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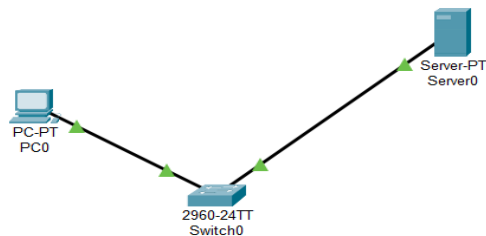
Lab Practical #06:

Study the application layer protocol DNS, DHCP, FTP.

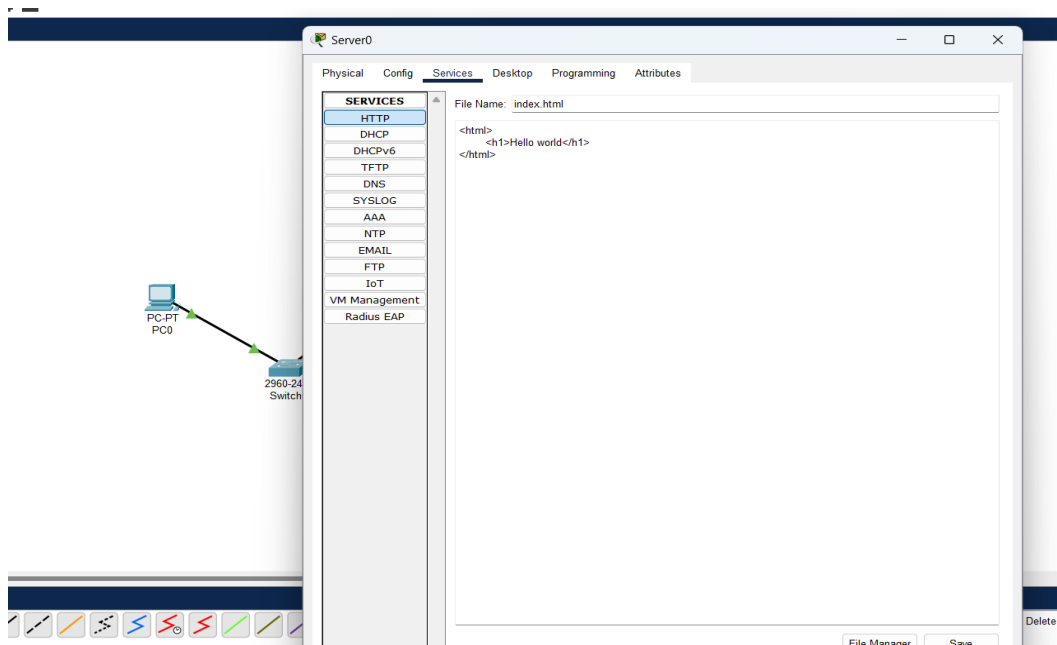
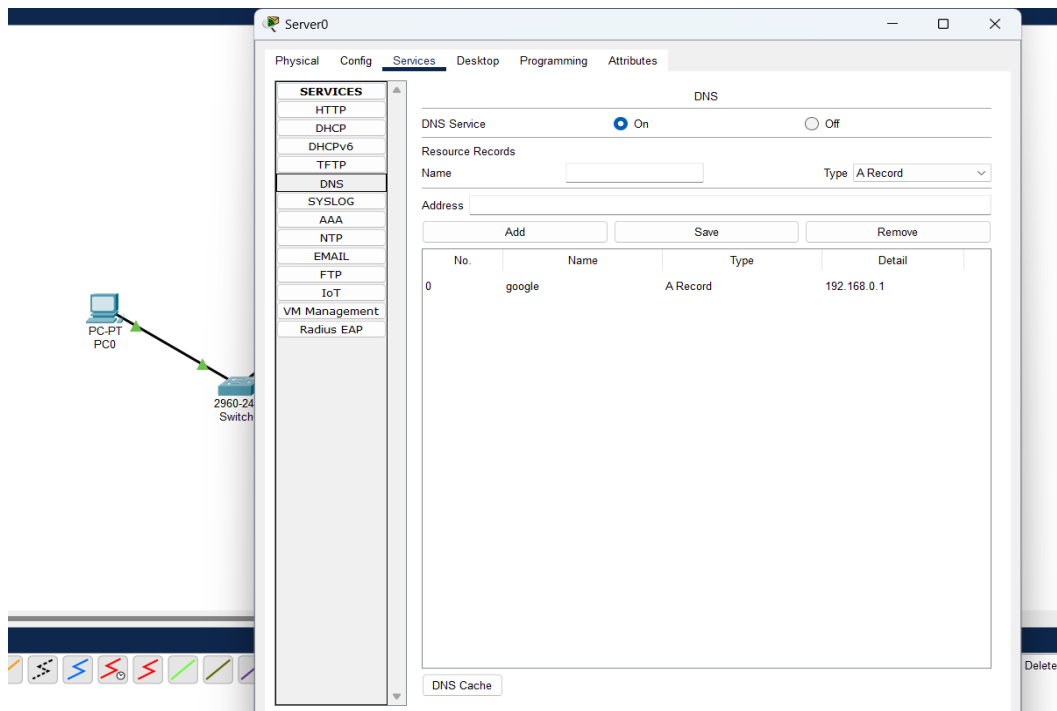
Practical Assignment #06:

1. Implement the application layer protocol DNS, DHCP, and FTP. Also check connectivity between them using ping command or PDU utility.

