

A Laboratory Manual For
Data Communication
And
Computer Networking
(22414)

Semester –IV



Maharashtra State
Board of Technical Education, Mumbai
(Autonomous) (ISO 9001 : 2015) (ISO/IEC 27001 : 2013)



**MAHARASHTRA STATE
BOARD OF TECHNICAL EDUCATION**

Certificate

This is to certify that Mr. / Ms:.....

Roll No., of Fourth Semester of Diploma
in..... of
Institute..... (Code:.....) has
completed the term work satisfactorily in course . **Data Communication and Computer Network (22414)** for the academic year 20.... To 20..... as Prescribed in curriculum

Place:.....

Enrollment No:.....

Date:

Exam. Seat No:.....

Subject Teacher

Head of Department

Principal

BATCH 2

Sr.no	Practical Outcome	Date of performance	Date of submission	Marks	Remark
1	Configure Peer-to-Peer Network at least three Host	03/01/24	10/01/24	25 25	Quli
2	Create desired standard network cable including	10/01/24	17/01/24	25 25	Quli
3	Connect computer using given topology with wired media.	17/01/24	24/01/24	24 25	Quli
4	Connect Computers Using Wireless Media	24/01/24	31/01/24	23 25	Quli
5	Share a Printer and Folder in Network	31/01/24	07/02/24	23 25	Quli
6	Create a Network Using Bluetooth	07/02/24	21/02/24	23 25	Quli
7	Install Operating System Windows Server 2008	21/02/24	21/02/24	22 25	Quli
8	Setting Up Wireless network	28/02/24	28/02/24	22 25	Quli
9	Configure static and dynamic IP addresses	28/03/24	13/03/24	22 25	Quli
10	Configure DHCP server	13/03/24	13/03/24	21 25	Quli
11	Run basic utilities and network commands: ipconfig, ping, tracert, netstat, pathping, route	13/03/24	20/03/24	22 25	Quli
12	Configure FTP Server	20/03/24	20/03/24	24 25	Quli



DEPARTMENT OF COMPUTER ENGINEERING

Subject: Data Communication and Computer Networking	Subject Code:22414
Semester:4 th Semester	Course: Computer Engineering
Laboratory No:L004C	Name of Subject Teacher: Pragati Mali
Name of Student: Siddharth Shah	Roll Id: 22203A0041

Experiment No:	1
Title of Experiment	Configure Peer - to - peer network with at least three hosts.

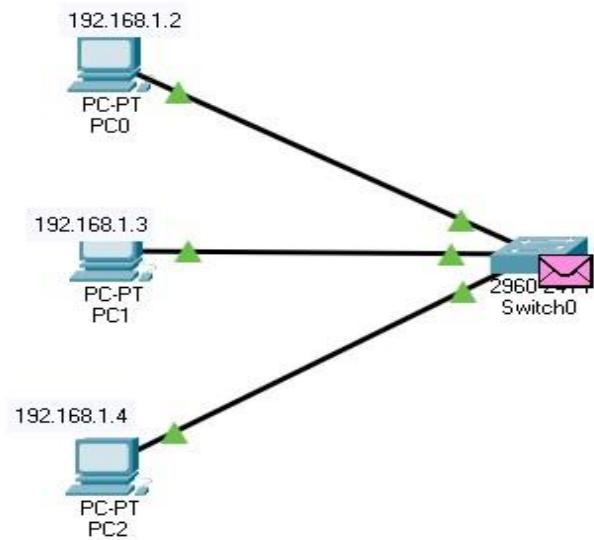
Aim: To understand the concept of Computer network and IP Address

Software used: Cisco Packet Tracer

Procedure:

1. Open Cisco Packet Tracer.
2. Add 3 PCs and 1 switch to the Workspace.
3. Connect each PC to the switch using copper straight-through wire.
4. Configure unique IP addresses and subnet mask for each PC.
5. Test connectivity.

Result:



Physical Config **Desktop** Programming Attributes

Command Prompt

```
Packet Tracer PC Command Line 1.0
C:\>PING 192.168.1.4

Pinging 192.168.1.4 with 32 bytes of data:

Reply from 192.168.1.4: bytes=32 time<1ms TTL=128
Reply from 192.168.1.4: bytes=32 time=4ms TTL=128
Reply from 192.168.1.4: bytes=32 time<1ms TTL=128
Reply from 192.168.1.4: bytes=32 time=6ms TTL=128

Ping statistics for 192.168.1.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 6ms, Average = 2ms

C:\>
```

Event List											Realtime	Simulation
Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete		
Successful	PC0	PC2	ICMP	■	0.000	N	0	(edit)		(delete)		

Conclusion:

1. Assembling of message into packets is managed by TCP.
2. IPv4 is 32 bits address where IPv6 is 128 bits address.
3. If user connects 2 computers in Peer-to-Peer network, then both computers within network to get resources.



DEPARTMENT OF COMPUTER ENGINEERING

Subject: Digital communication and computer network	Subject Code: 22414
Semester: 4 th Semester	Course: Computer Engineering
Laboratory No: L004B	Name of Subject Teacher: Pragati Mali
Name of Student: Siddharth Shah	Roll Id: 22203A0041

Experiment No:	2
Title of Experiment	Create desired standard network cable including cross cable and test by using cable tester.

AIM:- Create desired standard network cable including cross cable and test by using cable tester.

RESOURCE REQUIRED:-

1. Network cable.
2. Connector (Mainly RJ45 connector)
3. Networks toolkit
(Mainly Crimping tool.)
4. Line tester or cable tester.
5. Computer and Network control devices

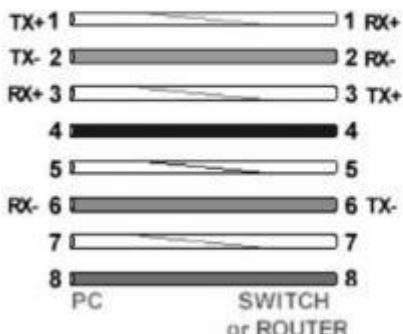
COLOR CODE:-

STRAIGHT CABLE COLOR CODING	CROSS CABLE COLOR CODING
1)Orange-White	1)Green-White
2)Orange	2)Green
3)Green-White	3)Orange-White
4)Blue	4)Blue
5)Blue-White	5)Blue-White
6)Green	6)Orange
7)Brown-White	7)Brown-White
8)Brown	8)Brown

Diagram:-

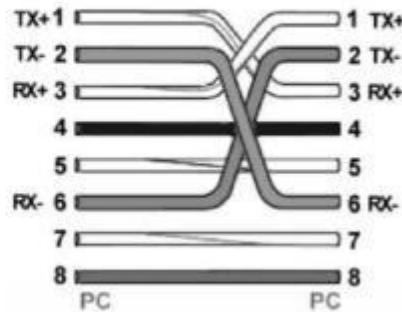
STRAIGHT-THROUGH

Wiring Standards Used
T568A T568A



CROSS-OVER

Wiring Standards Used
T568A T568B



Connections for network cable (Refer color picture 17)

PROCEDURE:-

1. Take ethernet cable of 30-40cm in length , a crimping tool , and a cutting tool.
2. A cutting tool is used to expose the inner wire.[Note:-While cutting use it with precaution and avoid overloading the cutting process.]
3. After the examining the inner wire , check whether it belongs to the CAD6 or CAD5 category.
4. Arrange the wires in color code given below.
5. Insert the wires int the rj45 connector.
6. Crimp the wire and then test the cable.

CONCLUSION:- From the above experiment we get to know about crimping tool and RJ45 connector and straight cable is used to connect to different devices and cross cable is used to connect same devices. We verified the network cable connection using cable tester.



DEPARTMENT OF COMPUTER ENGINEERING

Subject: Digital Communication and Computer Networking	Subject Code:22414
Semester:4 th Semester	Course: Computer Engineering
Laboratory No: L004B	Name of Subject Teacher: Pragati Mali
Name of Student: Siddharth Shah	Roll Id: 22203A0041

Experiment No:	3
Title of Experiment	Connect computer using given topology with wired media.

AIM:- Connect computer using given topology with wired media.

Software Used:-

- Cisco Packet Tracer

What is Topology?

Network topology is the geometric representation of relationship of all the links connecting the devices or nodes.

There are two types of topology:

one is physical topology that define the way in which a network is physically laid out.

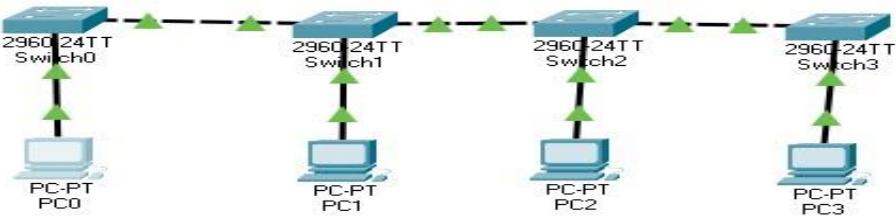
other one is logical topology that defines how data actually flow through the network.

Types of Topology:-

1. BUS Topology:

It is a multipoint data communication circuit that is easily control data flow between the computers because this configuration allows all stations to receive every transmission over the network.

In local area network, it is a single network cable runs in the building or campus and all nodes are connected along with the communication line.



