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DATE – 17-6-2021

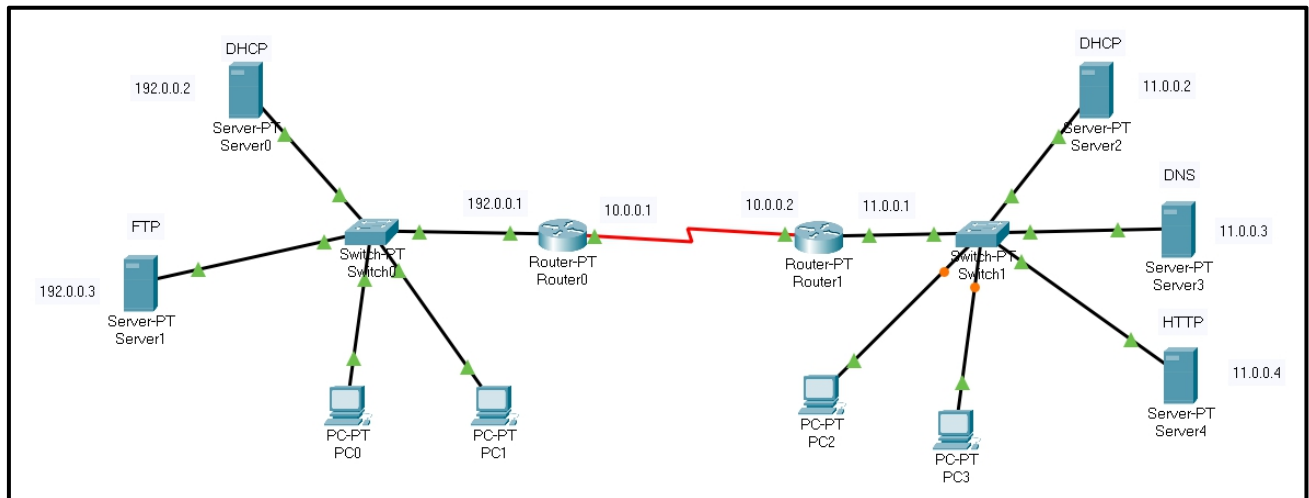
DHCP, DNS, HTTP AND FTP SERVICES

ALGORITHM

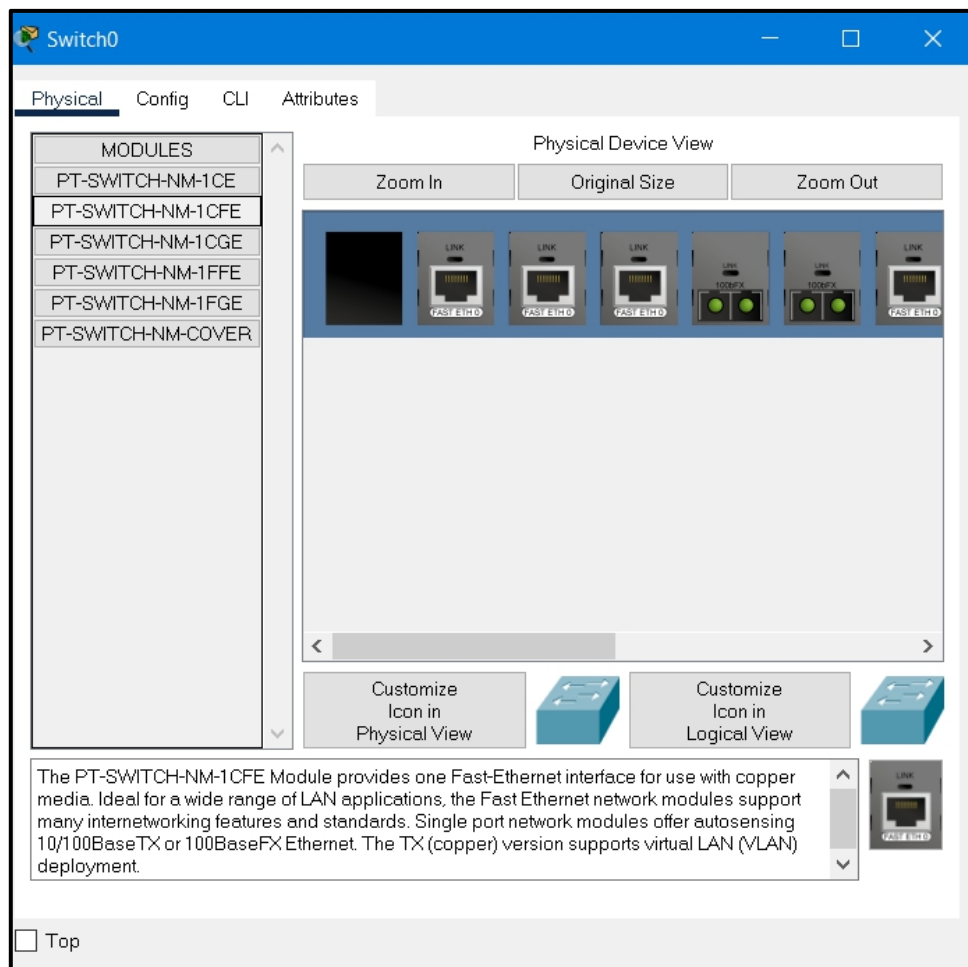
(STEPS INVOLVED)