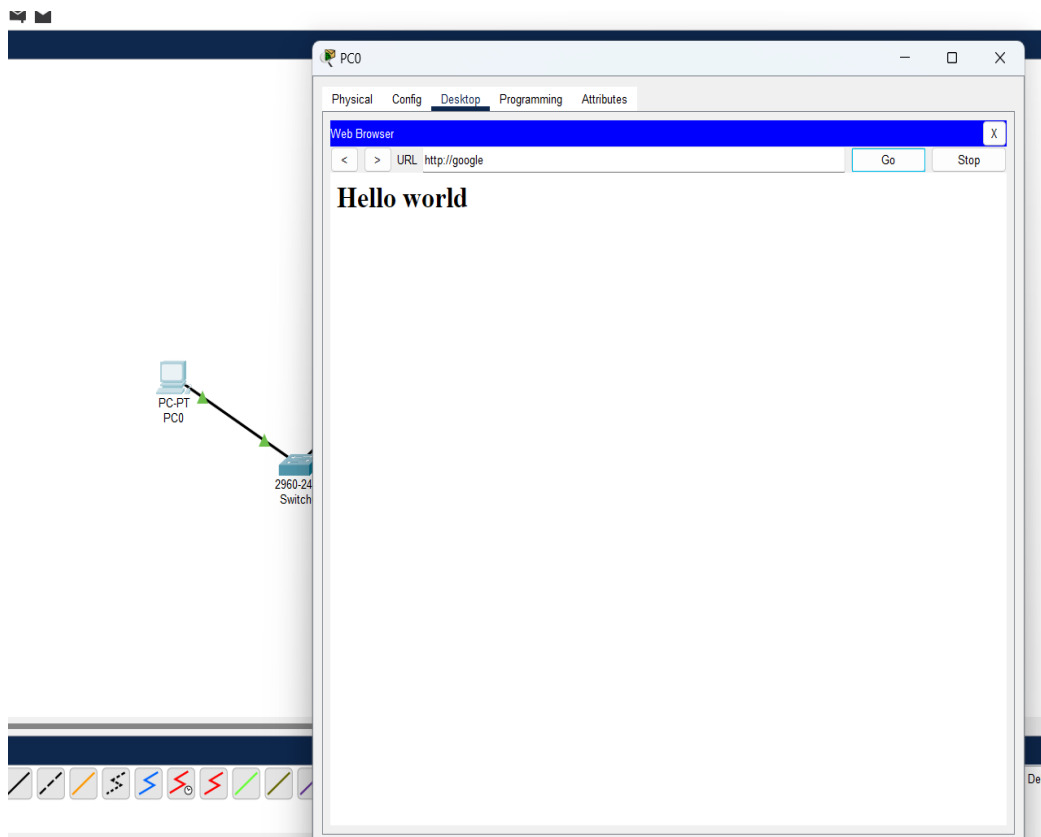
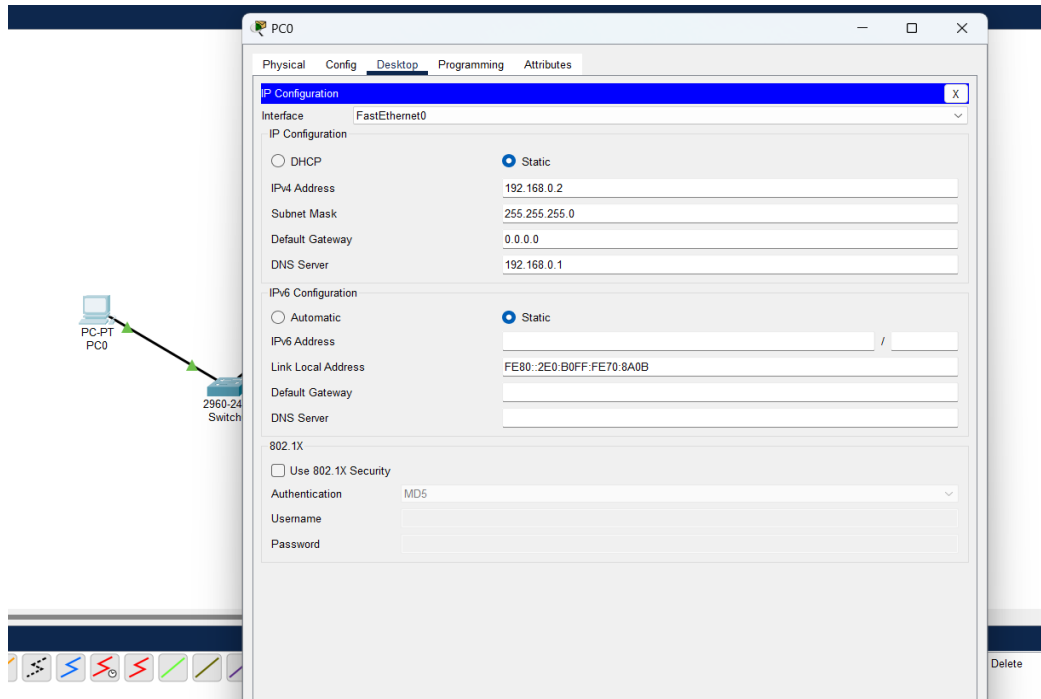
1. DNS:-



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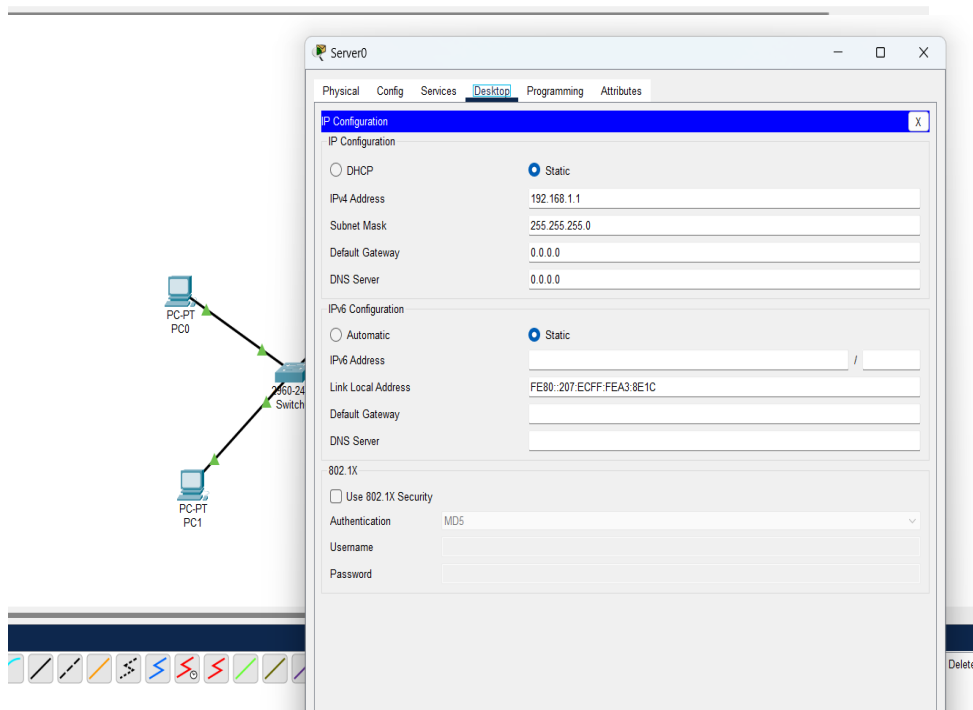
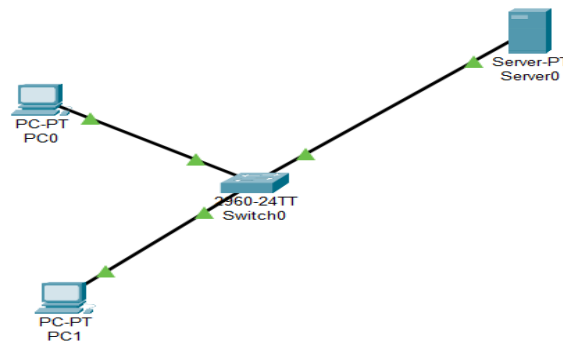
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Steps:-

