

INSTITUTE OF COMPUTER TECHNOLOGY
B. TECH COMPUTER SCIENCE AND ENGINEERING

Subject: Computer Networks[CN]

Name : Archita Gahoi

Enrollment_No. : 23162171002

SEM : 5

Class : A

Batch : 52 (CS)

Practical 5

Aim: To configure and utilize Telnet (teletype network), SSH (Secure Socket Shell) and FTP (File Transfer Protocol) in a network

Scenario:

Design the network of an organization having 3 different departments.

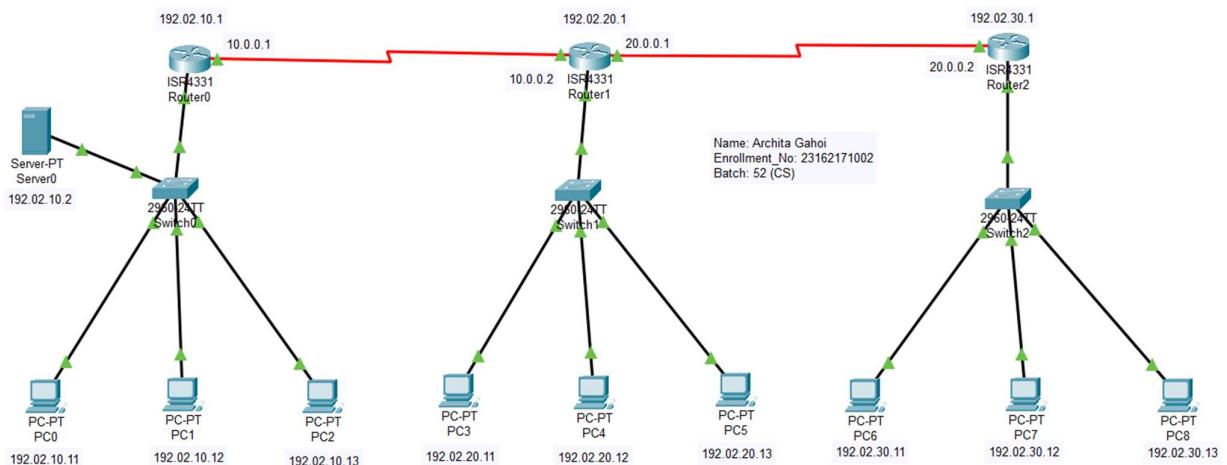
Make sure the below mentioned requirements must be fulfilled.

- 1) Create 3 users which will be able to get the access of the router using Telnet.
- 2) Create a single password to get the access of the router using Telnet.
Configure in such a way at a time 2 users can access router at a time.
- 3) Create 3 users which will be able to get the access of the router using SSH. Configure in such a way at a time 2 users can access router at a time.
- 4) Create FTP server and perform the operation to upload and download a file from one department to other department.

Procedure:

- 1) Create network as given below
- 2) Configure IP address (All Devices, Routers)
- 3) Configure dynamic routing table (RIP in routers)
- 4) Configure TELNET on Router0
- 5) Configure SSH on Router1
- 6) Configure FTP on Server

⇒ Main Circuit

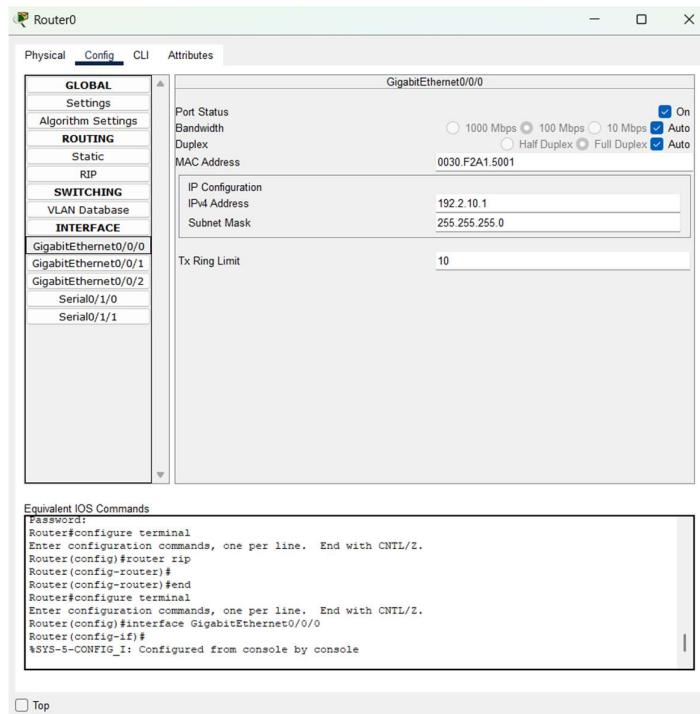
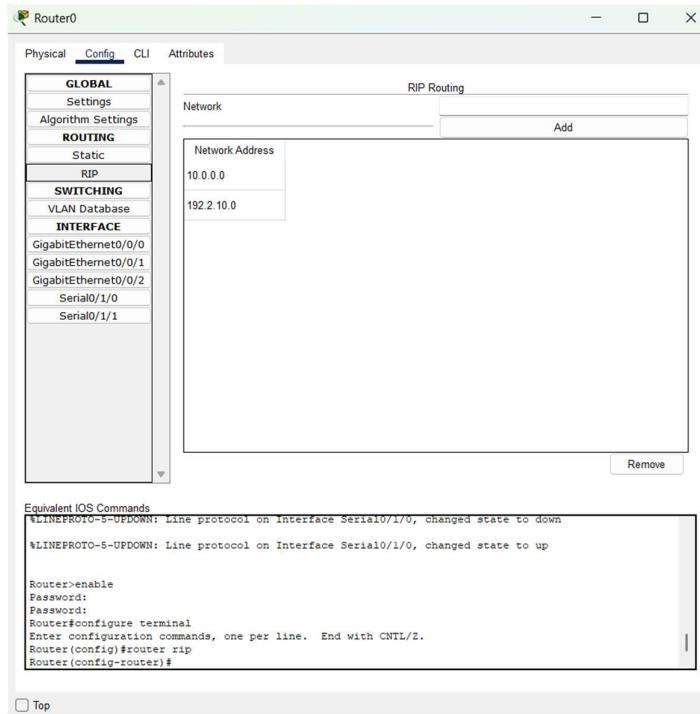