- CREATE A TOPOLOGY USING THE DEVICES PRESENT IN THE PACKET TRACER SOFTWARE.
- ASSIGN APPROPRIATE IPS TO THE VARIOUS PORTS PRESENT IN THE ROUTER AND UPDATE THE NETWORKS IN THE RIP (ROUTER INFORMATION PROTOCOL) TABLE.
- NOW YOU CONFIGURE A SERVER AND ENABLE ITS DHCP SERVICES AND ASSIGN APPROPRIATE IPS THEN LATER ADD THE PC AND CONFIGURE IT'S IP BY USING THE DHCP OPTION.
- ADD A SERVER TO THE TOPOLOGY, CONFIGURE IT AND ENABLE ITS DNS SERVICES. SET UP A DNS RECORD IN THE SERVER.
- TO HOST THAT DOMAIN ADD ONE MORE SERVER TO THE TOPOLOGY WHICH WILL PROVIDE OUR HTTP SERVICE FOR THE SPECIFIED DOMAIN NAME.
- PING THE DOMAIN NAME USING A WEB BROWSER IN A PC PRESENT INSIDE THE TOPOLOGY TO CHECK THE INTEGRITY OF YOUR TOPOLOGY AND THE SERVICES ITS PROVIDES.
- NOW ADD ANOTHER SERVER WHICH WILL PROVIDE FTP SERVICE IN OUR TOPOLOGY. CONFIGURE IT AND TURN ON ITS FTP SERVICE.AND ASSIGN THE USER DETAILS.
- NOW USE A PC PRESENT INSIDE THE TOPOLOGY TO VERIFY THE FTP SERVICE PROVIDED BY THE FTP SERVER WE JUST ADDED.

TOPOLOGY



CHANGING THE NUMBER OF PHYSICAL PORTS IN THE SWITCH



CONFIGURING THE ROUTER

The screenshot shows the configuration window for Router1. The left sidebar has a tree view with categories: GLOBAL (Settings, Algorithm Settings), ROUTING (Static, RIP), and INTERFACE (FastEthernet0/0, FastEthernet1/0, Serial2/0, Serial3/0, FastEthernet4/0, FastEthernet5/0). The 'FastEthernet1/0' interface is selected. The main area shows configuration options for this interface: Port Status (checked, On), Bandwidth (100 Mbps, 10 Mbps, Half Duplex, Full Duplex), Duplex (Half Duplex, Full Duplex), MAC Address (000C.8561.28D8), IP Configuration (IPv4 Address: 10.0.0.2, Subnet Mask: 255.0.0.0), and Tx Ring Limit (10). Below the configuration area is a text box for 'Equivalent IOS Commands' containing the following commands:

```
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet1/0
Router(config-if)#ip address 10.0.0.2 255.0.0.0
Router(config-if)#ip address 10.0.0.2 255.0.0.0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up
```

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

CONFIGURING THE RIP TABLE OF THE ROUTER

The screenshot shows the configuration window for Router0. The left sidebar has a tree view with categories: GLOBAL (Settings, Algorithm Settings), ROUTING (Static, RIP), and INTERFACE (FastEthernet0/0, FastEthernet1/0, Serial2/0, Serial3/0, FastEthernet4/0, FastEthernet5/0). The 'RIP' routing protocol is selected. The main area shows the 'RIP Routing' configuration. There is a 'Network' field with a value of 10.0.0.0 and an 'Add' button. Below this is a table with two rows: 'Network Address' and '192.0.0.0'. At the bottom right, there is a 'Remove' button. Below the configuration area is a text box for 'Equivalent IOS Commands' containing the following commands:

```
Router(config-if)#exit
Router(config)#interface FastEthernet1/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#router rip
Router(config-router)#network 192.0.0.0
Router(config-router)#network 10.0.0.0
Router(config-router)#
```

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

CONFIGURING THE DHCP SERVER

The screenshot shows the 'Server0' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is expanded, showing the following settings:

- IP Configuration:**
 - ☐ DHCP
 - ☒ Static
 - IPv4 Address: 192.0.0.2
 - Subnet Mask: 255.255.255.0
 - Default Gateway: 192.0.0.1
 - DNS Server: 11.0.0.3
- IPv6 Configuration:**
 - ☐ Automatic
 - ☒ Static
 - IPv6 Address: (empty)
 - Link Local Address: FE80::230:A3FF:FE85:26C8
 - Default Gateway: (empty)
 - DNS Server: (empty)
- 802.1X:**
 - ☐ Use 802.1X Security
 - Authentication: MD5
 - Username: (empty)
 - Password: (empty)

