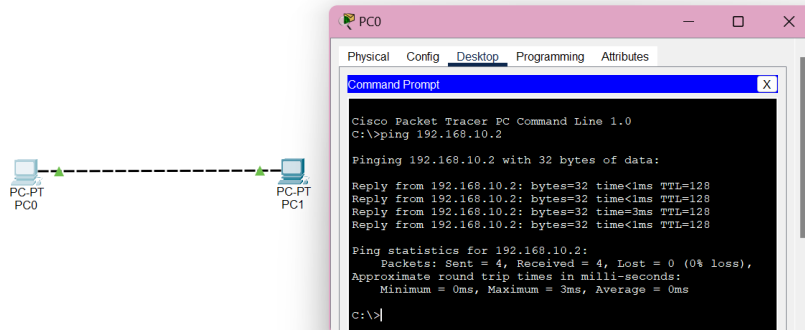


CN LAB EXPERIMENTS

CN EXPERIMENT- 01

4. Making connection between two host PCs (end devices) and analysing the communication using ping command.

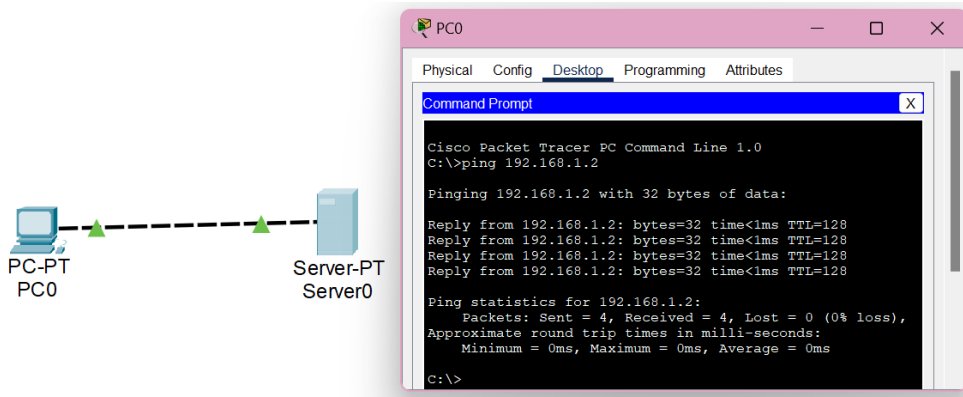
Simple steps: Make a connection and ping.



CN EXPERIMENT- 02

2. Configuration of an Ethernet using the network devices in Cisco Packet Tracer.

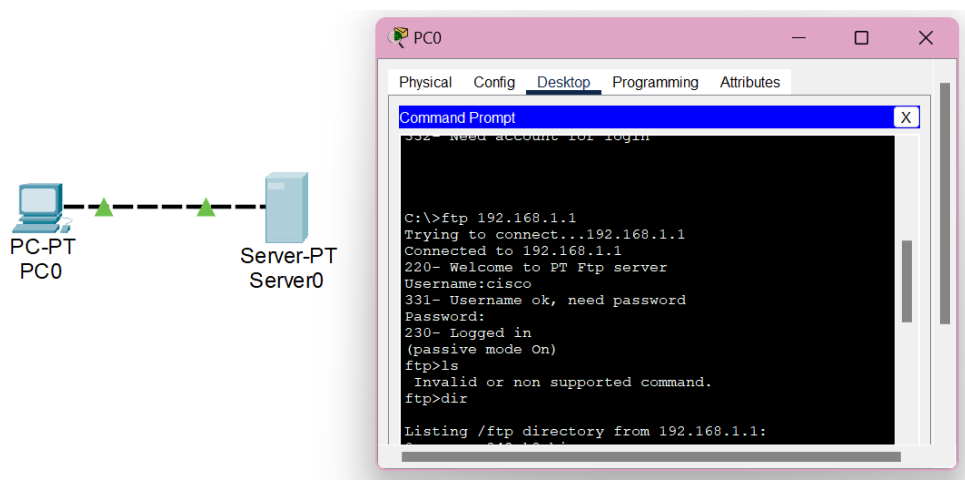
Simple steps: Make a connection and ping.



