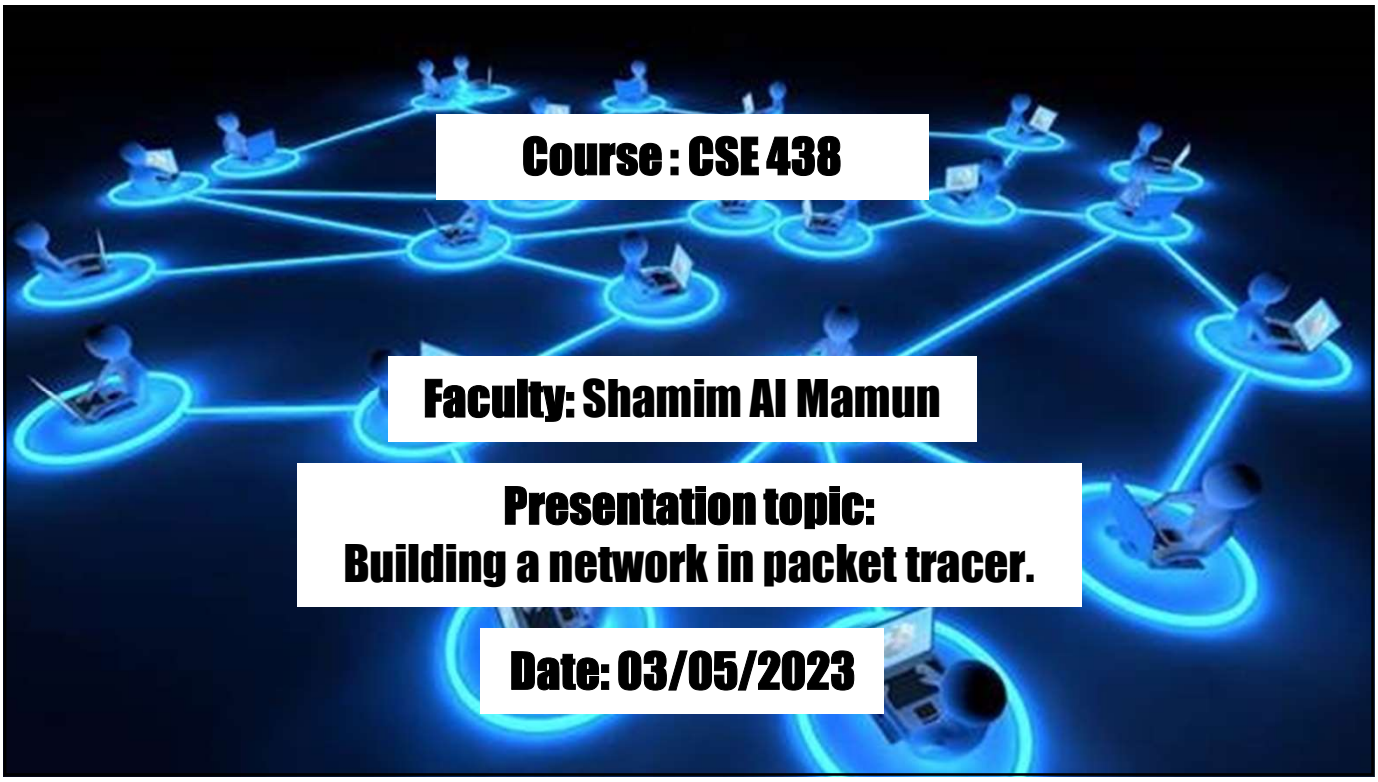


CSE 438

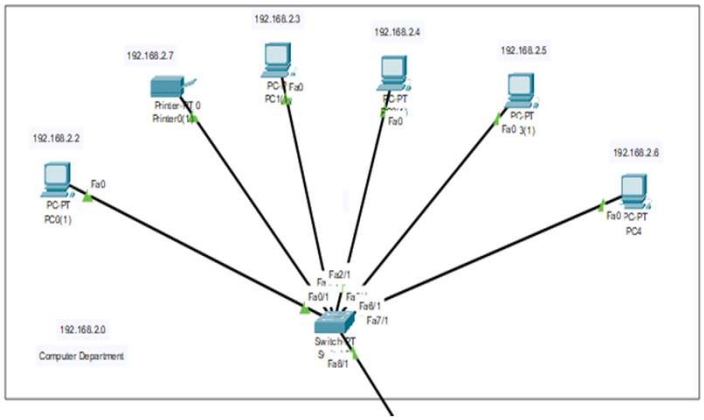
Group Members	
Name	**ID**
Shadman Sakib Khan	1911368042
Rezwan Hossain	1911253642
Md Naser Bin Hossain	1912620042
Suria Yesmin Enath	1921413042

NAME: SHADMAN SAKIB KHAN
ID: 1911368042

All Gateways & Network IPs

Room	Default Gateway	Network IP
Computer Department	192.168.2.1	192.168.2.0
Principle Room	192.168.4.1	192.168.4.0
Server Room	1.0.0.1	1.0.0.0
Internet Lab	128.168.0.1	128.168.0.0
IT Department	192.168.1.1	192.168.1.0
Others	192.168.3.1	192.168.3.0
Router0 to Router4	20.20.0.1	20.20.0.0
Router3 to Router4	10.10.0.1	10.10.0.0

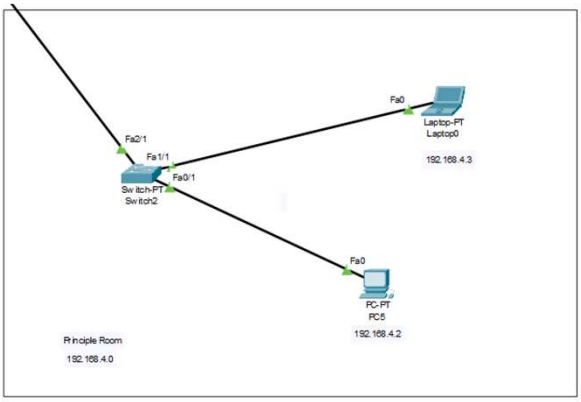
Computer Department



Network IP: 192.168.2.0

Default Gateway	192.168.2.1

Principle Room



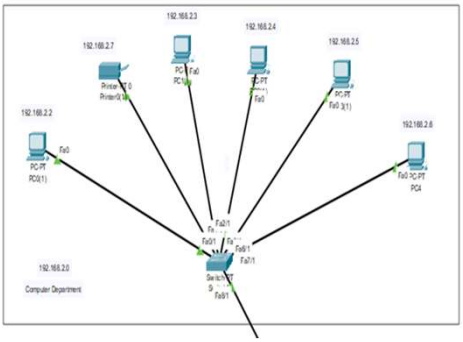
Network IP: 192.168.4.0

Default Gateway	192.168.4.1

Computer Department:

Here, I used 5 PCs & 1 Printer & their Name & IP Address:

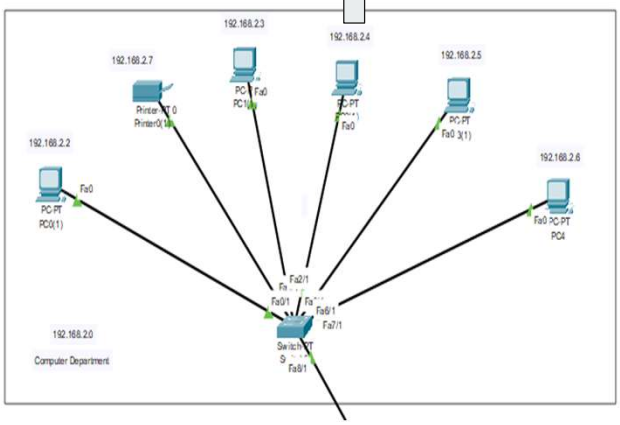
PC or Printer	IP Address
PC 0	192.168.2.2
PC 1	192.168.2.3
PC 2	192.168.2.4
PC 3	192.168.2.5
PC 4	192.168.2.6
Printer 0	192.168.2.7



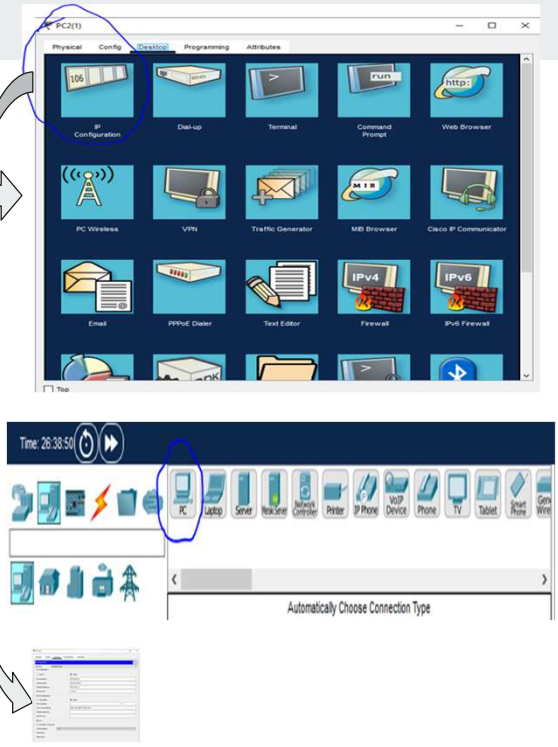
Network IP: 192.168.2.0

Default Gateway	192.168.2.1

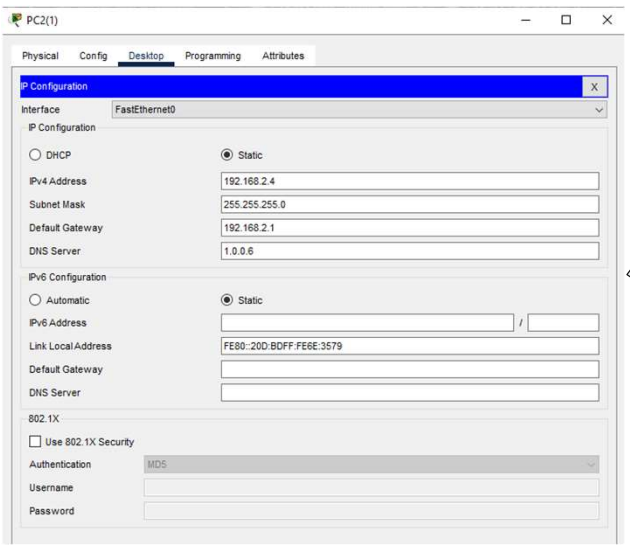
Computer Department:



Giving IP Addresses to PCs



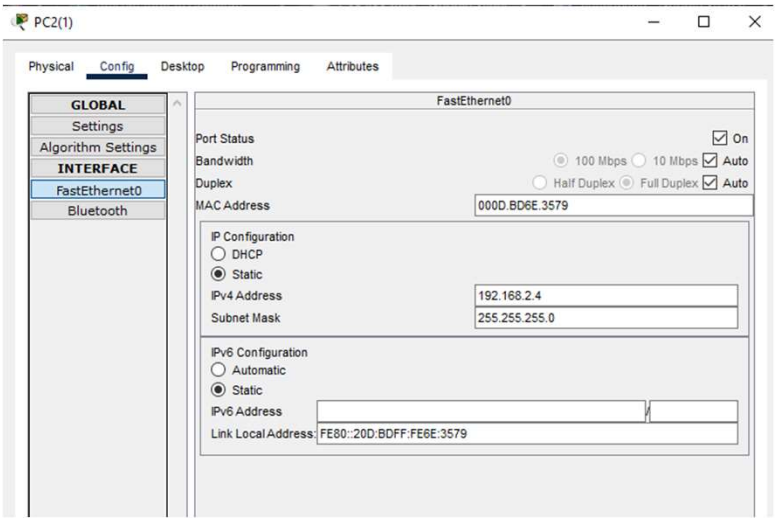
Giving IP Addresses to PCs



Procedure:

1. Double click on the PC.
2. Then click on Desktop.
3. Then click on IP Configuration.
4. Ip Configuration in Static.
5. IPv4 Address: 192.168.2.4
6. Subnet Mask: 255.255.255.0 (auto generate)
7. Default Gateway: 192.168.2.1
8. DNS Server: 1.0.0.6

Config FastEthernet0 for PCs



Procedure:

1. Double click on the PC.

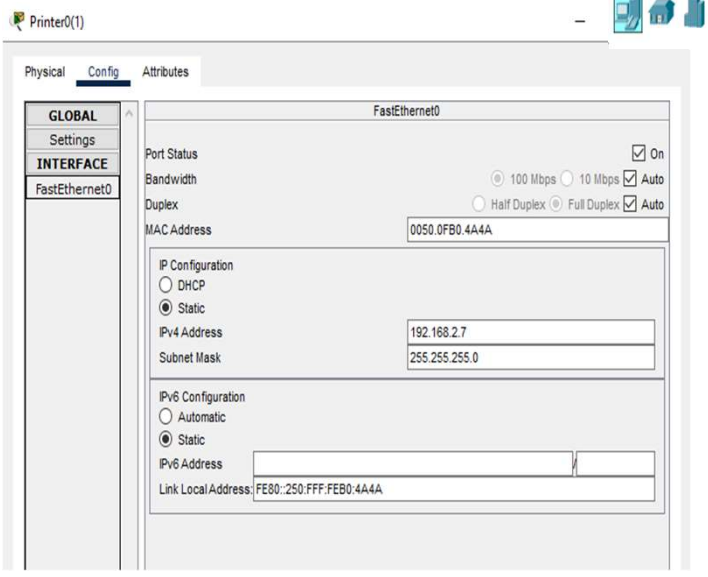
2. Go to config & then click on the FastEthernet0.