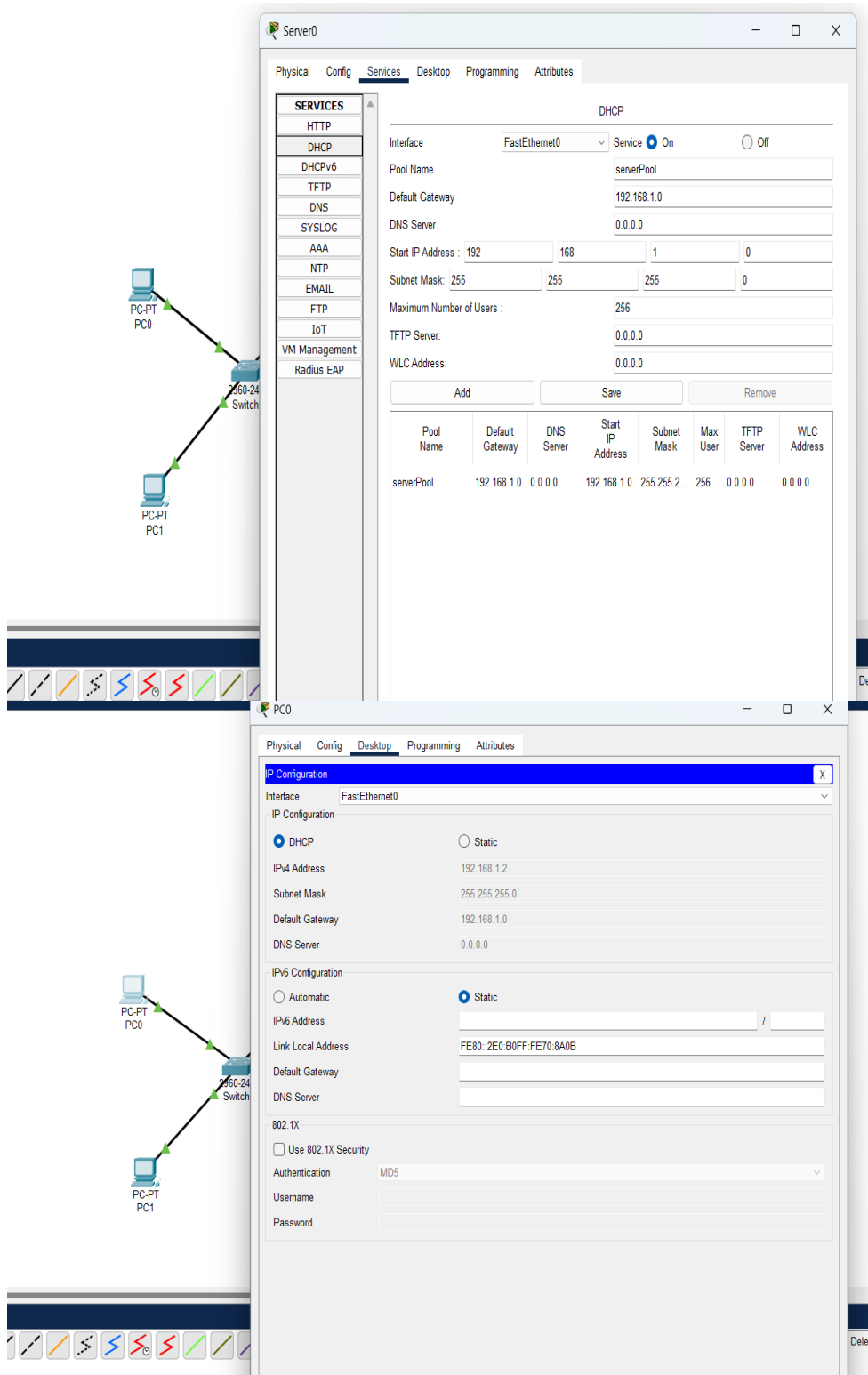
- Drag and drop the following devices onto the workspace:
 - One DNS server and One Web Server.
 - One or more client PCs and Routers.
 - Switches to connect the devices if needed.
- Click on the DNS server icon to open its configuration panel. Go to the Config tab. Assign a static IP address (e.g., 192.168.0.3) and subnet mask (e.g., 255.255.255.0).
- Go to the Services tab. Select DNS from the list of services. Turn on the DNS service.
- Add DNS records for the domain names you want to resolve. For example:- Name: www.google.com Address: 192.168.0.1 (IP of the web server).
- Click on a client PC icon to open its configuration panel. Go to the Config tab. Assign a static IP address (e.g., 192.168.0.2) and subnet mask (e.g., 255.255.255.0).
- Set the default gateway to the IP address of the router (e.g., 192.168.0.1).
- Set the DNS server to the IP address of your DNS server (e.g., 192.168.0.1).
- Click on the router icon to open its configuration panel.
- Assign IP addresses to the router interfaces that connect to the different network segments.
- Go to the client PC and open the command prompt.
- Type ping www.google.com and press Enter.
- The command should resolve www.google.com to 192.168.0.1 and start pinging the web server.
- Open a web browser on the client PC. Enter www.google.com in the address bar. The browser should display the default web page served by the web server.

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2. DHCP :-



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The image displays a network simulation environment with two main windows: 'Server0' and 'PC0'.