PC0

Physical Config Desktop **Programming** Attributes

Command Prompt X

```

Packet Tracer PC Command Line 1.0
C:\>ping 192.180.1.3

Pinging 192.180.1.3 with 32 bytes of data:

Reply from 192.180.1.3: bytes=32 time<1ms TTL=128
Reply from 192.180.1.3: bytes=32 time<1ms TTL=128
Reply from 192.180.1.3: bytes=32 time<1ms TTL=128
Reply from 192.180.1.3: bytes=32 time=6ms TTL=128

Ping statistics for 192.180.1.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 6ms, Average = 1ms

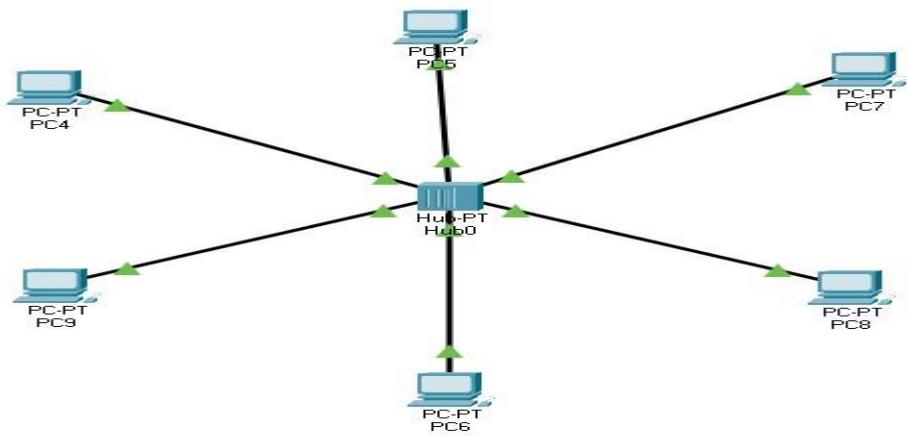
C:\>

```

2. STAR Topology:

It is a concentrated network, where the end points are directly reachable from a central location when network is expanded.

In star topology, all the cables run from the computers to a central location where they are all connected by a device called a hub.



```

Packet Tracer PC Command Line 1.0
C:\> ping 192.180.1.5

Pinging 192.180.1.5 with 32 bytes of data:

Reply from 192.180.1.5: bytes=32 time<1ms TTL=128

Ping statistics for 192.180.1.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

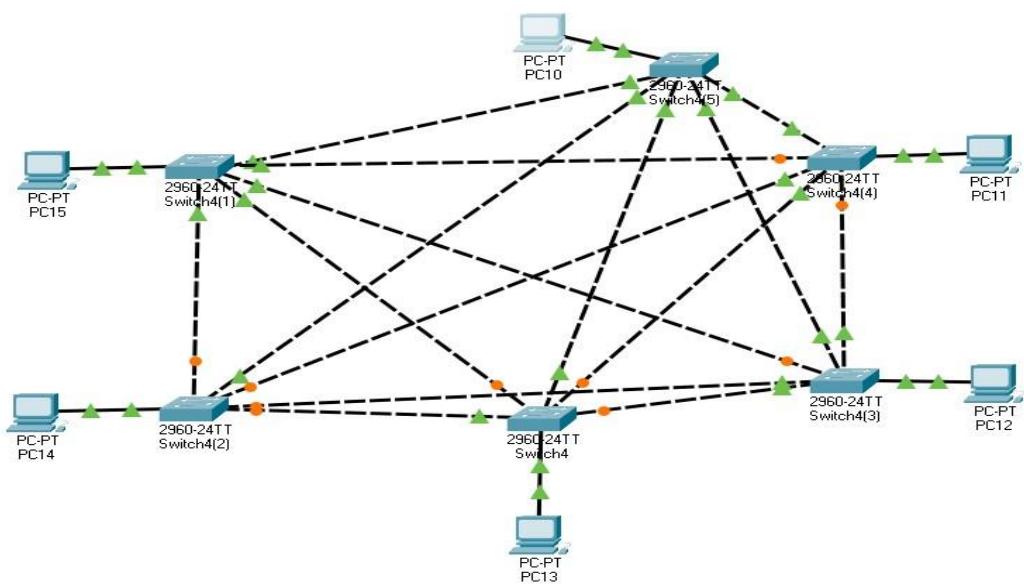
C:\>

```

3. MESH Topology:

In mesh topology every device has a dedicated point to point link to every other device. The term dedicated stand for link carries traffic only between two devices it connects.

It is a well-connected topology, in this every node has a connection to every other node in the network.



PC10

Physical Config Desktop **Desktop** Programming Attributes

Command Prompt

```

Packet Tracer PC Command Line 1.0
C:\> ping 192.168.1.7

Pinging 192.168.1.7 with 32 bytes of data:
Reply from 192.168.1.7: bytes=32 time=1ms TTL=128
Reply from 192.168.1.7: bytes=32 time=1ms TTL=128
Reply from 192.168.1.7: bytes=32 time<1ms TTL=128
Reply from 192.168.1.7: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.7:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>

```

Conclusion:-

Learned Different Topologies along with their use and functionality.



DEPARTMENT OF COMPUTER ENGINEERING

Subject: DATA COMMUNICATION AND COMPUTER NETWORK	Subject Code: 22414
Semester: 4 th Semester	Course: Computer Engineering
Laboratory No: L004B	Name of Subject Teacher: Pragati Mali
Name of Student: Siddharth Shah	Roll Id: 22203A0041

Experiment No:	4
Title:	Connect computer using wireless media

AIM: Connect computer using wireless media

SOFTWARE USED: CISCO PACKET TRACER

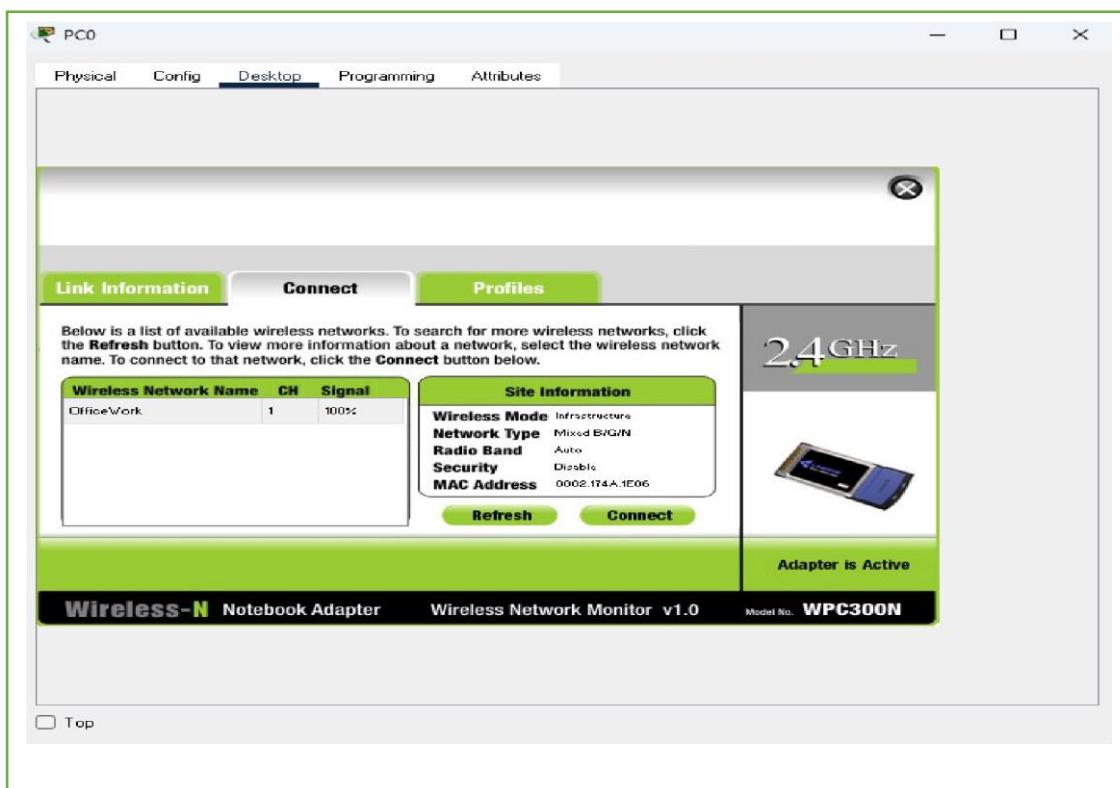
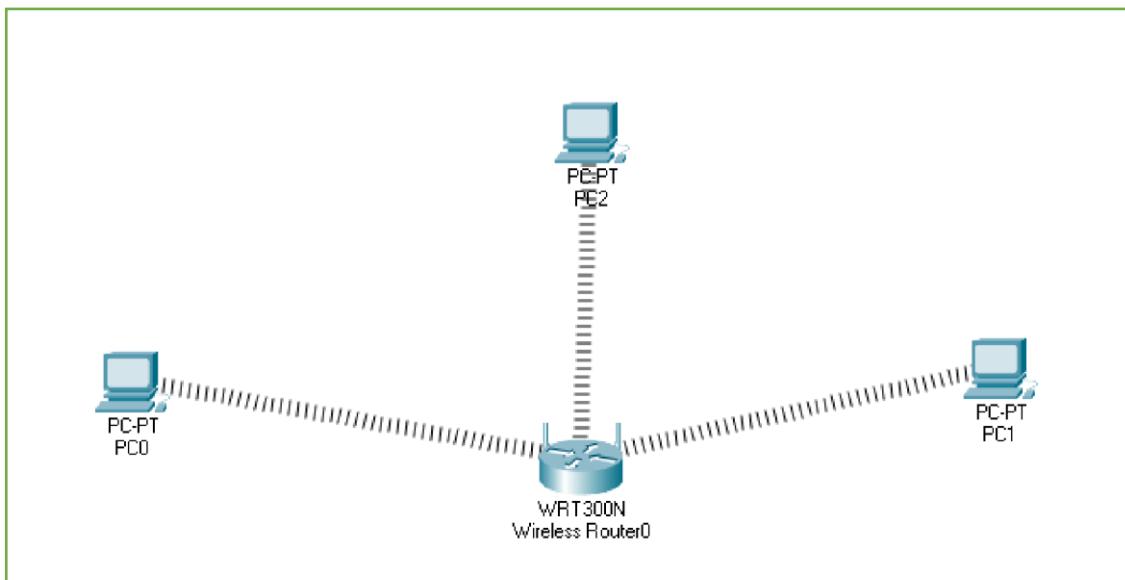
WHAT IS A ROUTER:

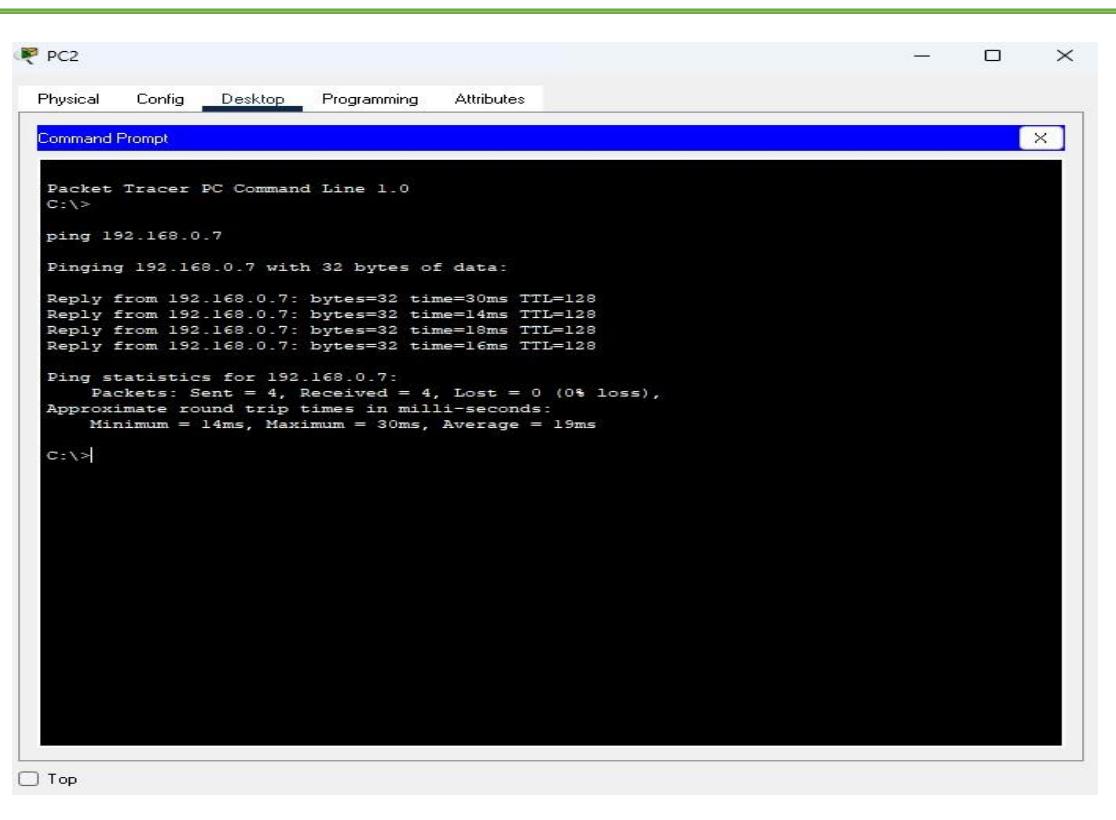
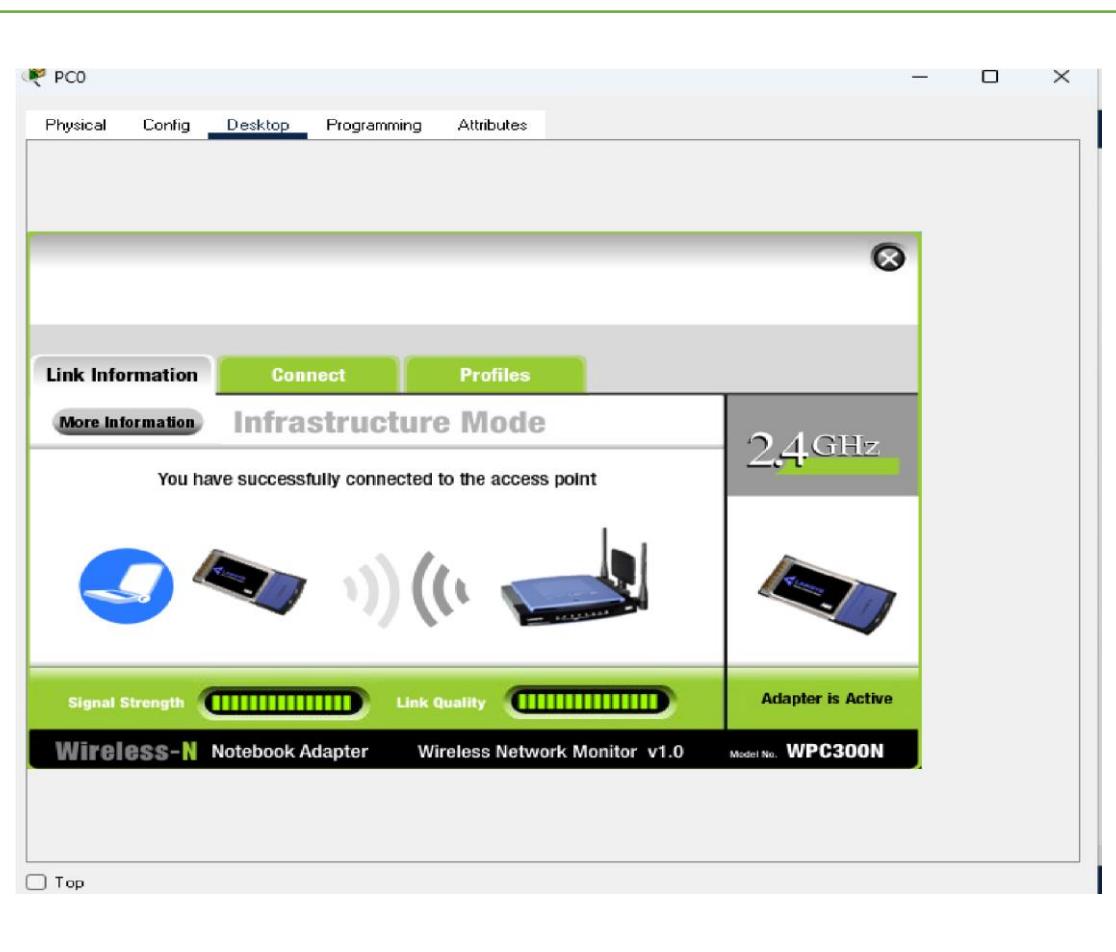
The router is a physical or virtual internetworking device that is designed to receive, analyze, and forward data packets between computer networks. A router examines a destination IP address of a given data packet, and it uses the headers and forwarding tables to decide the best way to transfer the packets.

PROCEDURE:

1. Open CISCO PACKET TRACER.
2. Insert a wireless router (Model: WRT300N).
3. Insert 3 PCs'.
4. Click on router and open GUI settings.
5. Disable DHCP server settings.
6. Copy IP address of the router.
7. Go to administration settings and reset password.
8. Click on PC and open physical settings.
9. There, replace ethernet port with WMP300N. (NOTE:- Remember to turn ON and OFF the PC when needed).
10. Give IP address to all the PC's.
11. In default gateway paste the Router IP address.
12. Connect each PC with the router.
13. Check the connection with the help of command prompt.
14. End.

Observation:





CONCLUSION:

With this experiment we get to know how to connect PC with wireless router with the help of CISCO PACKET TRACER.



DEPARTMENT OF COMPUTER ENGINEERING

Subject: DATA COMMUNICATION AND COMPUTER NETWORK	Subject Code: 22414
Semester: 4 th Semester	Course: Computer Engineering
Laboratory No: L004B	Name of Subject Teacher: Pragati Mali
Name of Student: Siddharth Shah	Roll Id: 22203A0041

Experiment No:	5
Title:	Share printer and folder in a network and transfer a file from one computer to another

AIM:- Share printer and folder in a network and transfer a file from one computer to another

SOFTWARE USED:- CISCO PACKET TRACER

WHAT IS A PRINTER:-

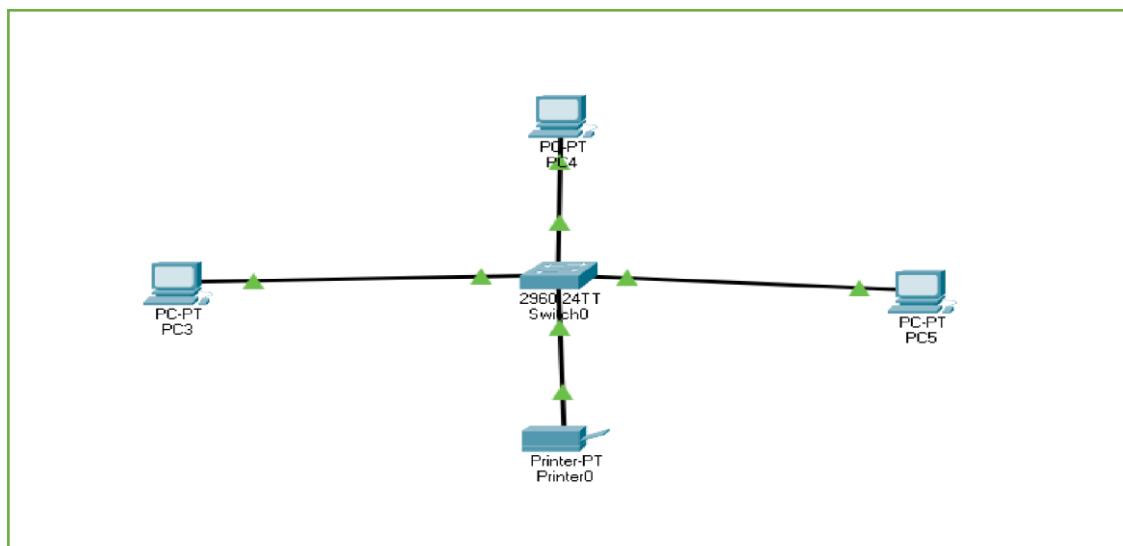
A printer is a device that produces a hard copy (physical, tangible output) of digital information stored on a computer or other electronic device. It takes electronic data and transfers it onto paper or other print media.