3. Simulating the Ethernet by transmitting ICMP, FTP and TFTP messages between two end devices.

Steps:

1. To enable FTP and TFTP server -> go to server -> services -> switch 'ON' both.
2. To simulate the ftp server -> go to cmd of PC -> ping [ftp 192.168.1.1](#) -> login w username and password(in server -> go to services -> ftp -> see user id and password.)
3. On the PC, use **Command Prompt** to transfer files via FTP.

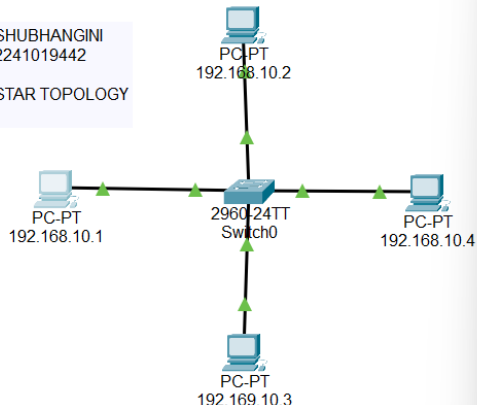


CN EXPERIMENT- 03 (Steps for all: Make the topology and ping.)

2. Constructing and simulating a network based on star topology

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STAR TOPOLOGY



Command Prompt

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.10.4

Pinging 192.168.10.4 with 32 bytes of data:

Reply from 192.168.10.4: bytes=32 time<1ms TTL=128
Reply from 192.168.10.4: bytes=32 time<1ms TTL=128
Reply from 192.168.10.4: bytes=32 time<1ms TTL=128
Reply from 192.168.10.4: bytes=32 time=2ms TTL=128

Ping statistics for 192.168.10.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 2ms, Average = 0ms

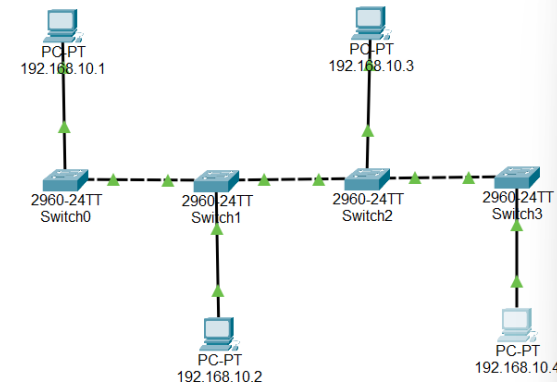
C:\>ping 192.168.10.1

Pinging 192.168.10.1 with 32 bytes of data:

Reply from 192.168.10.1: bytes=32 time=7ms TTL=128
Reply from 192.168.10.1: bytes=32 time=26ms TTL=128
Reply from 192.168.10.1: bytes=32 time=26ms TTL=128
Reply from 192.168.10.1: bytes=32 time=26ms TTL=128

Ping statistics for 192.168.10.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 7ms, Maximum = 26ms, Average = 21ms
```

3. Constructing and simulating a network based on bus topology.



Command Prompt

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.10.2

Pinging 192.168.10.2 with 32 bytes of data:

Reply from 192.168.10.2: bytes=32 time<1ms TTL=128
Reply from 192.168.10.2: bytes=32 time=1ms TTL=128
Reply from 192.168.10.2: bytes=32 time<1ms TTL=128
Reply from 192.168.10.2: bytes=32 time=1ms TTL=128

Ping statistics for 192.168.10.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>ping 192.168.10.2

Pinging 192.168.10.2 with 32 bytes of data:

Reply from 192.168.10.2: bytes=32 time<1ms TTL=128
Reply from 192.168.10.2: bytes=32 time=1ms TTL=128
Reply from 192.168.10.2: bytes=32 time=1ms TTL=128
Reply from 192.168.10.2: bytes=32 time=1ms TTL=128

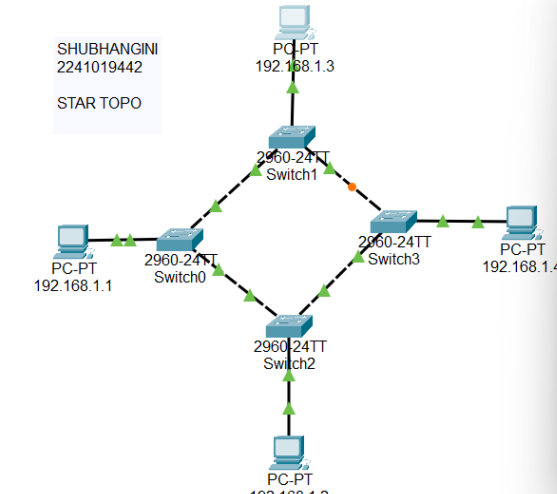
Ping statistics for 192.168.10.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>
```