Server0 Configuration (DHCP Service):

- Interface:** FastEthernet0
- Service:** On
- Pool Name:** serverPool
- Default Gateway:** 192.168.1.0
- DNS Server:** 0.0.0.0
- Start IP Address:** 192.168.1.1
- Subnet Mask:** 255.255.255.0
- Maximum Number of Users:** 256
- TFTP Server:** 0.0.0.0
- WLC Address:** 0.0.0.0

PC0 Configuration (IP Configuration):

- Interface:** FastEthernet0
- IP Configuration:** DHCP (selected), Static (unselected)
- IPv4 Address:** 192.168.1.2
- Subnet Mask:** 255.255.255.0
- Default Gateway:** 192.168.1.0
- DNS Server:** 0.0.0.0
- IPv6 Configuration:** Automatic (unselected), Static (selected)
- IPv6 Address:** (empty)
- Link Local Address:** FE80::2E0:B0FF:FE70:8A0B
- Default Gateway:** (empty)
- DNS Server:** (empty)
- 802.1X:** Use 802.1X Security (unchecked)
- Authentication:** MD5
- Username:** (empty)
- Password:** (empty)



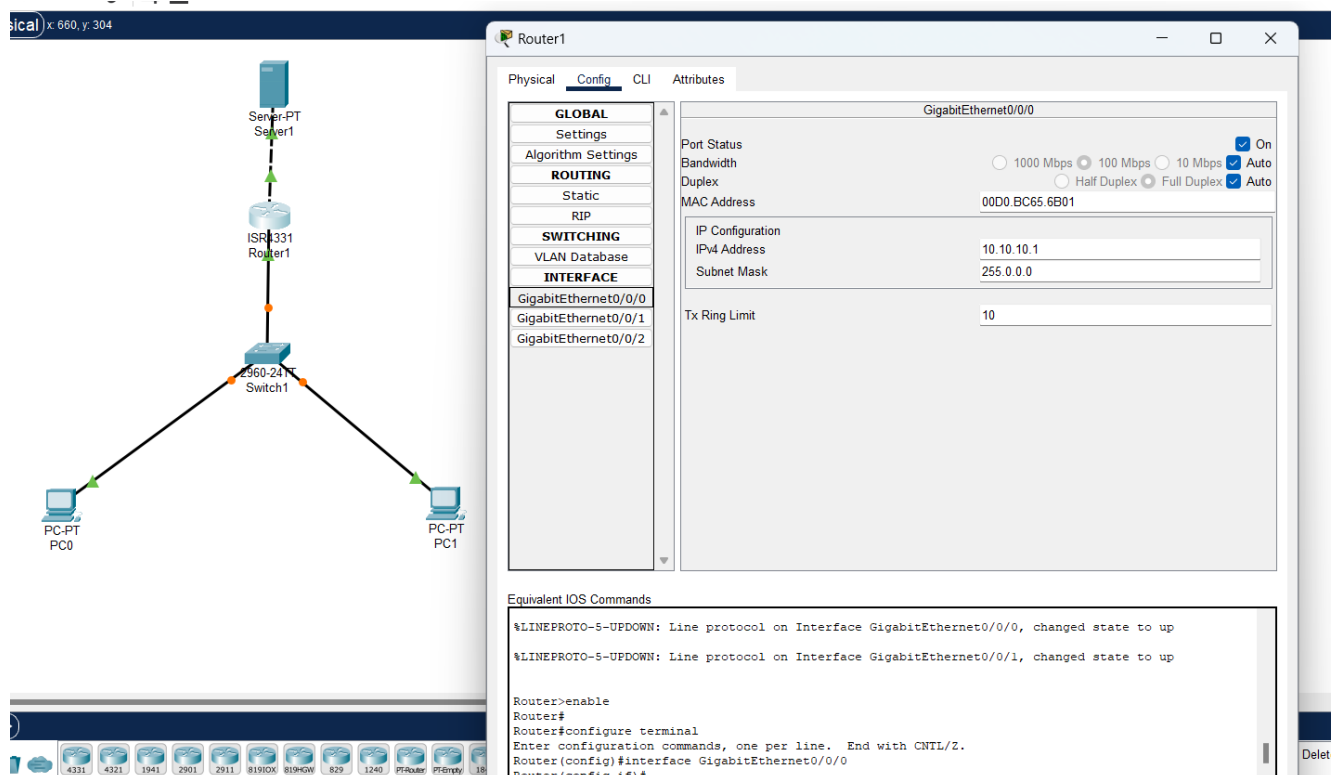
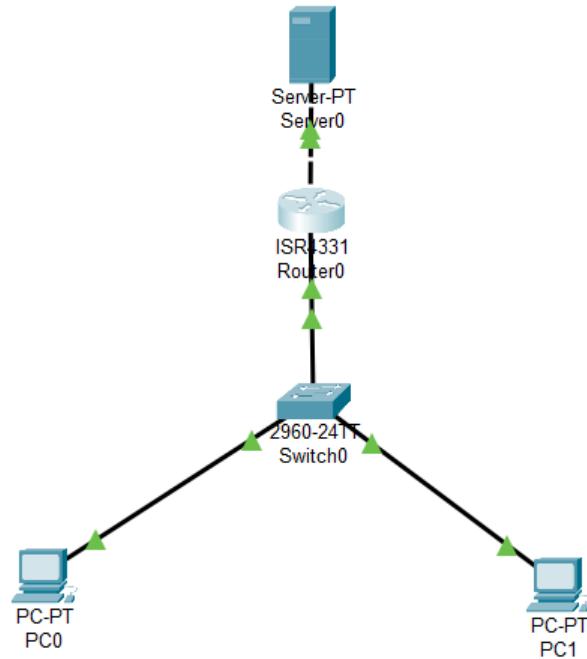
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Steps:-

- Drag and drop the following devices onto the workspace:
 - One Router and One Web Server.
 - One or more client PCs.
 - Switches to connect the devices if needed.
- Connect the devices using appropriate cables (use Copper Straight-Through cables to connect PCs to the switch and the switch to the router).
- Click on the server to open its IP configuration panel. Assign a static IP address (e.g., 192.168.1.1) and subnet mask (e.g., 255.255.255.0).
- Click on the DNS server icon to open its configuration panel. Go to the Config tab. Assign a static IP address (e.g., 192.168.1.0) and click Add button.
- Then go to PCs give IP configuration select DHCP.
- After selecting DHCP you can see the PCs automatic tack IP Address and Default Getway.