Configuration:

IP Address:

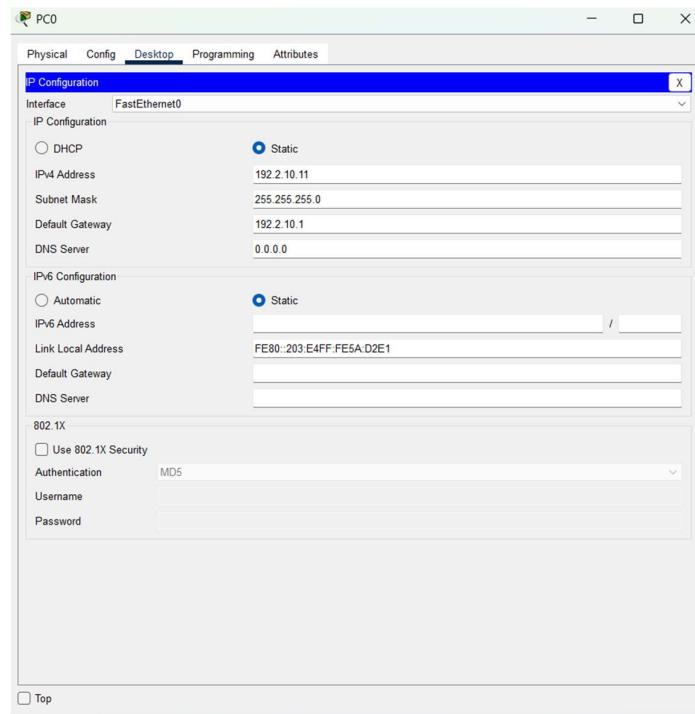
⇒ Routers

Router 0

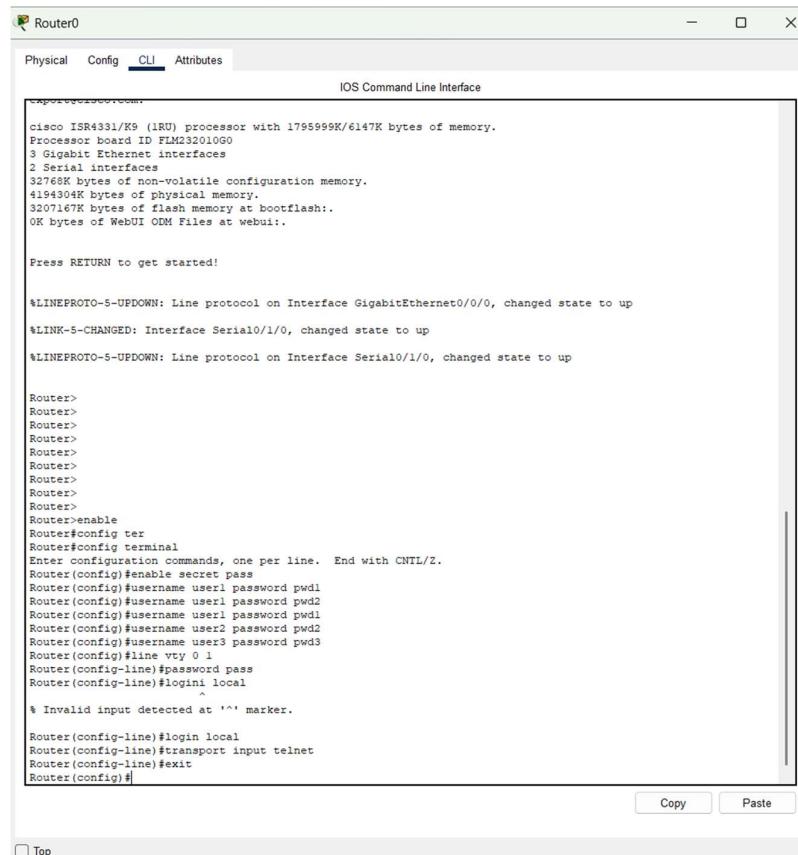


⇒ PCS

PC0



⇒ Configure TELNET on Router 0



Output:

PC1

Physical Config Desktop Programming Attributes

Command Prompt

```
Cisco Packet Tracer PC Command Line 1.0
C:\>telnet 192.02.10.1
Trying 192.2.10.1 ...Open

User Access Verification

Username: userl
Password:
* Login invalid

Username: userl
Password:
Router>en
Password:
Router#show user
  Line      User      Host(s)      Idle      Location
* 4 vty 0    userl     idle        00:00:00 192.2.10.12

  Interface   User          Mode      Idle      Peer Address
Router#
```

