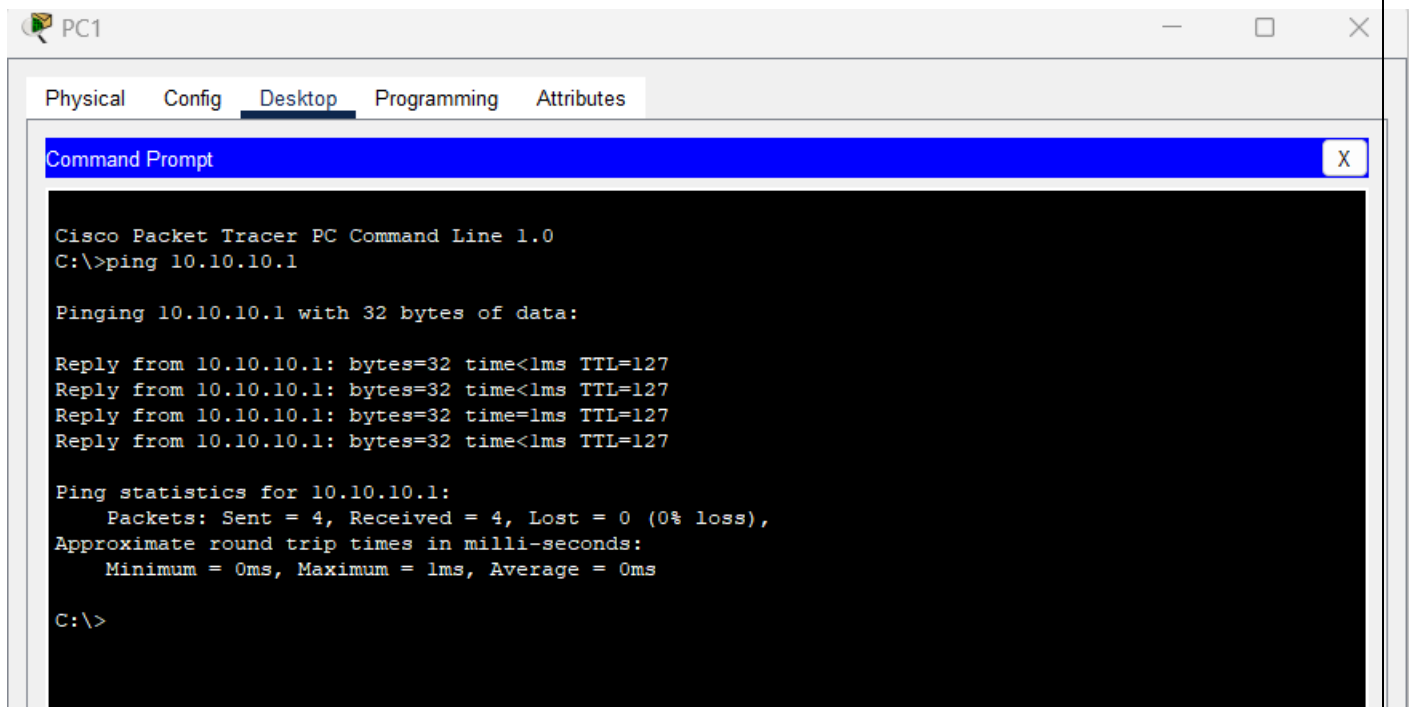
GigabitEthernet0/0/0	
Port Status	<input type="radio"/> 1000 Mbps <input checked="" type="radio"/> 100 Mbps <input type="radio"/> 10 Mbps <input checked="" type="checkbox"/> On
Bandwidth	<input checked="" type="checkbox"/> Auto
Duplex	<input type="radio"/> Half Duplex <input checked="" type="radio"/> Full Duplex <input checked="" type="checkbox"/> Auto
MAC Address	0002.164D.4D01
<input type="checkbox"/> IP Configuration	
IPv4 Address	192.168.1.4
Subnet Mask	255.255.255.0
Tx Ring Limit	10

The LAN 1 interface is connected through the GigabitEthernet0/0/0 wire. So the IPv4 Address respective is the default gateway provided in the LAN 1.



The LAN 2 interface is connected through the GigabitEthernet0/0/1 wire. So the IPv4 Address respective is the default gateway provided in LAN 2.

4. To check whether the devices are able to ping each other or not, we have to write ping<respective\_address>.



The screenshot shows a Cisco Packet Tracer PC window for PC1. The 'Desktop' tab is selected, displaying a Command Prompt. The prompt shows the execution of a ping command to 10.10.10.1, which is successful. The output includes the number of bytes, time, and TTL for each of the four replies, as well as the overall ping statistics showing 0% loss.

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 10.10.10.1

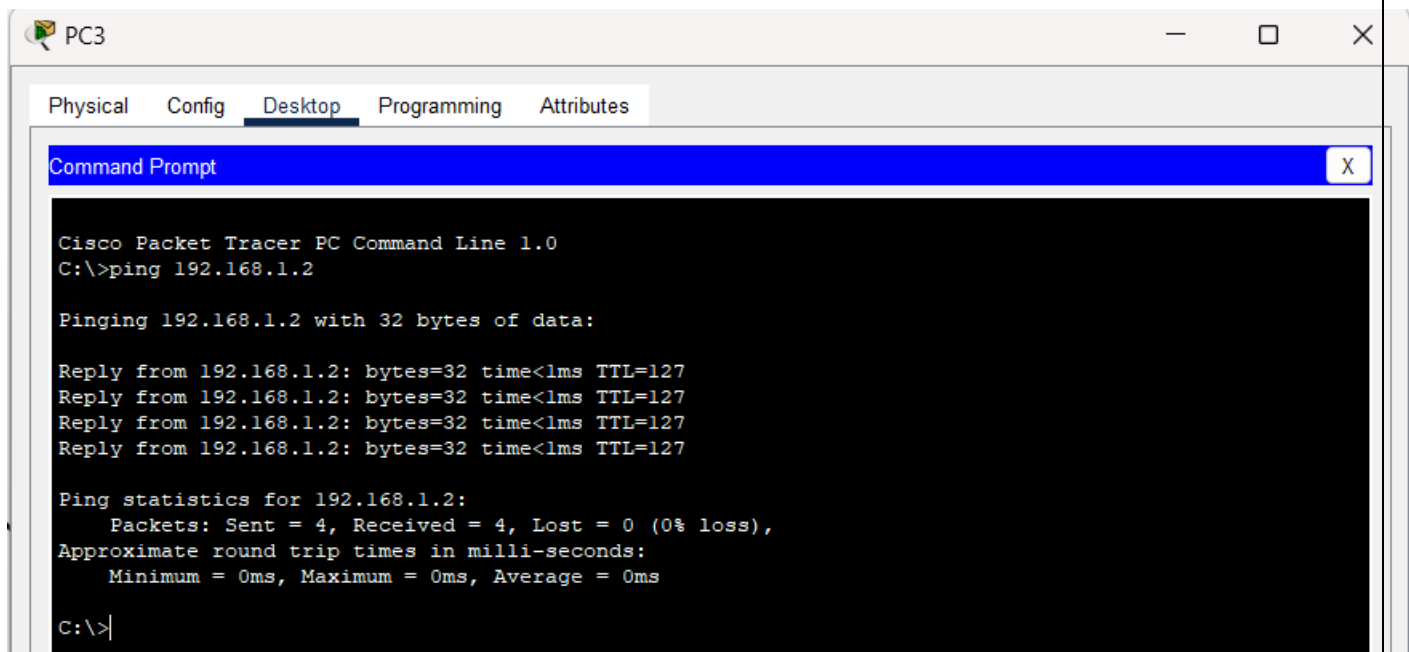
Pinging 10.10.10.1 with 32 bytes of data:

Reply from 10.10.10.1: bytes=32 time<1ms TTL=127
Reply from 10.10.10.1: bytes=32 time<1ms TTL=127
Reply from 10.10.10.1: bytes=32 time=1ms TTL=127
Reply from 10.10.10.1: bytes=32 time<1ms TTL=127