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

SETTING UP THE DHCP SERVICE ON THE SERVER

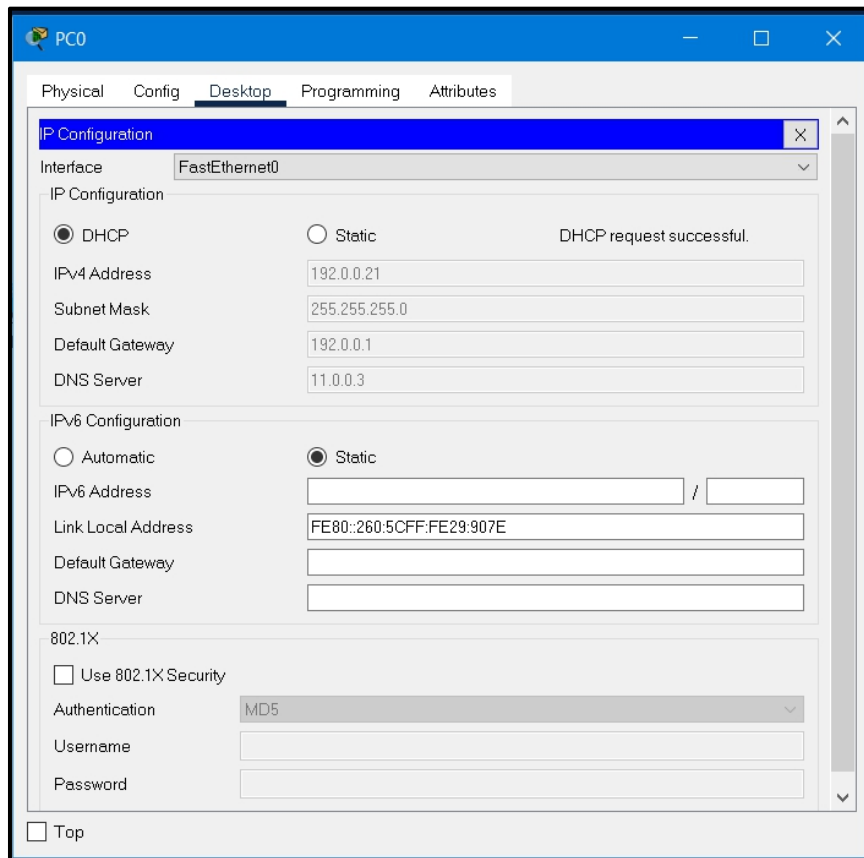
The screenshot shows the 'Server0' configuration window with the 'Services' tab selected. The 'DHCP' service is configured as follows:

- SERVICES:**
 - HTTP
 - DHCP**
 - DHCPv6
 - TFTP
 - DNS
 - SYSLOG
 - AAA
 - NTP
 - EMAIL
 - FTP
 - IoT
 - VM Management
 - Radius EAP
- DHCP Configuration:**
 - Interface: FastEthernet0
 - Service: ☒ On
 - Pool Name: serverPool
 - Default Gateway: 192.0.0.1
 - DNS Server: 11.0.0.3
 - Start IP Address: 192.0.0.21
 - Subnet Mask: 255.255.255.0
 - Maximum Number of Users: 235
 - TFTP Server: 0.0.0.0
 - WLC Address: 0.0.0.0
- Buttons:** Add, Save, Remove
- Table:**

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max Users	TFTP Server	WLC Address
serverPool	192.0.0.1	11.0.0.3	192.0.0.21	255.255.255.0	235	0.0.0.0	0.0.0.0

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

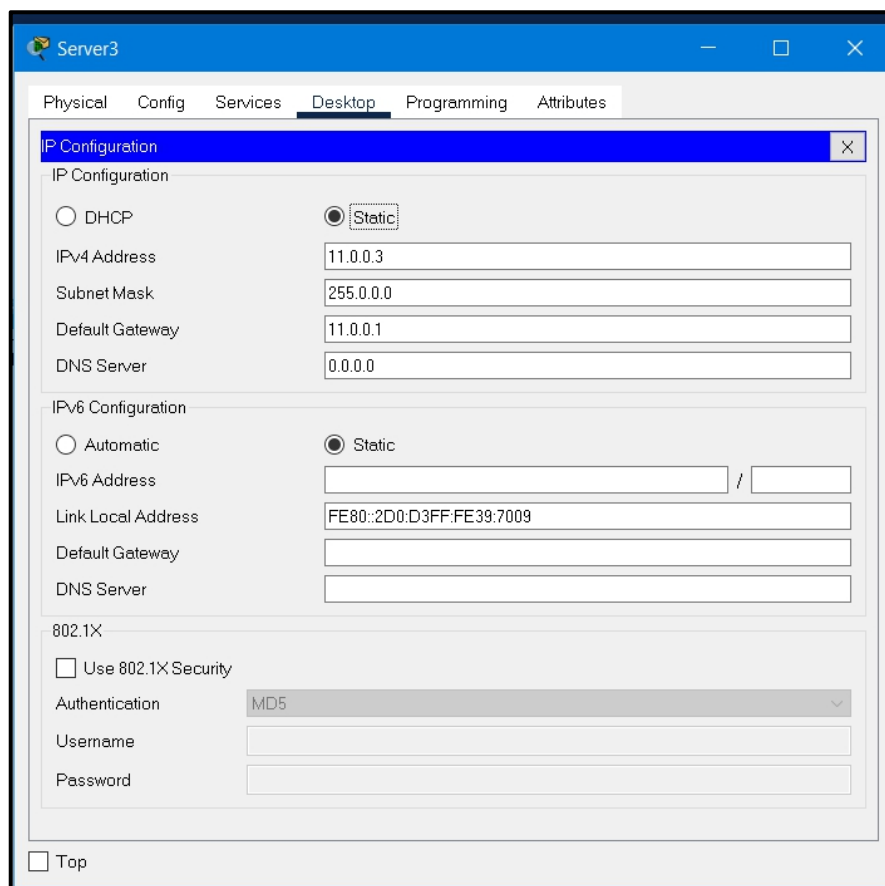
SWITCHING TO DHCP MODE IN THE PC'S IP CONFIGURATION



The screenshot shows the 'IP Configuration' window for PC0. The 'Interface' is 'FastEthernet0'. Under 'IP Configuration', the 'DHCP' radio button is selected, and a message states 'DHCP request successful.' The 'IPv4 Address' is 192.0.0.21, 'Subnet Mask' is 255.255.255.0, 'Default Gateway' is 192.0.0.1, and 'DNS Server' is 11.0.0.3. Under 'IPv6 Configuration', the 'Static' radio button is selected. The 'IPv6 Address' field is empty, 'Link Local Address' is FE80::260:5CFF:FE29:907E, 'Default Gateway' is empty, and 'DNS Server' is empty. Under '802.1X', 'Use 802.1X Security' is unchecked, 'Authentication' is MD5, 'Username' is empty, and 'Password' is empty. A 'Top' button is at the bottom left.