PC5

Physical Config Desktop Programming Attributes

Command Prompt

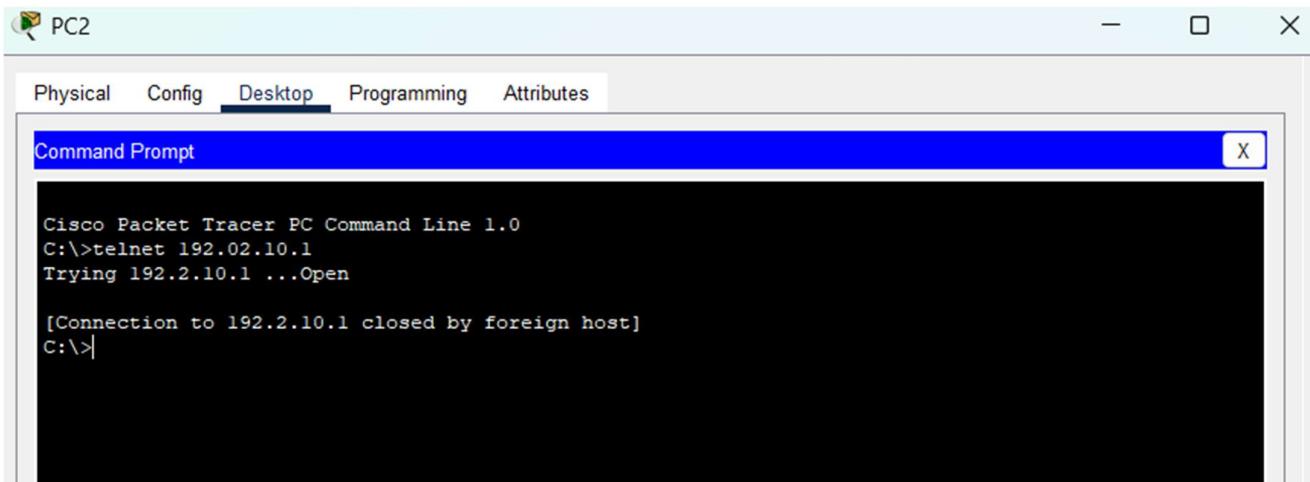
```
Cisco Packet Tracer PC Command Line 1.0
C:\>telnet 192.02.10.1
Trying 192.2.10.1 ...Open

User Access Verification

Username: user2
Password:
Router>en
Password:
Router#show user
  Line      User      Host(s)      Idle      Location
  4 vty 0    userl     idle        00:01:57 192.2.10.12
* 5 vty 1    user2     idle        00:00:00 192.2.20.13

  Interface   User          Mode      Idle      Peer Address
Router#
```