3. Turn on & IP Configuration in Static.

4. IP address: 192.168.2.4

5. Subnet Mask: 255.255.255.0 (auto generate)

Giving IP Addresses to Printer:



Procedure:

1. Double click on the printer.

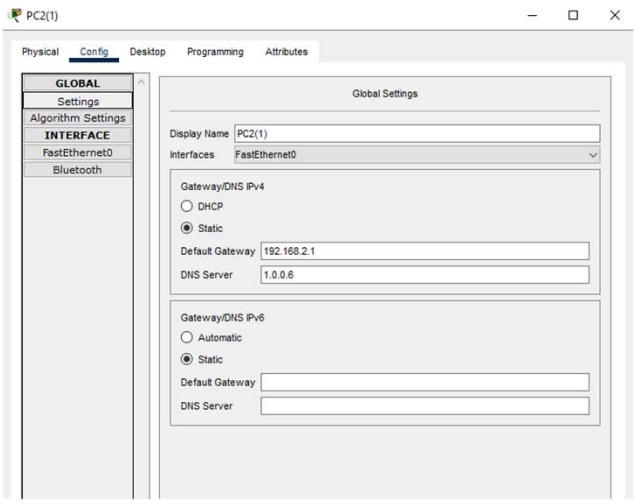
2. Go to config & then click on the FastEthernet0.

3. Turn on & IP Configuration in Static.

4. IP address: 192.168.2.7

5. Subnet Mask: 255.255.255.0 (auto generate)

Default Gateway giving to PCs:



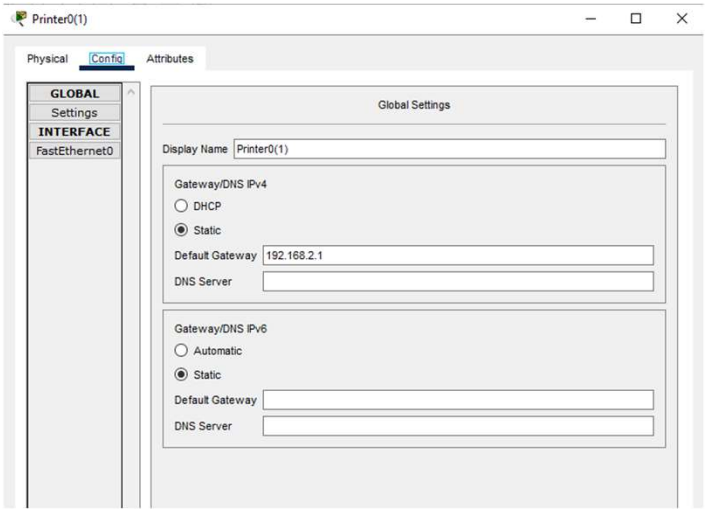
Procedure:

1. Double click on the PC.
2. Then click on the config.
3. Then on settings.
4. Gateway/DNS IPV4 in Static.
5. Default Gateway: 192.168.2.1
6. DNS Server: 1.0.0.6

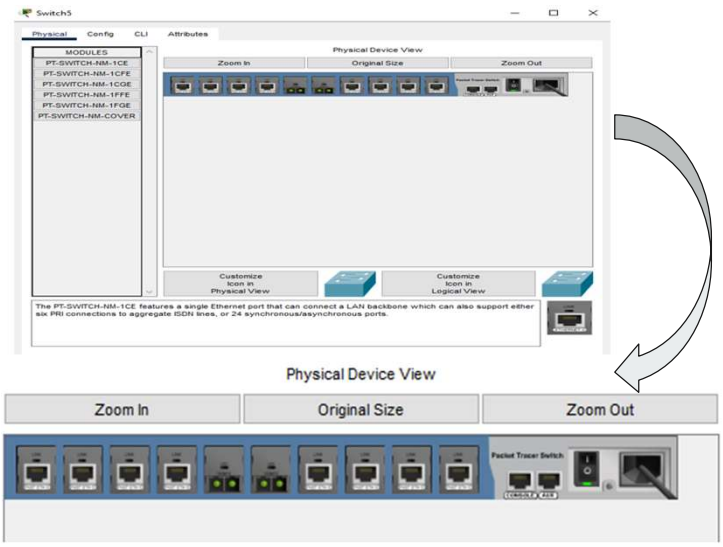
Default Gateway giving to Printer:

Procedure:

1. Double click on the printer.
2. Go to config & then click on the Setting..
3. Gateway/DNS IPV4 in Static.
4. Default Gateway: 192.168.2.1



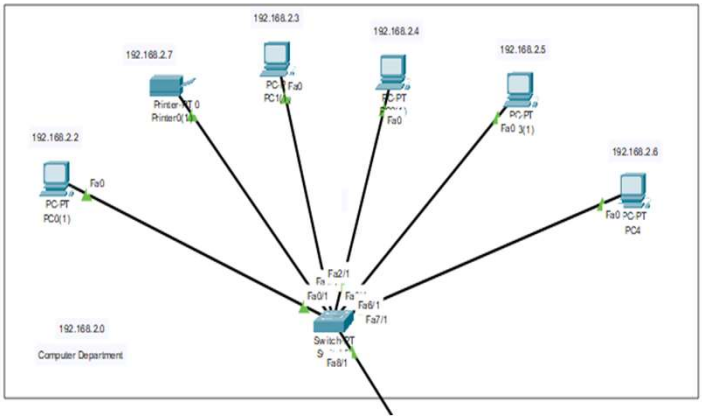
Switch-5:



Procedure:

1. Double click on switch.
2. Zoom in & Turn off the switch.
3. Drag PT-SWITCH-NM-1CFE to empty slots to increase port (total 8 port taken).
4. Must on all FastEthernet port.
5. Turn on the switch & Zoom out.

Connection:

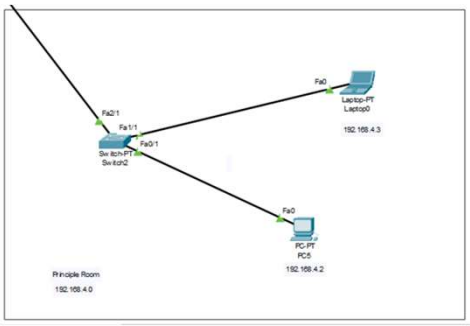


Finally we connected all our components with cables.