Ping statistics for 10.10.10.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>
```

We are successfully able to ping PC1 of LAN1 with PC3 of LAN2.



The screenshot shows a Cisco Packet Tracer PC window for PC3. The 'Desktop' tab is selected, displaying a Command Prompt. The prompt shows the execution of a ping command to 192.168.1.2, which is successful. The output includes the number of bytes, time, and TTL for each of the four replies, as well as the overall ping statistics showing 0% loss.

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.2

Pinging 192.168.1.2 with 32 bytes of data:

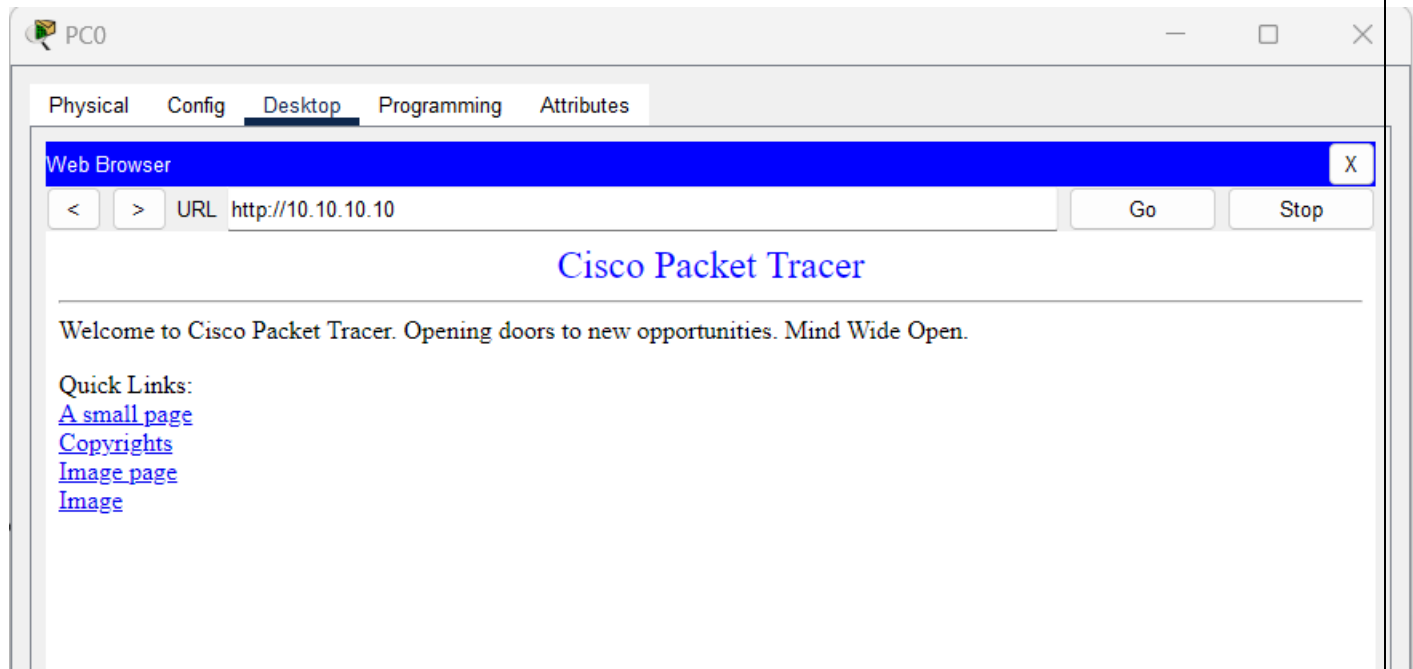
Reply from 192.168.1.2: bytes=32 time<1ms TTL=127
Reply from 192.168.1.2: bytes=32 time<1ms TTL=127
Reply from 192.168.1.2: bytes=32 time<1ms TTL=127
Reply from 192.168.1.2: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.1.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

Similarly, we are successfully able to ping a PC in LAN1 from PC in LAN2.

5. Ping the server.



**Inference:** The objective of the experiment was to establish a Wide Area Network (WAN) by interconnecting two separate Local Area Networks (LANs) using switches and PCs, with a router facilitating the connection. Each device was meticulously configured with the assigned IP addresses to form a cohesive WAN network.

Through thorough testing, including pinging devices to ensure connectivity, the network operated seamlessly as intended, demonstrating successful communication between devices and access to the server.

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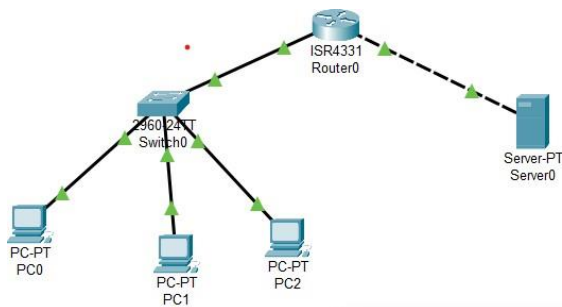
## Experiment 3

**Aim:** To create a network between the clients for connecting through email.

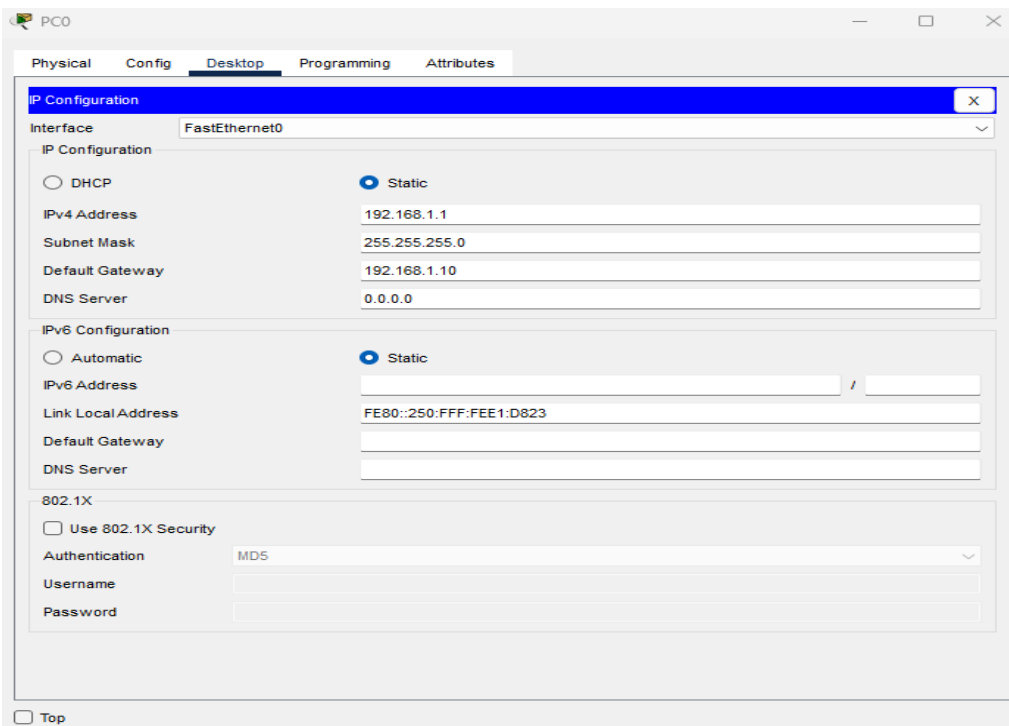
**Software used:** Cisco Packet Tracer

### **Procedure:**

1. Create a network using multiple PC, switch, router and server. Connect them using wires.



2. Configure the IP addresses and default gateway for all the PCs.



PC1

Physical Config Desktop Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.1.2

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.10

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::260:47FF:FEE3:BC65

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

☐ Top

PC2

Physical Config Desktop Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.1.3

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.10

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::20C:CFFF:FE37:37DC

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

☐ Top



3. Configure the default gateway and DNS server for the server.

The screenshot shows the configuration window for a device named 'Server0'. The window has a title bar with standard minimize, maximize, and close buttons. Below the title bar is a tabbed interface with tabs for 'Physical', 'Config', 'Services', 'Desktop', 'Programming', and 'Attributes'. The 'Config' tab is selected. On the left side of the 'Config' tab, there is a sidebar with a tree view. The tree view has two main sections: 'GLOBAL' and 'INTERFACE'. Under 'GLOBAL', there are 'Settings' and 'Algorithm Settings'. Under 'INTERFACE', there is 'FastEthernet0'. The main area of the window displays the 'Global Settings' for the selected configuration. It contains two sections: 'Gateway/DNS IPv4' and 'Gateway/DNS IPv6'. In the 'Gateway/DNS IPv4' section, the 'Static' radio button is selected, and the 'Default Gateway' is set to '192.168.1.10' and the 'DNS Server' is set to '10.10.10.1'. In the 'Gateway/DNS IPv6' section, the 'Static' radio button is also selected, but the 'Default Gateway' and 'DNS Server' fields are empty.

Server0

Physical **Config** Services Desktop Programming Attributes

**GLOBAL**

Settings

Algorithm Settings

**INTERFACE**

FastEthernet0

Global Settings

Display Name Server0

Gateway/DNS IPv4

☐ DHCP

☒ Static

Default Gateway 192.168.1.10

DNS Server 10.10.10.1

Gateway/DNS IPv6

☐ Automatic

☒ Static

Default Gateway

DNS Server

#### 4. Configure the IP addresses of the ethernet connections for the router.

The screenshot shows the configuration window for Router0, specifically for the GigabitEthernet0/0/0 interface. The left sidebar has a tree view with categories: GLOBAL, ROUTING, SWITCHING, and INTERFACE. Under INTERFACE, GigabitEthernet0/0/0 is selected. The main area shows the configuration for this interface. The Port Status is set to On. Bandwidth is set to 100 Mbps. Duplex is set to Full Duplex. The MAC Address is 0001.9775.D701. The IP Configuration section shows the IPv4 Address as 192.168.1.10 and the Subnet Mask as 255.255.255.0. The Tx Ring Limit is set to 10. Below the configuration area, there is a section for Equivalent IOS Commands, which contains a terminal session showing the configuration steps.

Router0

Physical Config CLI Attributes

**GLOBAL**

Settings

Algorithm Settings

**ROUTING**

Static

RIP

**SWITCHING**

VLAN Database

**INTERFACE**

GigabitEthernet0/0/0

GigabitEthernet0/0/1

GigabitEthernet0/0/2

GigabitEthernet0/0/0

Port Status ☒ On

Bandwidth ☐ 1000 Mbps ☒ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0001.9775.D701

IP Configuration

IPv4 Address 192.168.1.10

Subnet Mask 255.255.255.0

Tx Ring Limit 10

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)#interface GigabitEthernet0/0/0
Router(config-if)#
```

☐ Top

The screenshot shows the configuration window for Router0, specifically for the GigabitEthernet0/0/1 interface. The left sidebar has a tree view with categories: GLOBAL, ROUTING, SWITCHING, and INTERFACE. Under INTERFACE, GigabitEthernet0/0/1 is selected. The main area shows the configuration for this interface. The Port Status is set to On. Bandwidth is set to 100 Mbps. Duplex is set to Full Duplex. The MAC Address is 0001.9775.D702. The IP Configuration section shows the IPv4 Address as 10.10.10.10 and the Subnet Mask as 255.0.0.0. The Tx Ring Limit is set to 10. Below the configuration area, there is a section for Equivalent IOS Commands, which contains a terminal session showing the configuration steps.