4. Constructing and simulating a network based on ring topology.

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STAR TOPO



192.168.1.3

Physical Config Desktop Programming Attributes

Command Prompt

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

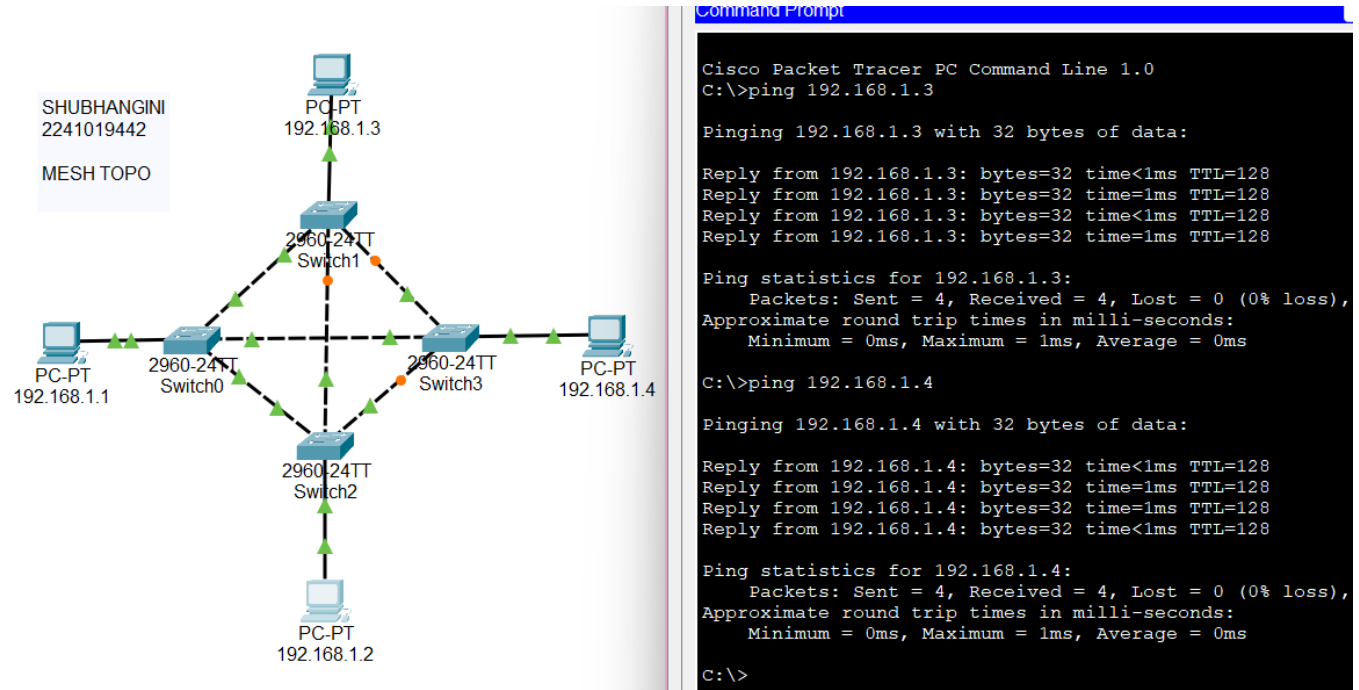
Pinging 192.168.1.2 with 32 bytes of data:

Reply from 192.168.1.2: bytes=32 time<1ms TTL=128
Reply from 192.168.1.2: bytes=32 time<1ms TTL=128
Reply from 192.168.1.2: bytes=32 time=11ms TTL=128
Reply from 192.168.1.2: bytes=32 time=11ms TTL=128