⇒ Only two users can access



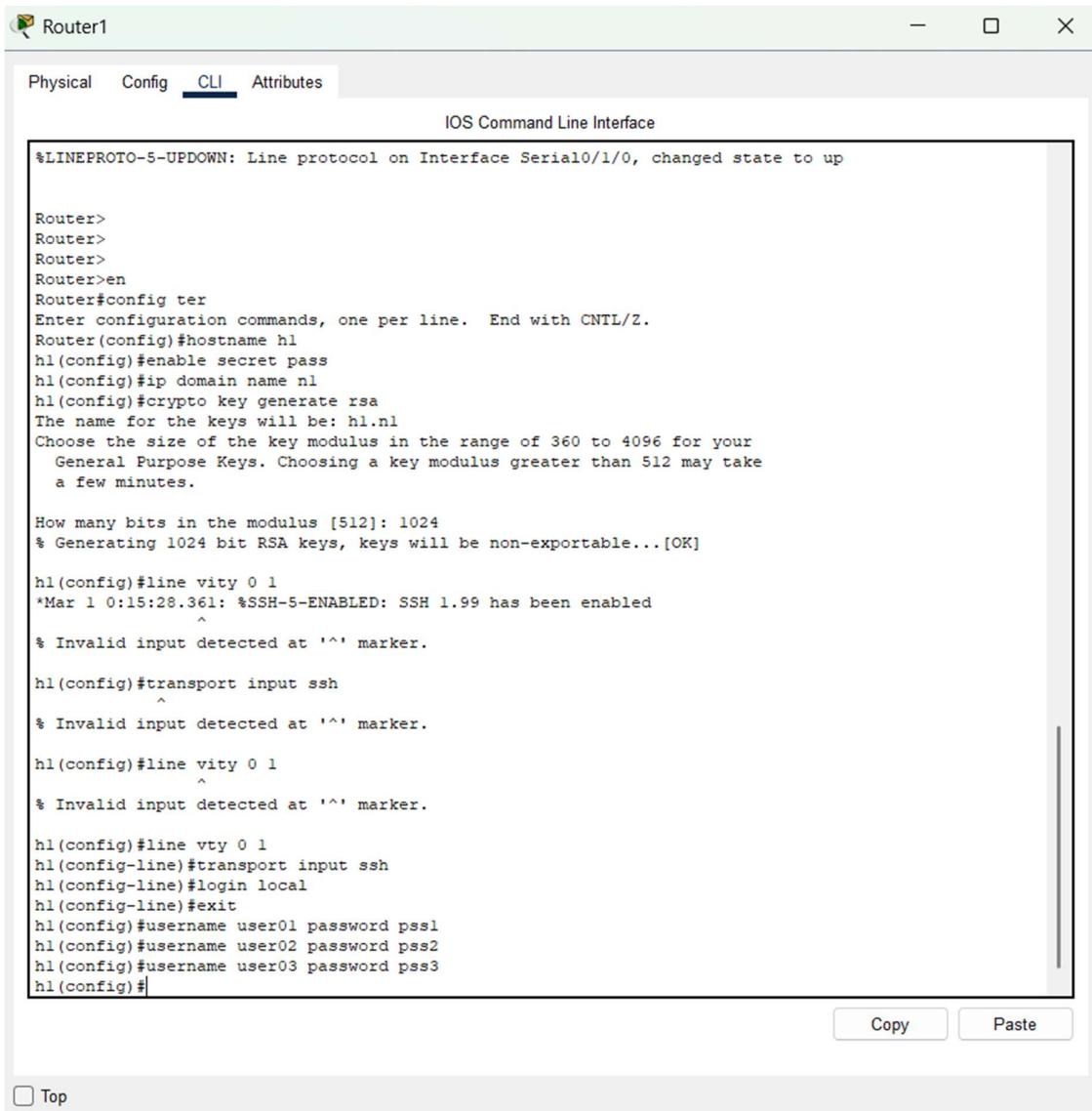
PC2

Physical Config Desktop Programming Attributes

Command Prompt X

```
Cisco Packet Tracer PC Command Line 1.0
C:\>telnet 192.02.10.1
Trying 192.2.10.1 ...Open
[Connection to 192.2.10.1 closed by foreign host]
C:\>
```

⇒ Configure SSH on Router1



Router1

Physical Config CLI Attributes

IOS Command Line Interface

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up

Router>
Router>
Router>
Router>en
Router#config ter
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname h1
h1(config)#enable secret pass
h1(config)#ip domain name nl
h1(config)#crypto key generate rsa
The name for the keys will be: h1.nl
Choose the size of the key modulus in the range of 360 to 4096 for your
General Purpose Keys. Choosing a key modulus greater than 512 may take
a few minutes.

How many bits in the modulus [512]: 1024
% Generating 1024 bit RSA keys, keys will be non-exportable...[OK]

h1(config)#line vty 0 1
*Mar 1 0:15:28.361: %SSH-5-ENABLED: SSH 1.99 has been enabled
^
% Invalid input detected at '^' marker.

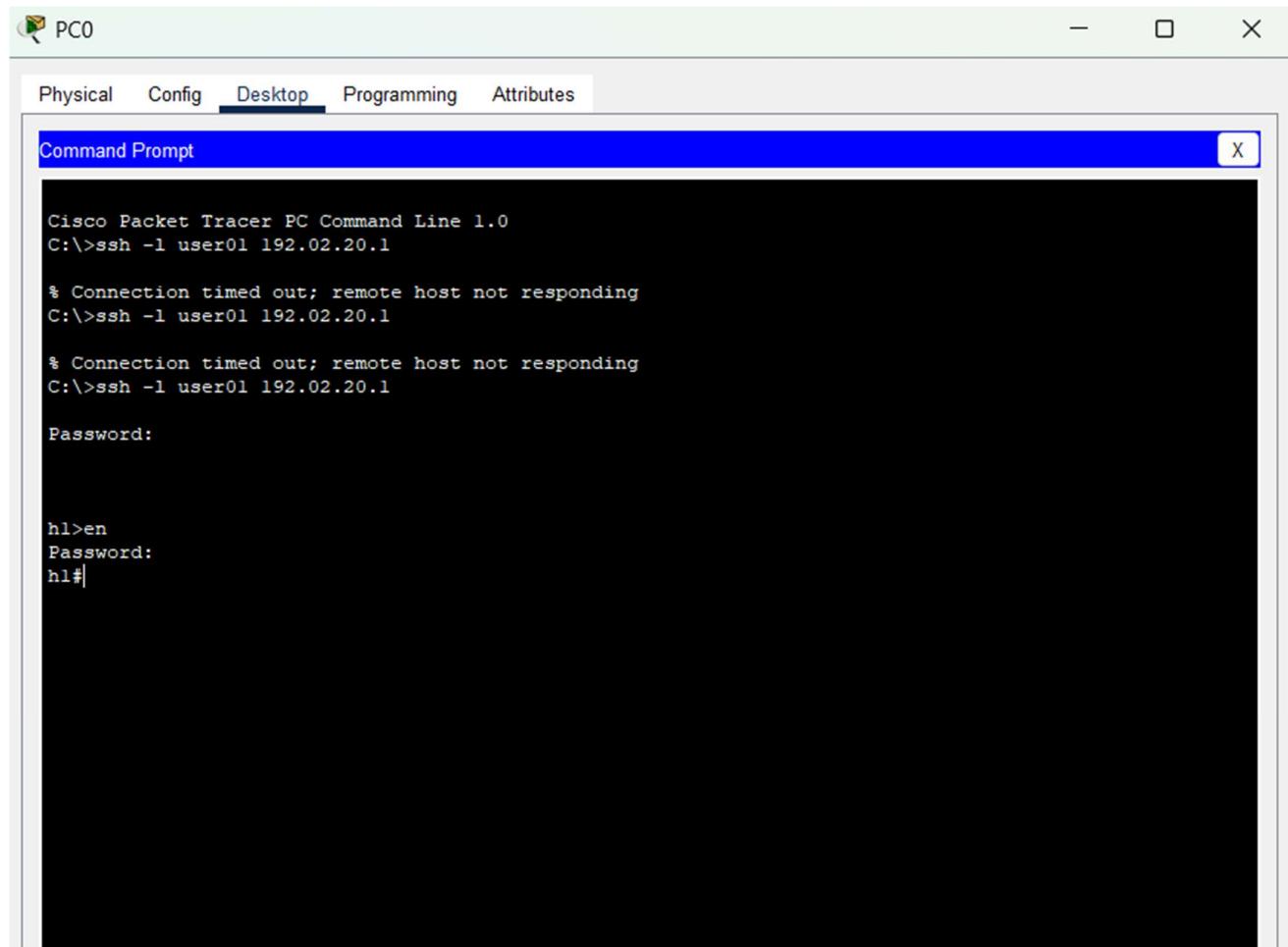
h1(config)#transport input ssh
^
% Invalid input detected at '^' marker.