Router0

Physical Config CLI Attributes

**GLOBAL**

Settings

Algorithm Settings

**ROUTING**

Static

RIP

**SWITCHING**

VLAN Database

**INTERFACE**

GigabitEthernet0/0/0

GigabitEthernet0/0/1

GigabitEthernet0/0/2

GigabitEthernet0/0/1

Port Status ☒ On

Bandwidth ☐ 1000 Mbps ☒ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0001.9775.D702

IP Configuration

IPv4 Address 10.10.10.10

Subnet Mask 255.0.0.0

Tx Ring Limit 10

Equivalent IOS Commands

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0/1
Router(config-if)#
```

5. Open the Web Browser from one of the pc and ping the server IP address.



## 6. Server -> Services ->Email



## 7. Type in the username and password to create the email accounts for different users.

Physical Config **Services** Desktop Programming Attributes

**SERVICES**

- HTTP
- DHCP
- DHCPv6
- TFTP
- DNS
- SYSLOG
- AAA
- NTP
- EMAIL**
- FTP
- IoT
- VM Management
- Radius EAP

**EMAIL**

SMTP Service ☒ ON ☐ OFF

POP3 Service ☒ ON ☐ OFF

Domain Name:

User Setup

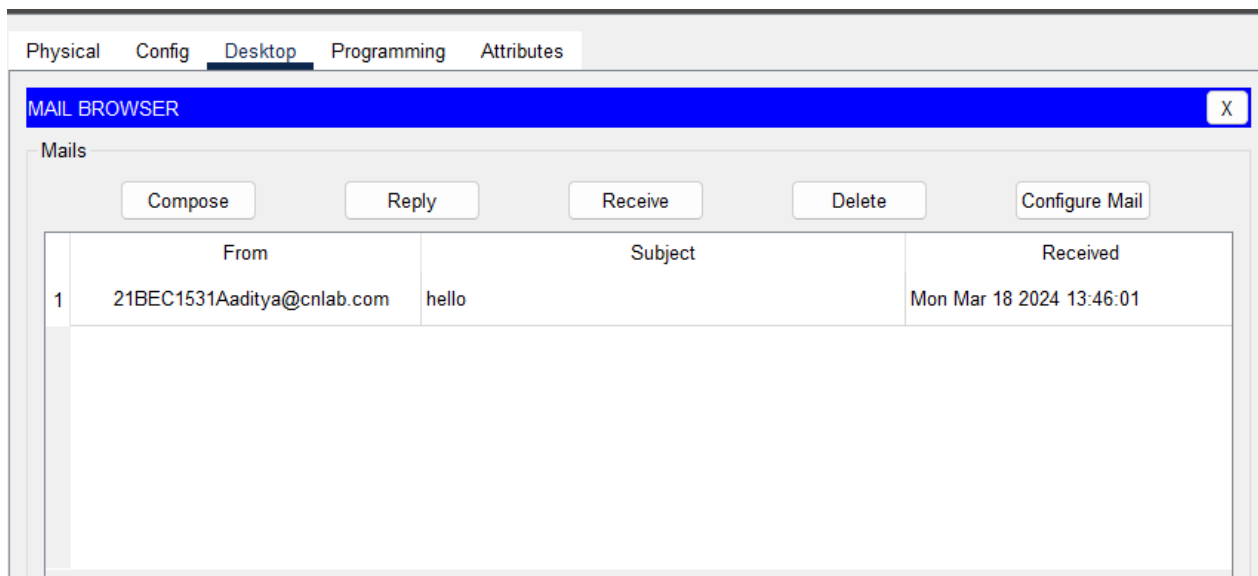
User  Password

21BEC1531aaditya  
peter

7. Open a PC -> Desktop -> Email



8. Write and send emails.



### Inference:

We configured local network with DNS server and Email services using Cisco Packet Tracer and the output obtained was observed. It was observed that the email server works on two protocols Simple Mail Transfer Protocol (SMTP) for sending and POP3 for retrieving and organizing mails.

**Conclusion:** In conclusion, the network setup successfully facilitated email communication between the clients, demonstrating effective connectivity and data exchange within the network. This experiment provided practical insights into configuring email clients, setting up mail servers, and establishing network protocols for seamless communication. Overall, it highlighted the importance of networking fundamentals in enabling efficient email correspondence among interconnected clients.

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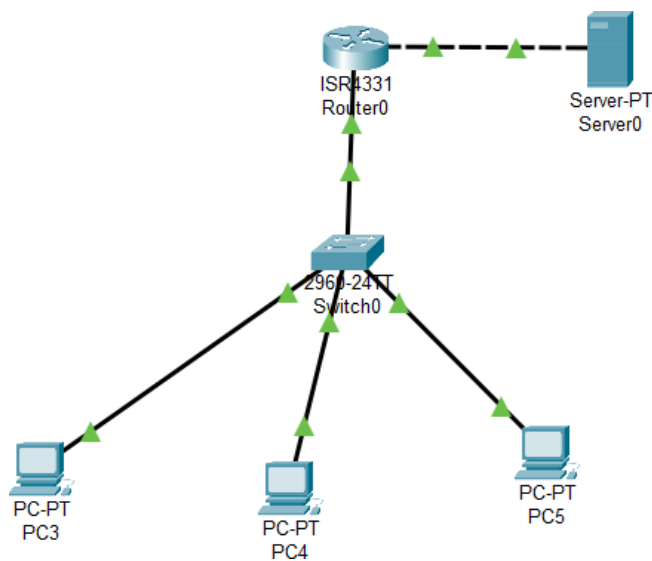
## Experiment 4

**Aim:** To setup an FTP Server and evaluate the confirmation in Cisco Packet Tracer

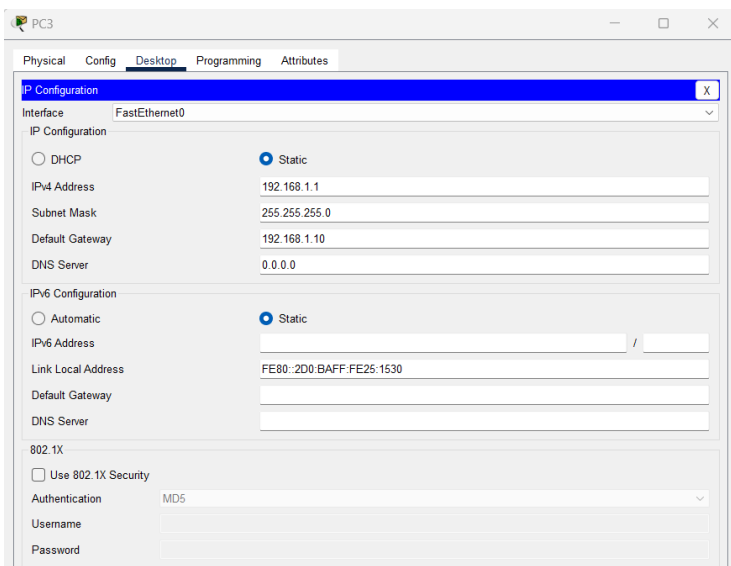
**Software used:** Cisco Packet Tracer

### Procedure:

1. Set up a multiple device network using PCs, switches, routers and server.



2. Configure all the IP addresses of the PCs and Server.



The IP addresses and default gateway of the PCs are 192.168.1.1, 192.168.1.2, 192.168.1.3 and 192.168.1.10 respectively.