Printers are commonly used for various purposes, such as producing documents, images, and graphics.

PROCEDURE:

1. Open CISCO PACKET TRACER.
2. Insert a Printer
3. Insert 3 PCs'.
4. Insert a Switch Connecting the 3 PC's along with the Printer
5. Go to Config ⑦ Select Fast Ethernet ⑦ Assign IP Address to the Printer
6. Assign IP Address to all the 3 PC's
7. Check the connection with the help of command prompt.
8. End

Observation:



Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
Successful	PC3	Printer0	ICMP	[Solid Blue]		0.000	N	0	(edit)	(delete)
Successful	PC3	Printer0	ICMP	[Solid Blue]		0.000	N	0	(edit)	(delete)
Successful	PC3	PC5	ICMP	[Solid Purple]		0.000	N	1	(edit)	(delete)

CONCLUSION:

File has been successfully sent from 1 PC to another using Printer



Vidyalankar
Polytechnic

DEPARTMENT OF COMPUTER ENGINEERING

Subject:- Data Communication & Computer Network	Subject Code: 22414
Semester: 4 th Semester	Course: Computer Engineering
Laboratory No: L004B	Name of Subject Teacher: Pragati Mali
Name of Student: Siddharth Shah	Roll Id: 22203A0041

Experiment No:	6
Title of Experiment	Create a network using Bluetooth (Piconet/Scatternet)

- Software Used:-

Cisco Packet Tracer

- Specifications Of components :-

1. Bluetooth Speaker

Plays sound through Bluetooth from a Portable Music Player.

Features:

- Bluetooth compatible
- Registration Server Compatible

Usage:

- Pair a Bluetooth Speaker with the Portable Music Player through Bluetooth using the Config tab. Enable the Portable Music Player by pressing ALT-click. The Portable Music Player will then send data to the Bluetooth Speaker through Bluetooth to play white noise music.

Direct Control:

- N/A

Local Control:

- N/A

Remote Control:

- N/A

Data Specifications:

- N/A

Example:

- See Usage section.

2. Portable Music Player

Plays music through Bluetooth capabilities.

Features:

- Bluetooth compatible
- Registration Server Compatible
- On
- Off

Usage:

- Pair a Bluetooth Speaker with the Portable Music Player through Bluetooth using the Config tab. Enable the Portable Music Player by pressing ALT-click. The Portable Music Player will then send data to the Bluetooth Speaker through Bluetooth to play white noise music.\

Direct Control:

- ALT-click to interact

Local Control:

- Connect device to MCU/SBC/Thing. Use the "customWrite" API per Data Specifications

Remote Control:

- Connect device to Registration Server using Config Tab

Data Specifications:

- N/A

Example:

- See Usage section.

• PROCEDURE:-

1. Open Cisco Packet Tracer.
2. Head to End Devices > Home and add a Bluetooth speaker and a Portable Music Player on your pane.
3. Open the Configuration menu for the speaker. Turn off the port status for wireless port and turn it on for Bluetooth port.
4. Repeat point no. 3 for the portable music player as well.
5. Now, in the wireless sub-menu under the configuration menu of the music player head to the 'Devices' section and click 'Discover' to search for available devices.
6. The Bluetooth speaker should pop up in the menu named 'IoT 0'. Select it and click 'Pair' to pair it with the music player. It should show the status as 'Paired, Connected' as shown in Fig. 01.

Devices		
Name	MAC Address	Status
IoT0	000A.4177.5E04	Paired, Connected
Discover	Pair	Unpair

Fig. 01

7. You have now successfully established connection between the two devices and should be in the off position initially as shown in Fig. 02.

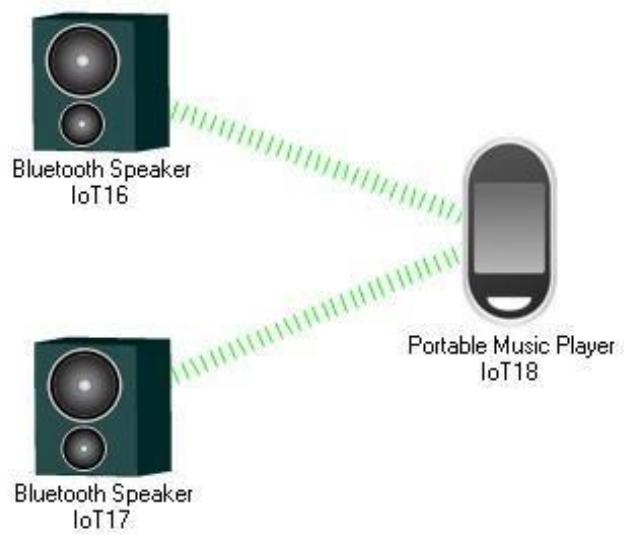


Fig. 02

8. To turn on the music player and verify the connection, Hold Left Alt on the keyboard and left click on the music player. Your, connection has been successfully established. Refer Fig. 03.

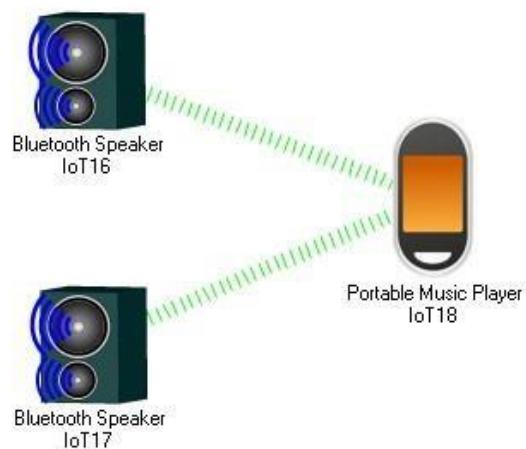


Fig. 03

- **CONCLUSION :-**

From the above experiment, we get a hands on experience on how to create and establish a network/connection between two devices using Bluetooth technology. (Piconet/Scatternet)



DEPARTMENT OF COMPUTER ENGINEERING

Subject:-Data communication and computer networking	Subject Code: 22414
Semester: 4 th Semester	Course: Computer Engineering
Laboratory No: L004B	Name of Subject Teacher: Pragati Mali
Name of Student: Siddharth .P. Shah	Roll Id: 22203A0041

Experiment No:	7
Title of Experiment	Install operating system(Windows/Linux-RedHat/Ubuntu)

Aim:- Install operating system(Windows/Linux-RedHat/Ubuntu)

Operating System

In simple words, Operating System is system software that is required to run applications programmes and utilities.

Example of operating system:-

1. WINDOWS
2. MAC OS
3. LINUX

WINDOWS

Microsoft Windows is a product line of proprietary graphical operating systems developed and marketed by Microsoft. It is grouped into families and sub-families that cater to particular sectors of the computing industry -- Windows (unqualified) for a consumer or corporate workstation, Windows Server for a server and Windows IoT for an embedded system. Defunct families include Windows 9x, Windows Mobile, Windows Phone, and Windows Embedded Compact.

MAC OS

MAC OS, originally **Mac OS X**, previously shortened as **OS X**, is an operating system developed and marketed by Apple Inc. since 2001. It is the primary operating system for Apple's Mac computers. Within the market of desktop and laptop computers, it is the second most widely used desktop OS, after Microsoft Windows and ahead of all Linux distributions, including ChromeOS.

Mac OS X succeeded classic Mac OS, the primary Macintosh operating system from 1984 to 2001. Its underlying architecture came from NeXT's NeXTSTEP, as a result of Apple's acquisition of NeXT, which also brought Steve Jobs back to Apple.