h1(config)#line vty 0 1
^
% Invalid input detected at '^' marker.

h1(config)#line vty 0 1
h1(config-line)#transport input ssh
h1(config-line)#login local
h1(config-line)#exit
h1(config)#username user01 password pss1
h1(config)#username user02 password pss2
h1(config)#username user03 password pss3
h1(config)#
Copy Paste
```

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Output:



PC0

Physical Config Desktop Programming Attributes

Command Prompt X

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ssh -l user01 192.02.20.1

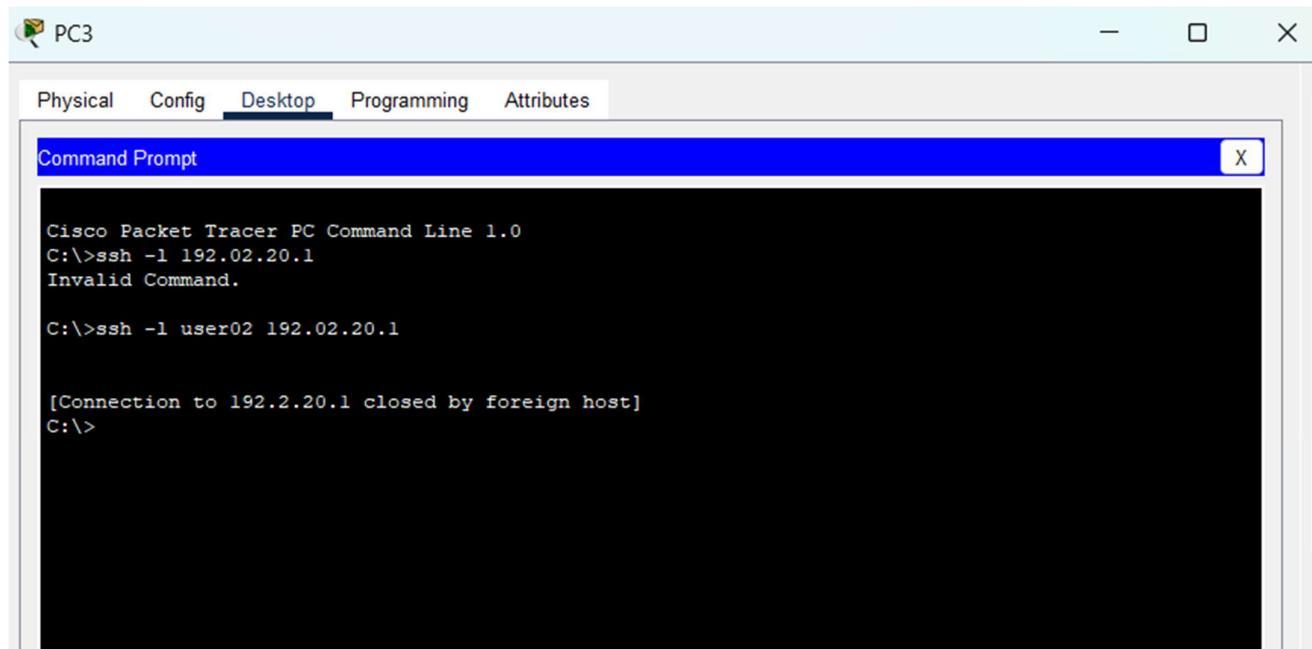
% Connection timed out; remote host not responding
C:\>ssh -l user01 192.02.20.1

% Connection timed out; remote host not responding
C:\>ssh -l user01 192.02.20.1

Password:

hl>en
Password:
hl#|
```

⇒ Only two users can access



PC3

Physical Config Desktop Programming Attributes

Command Prompt X

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ssh -l 192.02.20.1
Invalid Command.