The screenshot shows a configuration window for 'Server0' with tabs for Physical, Config, Services, Desktop, Programming, and Attributes. The 'Desktop' tab is active, and the 'IP Configuration' sub-tab is selected. The 'IP Configuration' section has a blue header bar with a close button 'X'. It contains two main sections: 'IP Configuration' and 'IPv6 Configuration'. In the 'IP Configuration' section, the 'Static' radio button is selected. The fields are: IPv4 Address (10.10.10.10), Subnet Mask (255.0.0.0), Default Gateway (10.10.10.11), and DNS Server (10.10.10.10). In the 'IPv6 Configuration' section, the 'Static' radio button is also selected. The fields are: IPv6 Address (empty), Link Local Address (FE80::202:4AFF:FE8D:78DB), Default Gateway (empty), and DNS Server (empty). Below these is the '802.1X' section, which includes a checkbox for 'Use 802.1X Security' (unchecked), a dropdown for 'Authentication' set to 'MD5', and input fields for 'Username' and 'Password'.

IP Configuration	
<input type="radio"/> DHCP <input checked="" type="radio"/> Static	
IPv4 Address	10.10.10.10
Subnet Mask	255.0.0.0
Default Gateway	10.10.10.11
DNS Server	10.10.10.10

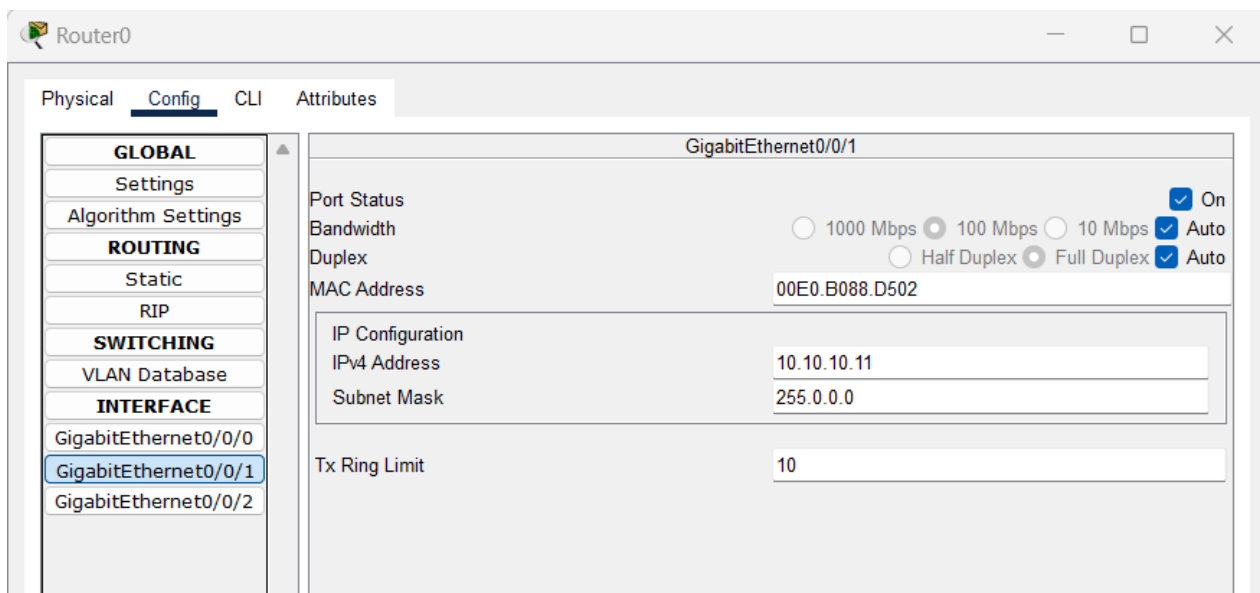
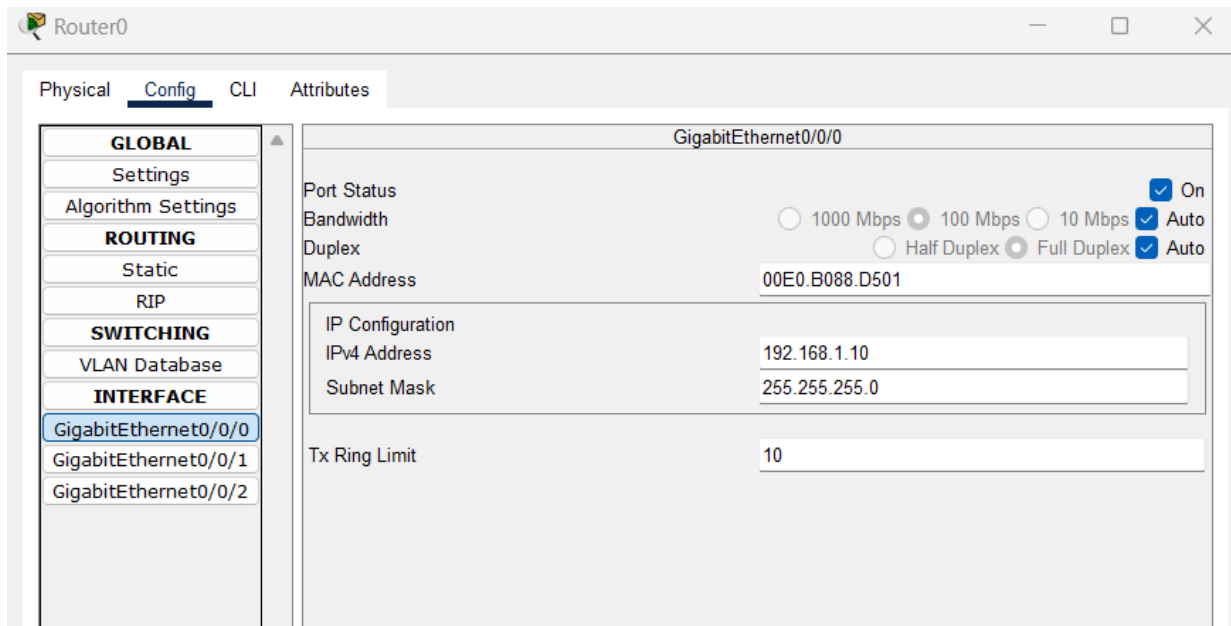
IPv6 Configuration	
<input type="radio"/> Automatic <input checked="" type="radio"/> Static	
IPv6 Address	
Link Local Address	FE80::202:4AFF:FE8D:78DB
Default Gateway	
DNS Server	

802.1X	
<input type="checkbox"/> Use 802.1X Security	
Authentication	MD5
Username	
Password	

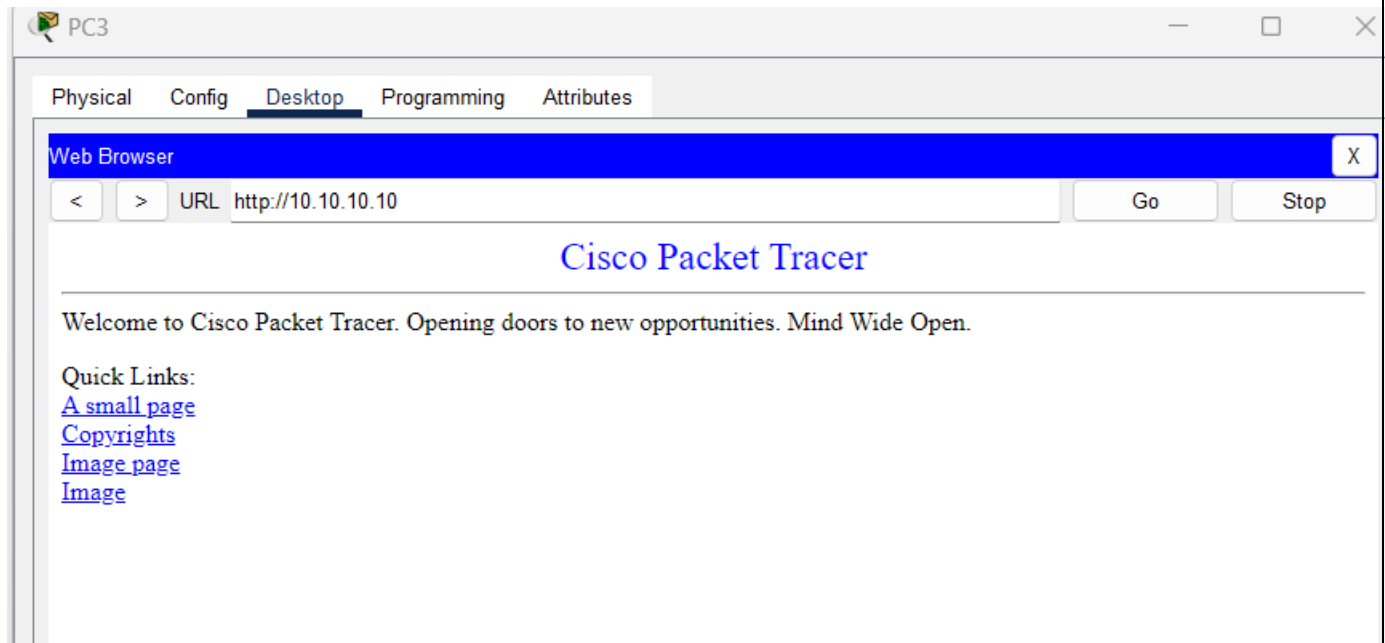
The IP address of the server is 10.10.10.10 and the default gateway assigned is 10.10.10.11.

3. Setup the router configuration.



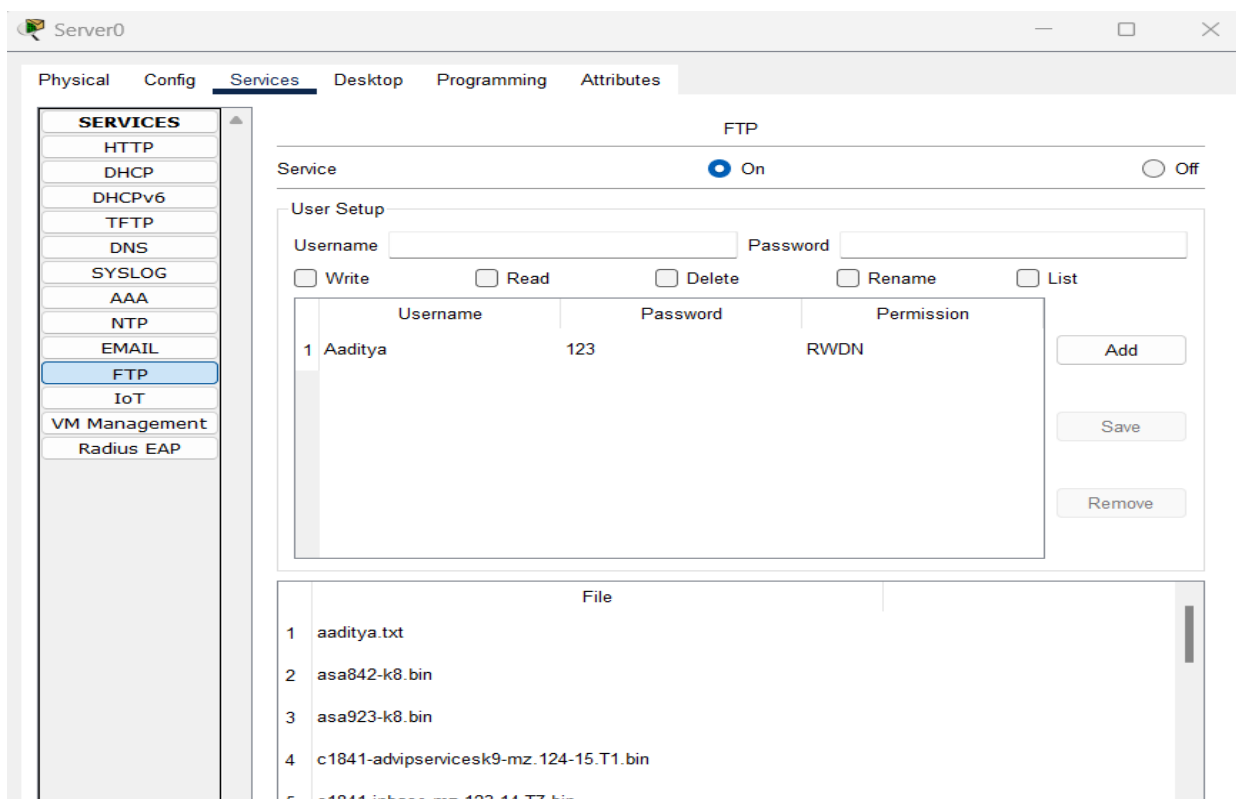
The interface is successfully configured and to verify, the PCs are able to access the server.





4. Now, for FTP protocol, go to Server -> Services -> FTP

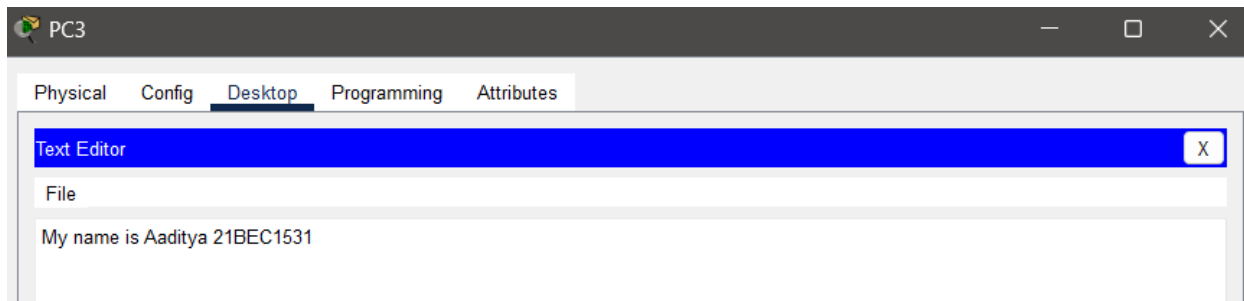
Create a new username and password for your ftp protocol services and mark for read and write services and then add it.



We can see the “Aaditya” named username is created and password is also visible.

5. Go to any of the PC -> Desktop -> Text Editor.

Create a new text file and save it in the respective PC.



I have saved it as “Hello.txt”.

6. Go to the PC -> Desktop -> Command Prompt -> Type ftp <Server IP address> (in my case ftp 10.10.10.10)

After entering, we will get to see username, we have type respective username provided and password to enter the FTP services.