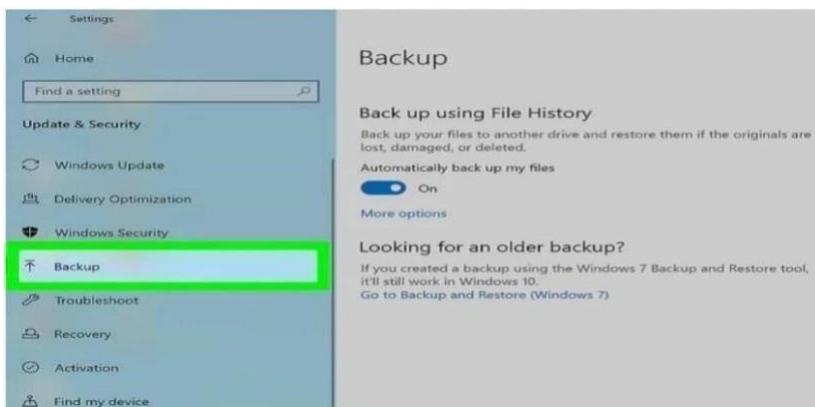
LINUX

Linux is a family of open-source Unix-like operating systems based on the Linux kernel, an operating system kernel first released on September 17, 1991, by Linus Torvalds. Linux is typically

packaged as a Linux distribution, which includes the kernel and supporting system software and libraries, many of which are provided by the GNU Project. Many Linux distributions use the word "Linux" in their name, but the Free Software Foundation uses and recommends the name "GNU/Linux" to emphasize the use and importance of GNU software in many distributions, causing some controversy .

PROCEDURE:-

1. Take backup of the data.



2. Insert Window installation media to computer



3. Boot the computer.

4. Select the USB Drive



5. Install the windows in your Device
6. Select the edition of window and then accept all the license term.
7. Select a drive to install the windows.



8. Remove the USB flash drive and restart your computer.
9. Setup the windows.
10. Use the windows.

Conclusion:-

From the above experiment we get to know what is OS , examples of OS and installation of OS.



DEPARTMENT OF COMPUTER ENGINEERING

Subject: Data Communication and Computer Network	Subject Code: 22414
Semester: 4 th Semester	Course: Computer Engineering
Laboratory No: L004B	Name of Subject Teacher: Pragati Mali
Name of Student: Siddharth Shah	Roll Id: 22203A0041

Experiment No:	8
Title:	Setting up a wireless network

Aim: Setting up a wireless network

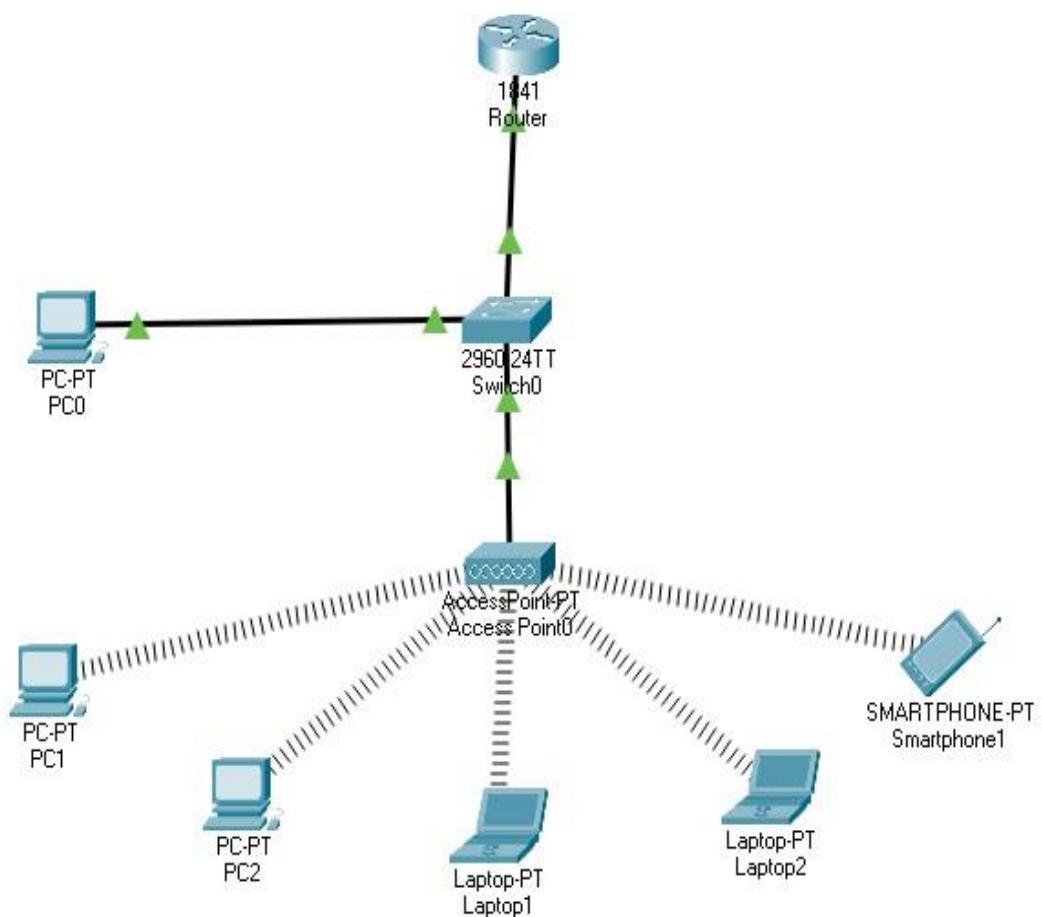
Software used : Cisco packet tracer

Procedure :

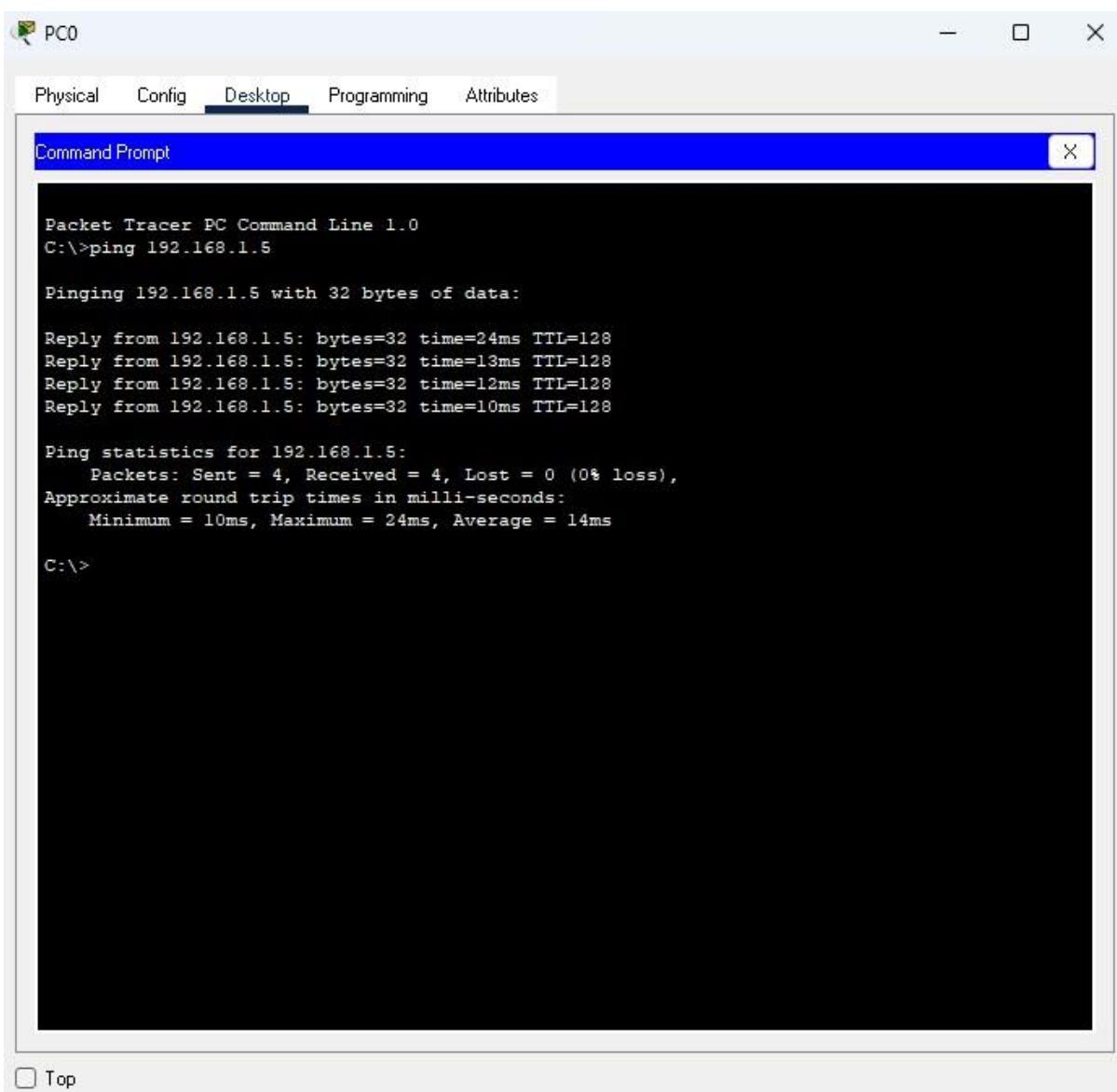
1. Select router-1841 from routers column.
2. Connect any one switch from switches and connect it with router with straight copper wire.
3. Connect Accesspoint to the switch and assign SSID and WEP key to the accesspoint.

4. Connect n number of devices through wireless media by connecting to SSID and WEP key of the accesspoint.
5. Assign Ip address to the devices connect to the accesspoint and put default Ip address of router to the devices to get access to the information.

Connection of devices with AP(accesspoint):-



Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
Successful	PC0	Laptop2	ICMP	█	Red	0.000	N	0	(edit)	(delete)
Successful	PC0	Smartphone1	ICMP	█	Purple	0.000	N	1	(edit)	(delete)
Successful	PC0	PC2	ICMP	█	Green	0.000	N	2	(edit)	(delete)



Conclusion: -

From this experiment, we get a hand on experience on how to create and establish a wireless connection between nth number of devices using accesspoint.