Field	Value
Interface	FastEthernet0
IP Configuration Mode	DHCP
IPv4 Address	192.0.0.21
Subnet Mask	255.255.255.0
Default Gateway	192.0.0.1
DNS Server	11.0.0.3
IPv6 Configuration Mode	Static
IPv6 Address	
Link Local Address	FE80::260:5CFF:FE29:907E
IPv6 Default Gateway	
IPv6 DNS Server	
802.1X Security	Use 802.1X Security (unchecked)
802.1X Authentication	MD5
802.1X Username	
802.1X Password	

CONFIGURING THE DNS SERVER



The screenshot shows the 'IP Configuration' window for Server3. The 'Interface' is 'FastEthernet0'. Under 'IP Configuration', the 'Static' radio button is selected. The 'IPv4 Address' is 11.0.0.3, 'Subnet Mask' is 255.0.0.0, 'Default Gateway' is 11.0.0.1, and 'DNS Server' is 0.0.0.0. Under 'IPv6 Configuration', the 'Static' radio button is selected. The 'IPv6 Address' field is empty, 'Link Local Address' is FE80::2D0:D3FF:FE39:7009, 'Default Gateway' is empty, and 'DNS Server' is empty. Under '802.1X', 'Use 802.1X Security' is unchecked, 'Authentication' is MD5, 'Username' is empty, and 'Password' is empty. A 'Top' button is at the bottom left.

Field	Value
Interface	FastEthernet0
IP Configuration Mode	Static
IPv4 Address	11.0.0.3
Subnet Mask	255.0.0.0
Default Gateway	11.0.0.1
DNS Server	0.0.0.0
IPv6 Configuration Mode	Static
IPv6 Address	
Link Local Address	FE80::2D0:D3FF:FE39:7009
IPv6 Default Gateway	
IPv6 DNS Server	
802.1X Security	Use 802.1X Security (unchecked)
802.1X Authentication	MD5
802.1X Username	
802.1X Password	

SETTING UP THE DNS SERVICES AND CREATING A DNS RECORD

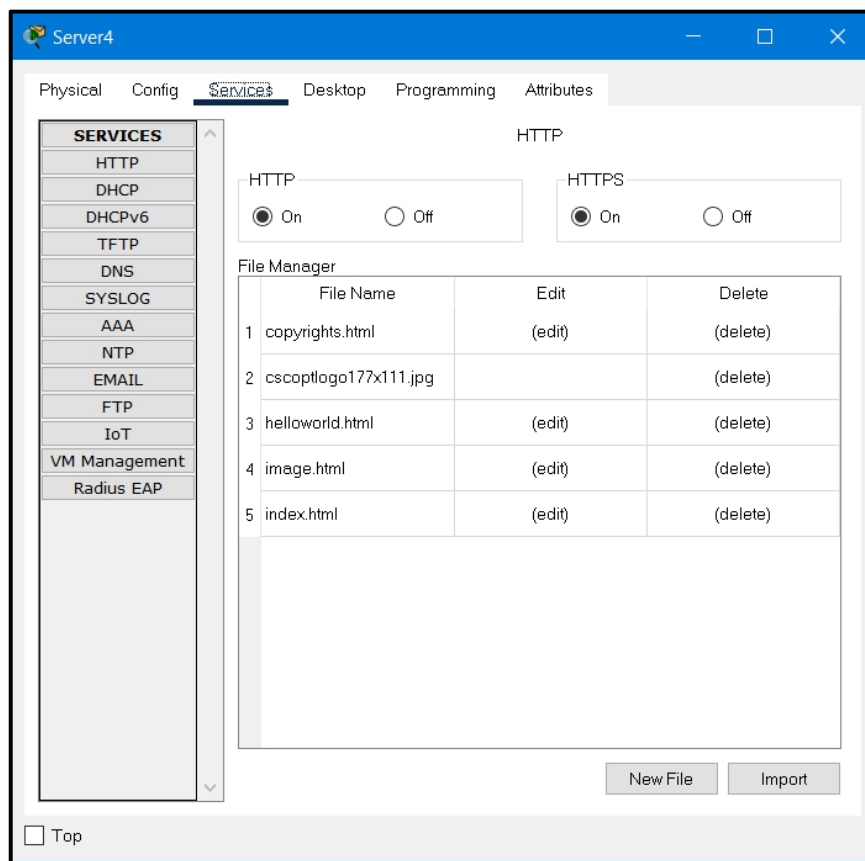
The screenshot shows the 'Server3' configuration window with the 'Services' tab selected. On the left, a list of services includes HTTP, DHCP, DHCPv6, TFTP, DNS (highlighted), SYSLOG, AAA, NTP, EMAIL, FTP, IoT, VM Management, and Radius EAP. The main area is titled 'DNS' and shows 'DNS Service' as 'On'. Under 'Resource Records', a record for 'demo.in' of type 'A Record' is listed with the address '11.0.0.4'. Buttons for 'Add', 'Save', and 'Remove' are present. A 'DNS Cache' button is at the bottom. A 'Top' link is in the footer.