```
C:\>ftp 10.10.10.10
Trying to connect...10.10.10.10
Connected to 10.10.10.10
220- Welcome to PT Ftp server
Username:Aaditya
331- Username ok, need password
Password:
230- Logged in
(passive mode On)
ftp> put Hello.txt

Writing file Hello.txt to 10.10.10.10:
File transfer in progress...

[Transfer complete - 22 bytes]

22 bytes copied in 0.092 secs (239 bytes/sec)
ftp>
```

Now type put <filename> (put Hello.txt). This command will save the file you have created in that respective PC.

```

C:\>ftp 10.10.10.10
Trying to connect...10.10.10.10
Connected to 10.10.10.10
220- Welcome to FT Ftp server
Username:Aaditya
331- Username ok, need password
Password:
230- Logged in
(passive mode On)
ftp> put Hello.txt

Writing file Hello.txt to 10.10.10.10:
File transfer in progress...

[Transfer complete - 22 bytes]

22 bytes copied in 0.092 secs (239 bytes/sec)
ftp>

```

Type dir in the command prompt. This command will enable us see all the files available in the FTP service.

We can see Hello.txt file has been saved.

```

ftp>dir

Listing /ftp directory from 10.10.10.10:
 0  : Hello.txt                               34
 1  : asa842-k8.bin                           5571584
 2  : c1841-advipservicesk9-mz.124-15.T1.bin  33591768
 3  : c1841-ipbase-mz.123-14.T7.bin           13832032
 4  : c1841-ipbasek9-mz.124-12.bin            16599160
 5  : c1900-universalk9-mz.SPA.155-3.M4a.bin  33591768
 6  : c2600-advipservicesk9-mz.124-15.T1.bin  33591768
 7  : c2600-i-mz.122-28.bin                   5571584
 8  : c2600-ipbasek9-mz.124-8.bin             13169700
 9  : c2800nm-advipservicesk9-mz.124-15.T1.bin 50938004
10  : c2800nm-advipservicesk9-mz.151-4.M4.bin  33591768
11  : c2800nm-ipbase-mz.123-14.T7.bin         5571584
12  : c2800nm-ipbasek9-mz.124-8.bin           15522644
13  : c2900-universalk9-mz.SPA.155-3.M4a.bin  33591768
14  : c2950-i6q412-mz.121-22.EA4.bin         3058048
15  : c2950-i6q412-mz.121-22.EA8.bin         3117390
16  : c2960-lanbase-mz.122-25.FX.bin          4414921
17  : c2960-lanbase-mz.122-25.SEE1.bin        4670455
18  : c2960-lanbasek9-mz.150-2.SE4.bin        4670455
19  : c3560-advipservicesk9-mz.122-37.SE1.bin  8662192
20  : c3560-advipservicesk9-mz.122-46.SE.bin  10713279
21  : c800-universalk9-mz.SPA.152-4.M4.bin     33591768
22  : c800-universalk9-mz.SPA.154-3.M6a.bin    83029236
23  : cat3k_caa-universalk9.16.03.02.SPA.bin  505532849
24  : cgr1000-universalk9-mz.SPA.154-2.CG     159487552
25  : cgr1000-universalk9-mz.SPA.156-3.CG     184530138
26  : ir800-universalk9-bundle.SPA.156-3.M.bin 160968869
27  : ir800-universalk9-mz.SPA.155-3.M        61750062
28  : ir800-universalk9-mz.SPA.156-3.M        63753767
29  : ir800_yocto-1.7.2.tar                   2877440
30  : ir800_yocto-1.7.2_python-2.7.3.tar     6912000
31  : pt1000-i-mz.122-28.bin                   5571584
32  : pt3000-i6q412-mz.121-22.EA4.bin         3117390
ftp>quit

```

7. Go to any other PC -> Desktop -> Command Prompt -> Type ftp 10.10.10.10 -> sign in After signing in into your FTP services, type get <filename>. This command will read the file that you have put in your FTP service.

```
C:\>ftp 10.10.10.10
Trying to connect...10.10.10.10
Connected to 10.10.10.10
220- Welcome to PT Ftp server
Username:Aaditya
331- Username ok, need password
Password:
230- Logged in
(passive mode On)
ftp>get Hello.txt

Reading file Hello.txt from 10.10.10.10:
File transfer in progress...

[Transfer complete - 22 bytes]

22 bytes copied in 0.01 secs (2200 bytes/sec)
ftp>
```

**Inference:** To set up FTP services, all the PCs and routers are configured assigning all the IP addresses. By configuring the FTP server and ensuring connectivity between devices, the FTP protocol implementation and network file sharing has completed. This experiment enhances the knowledge of FTP services, essential for efficient data exchange and management within network infrastructures.

**Name: Aaditya Bhatt**

**Reg.No: 21BEC1531**

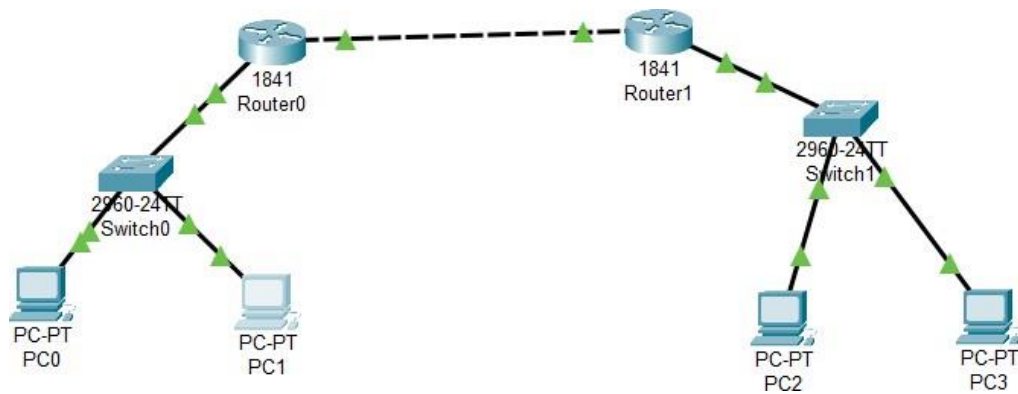
## **Experiment 5**

**Aim:** To configure and implement the static routing using Cisco Packet Tracer

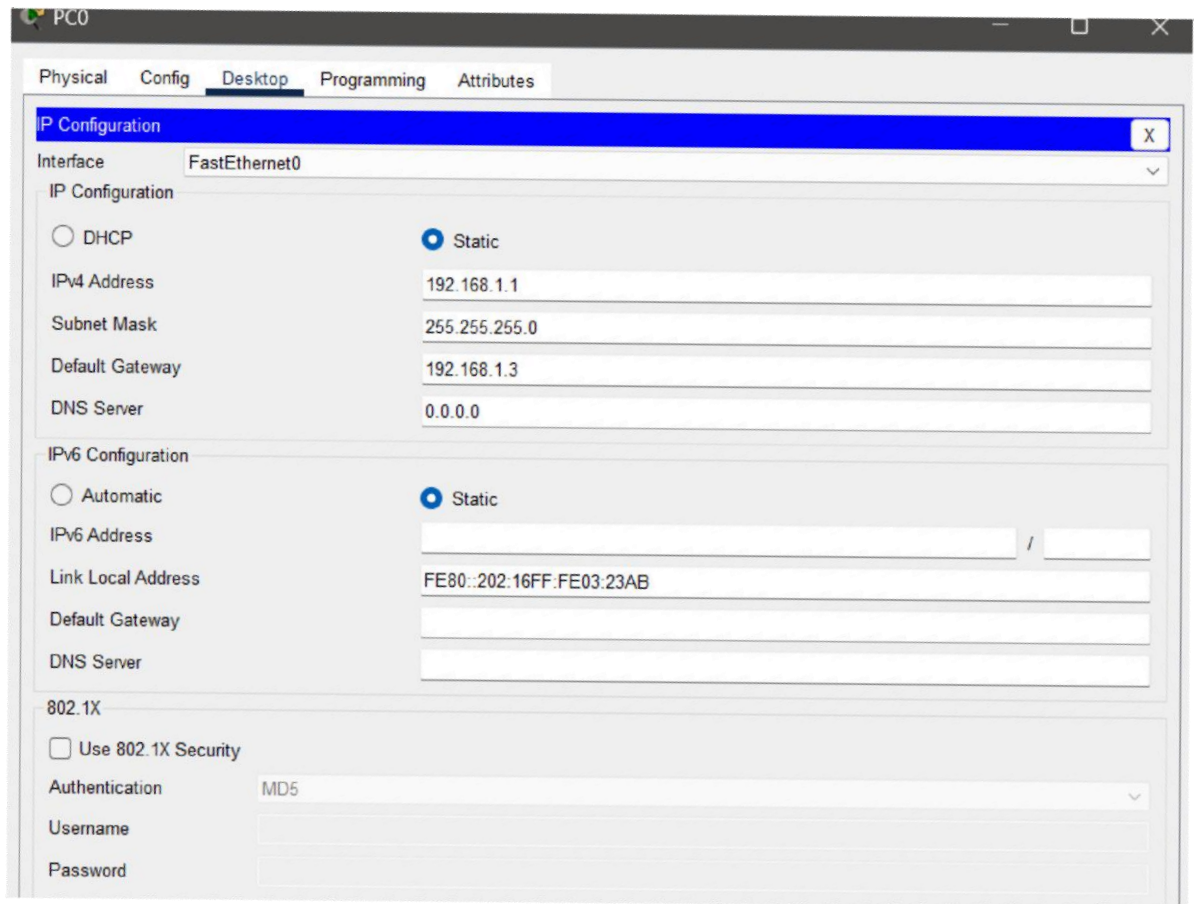
**Software used:** Cisco Packet Tracer

### **Procedure:**

1. Create a network using multiple PC, two switches, two routers. Connect them using wires.



2. Configure the IP addresses and default gateway for all the PCs.



Similarly, we configured all the PC's

3. Configure the IP addresses of the fast ethernet connections for the router.

Router0

Physical Config CLI Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

FastEthernet0/0

FastEthernet0/1

FastEthernet0/0

Port Status

Bandwidth

Duplex

MAC Address

IP Configuration

IPv4 Address

Subnet Mask

Tx Ring Limit

☒ On
 ☐ 100 Mbps
 ☐ 10 Mbps
 ☒ Auto

☐ Half Duplex
 ☒ Full Duplex
 ☒ Auto

0004.9A46.9001

192.168.1.3

255.255.255.0

10

#### Equivalent IOS Commands