C:\>ssh -l user02 192.02.20.1

[Connection to 192.2.20.1 closed by foreign host]
C:\>
```

⇒ Configure FTP on Server

The screenshot shows a server configuration interface titled "Server0". The top navigation bar includes tabs for Physical, Config, Services, Desktop, Programming, and Attributes. The "Services" tab is selected, and the left sidebar under "SERVICES" lists various services: HTTP, DHCP, DHCPv6, TFTP, DNS, SYSLOG, AAA, NTP, EMAIL, FTP, IoT, VM Management, and Radius EAP. The "FTP" service is currently selected.

The main configuration area is titled "FTP" and contains the following sections:

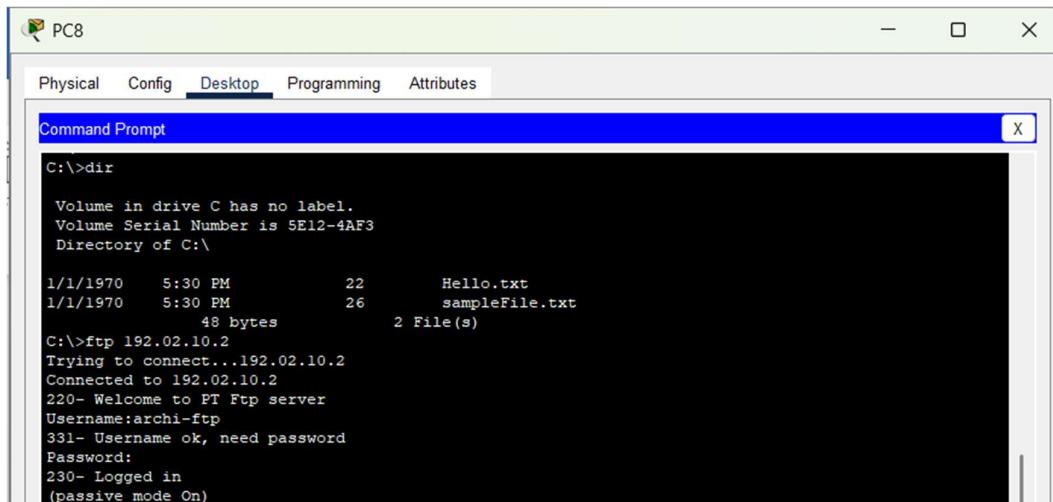
- User Setup:** Shows a user entry for "archi-ftp" with password "248". Permissions checkboxes for Write, Read, Delete, Rename, and List are all checked. A table below shows the user details:

	Username	Password	Permission
1	archi-ftp	248	RWDNL
- File:** A list of files with their corresponding file numbers:
 - 1 asa842-k8.bin
 - 2 asa923-k8.bin
 - 3 c1841-advpipservicesk9-mz.124-15.T1.bin
 - 4 c1841-ipbase-mz.123-14.T7.bin
 - 5 c1841-ipbasek9-mz.124-12.bin
 - 6 c1900-universalk9-mz.SPA.155-3.M4a.bin
 - 7 c2600-advpipservicesk9-mz.124-15.T1.bin

Buttons for Add, Save, and Remove are located on the right side of the User Setup and File sections respectively.

Output:

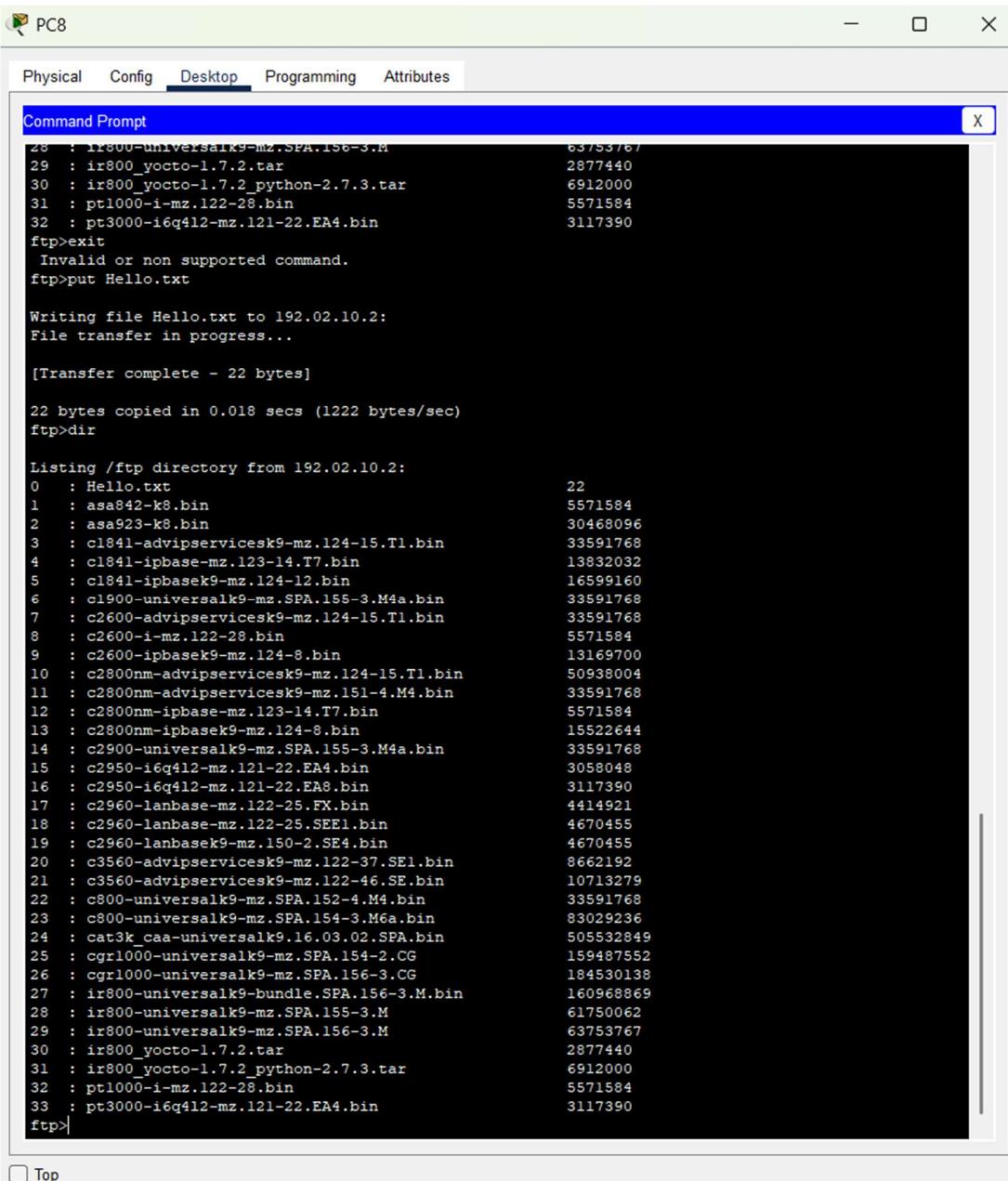
⇒ Uploading file from PC8 in network 3