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 = 11ms, Average = 5ms

C:\>
```

5. Constructing and simulating a network based on mesh topology.

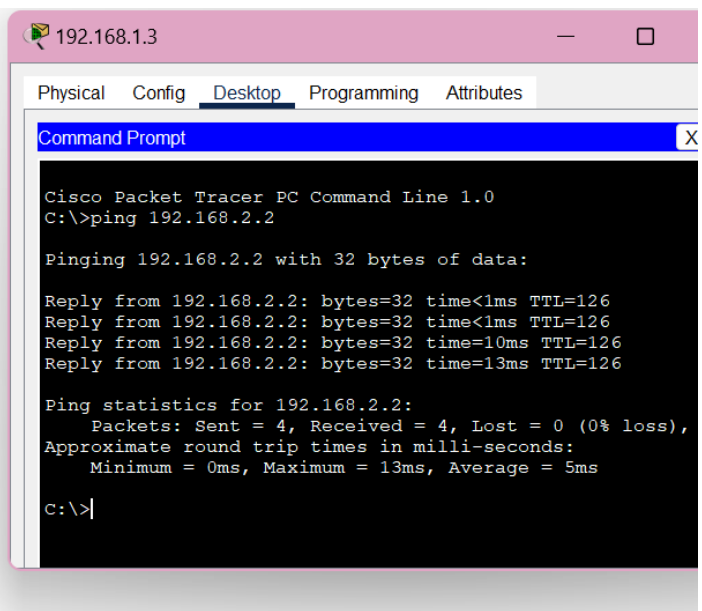
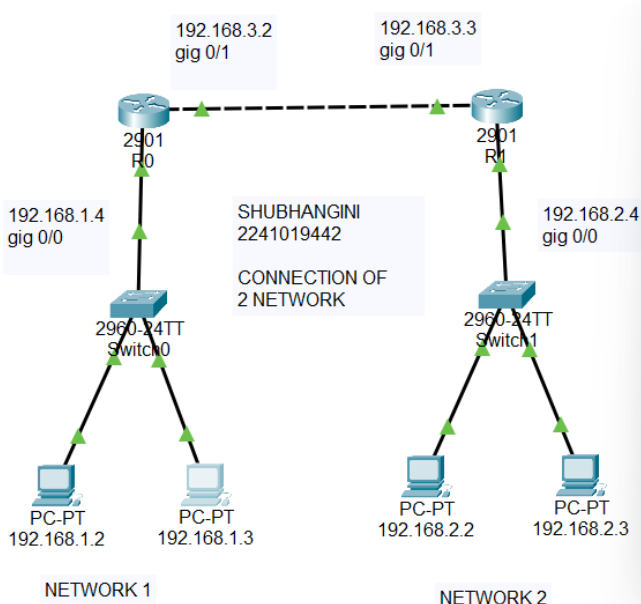


CN EXPERIMENT- 04

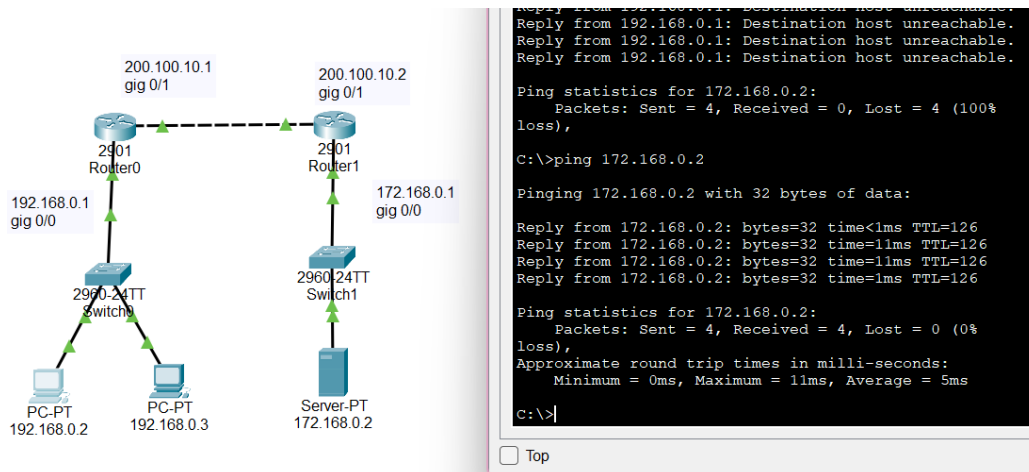
2. Constructing and analysing the communication between two networks (of different classes).

STEPS:

Use 4 pcs, 2 (2960) switches and 2(2901)Routers -> make the required connection (Make sure to take different classes)-> hover on the arrow and see which gig its showing -> if it shows gig 0/0 then select the router -> put the network address in gig 0/0 and same w 0/1 (do same w network 2) -> then do the static analysis with next hop (for eg: for R0 the next hop is 192.168.3.3) and for R1 next hop is 192.168.3.2 , for ref: <https://youtu.be/lmnptnqn-WI?si=Zhh-ibLVwQp7CXY2>