```
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

Router(config-if)#
Router(config-if)#exit
Router(config)#
Router(config)#ip route 192.168.3.0 255.255.255.0 10.10.10.2
Router(config)#
Router(config)#
Router(config)#interface FastEthernet0/0
Router(config-if)#
```

Router0

PhysicalConfigCLIAttributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

FastEthernet0/0

FastEthernet0/1

FastEthernet0/1

Port Status

100 Mbps

10 Mbps

On

Bandwidth

Auto

Duplex

Half Duplex

Full Duplex

Auto

MAC Address0004.9A46.9002

IP Configuration

IPv4 Address10.10.10.1

Subnet Mask255.0.0.0

Tx Ring Limit10

Equivalent IOS Commands

Router1

PhysicalConfigCLIAttributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

FastEthernet0/0

FastEthernet0/1

FastEthernet0/0

Port Status

100 Mbps

10 Mbps

On

Bandwidth

Auto

Duplex

Half Duplex

Full Duplex

Auto

MAC Address0090.2150.1201

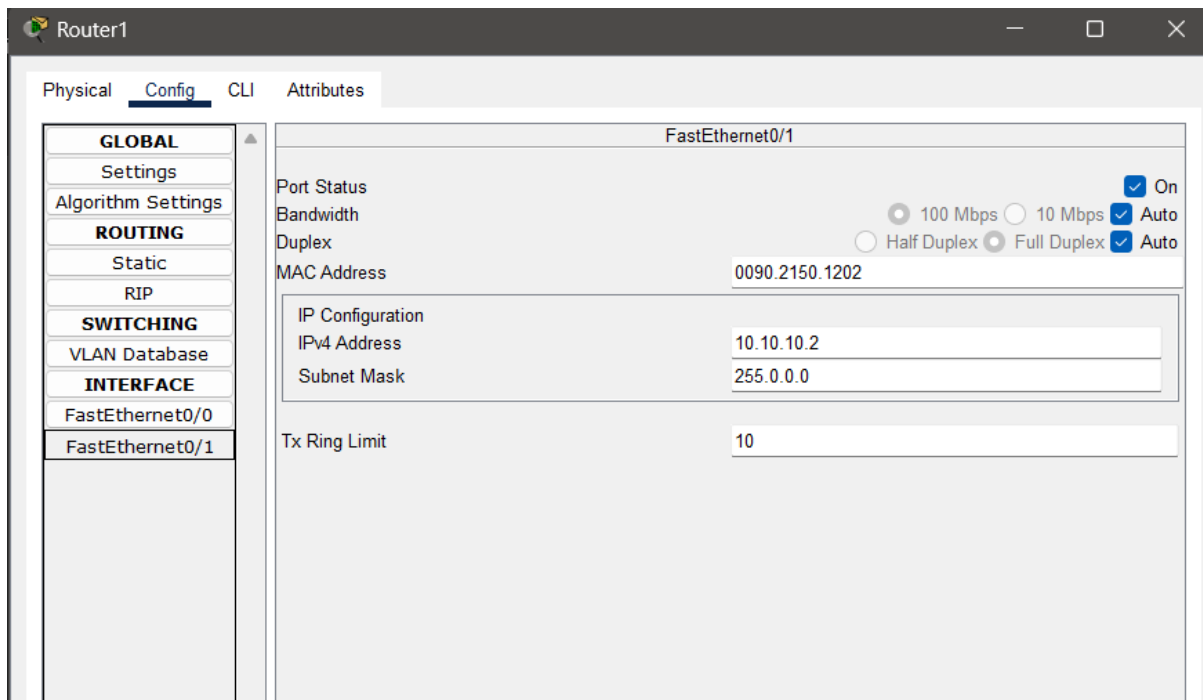
IP Configuration

IPv4 Address192.168.3.3

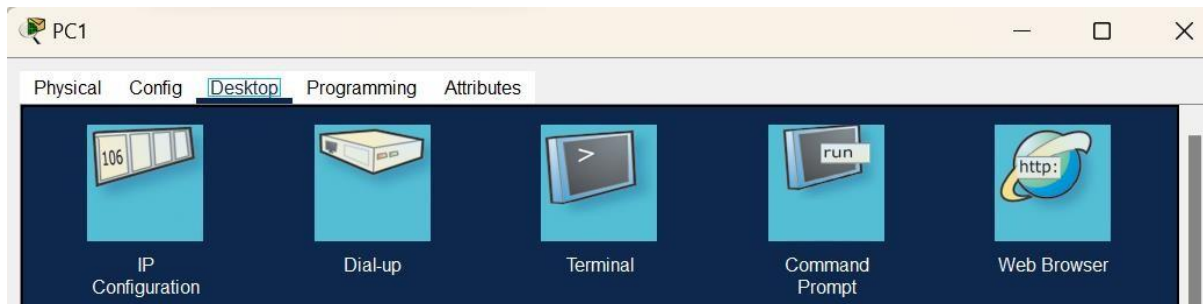
Subnet Mask255.255.255.0

Tx Ring Limit10





4.. PC1 -> Web Browser



5. The network setup is complete

6. Ping PC 1 by PC3 a. Enter 'Command Prompt' enter command 'ping 192.168.3.2'

```
C:\>ping 192.168.3.2

Pinging 192.168.3.2 with 32 bytes of data:

Reply from 192.168.3.2: bytes=32 time=1ms TTL=126
Reply from 192.168.3.2: bytes=32 time<1ms TTL=126
Reply from 192.168.3.2: bytes=32 time<1ms TTL=126
Reply from 192.168.3.2: bytes=32 time<1ms TTL=126