Principle Room:

Here, I used 1 PC & 1 Laptop & their Name & IP Address:

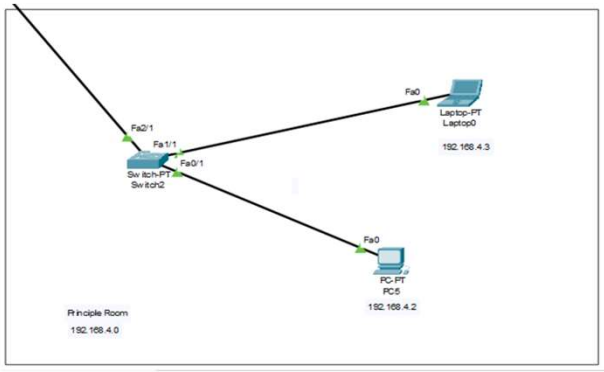
PC or Printer	IP Address
Laptop0	192.168.4.3
PC5	192.168.4.2

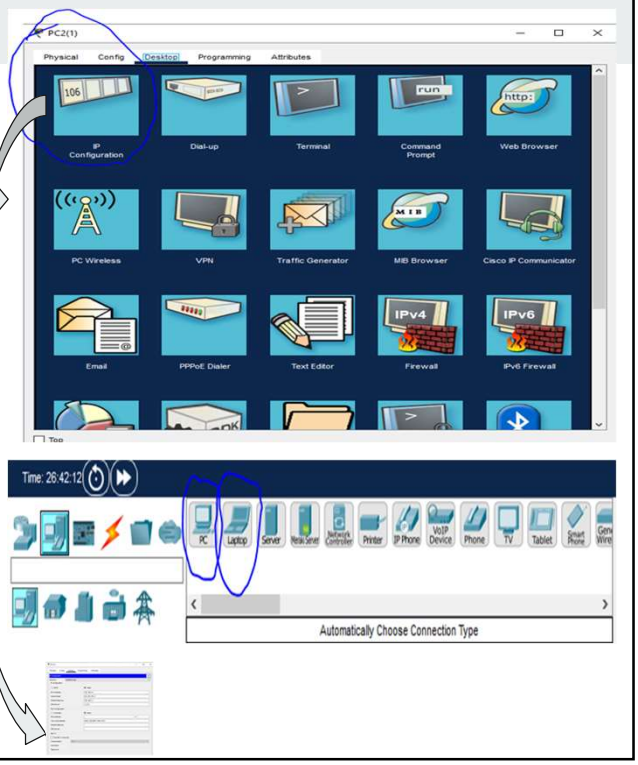


Network IP: 192.168.4.0

Default Gateway	192.168.2.1

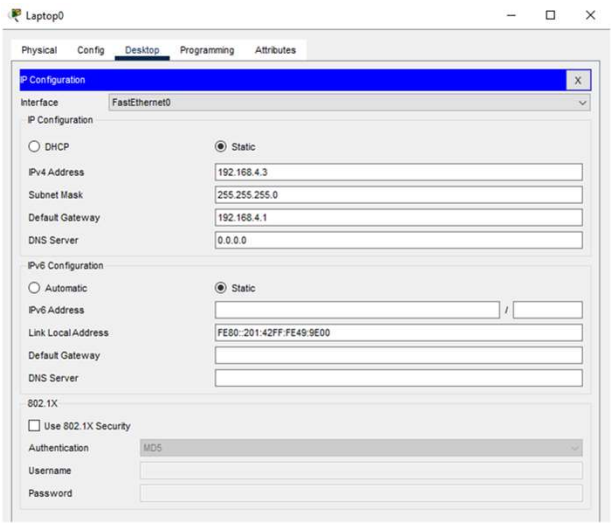
Principle Room:





Giving IP Addresses to PC & Laptop

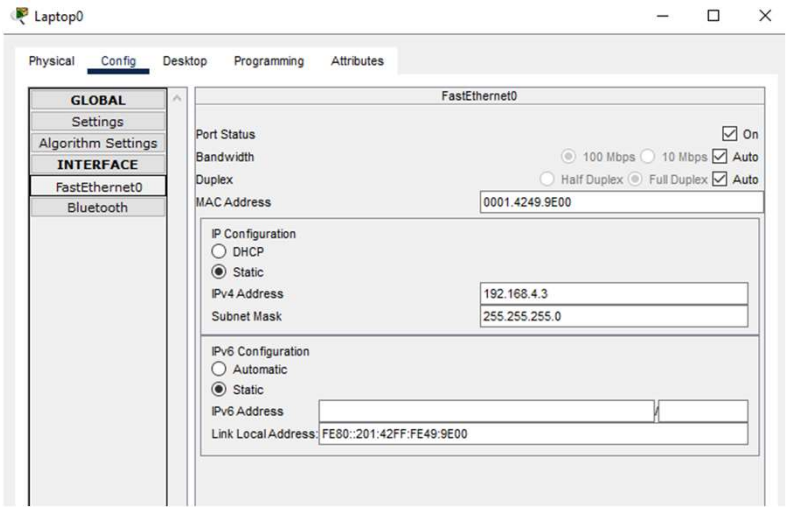
Giving IP Addresses to PC & Laptop:



Procedure:

1. Double click on the Laptop.
2. Then click on Desktop.
3. Then click on IP Configuration.
4. Ip Configuration in Static.
5. IPv4 Address: 192.168.4.3
6. Subnet Mask: 255.255.255.0 (auto generate)
7. Default Gateway: 192.168.4.1
8. DNS Server: 0.0.0.0

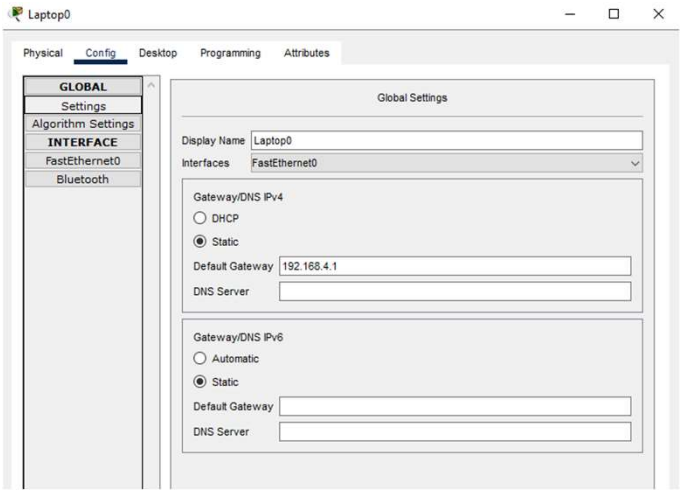
Config FastEthernet0 for PC & Laptop:



Procedure:

1. Double click on the Laptop.
2. Go to config & then click on the FastEthernet0.
3. Turn on & IP Configuration in Static.
4. IP address: 192.168.4.3
5. Subnet Mask: 255.255.255.0 (auto generate)