No.	Name	Type	Detail
0	demo.in	A Record	11.0.0.4

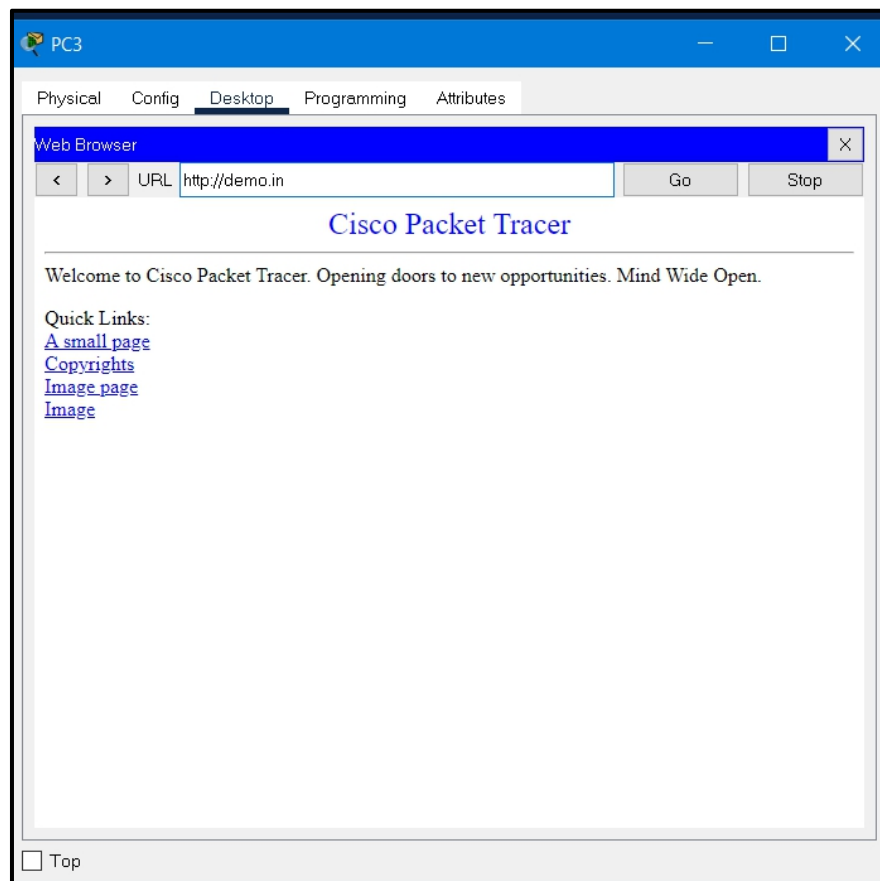
CONFIGURING THE HTTP SERVER

The screenshot shows the 'Server4' configuration window with the 'Desktop' tab selected. The 'IP Configuration' window is open, showing settings for both IPv4 and IPv6. IPv4 is configured with a static IP of 11.0.0.4, subnet mask 255.0.0.0, default gateway 11.0.0.1, and DNS server 11.0.0.3. IPv6 is also configured with a static IP, link local address FE80::20C:85FF:FEB0:D7B8, and default gateway. Below, the '802.1X' section shows 'Use 802.1X Security' as unchecked, with authentication set to MD5. Username and password fields are empty. A 'Top' link is in the footer.

SETTING UP THE HTTP SERVICES IN THE SERVER



PINGING THE HTTP SERVER USING A DOMAIN NAME THAT WE CREATED IN THE DNS SERVER POINTING TOWARDS THE HTTP SERVER



CONFIGURING THE FTP SERVER

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

- IP Configuration:**
 - ☐ DHCP
 - ☒ Static
 - IPv4 Address: 192.0.0.3
 - Subnet Mask: 255.255.255.0
 - Default Gateway: 192.0.0.1
 - DNS Server: 11.0.0.3
- IPv6 Configuration:**
 - ☐ Automatic
 - ☒ Static
 - IPv6 Address: (empty)
 - Link Local Address: FE80::202:16FF:FE1C:65C1
 - Default Gateway: (empty)
 - DNS Server: (empty)
- 802.1X:**
 - ☐ Use 802.1X Security
 - Authentication: MD5
 - Username: (empty)
 - Password: (empty)

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

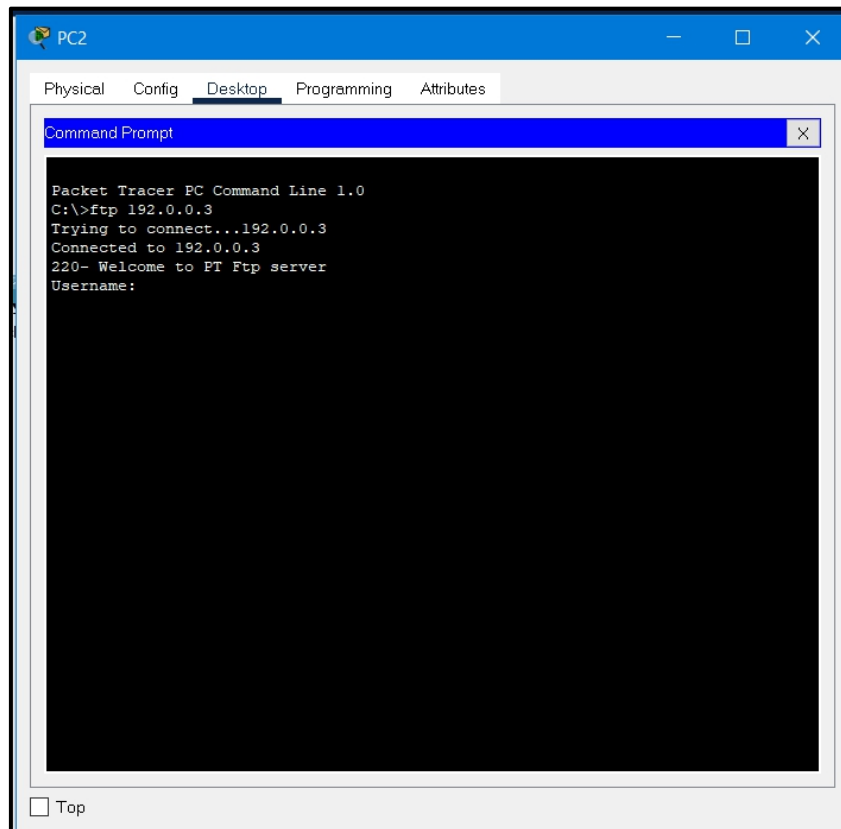
SETTING UP THE FTP SERVICES AND CREATING THE USERS

The screenshot shows the 'Server1' configuration window with the 'Services' tab selected. The 'FTP' service is configured as follows:

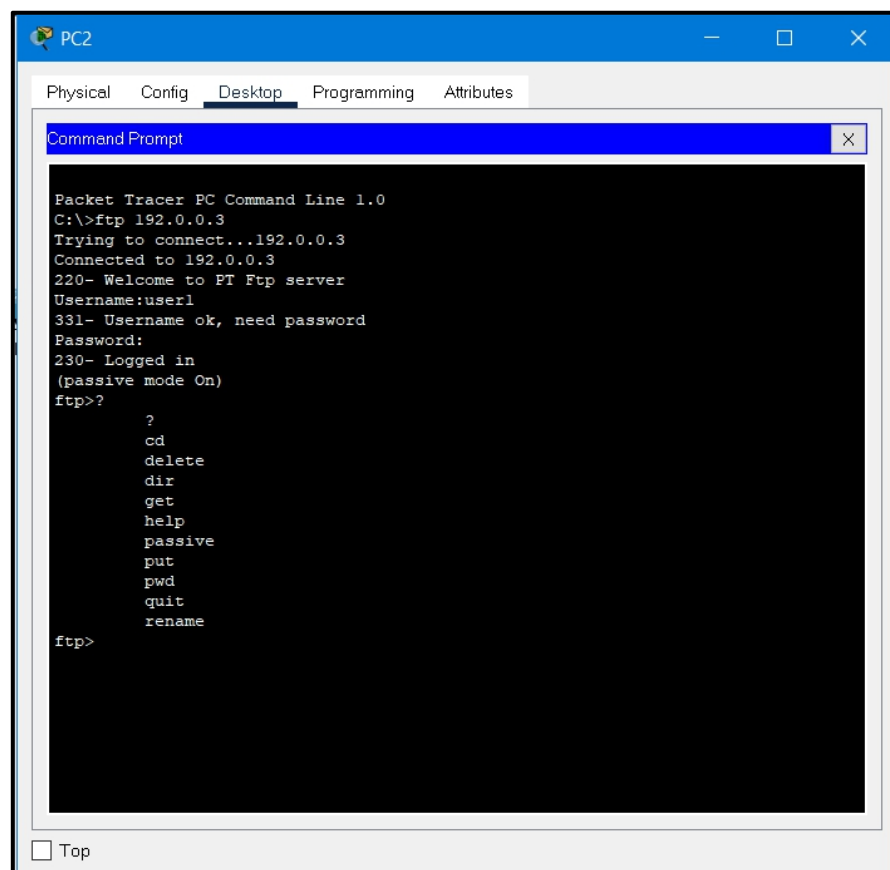
- SERVICES:**
 - HTTP
 - DHCP
 - DHCPv6
 - TFTP
 - DNS
 - SYSLOG
 - AAA
 - NTP
 - EMAIL
 - FTP**
 - IoT
 - VM Management
 - Radius EAP
- FTP:**
 - Service: ☒ On ☐ Off
 - User Setup:**
 - Username: (empty) Password: (empty)
 - ☐ Write ☐ Read ☐ Delete ☐ Rename ☐ List
 - | | Username | Password | Permission |
|---|----------|----------|------------|
| 1 | cisco | cisco | RL |
| 2 | user1 | user1 | RWDNL |
 - Buttons: Add, Save, Remove
 - File:**
 - | | |
|---|--|
| 1 | asa842-k8.bin |
| 2 | asa923-k8.bin |
| 3 | c1841-advipservicesk9-mz.124-15.T1.bin |
| 4 | c1841-iphase-mz.123-14.T2.bin |
 - Buttons: Remove

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

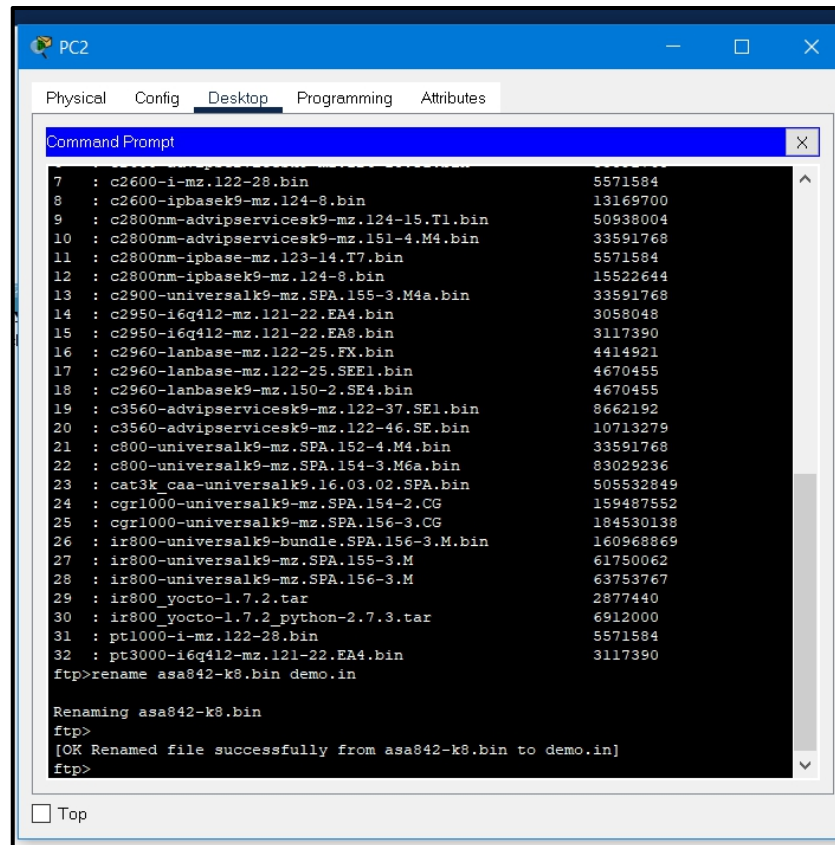
PINGING THE FTP SERVER AND LOGGING INTO IT