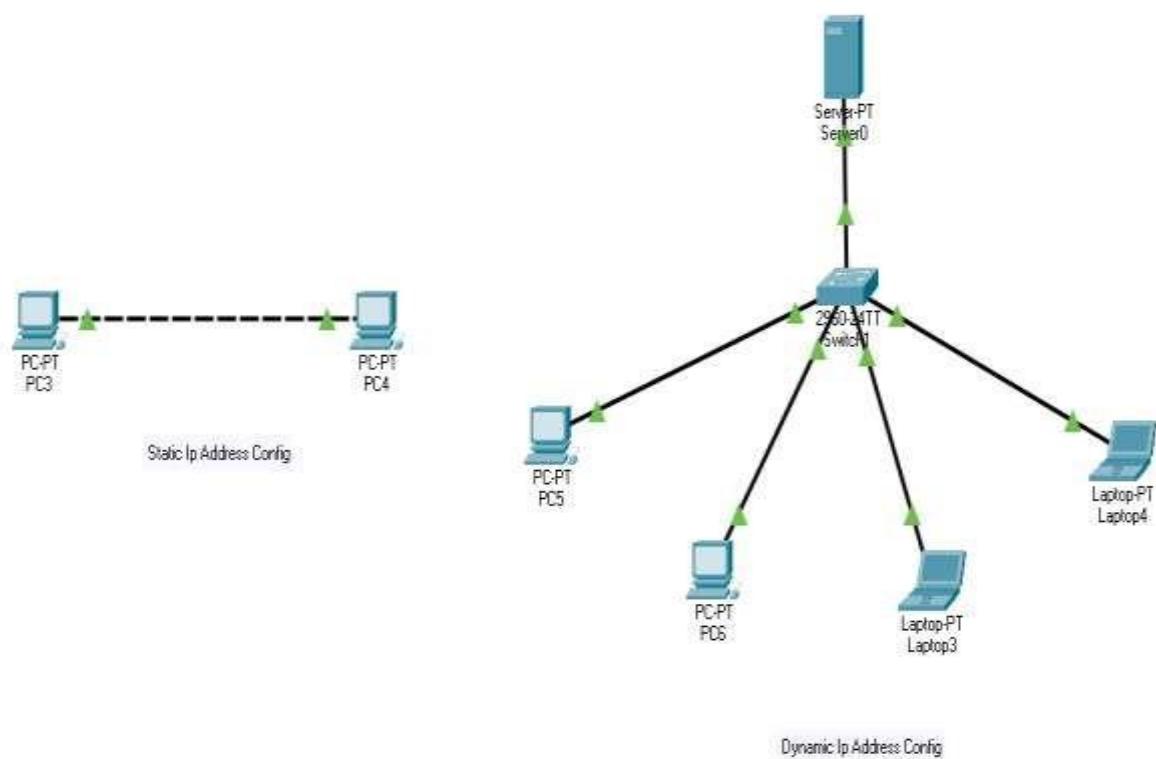
DEPARTMENT OF COMPUTER ENGINEERING

Subject: Data Communication and Computer Network	Subject Code: 22414
Semester: 4 th Semester	Course: Computer Engineering
Laboratory No: L004B	Name of Subject Teacher: Pragati Mali
Name of Student: Siddharth Shah	Roll Id: 22203A0041

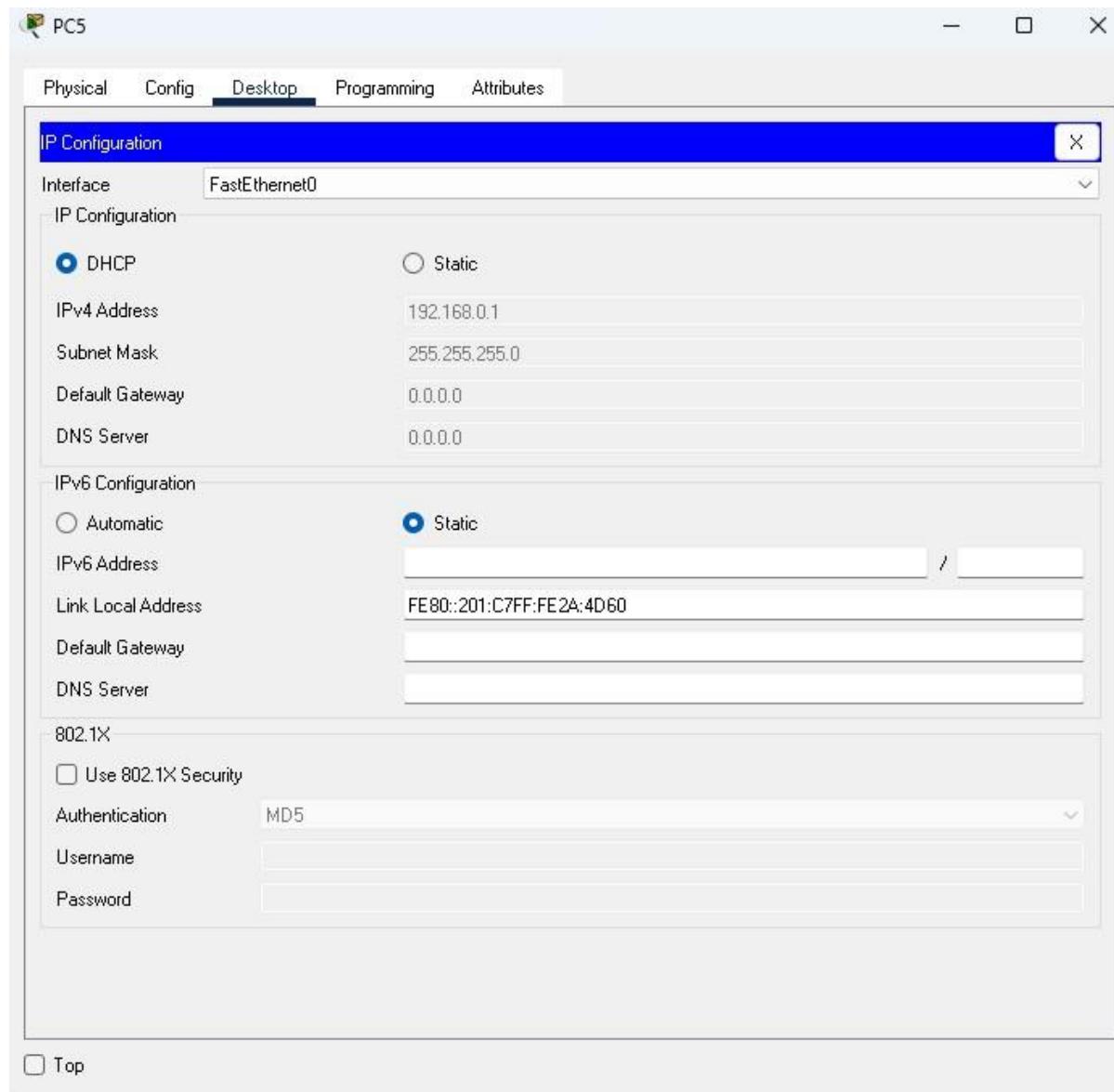
Experiment No:	9
Title:	Configure Static and Dynamic Ip Address

Aim:- Configure Static and Dynamic Ip Address

Software Used:- Cisco Packet Tracer **Connection:-**



Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
Successful		PC3	PC4	ICMP	Green	0.000	N	0	(edit)	(delete)
Successful		PC4	PC3	ICMP	Brown	0.000	N	1	(edit)	(delete)
Successful		PC5	Laptop3	ICMP	Brown	0.000	N	2	(edit)	(delete)
Successful		PC6	PC6	ICMP	Dark Brown	0.000	N	3	(edit)	(delete)



Conclusion:-

From this experiment, we get a hand on experience on how to configure Static and Dynamic Ip Address Configuration.

Subject: Data communication and computer networking	Subject Code:22414
Semester:4 Semester	Course: Computer Engineering
Laboratory No: L004B	Name of Subject Teacher: Pragati Mali
Name of Student: Siddharth Shah	Roll Id: 22203A0041