Ping statistics for 192.168.3.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>
```

## Inference:

**Routing Configuration:** Through this experiment, students learn to configure static routing protocols on Cisco Packet Tracer. This involves setting up routing tables manually to direct traffic between different network segments.

Experimenting with static routing allows students to grasp the concept of routing tables and their importance in directing traffic. They learn to add, modify, or remove static routes to accommodate changes in network topology or routing requirements.

**Conclusion:** the experiment on configuring and implementing static routing using Cisco Packet Tracer provides valuable hands-on experience in network configuration and management. Through this exercise, students gain a deeper understanding of routing protocols, network optimization, and routing table management. This practical knowledge equips them with essential skills for designing and maintaining efficient network infrastructures in real-world scenarios.

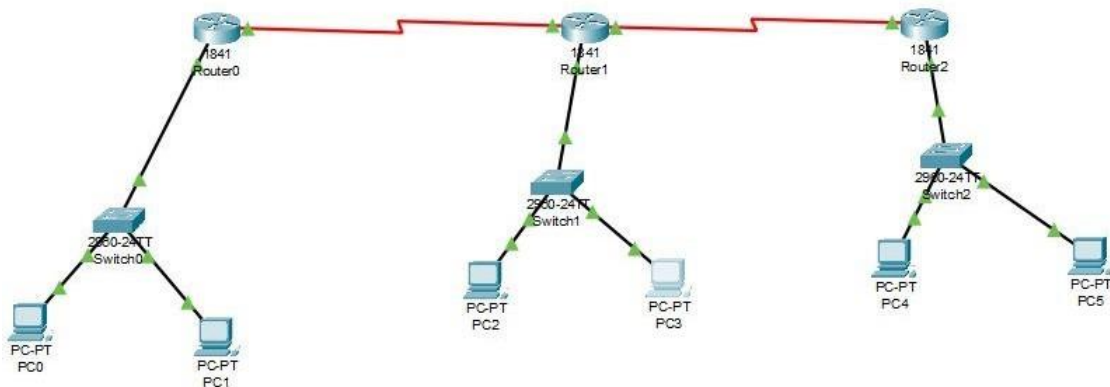
## Experiment 6

**Aim:** To configure and implement the dynamic routing using Cisco Packet Tracer.

**Software used:** Cisco Packet Tracer

**Procedure:**

1. Create a network using multiple 6 PC, 3 switches and 3 routers 1841.



2. Configure the PCs IP address.

PC0

Physical Config Desktop Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.1.2

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::290:2BFF:FE82:A552

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

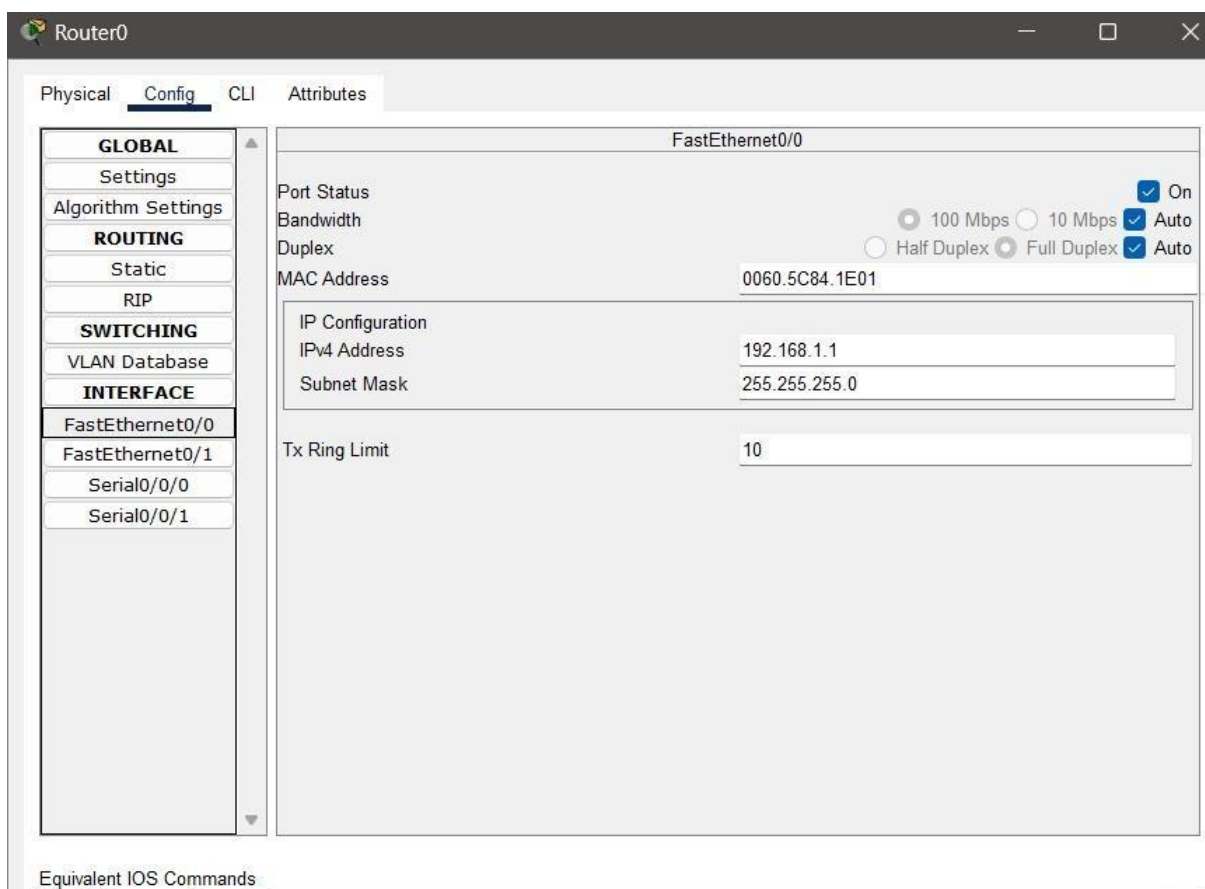
Authentication MD5

Username

Password

Configure all the PC's and their IP's addresses.

3. Assign IP Addresses to LAN 1. Assign IP address '192.168.1.2' to PC0. Assign IP address '192.168.1.3' to PC1 b. Assign IP Addresses to LAN 2. Assign IP address '192.168.2.2' to PC2. Assign IP address '192.168.2.3' to PC3 c. Assign IP Addresses to LAN 3. Assign IP address '192.168.3.2' to PC4. Assign IP address '192.168.3.3' to PC5.
4. Connect the Switches to each Routers 1841 via Fast Ethernet interface. Connect Fa0/3 of SW 1 to Fa0/0 of Router 0
5. Assign IP Addresses '192.168.1.1' to the Fa0/0 interface of the Router 0 and Check 'Port Status' to 'On'



Connect Fa0/2 of SW 2 to Fa0/0 of Router 1

Assign IP Addresses '192.168.2.1' to the Fa0/1 interface of the Router 1 and Check 'Port Status' to 'On'

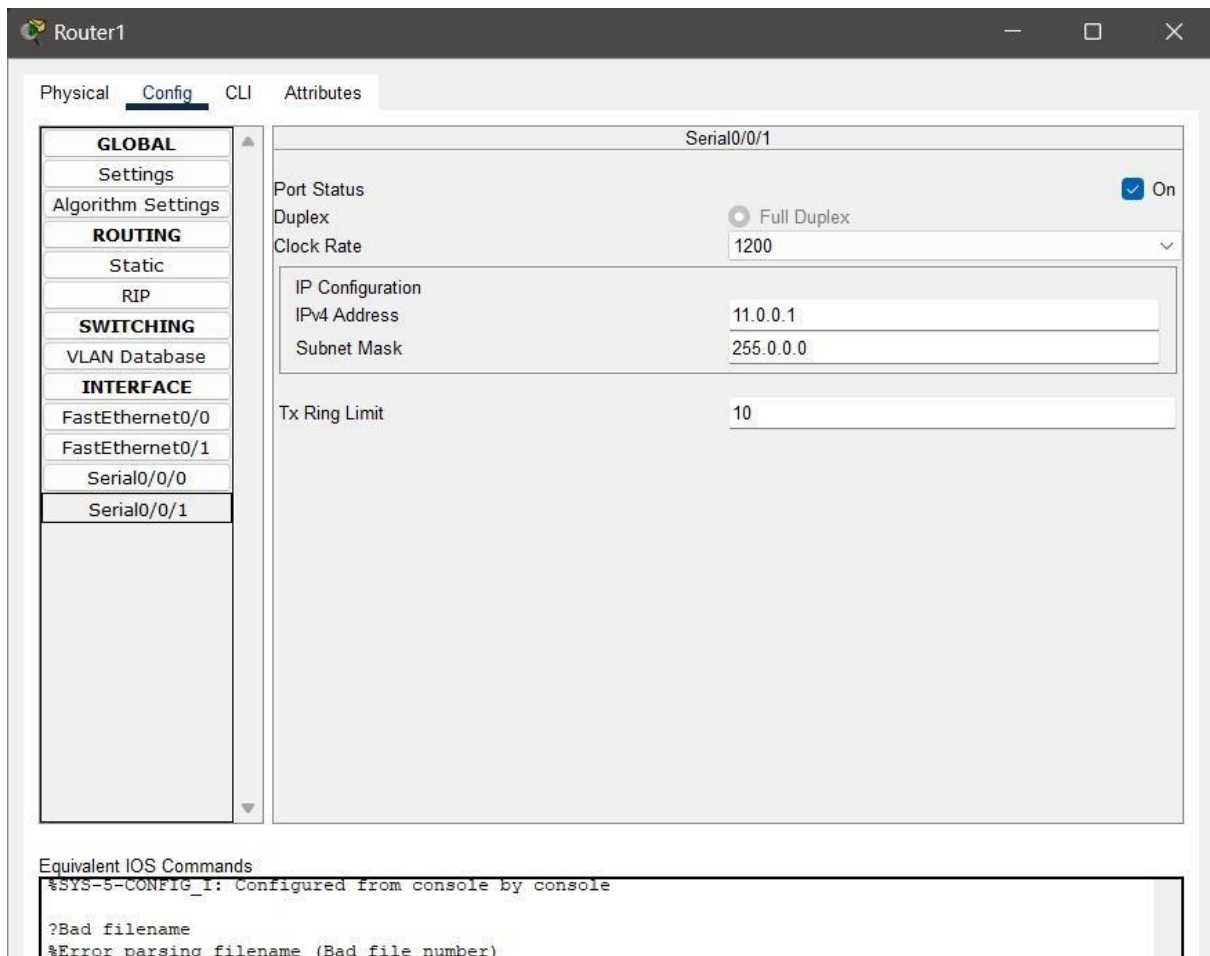
And similarly do for router 2 also with IP 192.168.3.1

set serial0/0/0 for router 0