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3. FTP :-



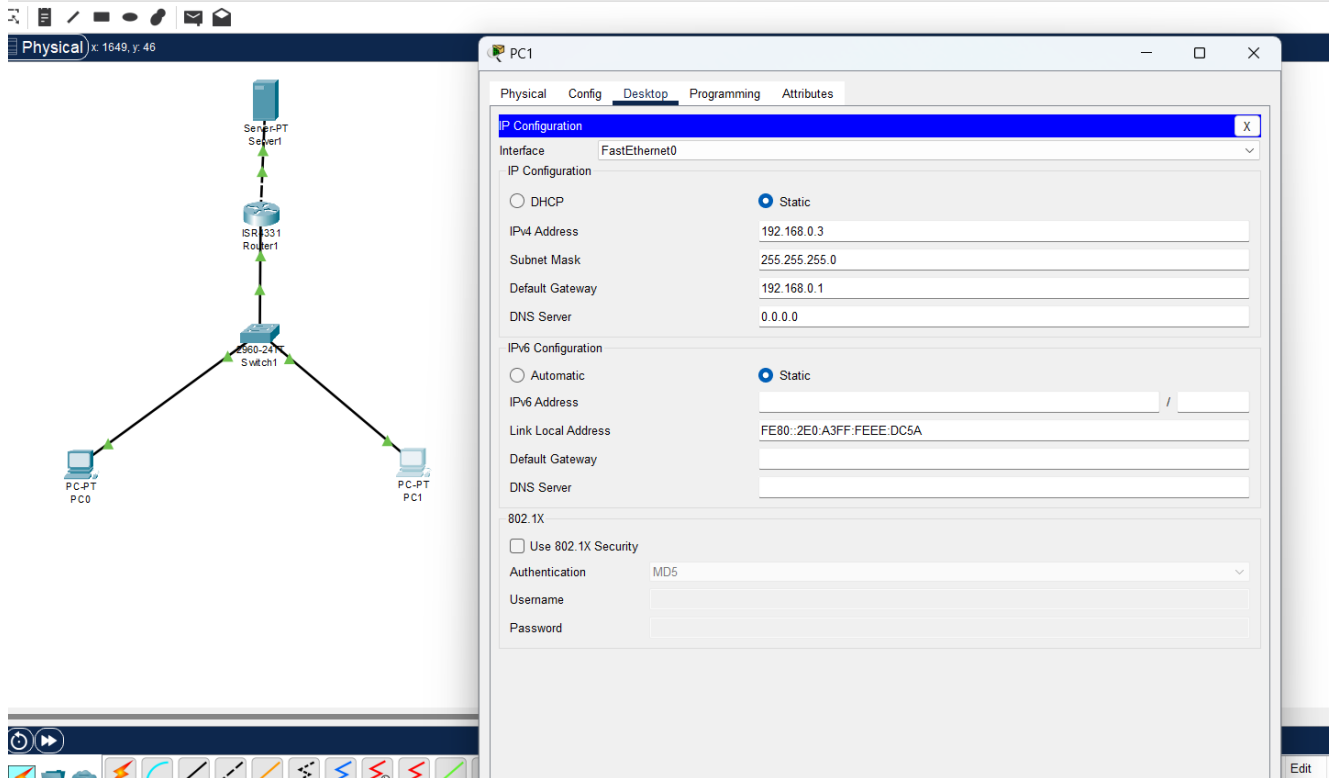
The screenshot displays the Cisco Packet Tracer interface. On the left, the network topology is visible, showing a Server-PT (Server1) connected to a Router (ISR4331 Router1), which is connected to a Switch (2960-24TT Switch1). The Switch is connected to two PCs (PC-PT PC0 and PC-PT PC1). On the right, the configuration window for Router1 is open, showing the configuration for the GigabitEthernet0/0/0 interface. The configuration includes the following settings:

- Port Status: On
- Bandwidth: 100 Mbps
- Duplex: Full Duplex
- MAC Address: 00D0.BC65.6B01
- IP Configuration: IPv4 Address 10.10.10.1, Subnet Mask 255.0.0.0
- Tx Ring Limit: 10

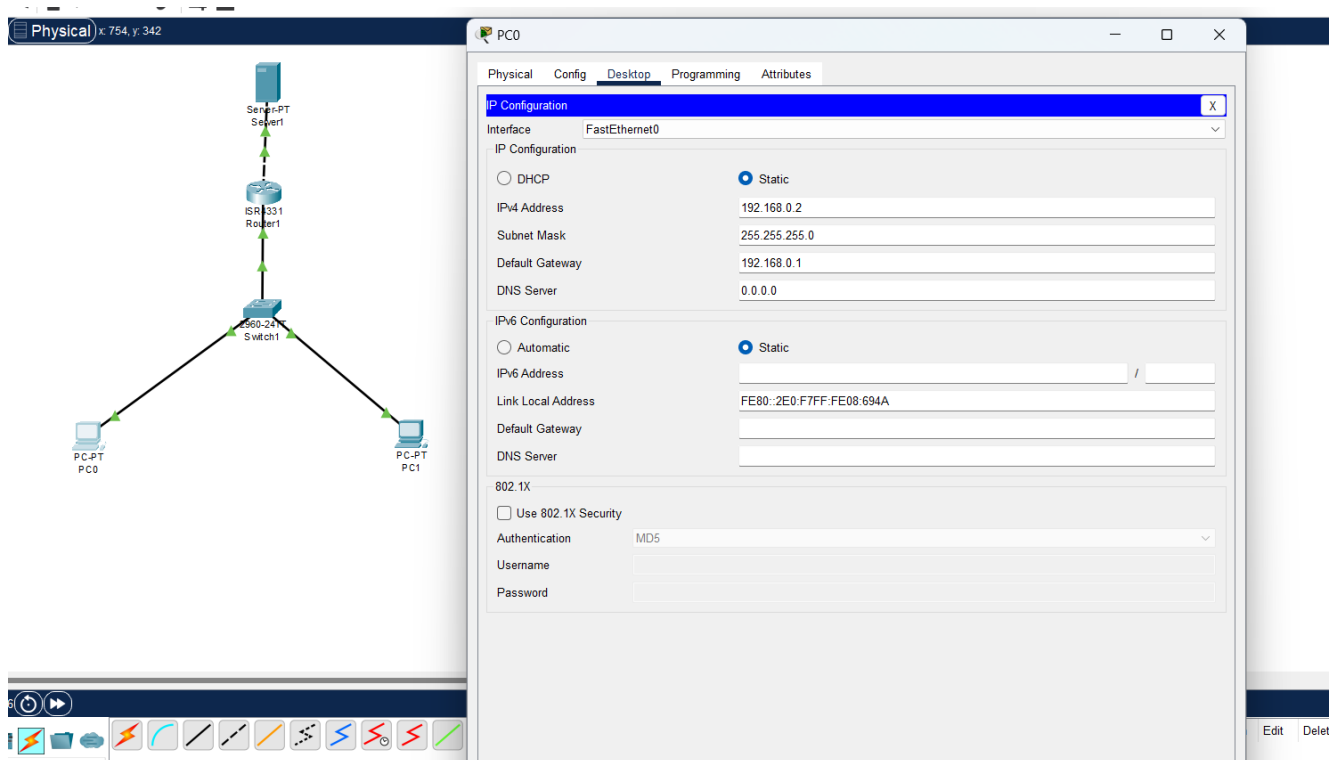
The Equivalent IOS Commands section shows the following commands:

```
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)#
```