3. Configuring and implementing NAT using a router to analyse the communication between PCs(in a private network) and a public server.

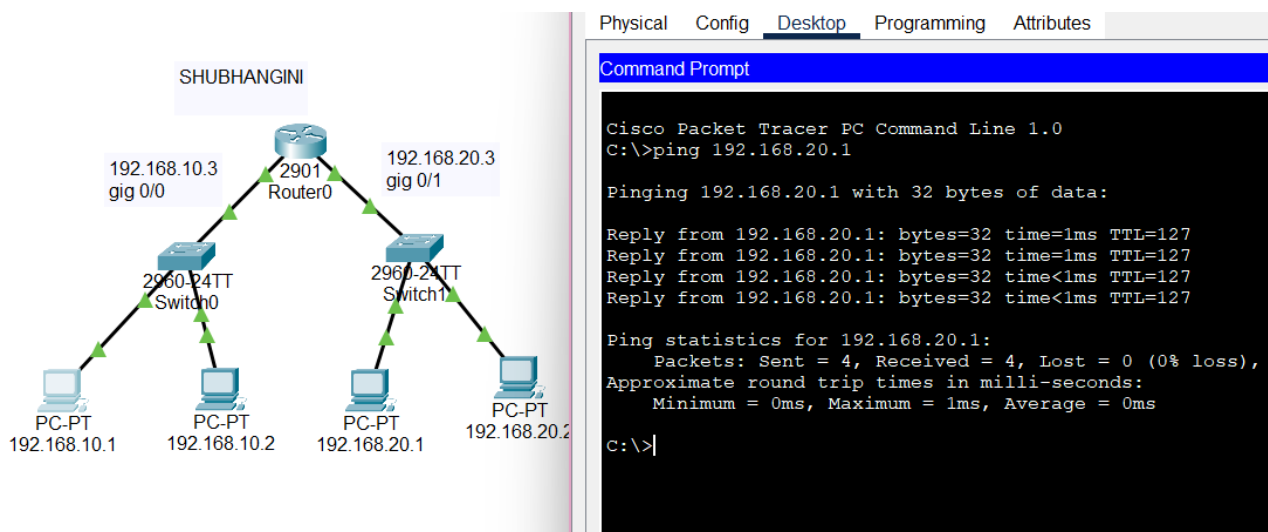


In Router 0: CLI

CN EXPERIMENT- 06

2. Implementing the sub-netting technique to divide a network into smaller subnets (with predefined users) and analysing the communication between PCs in both intra and inter-subnets.

STEPS: Use 4 pcs, 2 (2960) switches and 2(2901) Routers -> make the required connection-> hover on the arrow and see which gig its showing -> if it shows gig 0/0 then select the router -> put the network address in gig 0/0 and same w 0/1 -> then do the static analysis with next hop (for eg: for R0 the next hop is 192.168.20.3). **NOTE: WHILE PC CONFIG IN PLACE OF SUBNET WRITE 255.255.255.128.**

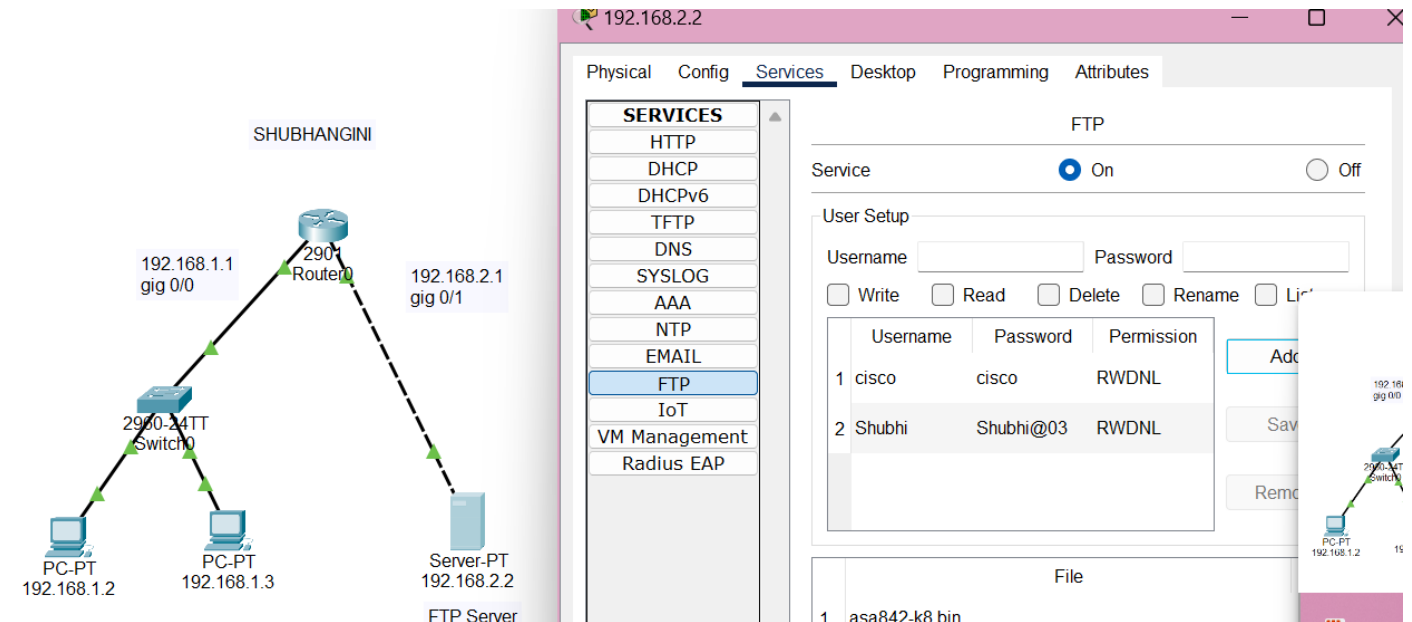


3. Implementing the VLSM technique to optimize the IPv4 address allocations to PCs (belonging to subnets) and interfaces in a given network and analysing the communication between PCs in the network.

CN EXPERIMENT- 07

2. An overview on message communication between two end hosts using FTP and TELNET packets.

STEPS: Step the configuration as usual-> 192.168.2.2 will be our FTP server->then go to FTP server -> services -> FTP -> and create a new userid and pswd -> give permission and add-> go to PC0 and open text editor -> write Hello world and save it as abc.txt -> go to cmd and try to ping FTP server (192.168.2.2) -> once its done write [ftp 192.168.2.2](ftp://192.168.2.2) ,itll ask the user id and password -> then upload the abc.txt file to the server by writing “put abc.txt” (the file is uploaded)-> write dir to check if its uploaded-> now to download it in another PC go to cmd -> write [ftp 192.168.2.2](ftp://192.168.2.2) login w user id and password -> write “get hello.txt” and then file will be downloaded.