```
C:\>dir
Volume in drive C has no label.
Volume Serial Number is 5E12-4AF3
Directory of C:\

1/1/1970      5:30 PM           22      Hello.txt
1/1/1970      5:30 PM           26    sampleFile.txt
                           48 bytes          2 File(s)

C:\>ftp 192.02.10.2
Trying to connect...192.02.10.2
Connected to 192.02.10.2
220- Welcome to PT Ftp server
Username:archi-ftp
331- Username ok, need password
Password:
230- Logged in
(passive mode On)
```



```
28 : ir800-universalk9-mz.SPA.156-3.0          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>exit
Invalid or non supported command.

ftp>put Hello.txt

Writing file Hello.txt to 192.02.10.2:
File transfer in progress...

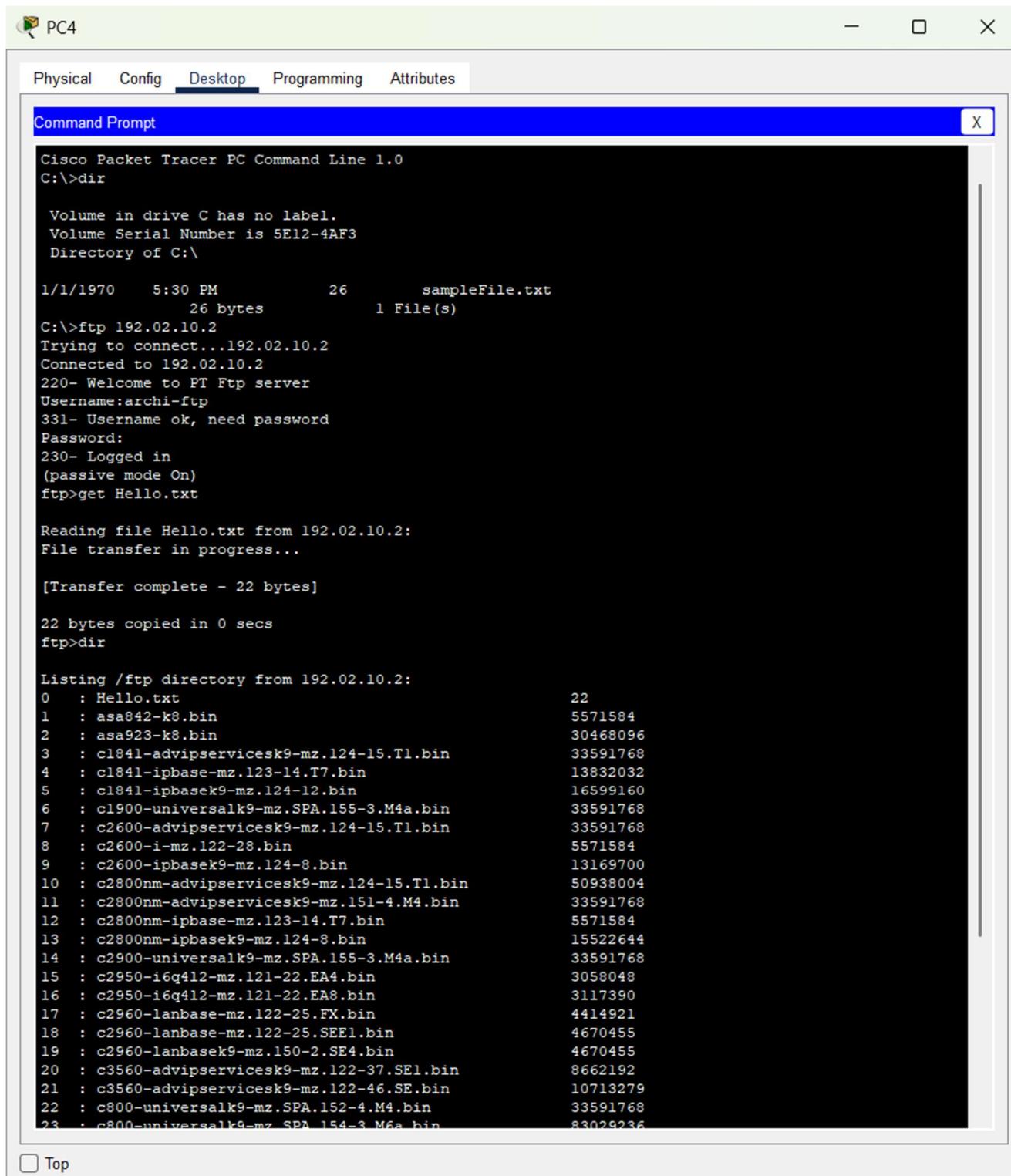
[Transfer complete - 22 bytes]