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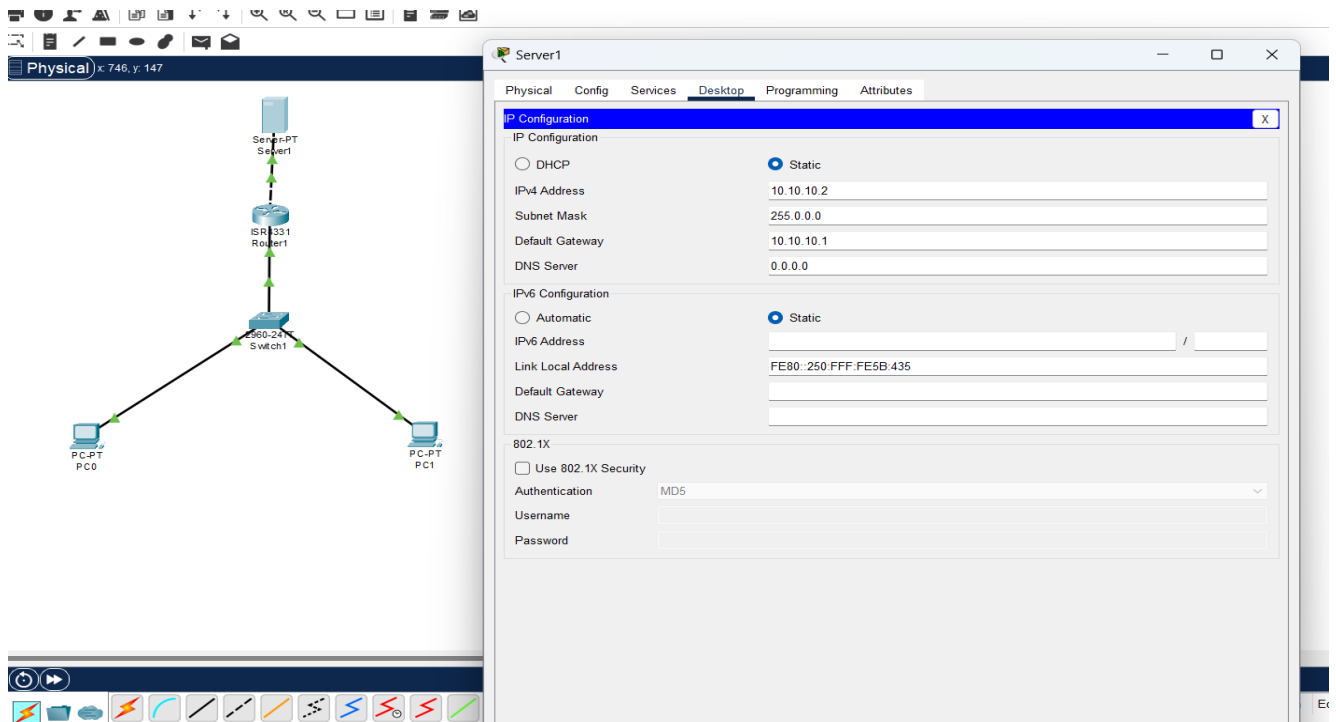


The image shows a network diagram and the configuration window for PC1 in a network simulator. The network diagram on the left shows a topology with a Server-PT (Server1) connected to an ISR 1331 Router1, which is connected to a 2960-24 Switch1. The switch is connected to two PCs: PC-PT PC0 and PC-PT PC1. The configuration window for PC1 is open, showing the IP Configuration tab. The interface is FastEthernet0. The IP Configuration is set to Static. The IPv4 Address is 192.168.0.3, Subnet Mask is 255.255.255.0, Default Gateway is 192.168.0.1, and DNS Server is 0.0.0.0. The IPv6 Configuration is also set to Static. The IPv6 Address is empty, Link Local Address is FE80::2E0:A3FF:FE0E:DC5A, Default Gateway is empty, and DNS Server is empty. The 802.1X section is expanded, showing Use 802.1X Security is unchecked, Authentication is MD5, Username is empty, and Password is empty.