The screenshot shows the configuration window for Router0, specifically for the Serial0/0/0 interface. The window has a dark title bar with the text "Router0" and standard window controls. Below the title bar, there are tabs: "Physical", "Config" (which is selected and highlighted in blue), "CLI", and "Attributes". On the left side, there is a sidebar menu with categories: "GLOBAL" (containing "Settings" and "Algorithm Settings"), "ROUTING" (containing "Static" and "RIP"), "SWITCHING" (containing "VLAN Database"), and "INTERFACE" (containing "FastEthernet0/0", "FastEthernet0/1", "Serial0/0/0" (which is selected and highlighted in blue), and "Serial0/0/1"). The main area of the window is titled "Serial0/0/0" and contains the following configuration fields: "Port Status" with a checked "On" checkbox, "Duplex" set to "Full Duplex" with a radio button, "Clock Rate" set to "2000000" with a dropdown arrow, "IP Configuration" section containing "IPv4 Address" set to "10.0.0.1" and "Subnet Mask" set to "255.0.0.0", and "Tx Ring Limit" set to "10".

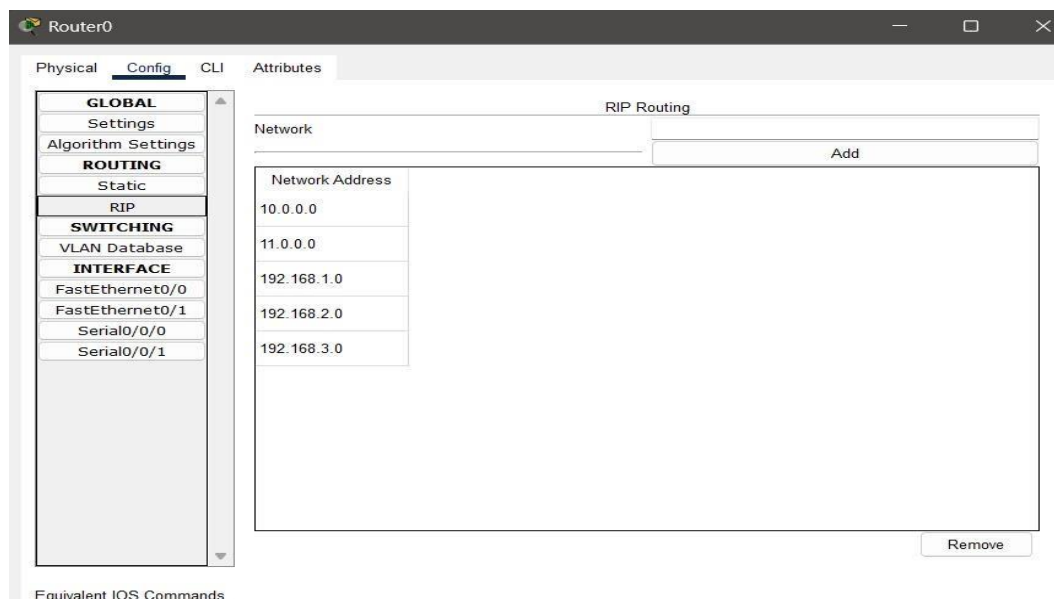
set for router 1 serial 0/0/0 and serial 0/0/1

The screenshot shows the configuration window for Router0, specifically for the Serial0/0/0 interface. The window has a dark title bar with the text "Router0" and standard window controls. Below the title bar, there are tabs: "Physical", "Config" (which is selected and highlighted in blue), "CLI", and "Attributes". On the left side, there is a sidebar menu with categories: "GLOBAL" (containing "Settings" and "Algorithm Settings"), "ROUTING" (containing "Static" and "RIP"), "SWITCHING" (containing "VLAN Database"), and "INTERFACE" (containing "FastEthernet0/0", "FastEthernet0/1", "Serial0/0/0" (which is selected and highlighted in blue), and "Serial0/0/1"). The main area of the window is titled "Serial0/0/0" and contains the following configuration fields: "Port Status" with a checked "On" checkbox, "Duplex" set to "Full Duplex" with a radio button, "Clock Rate" set to "2000000" with a dropdown arrow, "IP Configuration" section containing "IPv4 Address" set to "10.0.0.1" and "Subnet Mask" set to "255.0.0.0", and "Tx Ring Limit" set to "10".



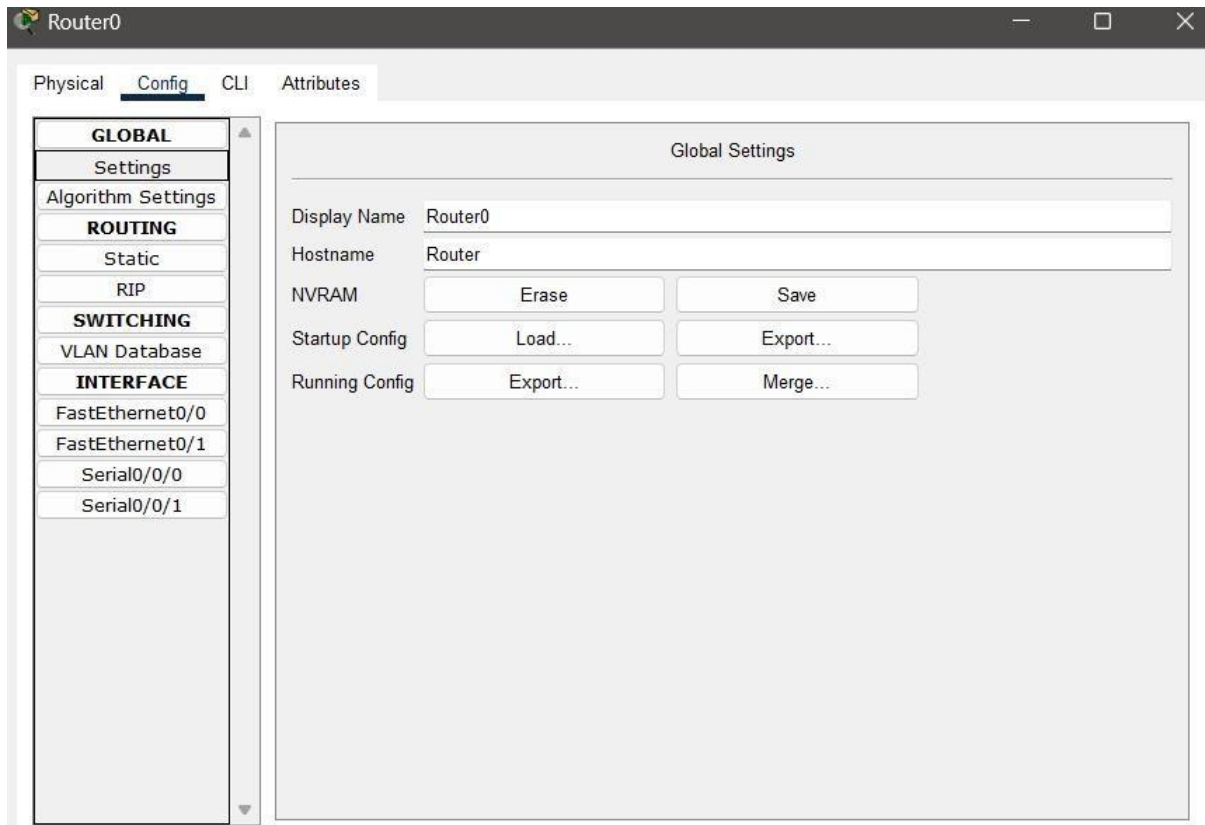
## Configure the Dynamic Routing Table using RIP Protocol

- Choose Router 1 Select Routing > RIP ii. Add Network Address of Each Network as • 10.0.0.0 • 11.0.0.0 • 192.168.1.0 • 192.168.2.0 • 192.168.3.0
- 



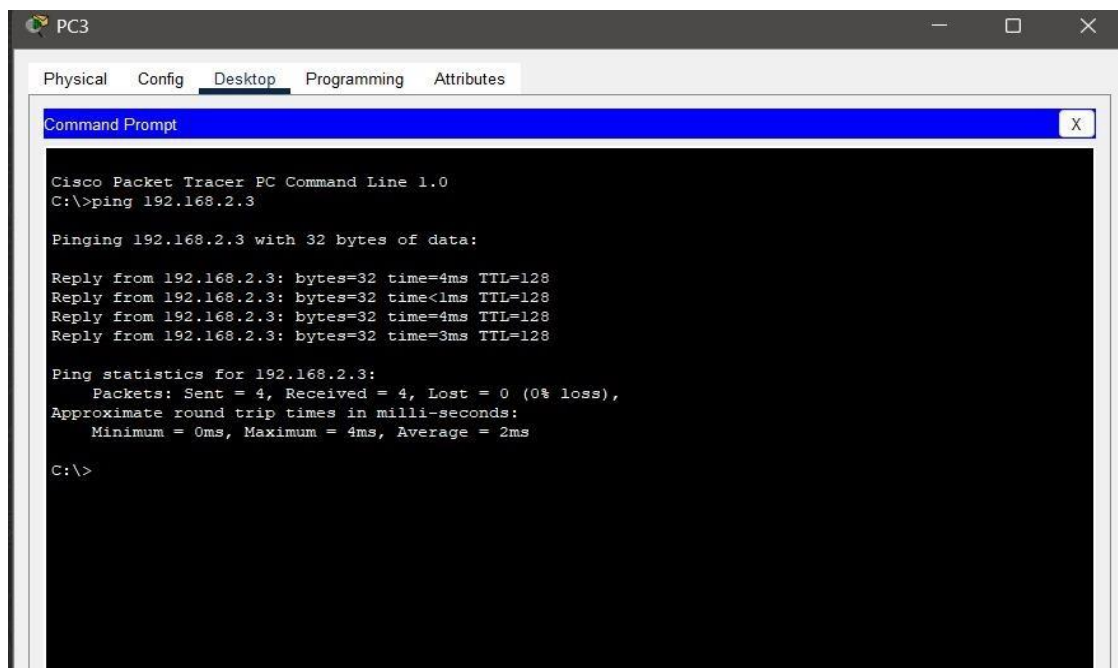
Similarly repeat for Router 1 and router 2.

Go to the Setting Tab: Select Save on NVRAM settings for each router.



The network setup is completed

Now ping PC1 by PC3. Enter command ping 192.168.2.3





**Inference:**

Dynamic routing protocols offer advantages over static routing, such as automatic adaptation, scalability, and efficient distribution of routing information across multiple routers. Cisco Packet Tracer is a valuable platform for experimentation with dynamic routing, allowing users to visually observe routing tables and packet flow. It also allows users to create various network scenarios, gaining insights into convergence speed and resilience. The choice of dynamic routing protocol depends on network size, complexity, and desired features. Experimentation with different protocols in Cisco Packet Tracer helps evaluate their strengths and weaknesses, resulting in more efficient and adaptable network management.