22 bytes copied in 0.018 secs (1222 bytes/sec)
ftp>dir

Listing /ftp directory from 192.02.10.2:
0 : Hello.txt                                22
1 : asa842-k8.bin                            5571584
2 : asa923-k8.bin                            30468096
3 : c1841-advpiservicesk9-mz.124-15.T1.bin  33591768
4 : c1841-ipbase-mz.123-14.T7.bin          13832032
5 : c1841-ipbasek9-mz.124-12.bin          16599160
6 : c1900-universalk9-mz.SPA.155-3.M4a.bin  33591768
7 : c2600-advpiservicesk9-mz.124-15.T1.bin  33591768
8 : c2600-i-mz.122-28.bin                  5571584
9 : c2600-ipbasek9-mz.124-8.bin            13169700
10 : c2800nm-advpiservicesk9-mz.124-15.T1.bin 50938004
11 : c2800nm-advpiservicesk9-mz.151-4.M4.bin  33591768
12 : c2800nm-ipbase-mz.123-14.T7.bin      5571584
13 : c2800nm-ipbasek9-mz.124-8.bin          15522644
14 : c2900-universalk9-mz.SPA.155-3.M4a.bin  33591768
15 : c2950-i6q412-mz.121-22.EA8.bin        3058048
16 : c2950-i6q412-mz.121-22.EA8.bin        3117390
17 : c2960-lanbase-mz.122-25.FX.bin       4414921
18 : c2960-lanbase-mz.122-25.SEEl.bin     4670455
19 : c2960-lanbasek9-mz.150-2.SE4.bin     4670455
20 : c3560-advpiservicesk9-mz.122-37.SE1.bin 8662192
21 : c3560-advpiservicesk9-mz.122-46.SE.bin  10713279
22 : c800-universalk9-mz.SPA.154-2.M4.bin   33591768
23 : c800-universalk9-mz.SPA.154-3.M6a.bin  83029236
24 : cat3k_caa-universalk9.16.03.02.SPA.bin  505532849
25 : cgr1000-universalk9-mz.SPA.154-2.CG    159487552
26 : cgr1000-universalk9-mz.SPA.156-3.CG    184530138
27 : ir800-universalk9-bundle.SPA.156-3.M.bin 160968869
28 : ir800-universalk9-mz.SPA.155-3.M       61750062
29 : ir800-universalk9-mz.SPA.156-3.M       63753767
30 : ir800_yocto-1.7.2.tar                  2877440
31 : ir800_yocto-1.7.2_python-2.7.3.tar    6912000
32 : pt1000-i-mz.122-28.bin                5571584
33 : pt3000-i6q412-mz.121-22.EA4.bin      3117390
ftp>
```

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⇒ Downloading file in PC4 in network 2



The screenshot shows a Cisco Packet Tracer PC Command Line window titled "Command Prompt". The window has tabs: Physical, Config, Desktop (which is selected), Programming, and Attributes. The command history is as follows:

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

Volume in drive C has no label.
Volume Serial Number is 5E12-4AF3
Directory of C:\

1/1/1970      5:30 PM              26      sampleFile.txt
                  26 bytes          1 File(s)

C:\>ftp 192.02.10.2
Trying to connect...192.02.10.2
Connected to 192.02.10.2
220- Welcome to PT Ftp server
Username:archi-ftp
331- Username ok, need password
Password:
230- Logged in
(passive mode On)
ftp>get Hello.txt

Reading file Hello.txt from 192.02.10.2:
File transfer in progress...

[Transfer complete - 22 bytes]

22 bytes copied in 0 secs
ftp>dir

Listing /ftp directory from 192.02.10.2:
0   : Hello.txt                                22
1   : asa842-k8.bin                            5571584
2   : asa923-k8.bin                            30468096
3   : c1841-advipservicesk9-mz.124-15.T1.bin  33591768
4   : c1841-ipbase-mz.123-14.T7.bin           13832032
5   : c1841-ipbasek9-mz.124-12.bin            16599160
6   : c1900-universalk9-mz.SPA.155-3.M4a.bin  33591768
7   : c2600-advipservicesk9-mz.124-15.T1.bin  33591768
8   : c2600-i-mz.122-28.bin                   5571584
9   : c2600-ipbasek9-mz.124-8.bin             13169700
10  : c2800nm-advipservicesk9-mz.124-15.T1.bin 50938004
11  : c2800nm-advipservicesk9-mz.151-4.M4.bin  33591768
12  : c2800nm-ipbase-mz.123-14.T7.bin         5571584
13  : c2800nm-ipbasek9-mz.124-8.bin           15522644
14  : c2900-universalk9-mz.SPA.155-3.M4a.bin  33591768
15  : c2950-i6q412-mz.121-22.EA4.bin         3058048
16  : c2950-i6q412-mz.121-22.EA8.bin         3117390
17  : c2960-lanbase-mz.122-25.FX.bin         4414921
18  : c2960-lanbase-mz.122-25.SE1.bin        4670455
19  : c2960-lanbasek9-mz.150-2.SE4.bin       4670455
20  : c3560-advipservicesk9-mz.122-37.SE1.bin 8662192
21  : c3560-advipservicesk9-mz.122-46.SE.bin  10713279
22  : c800-universalk9-mz.SPA.152-4.M4.bin   33591768
23  : c800-universalk9-mz.SPA.154-3.M6a.bin  83029236
```

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Conclusion:

In this practical, we successfully configured and utilized Telnet, SSH, and FTP in a network environment. Telnet was implemented to enable remote device access and management, while SSH provided a more secure alternative through encrypted communication. An FTP server was also configured to allow reliable file transfer operations between network devices. The experiment demonstrated the importance of remote access, secure communication, and data sharing in organizational networks. Overall, the objectives were achieved, highlighting how Telnet, SSH, and FTP can be effectively used to ensure connectivity, security, and efficient resource management in real-time scenarios.