Experiment No:	10
Title of Experiment	Config DCHP Server

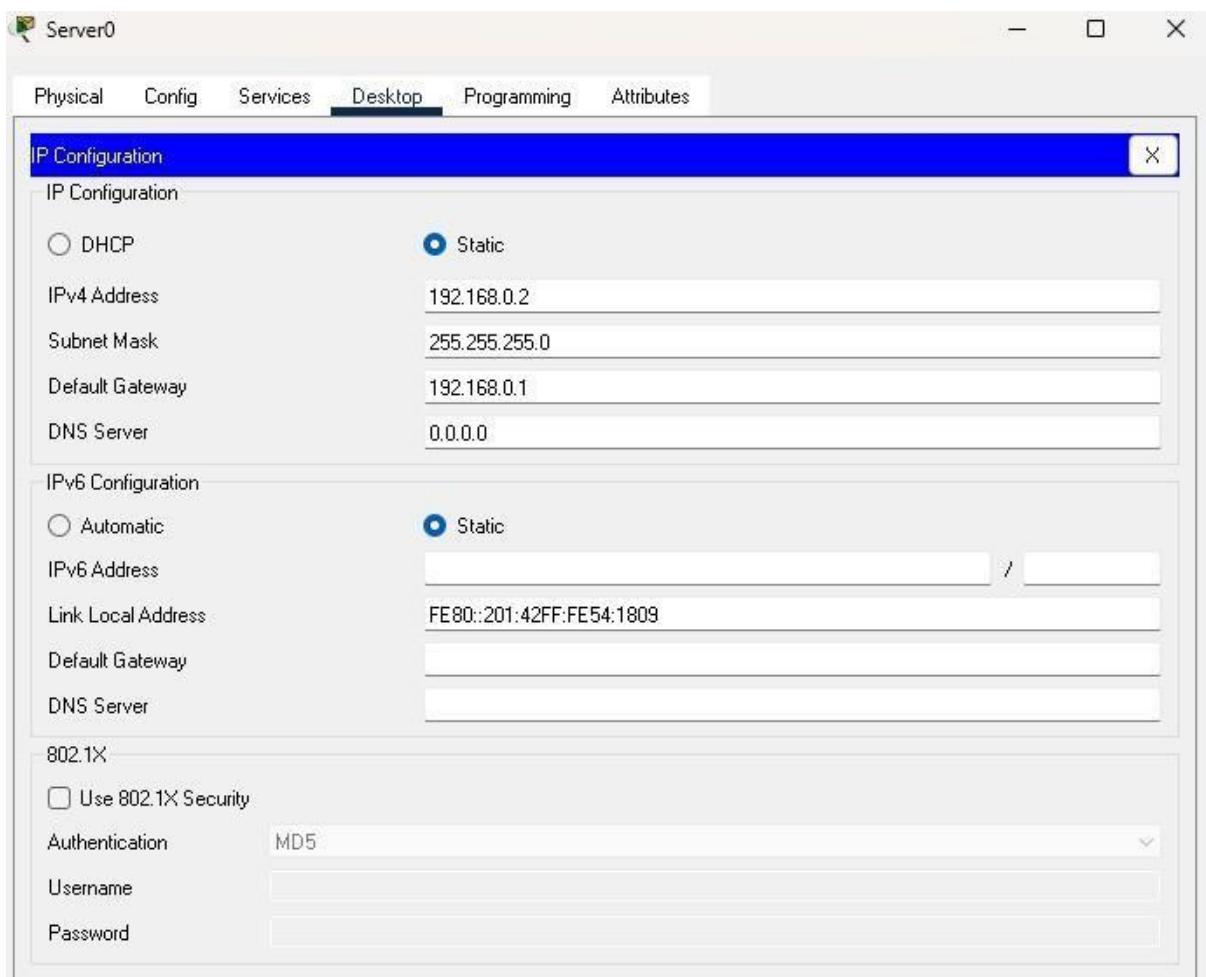
Aim: - Config DCHP Server

Resource required: - Cisco Packet Tracker.

Procedure: -

- Open CISCO PACKET TRACER.
- Select two computers from End Devices and place it on pain.
- Connect them using wires.
- Now, take a Server from End Devices and place it on plain. Take a Switch and Three Computer from End Devices and place it on pain.
- Connect the server and the switch through wire and connect the switch with each Computer through wires.
- Click on Server and go to FastEthernet0 located in config. Set a IP address and click enter. Then go to DHCP located in services select on and set gateway as 192.168.0.2 and insert 10 a 50 in Start IP Adress and subset mask respectively.
- Click on Computer go to Desktop, click on IP config and select DHCP.

Result: -



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 <input checked="" type="radio"/> On <input type="radio"/> Off					
Pool Name	serverPool						
Default Gateway	0.0.0						
DNS Server	0.0.0						
Start IP Address:	192	168	0				
Subnet Mask:	255	255	255				
Maximum Number of Users:	246						
TFTP Server:	0.0.0						
WLC Address:	0.0.0						
Add		Save	Remove				
Pool Name	Default Gateway	DNS Server	Start IP Address				
Subnet Mask	Max User	TFTP Server	WLC Address				
serverPool	0.0.0	0.0.0	192.168.0.1	255.255.255.0	246	0.0.0	0.0.0

Conclusion: From above practical we get to know how to configure DHCP Server



DEPARTMENT OF COMPUTER ENGINEERING

Subject: DCC	Subject Code:22414
Semester:4 th Semester	Course: Computer Engineering
Laboratory No: L004	Name of Subject Teacher: Pragati Mali
Name of Student: Siddharth Shah	Roll Id: 22203A0041

Experiment No:	11
Title of Experiment	Run basic TCP/IP utilities and networking commands

Aim: Run basic utilities and network commands: ipconfig, ping, tracert, netstat, pathping.

Software used:

- Cisco Package Tracker

- ## Basic TCP/IP utilities

- **Ping:**

The ping command is usually used as a simple way to verify that a computer can communicate over the network with another computer or network device. The ping command operates by sending Internet Control Message Protocol (ICMP) Echo Request messages to the destination computer and waiting for a response.

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Users\vpt> Ping www.google.com

Pinging www.google.com [142.250.182.196] with 32 bytes of data:
Reply from 142.250.182.196: bytes=32 time=3ms TTL=59

Ping statistics for 142.250.182.196:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 3ms, Maximum = 3ms, Average = 3ms
```

- **Ipconfig:**

IPCONFIG is a command line tool used to control the network connections on Windows machines. Ipconfig displays all current TCP/IP network configuration values and refreshes Dynamic Host Configuration Protocol (DHCP) and Domain Name System (DNS) settings.

```
PS C:\Users\vpt> Ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

Connection-specific DNS Suffix . : wdc.vidyalankarlive.com
Link-local IPv6 Address . . . . . : fe80::59a4:e2c3:ec17:3768%14
IPv4 Address. . . . . : 172.16.104.57
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 172.16.104.1

Ethernet adapter vEthernet (Default Switch):

Connection-specific DNS Suffix . :
Link-local IPv6 Address . . . . . : fe80::974b:d0cd:9ac:6cc0%18
IPv4 Address. . . . . : 192.168.176.1
Subnet Mask . . . . . : 255.255.240.0
Default Gateway . . . . . :
```


-
-

Netstat:

Netstat is a common command line TCP/IP networking utility available in most versions of Windows, Linux, UNIX and other operating systems. Netstat provides information and statistics about protocols in use and current TCP/IP network connections.

Active Connections			
Proto	Local Address	Foreign Address	State
TCP	172.16.104.57:49480	bingforbusiness:https	CLOSE_WAIT
TCP	172.16.104.57:49483	bingforbusiness:https	CLOSE_WAIT
TCP	172.16.104.57:49484	bingforbusiness:https	CLOSE_WAIT
TCP	172.16.104.57:49485	bingforbusiness:https	CLOSE_WAIT
TCP	172.16.104.57:49486	bingforbusiness:https	CLOSE_WAIT
TCP	172.16.104.57:49487	bingforbusiness:https	CLOSE_WAIT
TCP	172.16.104.57:49488	bingforbusiness:https	CLOSE_WAIT
TCP	172.16.104.57:49490	20.190.145.170:https	CLOSE_WAIT
TCP	172.16.104.57:49491	20.190.145.170:https	CLOSE_WAIT
TCP	172.16.104.57:49533	a23-223-244-74:https	CLOSE_WAIT
TCP	172.16.104.57:49534	40.99.9.34:https	CLOSE_WAIT
TCP	172.16.104.57:49535	20.42.65.88:https	CLOSE_WAIT
TCP	172.16.104.57:49541	13.107.253.254:https	CLOSE_WAIT
TCP	172.16.104.57:49542	52.108.9.254:https	CLOSE_WAIT
TCP	172.16.104.57:49543	152.199.43.62:https	CLOSE_WAIT
TCP	172.16.104.57:49544	204.79.197.222:https	CLOSE_WAIT
TCP	172.16.104.57:49560	20.198.119.84:https	ESTABLISHED
TCP	172.16.104.57:49565	bom12s21-in-f3:https	TIME_WAIT
TCP	172.16.104.57:49566	maa05s12-in-f3:https	TIME_WAIT
TCP	172.16.104.57:49574	relay-3e92535d:http	ESTABLISHED
TCP	172.16.104.57:49583	sb-in-f84:https	ESTABLISHED
TCP	172.16.104.57:49586	WDC-SRV-22:50889	TIME_WAIT
TCP	172.16.104.57:49589	WDC-SRV-22:microsoft-ds	ESTABLISHED
TCP	172.16.104.57:49591	maa03s44-in-f10:https	ESTABLISHED
TCP	172.16.104.57:49601	a184-84-232-59:https	ESTABLISHED
TCP	172.16.104.57:49602	13.107.21.239:https	TIME_WAIT
TCP	172.16.104.57:49603	a-0003:https	TIME_WAIT
TCP	172.16.104.57:49604	a-0003:https	TIME_WAIT
TCP	172.16.104.57:49605	a184-84-232-99:https	TIME_WAIT
TCP	172.16.104.57:49606	a184-84-232-99:https	TIME_WAIT
TCP	172.16.104.57:49607	a-0003:https	TIME_WAIT
TCP	172.16.104.57:49608	a184-84-232-99:https	TIME_WAIT
TCP	172.16.104.57:49609	a23-192-96-181:https	TIME_WAIT
TCP	172.16.104.57:49610	a23-223-244-83:https	TIME_WAIT

Tracert:

-
-

The tracert command is a Command Prompt command that's used to show several details about the path that a packet takes from the computer or device you're on to whatever destination you specify. It will list all the routers it passes through until it reaches its destination or fails to and is discarded.