```
C:\>ftp 192.168.2.2
Trying to connect...192.168.2.2
Connected to 192.168.2.2
220- Welcome to PT Ftp server
Username:Shubhi
331- Username ok, need password
Password:
230- Logged in
(passive mode On)
ftp>put hello.txt

Writing file hello.txt to 192.168.2.2:
File transfer in progress...

[Transfer complete - 33 bytes]

33 bytes copied in 0.08 secs (412 bytes/sec)
ftp>dir

Listing /ftp directory from 192.168.2.2:
0  : asa842-k8.bin
1  : asa923-k8.bin
2  : c1841-advipservicesk9-mz.124-15.T1.bin
3  : c1841-ipbase-mz.123-14.T7.bin
4  : c1841-ipbasek9-mz.124-12.bin
5  : c1900-universalk9-mz.SPA.155-3.M4a.bin
6  : c2600-advipservicesk9-mz.124-15.T1.bin
7  : c2600-i-mz.122-28.bin
8  : c2600-ipbasek9-mz.124-8.bin
9  : c2800nm-advinservicesk9-mz.124-15.T1.bin
```

The Cisco Packet Tracer configuration for PC 192.168.1.3 is shown. The 'Desktop' tab is active, and the 'Command Prompt' window is open. The command prompt shows the same FTP commands as the previous window, but with the file 'hello.txt' being downloaded from the server.

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ftp 192.168.2.2
Trying to connect...192.168.2.2
Connected to 192.168.2.2
220- Welcome to PT Ftp server
Username:Shubhi
331- Username ok, need password
Password:
230- Logged in
(passive mode On)
ftp>get hello.txt

Reading file hello.txt from 192.168.2.2:
File transfer in progress...

[Transfer complete - 33 bytes]

33 bytes copied in 0.011 secs (3000 bytes/sec)
ftp>dir

Listing /ftp directory from 192.168.2.2:
0  : asa842-k8.bin
1  : asa923-k8.bin
2  : c1841-advipservicesk9-mz.124-15.T1.bin
```

3. Implementing APIPA to generate and verify the IPv4 address for a PC connected to a network.

The image shows a network diagram and two configuration windows. The network diagram on the left shows a Server-PT (192.168.2.1) connected to a 2960-24TT Switch0, which is connected to two PC-PTs (192.168.1.1 and 192.168.1.2). The configuration window for 192.168.1.1 shows the IP Configuration tab with DHCP selected and a message: "DHCP failed. APIPA is being used." The configuration window for 192.168.1.2 shows the IP Configuration tab with DHCP selected and a message: "DHCP failed. APIPA is being used." The configuration window for Server0 shows the IP Configuration tab with DHCP selected and a message: "DHCP failed. APIPA is being used." The configuration window for Server0 also shows the IPv6 Configuration tab with Static selected and a Link Local Address of FE80::202:16FF:FE87:32CE.

4. Configuring a client - server network and analysing the message communication between them using FTP and TELNET packets.

a) FTP

The image shows a network diagram and a Command Prompt window. The network diagram on the left shows a Server-PT (192.168.1.4) connected to a 2960-24TT Switch0, which is connected to two PC-PTs (192.168.1.1 and 192.168.1.2). The Command Prompt window on the right shows the following commands and output:

```
C:\>ftp 192.168.1.4
Trying to connect...192.168.1.4
Connected to 192.168.1.4
220- Welcome to PT Ftp server
Username:cisco
331- Username ok, need password
Password:
230- Logged in
(passive mode On)
ftp>put abc.txt

Writing file abc.txt to 192.168.1.4:
File transfer in progress...

[Transfer complete - 9 bytes]

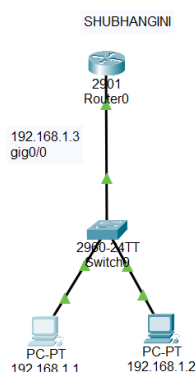
9 bytes copied in 0.081 secs (111 bytes/sec)
ftp>get abc.txt

Reading file abc.txt from 192.168.1.4:
File transfer in progress...

[Transfer complete - 9 bytes]

9 bytes copied in 0 secs
```

B) Telnet- <https://www.youtube.com/watch?v=g54jjrZByQ>



Step 1:

Step2: In Router 0 CLI

```
Router(config-if)#host R1-Telnet
R1-Telnet(config)#enable password cisco
R1-Telnet(config)#ip domain-name cisco.com
R1-Telnet(config)#username Admin password cisco
R1-Telnet(config)#line vty 0 15
R1-Telnet(config-line)#login local
R1-Telnet(config-line)#transport input Telnet
R1-Telnet(config-line)#exit
R1-Telnet(config)#do wr
Building configuration...
[OK]
R1-Telnet(config)#
R1-Telnet(config)#
```

Step3:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>telnet 192.168.1.1
Trying 192.168.1.1 ...
% Connection timed out; remote host not responding
C:\>telnet 192.168.1.3
Trying 192.168.1.3 ...Open

User Access Verification

Username: Admin
Password:
R1-Telnet>
R1-Telnet>
```