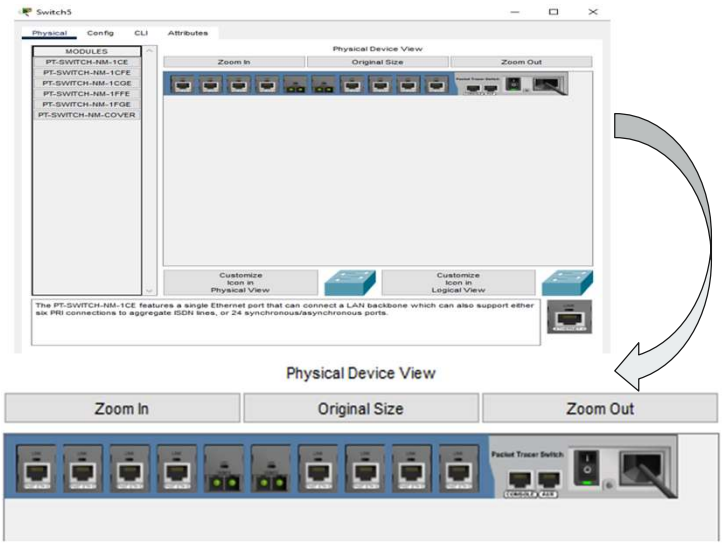
Default Gateway Giving to PC & Laptop:



Procedure:

1. Double click on the Laptop.
2. Then click on the config.
3. Then on settings.
4. Gateway/DNS IPV4 in Static.
5. Default Gateway: 192.168.4.1

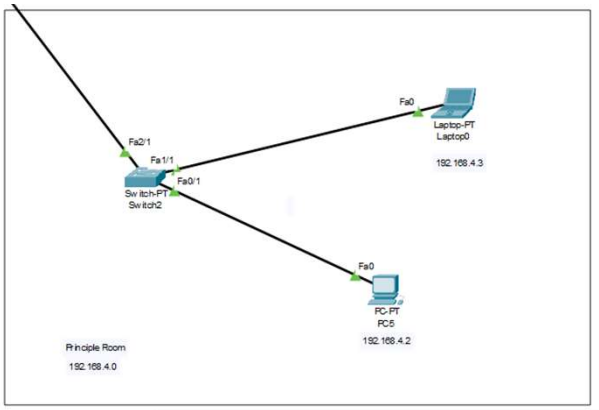
Switch-2:



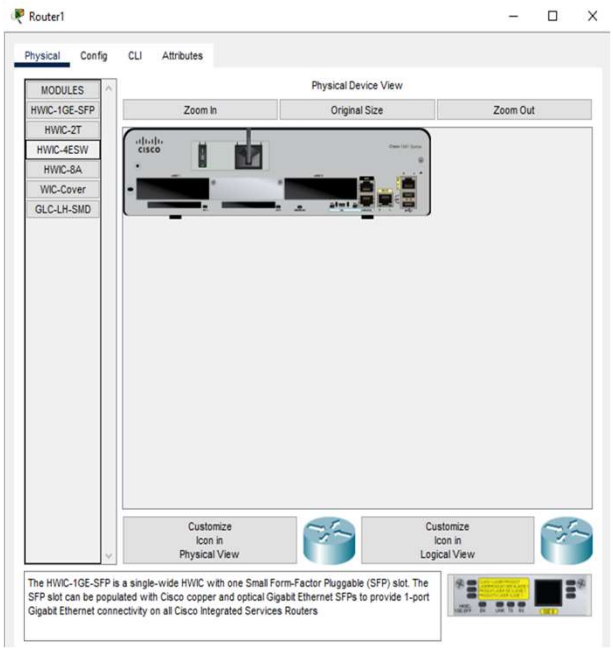
Procedure:

1. Double click on switch.
2. Zoom in & Turn off the switch.
3. Drag PT-SWITCH-NM-1CFE to empty slots to increase port (total 8 port taken).
4. Must on all FastEthernet port.
5. Turn on the switch & Zoom out.

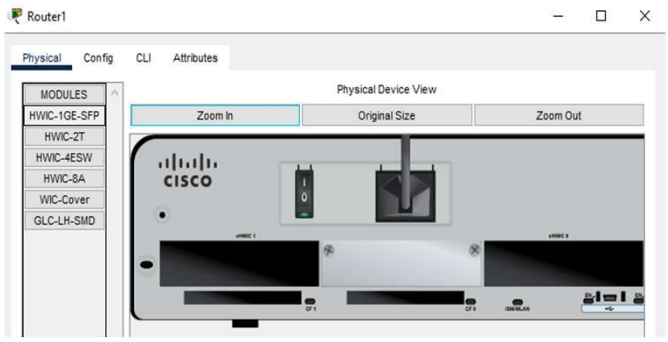
Connection:



Finally we connected all our components with cables.



Router-0:



Setting Router

Router-0:

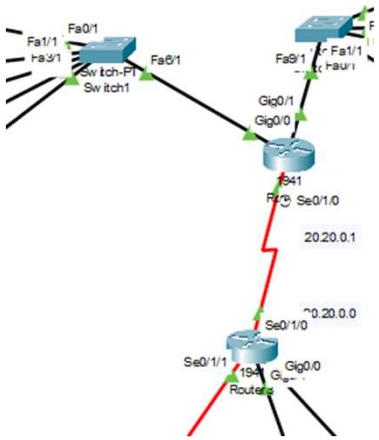
Procedure:

1. Double click on Router.
2. Zoom in.
3. Turn off the router.
4. Drag HWIC-2T to empty slots
5. Turn on the router
6. Zoom out.

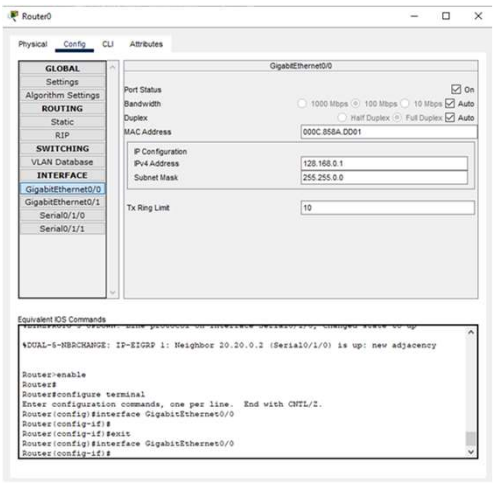
Router-0:

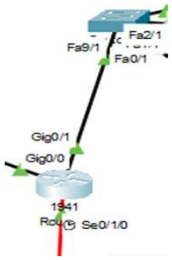
1. Here, I Used **EIGRP** (Enhanced Interior Gateway Routing Protocol).