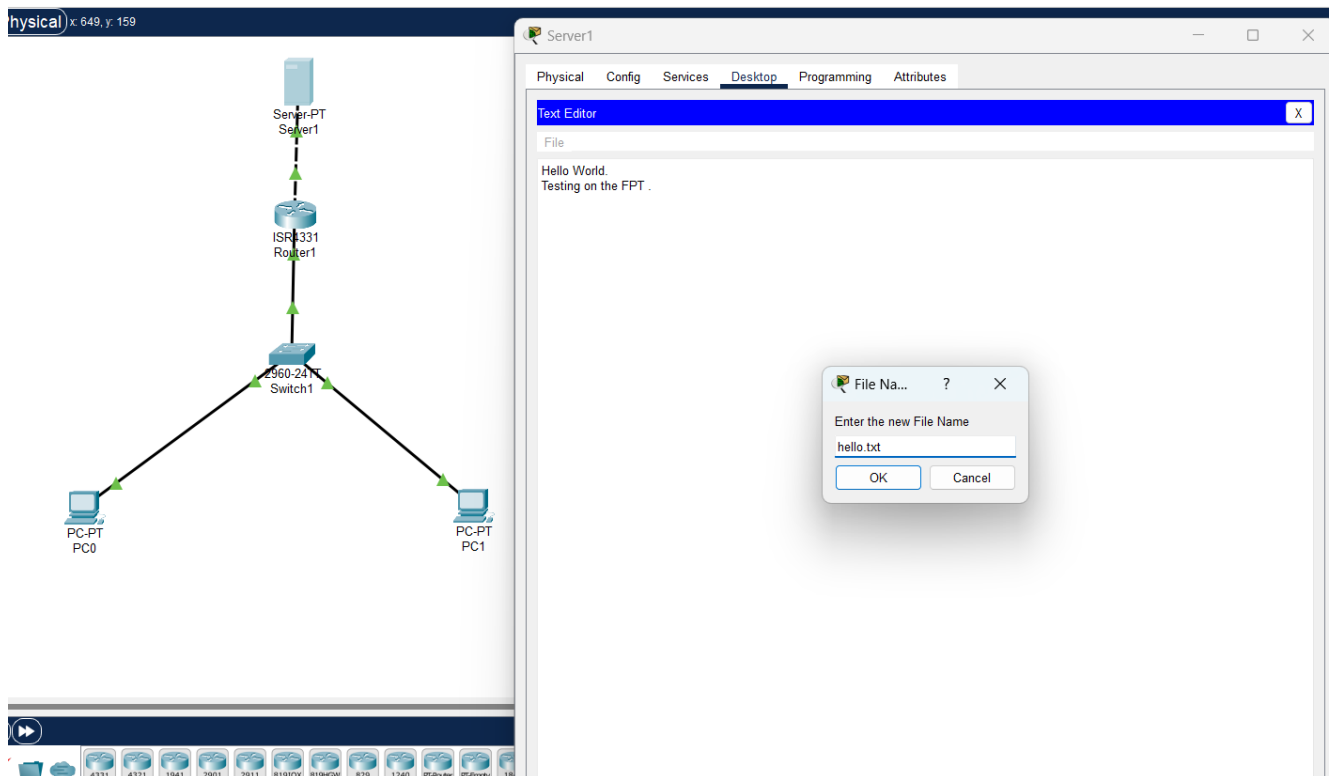


The image shows the same network diagram as above, but with the configuration window for PC0 open. The network topology is identical: Server-PT (Server1) connected to ISR 1331 Router1, which is connected to 2960-24 Switch1, which is connected to PC-PT PC0 and PC-PT PC1. The configuration window for PC0 is open, showing the IP Configuration tab. The interface is FastEthernet0. The IP Configuration is set to Static. The IPv4 Address is 192.168.0.2, Subnet Mask is 255.255.255.0, Default Gateway is 192.168.0.1, and DNS Server is 0.0.0.0. The IPv6 Configuration is also set to Static. The IPv6 Address is empty, Link Local Address is FE80::2E0:F7FF:FE08:694A, Default Gateway is empty, and DNS Server is empty. The 802.1X section is expanded, showing Use 802.1X Security is unchecked, Authentication is MD5, Username is empty, and Password is empty.

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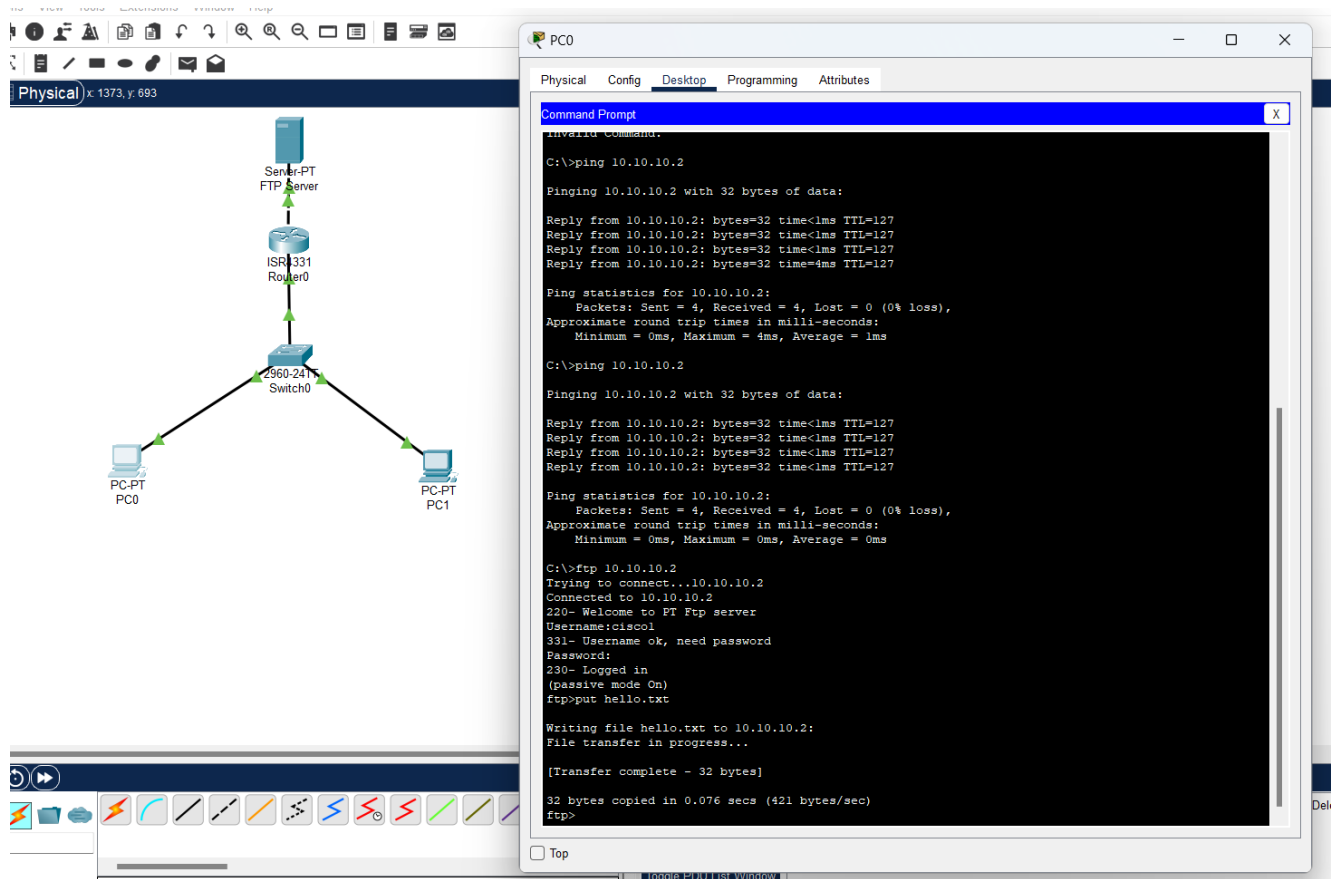