AFTER LOGGING IN, SHOWING ALL THE COMMANDS ONE CAN PERFORM IN THE FTP SERVER



LISTING DOWN ALL THE FILES PRESENT IN THE SERVER AND RENAMING A PARTICULAR FILE AS USER HAS THE ALLOWANCE TO DO SO



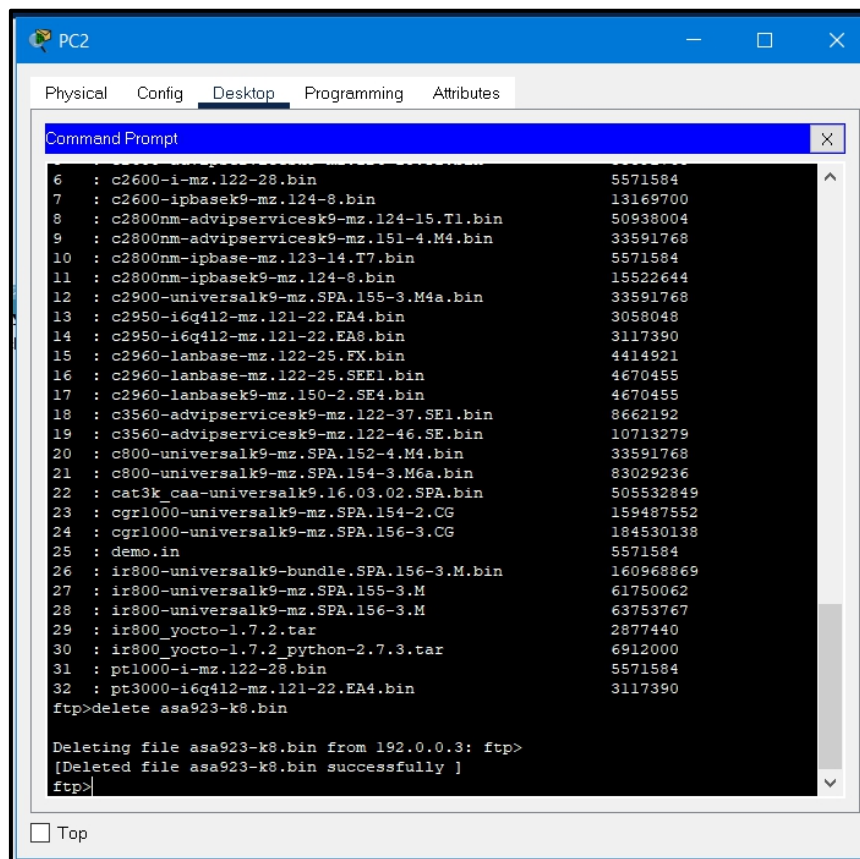
The screenshot shows a PC2 window with a Command Prompt. The Command Prompt displays a list of files and their sizes, followed by a rename command and its successful execution.

```
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>rename asa842-k8.bin demo.in

Renaming asa842-k8.bin
ftp>
[OK Renamed file successfully from asa842-k8.bin to demo.in]
ftp>
```

DELETION OF A CERTAIN FILES IN THE FTP SERVER



The screenshot shows a PC2 window with a Command Prompt. The Command Prompt displays a list of files and their sizes, followed by a delete command and its successful execution.