```
PS C:\Users\vpt> Tracert www.google.com

Tracing route to www.google.com [142.251.42.36]
over a maximum of 30 hops:

 1 <1 ms <1 ms <1 ms 172.16.104.1
 2 <1 ms <1 ms <1 ms sophos.wdc.vidyalankarlive.com [172.16.0.1]
 3 1 ms <1 ms 1 ms 125.99.106.137
 4 2 ms 2 ms 3 ms 192.168.210.129
 5 2 ms 2 ms 3 ms 192.168.27.34
 6 3 ms 3 ms 2 ms 125.99.55.254
 7 3 ms * 2 ms 125.99.55.253
 8 3 ms 3 ms 3 ms 192.168.151.188
 9 * 3 ms * 125.99.55.163
10 4 ms 4 ms 5 ms 125.99.55.165
11 3 ms 3 ms 3 ms 142.251.225.29
12 3 ms 3 ms 7 ms 142.251.69.43
13 3 ms 3 ms 12 ms bom12s20-in-f4.1e100.net [142.251.42.36]
```

Pathping:

Pathping is a TCP/IP based utility (command-line tool) that provides useful information about network latency and network loss at intermediate hops between a source address and a destination address. It does this by sending echo requests via ICMP and analysing the results.

```
PS C:\Users\vpt> Pathping www.google.com

Tracing route to www.google.com [142.250.205.228]
over a maximum of 30 hops:
  0  4B-18.wdc.vidyalankarlive.com [172.16.104.57]
  1  172.16.104.1
  2  sophos.wdc.vidyalankarlive.com [172.16.0.1]
  3  42.104.87.6
  4  74.125.48.70
  5  142.251.76.23
  6  142.250.208.226
  7  72.14.232.35
  8  142.251.229.251
  9  142.251.60.187
 10  maa05s28-in-f4.1e100.net [142.250.205.228]

Computing statistics for 250 seconds...
      Source to Here   This Node/Link
Hop  RTT     Lost/Sent = Pct  Lost/Sent = Pct  Address
  0          0/ 100 =  0%          0/ 100 =  0%  4B-18.wdc.vidyalankarlive.com [172.16.104.57]
           0/ 100 =  0%          0/ 100 =  0%  |
  1    2ms    0/ 100 =  0%    0/ 100 =  0%  172.16.104.1
           0/ 100 =  0%          0/ 100 =  0%  |
  2    0ms    0/ 100 =  0%    0/ 100 =  0%  sophos.wdc.vidyalankarlive.com [172.16.0.1]
           0/ 100 =  0%          0/ 100 =  0%  |
  3    3ms    0/ 100 =  0%    0/ 100 =  0%  42.104.87.6
           0/ 100 =  0%          0/ 100 =  0%  |
  4    4ms    0/ 100 =  0%    0/ 100 =  0%  74.125.48.70
           0/ 100 =  0%          0/ 100 =  0%  |
  5    ---  100/ 100 =100%  100/ 100 =100%  142.251.76.23
           0/ 100 =  0%          0/ 100 =  0%  |
  6    4ms    0/ 100 =  0%    0/ 100 =  0%  142.250.208.226
           0/ 100 =  0%          0/ 100 =  0%  |
  7    ---  100/ 100 =100%  100/ 100 =100%  72.14.232.35
           0/ 100 =  0%          0/ 100 =  0%  |
  8   28ms   0/ 100 =  0%    0/ 100 =  0%  142.251.229.251
           1/ 100 =  1%          1/ 100 =  1%  |
  9    ---  100/ 100 =100%  99/ 100 = 99%  142.251.60.187
           0/ 100 =  0%          0/ 100 =  0%  |
 10   24ms   1/ 100 =  1%    0/ 100 =  0%  maa05s28-in-f4.1e100.net [142.250.205.228]

Trace complete.
```

-

- **Conclusion:**

We learn how to run basic utilities and network commands: ipconfig, ping, tracert, netstart, pathping, route using Cisco Packet Tracer.



Vidyalankar
Polytechnic

DEPARTMENT OF COMPUTER ENGINEERING

Subject: DCC	Subject Code:22414
Semester:4 th Semester	Course: Computer Engineering
Laboratory No: L004B	Name of Subject Teacher: Pragati Mali
Name of Student: Siddharth Shah	Roll Id: 22203A0041

Experiment No:	12
Title of Experiment	Configure FTP server.

Aim: Configure FTP server.

Software used:

- Cisco Packet Tracker

Procedure:

Select suitable router, server and suitable pcs and connect the pcs with a switch and connect the switch.

First select router configuration-> fast Ethernet0-> set the Ip address.

Then after configuring router go to server -> Desktop -> Ip Configuration -> assign Ipv4 address and set the default gateway to router's Ip address.

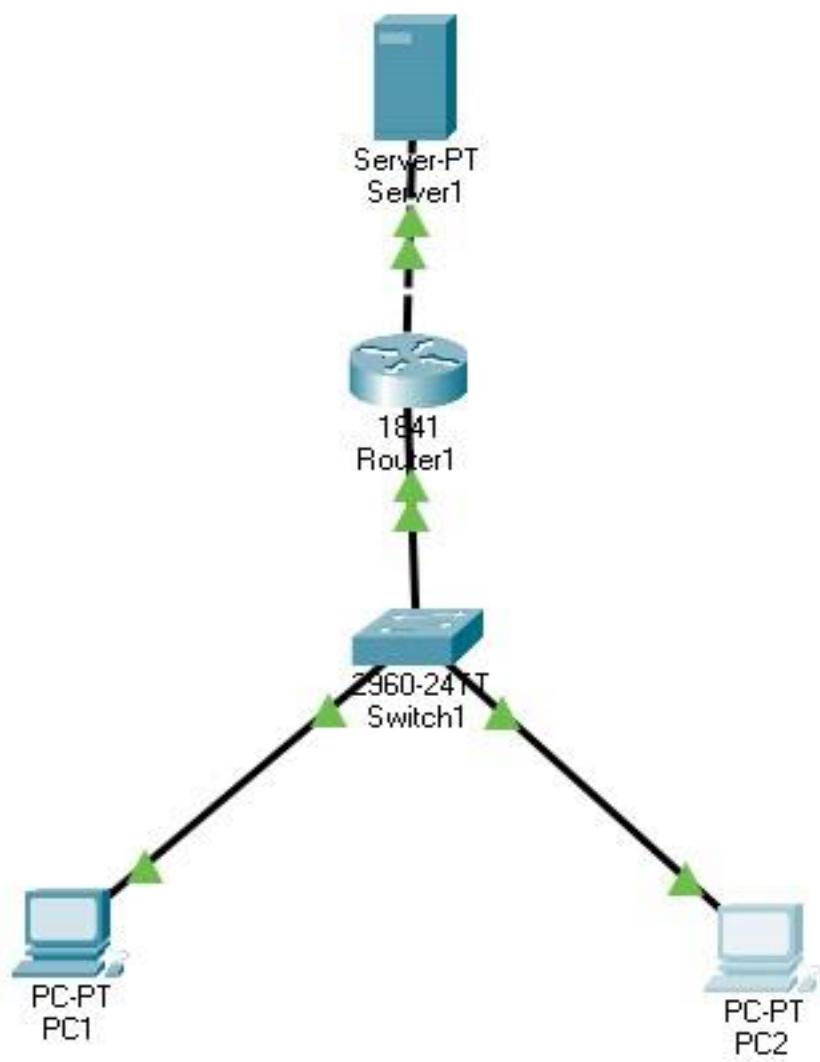
After server configuration go to Pc -> desktop -> Ip Configuration -> assign Ipv4 address and set the default gateway to router's Ip address

Then go to server -> Services -> FTP -> Give Username and password > assign rights to the username -> Select add.

Go to Pc -> desktop -> command prompt -> First ping the server -> Then in the command prompt type fpt <server Ip address> -> Enter the username and password.

Then to upload a file create a file in the pc -> go to command prompt > type: put <filename>

To fetch a file, go to command prompt -> type: get <filename>



PC1

Physical Config Desktop Programming Attributes

Command Prompt

```
\Invalid Command.

C:\>ping 192.168.0.3

Pinging 192.168.0.3 with 32 bytes of data:

Request timed out.
Reply from 192.168.0.3: bytes=32 time<1ms TTL=127
Reply from 192.168.0.3: bytes=32 time<1ms TTL=127
Reply from 192.168.0.3: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.0.3:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ftp 192.168.0.3
Trying to connect...192.168.0.3
Connected to 192.168.0.3
220- Welcome to PT Ftp server
Username:Siddharth
331- Username ok, need password
Password:
230- Logged in
(passive mode On)
ftp>put Hello.txt

Writing file Hello.txt to 192.168.0.3:
File transfer in progress...

[Transfer complete - 31 bytes]

31 bytes copied in 0.082 secs (378 bytes/sec)
ftp>
```

Top

PC2

Physical Config Desktop Programming Attributes

Command Prompt X

```
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.0.3

Pinging 192.168.0.3 with 32 bytes of data:

Reply from 192.168.0.3: bytes=32 time=4ms TTL=127
Reply from 192.168.0.3: bytes=32 time<1ms TTL=127
Reply from 192.168.0.3: bytes=32 time<1ms TTL=127
Reply from 192.168.0.3: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.0.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 4ms, Average = 1ms

C:\>ftp 192.168.0.3
Trying to connect...192.168.0.3
Connected to 192.168.0.3
220- Welcome to PT Ftp server
Username:Siddharth
331- Username ok, need password
Password:
230- Logged in
(passive mode On)
ftp>get Hello.txt

Reading file Hello.txt from 192.168.0.3:
File transfer in progress...

[Transfer complete - 31 bytes]

31 bytes copied in 0 secs
ftp>
```

Top

Conclusion:

We learn how to Configure FTP server using Cisco Packet Tracer.