The top image shows a network diagram on the left and the 'Server1' configuration window on the right. The network diagram, titled 'Physical' (x: 746, y: 147), shows a topology where a 'Server-PT Server1' is connected to an 'ISR-331 Router1', which is connected to a '2960-24T Switch1'. The switch is then connected to two PCs, 'PC-PT PC0' and 'PC-PT PC1'. The 'Server1' configuration window has tabs for Physical, Config, Services, Desktop, Programming, and Attributes. The 'Desktop' tab is active, showing 'IP Configuration' with 'Static' selected. The IPv4 settings are: IP Address 10.10.10.2, Subnet Mask 255.0.0.0, Default Gateway 10.10.10.1, and DNS Server 0.0.0.0. The IPv6 settings are also 'Static' with a Link Local Address of FE80::250:FFF:FE5B:435. The 802.1X section shows 'Use 802.1X Security' is unchecked, and 'Authentication' is set to MD5.



The bottom image shows the same network diagram on the left and the 'Server1' configuration window on the right. The network diagram is titled 'Physical' (x: 649, y: 159) and shows the same topology as the top image. The 'Server1' configuration window has tabs for Physical, Config, Services, Desktop, Programming, and Attributes. The 'Desktop' tab is active, showing a 'Text Editor' window with the text 'Hello World. Testing on the FPT .'. A 'File Name' dialog box is open, prompting 'Enter the new File Name' with 'hello.txt' entered in the text field. The dialog has 'OK' and 'Cancel' buttons.

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The image displays a network configuration in Packet Tracer. On the left, a network diagram shows a topology where a 'Server-PT FTP Server' is connected to 'ISR-331 Router0'. The router is connected to 'Switch0', which is a 2960-24T switch. 'Switch0' is connected to two PCs, 'PC-PT PC0' and 'PC-PT PC1'. The interface for 'PC0' is active, showing a 'Physical' tab with coordinates x: 1373, y: 693.

On the right, the 'PC0' configuration window is open, showing the 'Desktop' tab with a 'Command Prompt' window. The command prompt displays the following output:

```
C:\>ping 10.10.10.2

Pinging 10.10.10.2 with 32 bytes of data:

Reply from 10.10.10.2: bytes=32 time<1ms TTL=127
Reply from 10.10.10.2: bytes=32 time<1ms TTL=127
Reply from 10.10.10.2: bytes=32 time<1ms TTL=127
Reply from 10.10.10.2: bytes=32 time=4ms TTL=127

Ping statistics for 10.10.10.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 4ms, Average = 1ms

C:\>ping 10.10.10.2

Pinging 10.10.10.2 with 32 bytes of data:

Reply from 10.10.10.2: bytes=32 time<1ms TTL=127
Reply from 10.10.10.2: bytes=32 time<1ms TTL=127
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Reply from 10.10.10.2: bytes=32 time<1ms TTL=127

Ping statistics for 10.10.10.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ftp 10.10.10.2
Trying to connect...10.10.10.2
Connected to 10.10.10.2
220- Welcome to FT Ftp server
Username:cisco1
331- Username ok, need password
Password:
230- Logged in
(passive mode On)
ftp>put hello.txt

Writing file hello.txt to 10.10.10.2:
File transfer in progress...

[Transfer complete - 32 bytes]

32 bytes copied in 0.076 secs (421 bytes/sec)
ftp>
```

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PC0

Physical Config **Desktop** Programming Attributes

Command Prompt

```
z30- logged in
(passive mode On)
ftp>put hello.txt

Writing file hello.txt to 10.10.10.2:
File transfer in progress...

[Transfer complete - 32 bytes]

32 bytes copied in 0.076 secs (421 bytes/sec)
ftp>dir

Listing /ftp directory from 10.10.10.2:
0 : asa842-k8.bin 5571584
1 : asa923-k8.bin 30468096
2 : cl841-advipservicesk9-mz.124-15.T1.bin 33591768
3 : cl841-ipbase-mz.123-14.T7.bin 13832032
4 : cl841-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-i6q4l2-mz.121-22.EA4.bin 3058048
15 : c2950-i6q4l2-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 : hello.txt 32
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-i6q4l2-mz.121-22.EA4.bin 3117390
ftp>
```

☐ Top



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Steps:-

- Drag and drop the following devices onto the workspace:
 - One Router and One Web Server.
 - One or more client PCs.
 - Switches to connect the devices if needed.
- Connect the devices using appropriate cables (use Copper Straight-Through cables to connect PCs to the switch and the switch to the router to server).
- In Router open config and give server-side IP (e.g., 10.10.10.1) and give Switch side IP (e.g., 192.168.0.1).
- Add check on the On in a Port Status.
- Now give PCs IP address (e.g., 192.168.0.2) and give Default Getway address as Switch (e.g., 192.168.0.1).
- Now give Server IP address (e.g., 10.10.10.2) and give Default Getway address as Switch (e.g., 10.10.10.1).
- In switch go to FTP tab and give new username and password.
- In server write text in Text Editor and save text as name (e.g., hello.txt).
- Open Command prompt in PCs and give command ping, server IP address and enter. After give ftp, server IP address and enter.
- Ater that it need username and password, after give Username and password we logged in. our server and PC are connected.
- Then write put command with txt file name (e.g., hello.txt) and enter.
- Now write dir command and enter, you can see PCs have server txt file (e.g., hello.txt) with number of bytes.