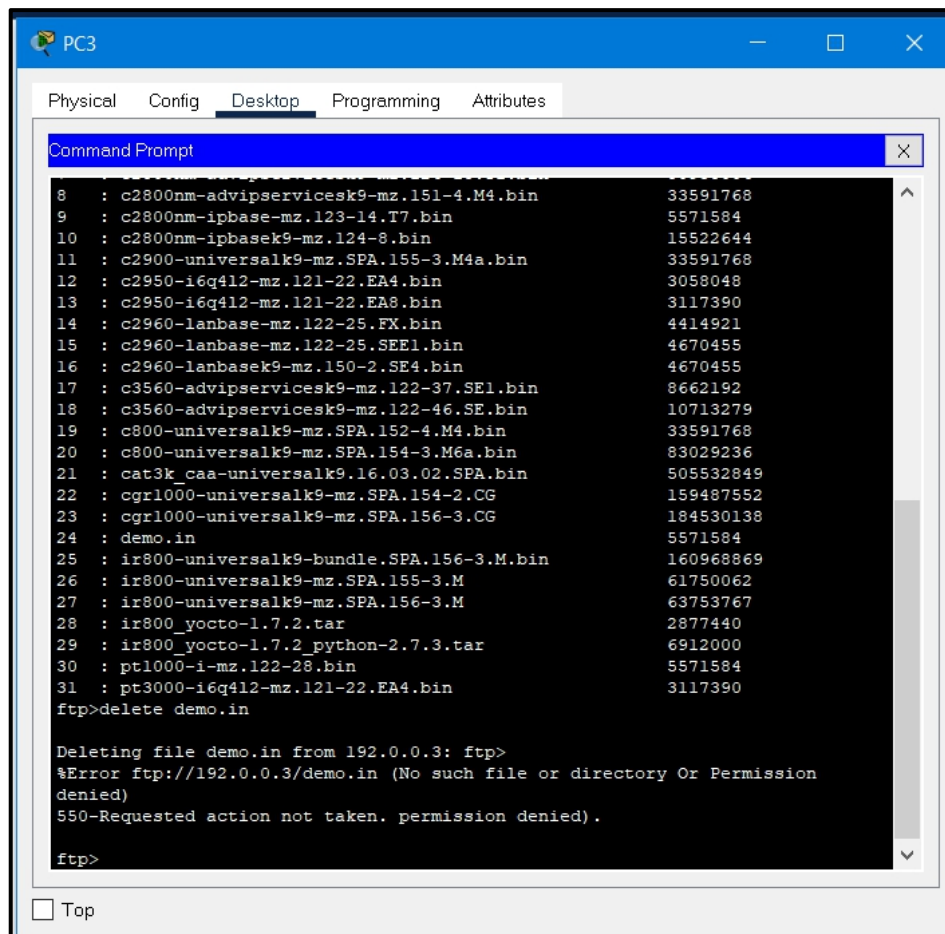
```
6 : c2600-i-mz.122-28.bin 5571584
7 : c2600-ipbasek9-mz.124-8.bin 13169700
8 : c2800nm-advipservicesk9-mz.124-15.T1.bin 50938004
9 : c2800nm-advipservicesk9-mz.151-4.M4.bin 33591768
10 : c2800nm-ipbase-mz.123-14.T7.bin 5571584
11 : c2800nm-ipbasek9-mz.124-8.bin 15522644
12 : c2900-universalk9-mz.SPA.155-3.M4a.bin 33591768
13 : c2950-i6q412-mz.121-22.EA4.bin 3058048
14 : c2950-i6q412-mz.121-22.EA8.bin 3117390
15 : c2960-lanbase-mz.122-25.FX.bin 4414921
16 : c2960-lanbase-mz.122-25.SEE1.bin 4670455
17 : c2960-lanbasek9-mz.150-2.SE4.bin 4670455
18 : c3560-advipservicesk9-mz.122-37.SE1.bin 8662192
19 : c3560-advipservicesk9-mz.122-46.SE.bin 10713279
20 : c800-universalk9-mz.SPA.152-4.M4.bin 33591768
21 : c800-universalk9-mz.SPA.154-3.M6a.bin 83029236
22 : cat3k_caa-universalk9.16.03.02.SPA.bin 505532849
23 : cgr1000-universalk9-mz.SPA.154-2.CG 159487552
24 : cgr1000-universalk9-mz.SPA.156-3.CG 184530138
25 : demo.in 5571584
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>delete asa923-k8.bin

Deleting file asa923-k8.bin from 192.0.0.3: ftp>
[Deleted file asa923-k8.bin successfully ]
ftp>
```

NOW SIGNING INTO THE FTP SERVER USING A NEW USER WHO HAS ONLY LISTING ALLOWANCE

HENCE WHEN HE TRIES TO DELETE A FILE THE SERVER DENIES HIM STATING HE HAS NO PERMISSION TO UNDERTAKE THAT OPERATION



```
PC3
Physical Config Desktop Programming Attributes
Command Prompt
8 : c2800nm-advipservicesk9-mz.151-4.M4.bin 33591768
9 : c2800nm-ipbase-mz.123-14.T7.bin 5571584
10 : c2800nm-ipbasek9-mz.124-8.bin 15522644
11 : c2900-universalk9-mz.SPA.155-3.M4a.bin 33591768
12 : c2950-i6q412-mz.121-22.EA4.bin 3058048
13 : c2950-i6q412-mz.121-22.EA8.bin 3117390
14 : c2960-lanbase-mz.122-25.FX.bin 4414921
15 : c2960-lanbase-mz.122-25.SEE1.bin 4670455
16 : c2960-lanbasek9-mz.150-2.SE4.bin 4670455
17 : c3560-advipservicesk9-mz.122-37.SE1.bin 8662192
18 : c3560-advipservicesk9-mz.122-46.SE.bin 10713279
19 : c800-universalk9-mz.SPA.152-4.M4.bin 33591768
20 : c800-universalk9-mz.SPA.154-3.M6a.bin 83029236
21 : cat3k_caa-universalk9.16.03.02.SPA.bin 505532849
22 : cgr1000-universalk9-mz.SPA.154-2.CG 159487552
23 : cgr1000-universalk9-mz.SPA.156-3.CG 184530138
24 : demo.in 5571584
25 : ir800-universalk9-bundle.SPA.156-3.M.bin 160968869
26 : ir800-universalk9-mz.SPA.155-3.M 61750062
27 : ir800-universalk9-mz.SPA.156-3.M 63753767
28 : ir800_yocto-1.7.2.tar 2877440
29 : ir800_yocto-1.7.2_python-2.7.3.tar 6912000
30 : pt1000-i-mz.122-28.bin 5571584
31 : pt3000-i6q412-mz.121-22.EA4.bin 3117390
ftp>delete demo.in

Deleting file demo.in from 192.0.0.3: ftp>
%Error ftp://192.0.0.3/demo.in (No such file or directory Or Permission
denied)
550-Requested action not taken. permission denied).

ftp>
```

☐ Top