2. For Router-0 here added 2 Switches (Outer Switch0(1) & Internet Lab Switch1 and 1 Router (Router-3).



Connection Between Switch 0(1) & Router0:





Switch 0(1) config with Router0 at GigabitEthernet0/1.

Procedure:

1. Double click on Router0.

2. Go to config & select GigabitEthernet0/1.

3. At first “ON” the Port Status.

4. Then click on the IP Configuration & set the IP address 128.168.0.1 which is Others room default IP and subnet mask 255.255.0.0 (calculated).

5. Then go to “CLI” for routing

Connection Between Switch 0(1) & Router0:

```
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#exit
Router(config)#router eigrp 1
Router(config-router)#network 1.0.0.0 255.0.0.0
Router(config-router)#network 20.20.0.0 255.0.0.0
Router(config-router)#
Router(config-router)#end
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
```

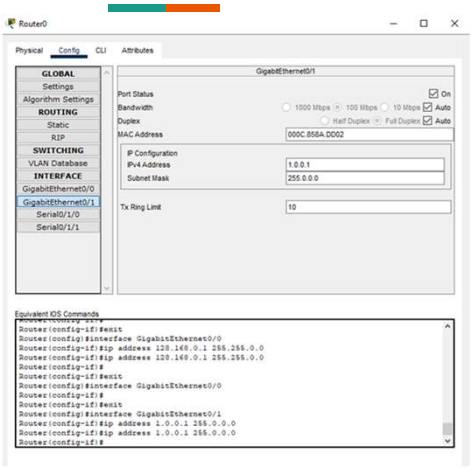
6. Type #exit

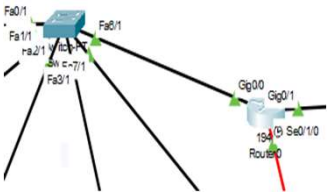
7. Then type #router eigrp 1

8. Then type #network 1.0.0.0 255.0.0.0

9. Next, Type #network 20.20.0.0 255.0.0.0

Connection Between Switch 1 & Router0:





Switch 1 config with Router0 at GigabitEthernet0/0.

Procedure:

1. Double click on Router0.

2. Go to config & select GigabitEthernet0/0.

3. At first “ON” the Port Status.

4. Then click on the IP Configuration & set the IP address 1.0.0.1 which is Others room default IP and subnet mask 255.0.0.0 (calculated).

5. Then go to “CLI” for routing

Connection Between Switch 1 & Router0:

```
Router(config)#interface GigabitEthernet0/0
Router(config-if)#exit
Router(config)#router eigrp 1
Router(config-router)#network 128.168.0.0 255.255.0.0
Router(config-router)#network 20.20.0.0 255.0.0.0
Router(config-router)#
```

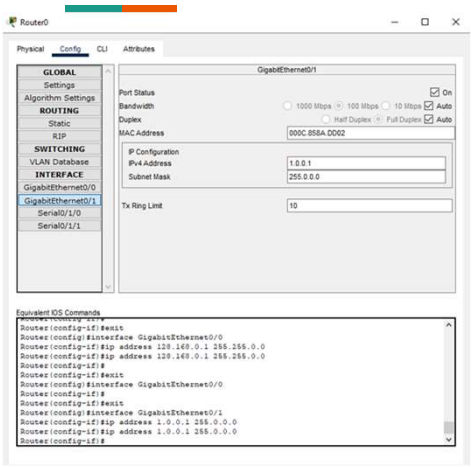
6. Type #exit

7. Then type #router eigrp 1

8. Then type #network 128.168.0.0 255.255.0.0

9. Next,Type #network 20.20.0.0 255.0.0.0

Connection Between Router3 & Router0:



Router3 config with Router0 at Serial0/1/0.

Procedure:

1. Double click on Router0.

2. Go to config & select Serial0/1/0.

3. At first "ON" the Port Status.

4. Then click on the IP Configuration & set the IP address 20.20.0.1 which is Others room default IP and subnet mask 255.0.0.0 (calculated).

5. Then go to "CLI" for routing

Connection Between Router3 & Router0:

```
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#exit
Router(config)#router eigrp 1
Router(config-router)#network 20.20.0.0 255.0.0.0
Router(config-router)#network 10.10.0.0 255.0.0.0
Router(config-router)#
```

6. Type #exit

7. Then type #router eigrp 1

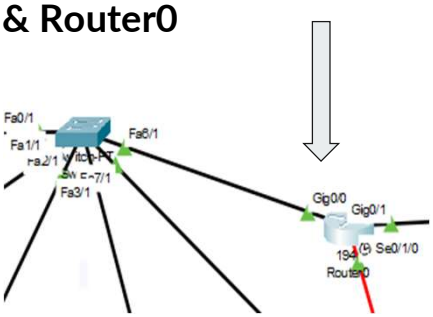
8. Then type #network 20.20.0.0 255.0.0.0

9. Next,Type #network 10.10.0.0 255.0.0.0

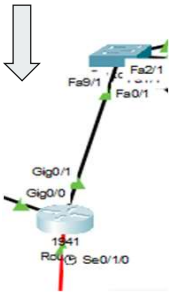
Router-0:

Finally, Router0 connected with switch0(1) (Server Room), switch1 (Internet Lab) and Router3.

Switch1 (Internet Lab) & Router0



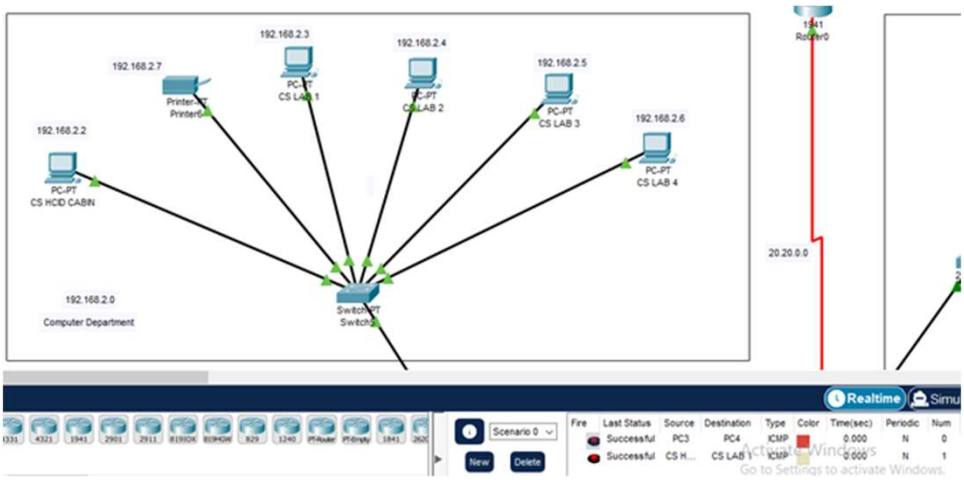
Switch0(1) (Server Room) & Router0



Router3 & Router0:

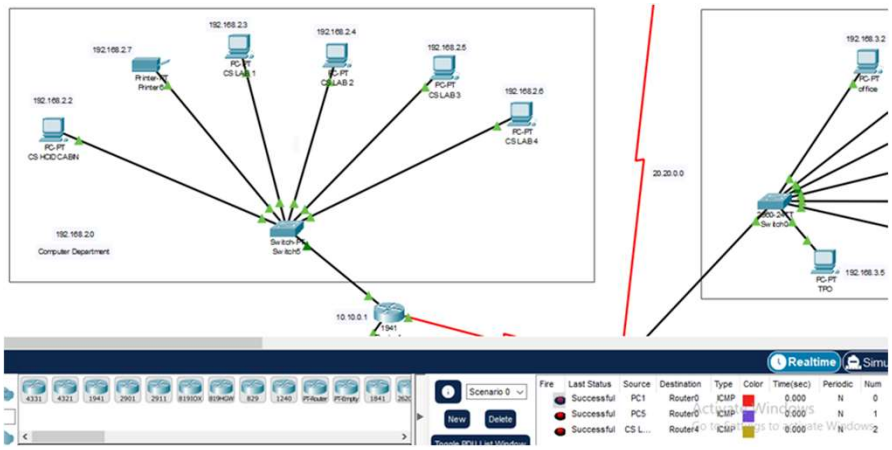
Result:

Computer Department PC to PC packet transfer:



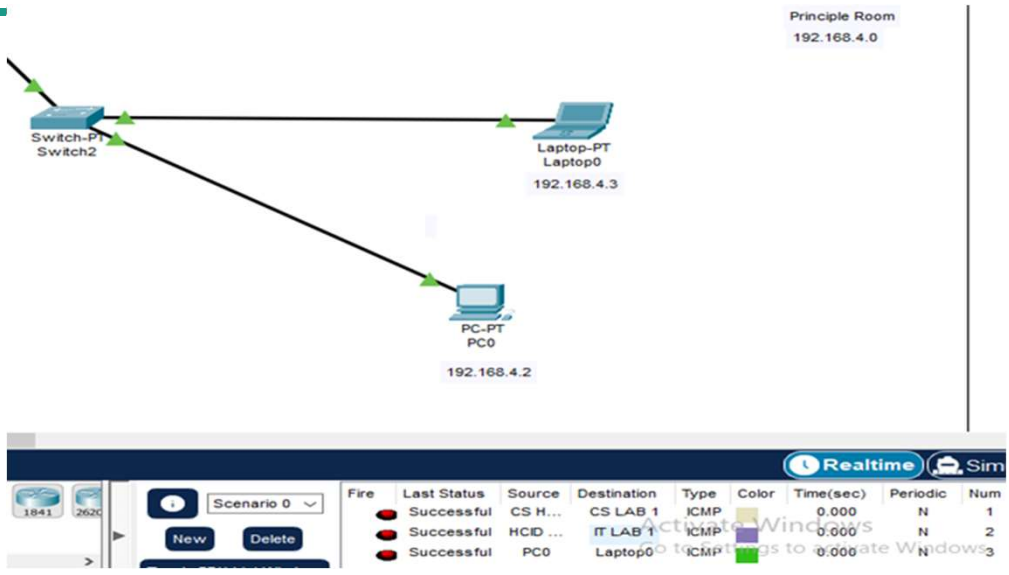
Result:

Computer Department to Router4:



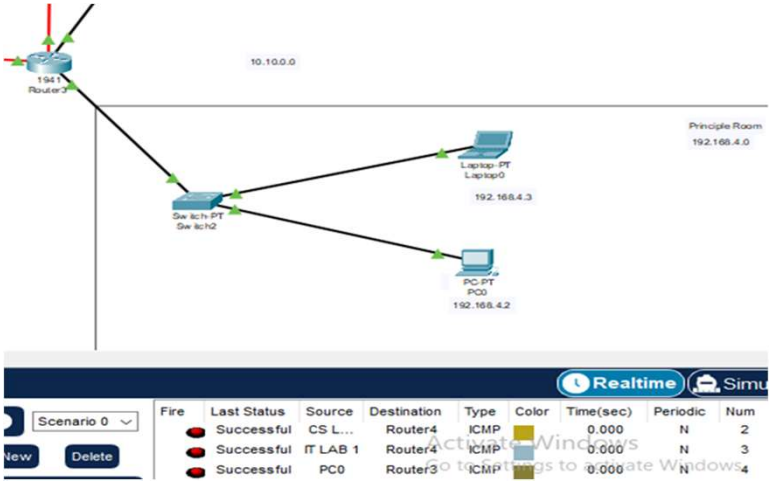
Result:

Principle Room PC to PC packet transfer:



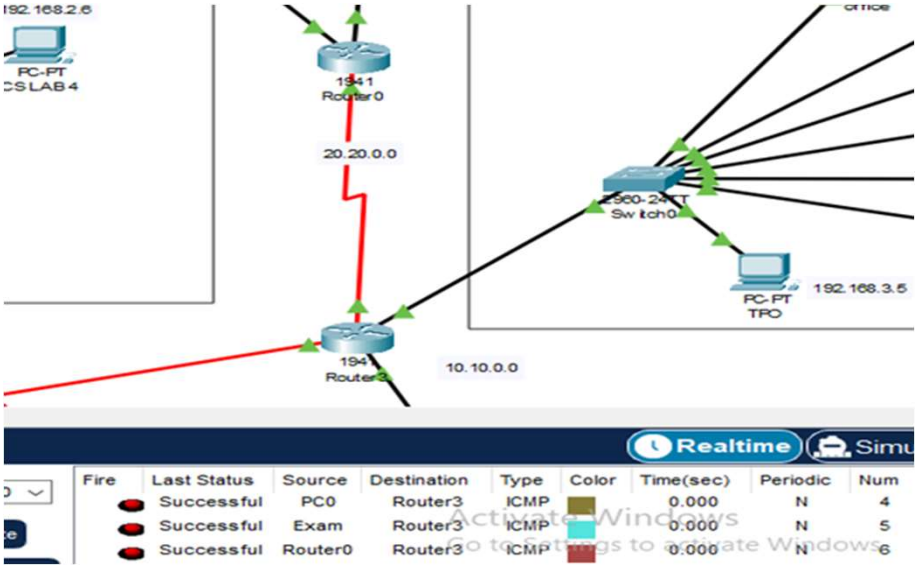
Result:

Principle Room to Router3:



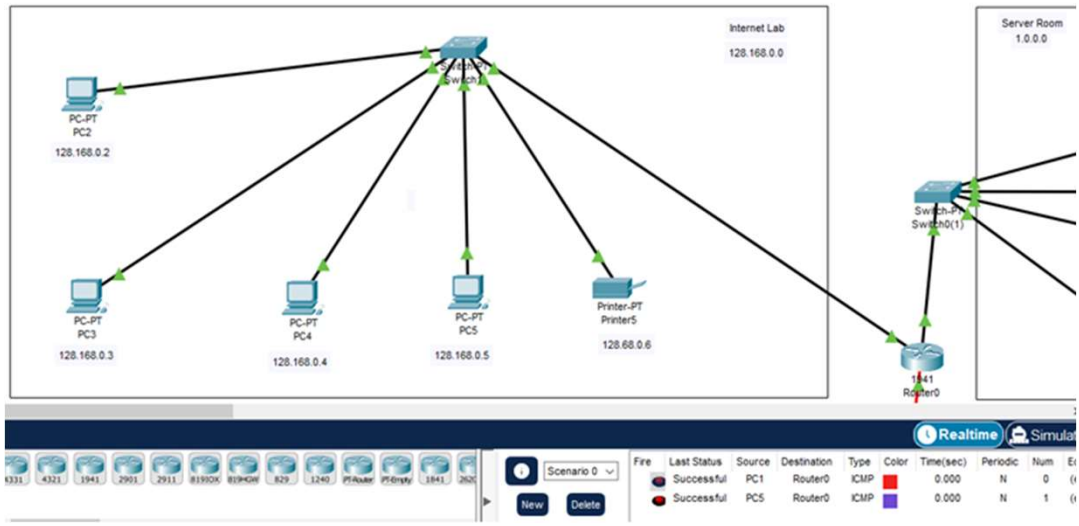
Result:

Router0 to Router3:



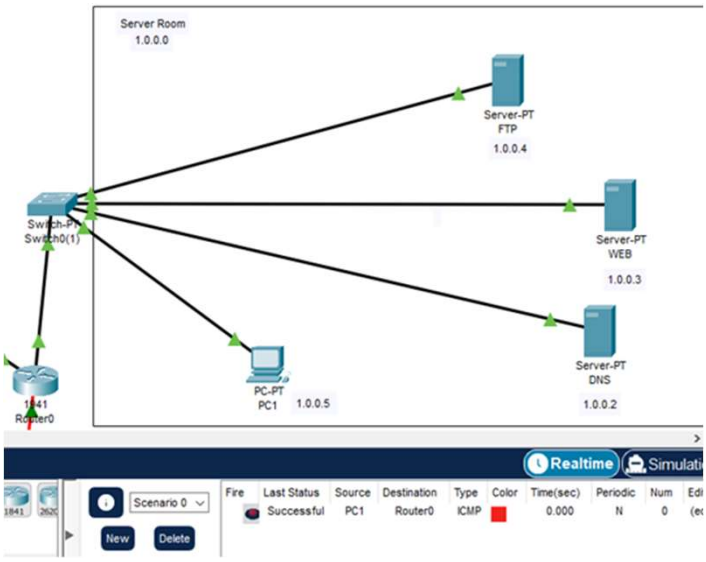
Result:

Switch1 pc to Router0:



Result:

Switch0(1) pc to Router0:



NAME: REZWAN HOSSAIN
ID: 1911253642

Internet Lab

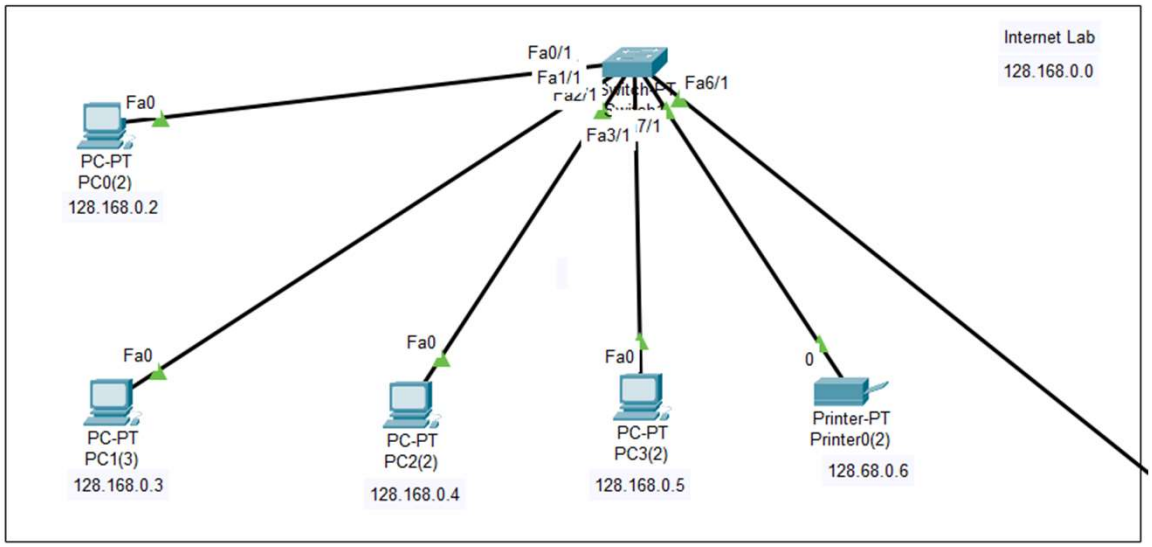


Fig: Network of Internet Lab

IP Addresses:

IP ADDRESSES OF ALL THE COMPONENTS	
PC0	128.168.0.2
PC1	128.168.0.3
PC2	128.168.0.4
PC3	128.168.0.5
Printer	128.168.0.6
Default Gateway	128.168.0.1

IP Addressing and Default Gateway of PC

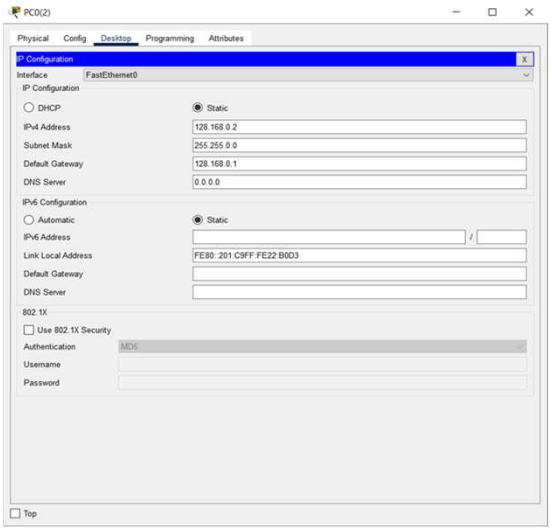


Fig: IP addressing of the components

Procedure:

1. Click on one pc
2. Go to Desktop
3. Click of IP configuration
4. Write the IP address of the pc
5. Generate the Subnet Maask
6. Give a Default Gateway

IP Addressing of Printer

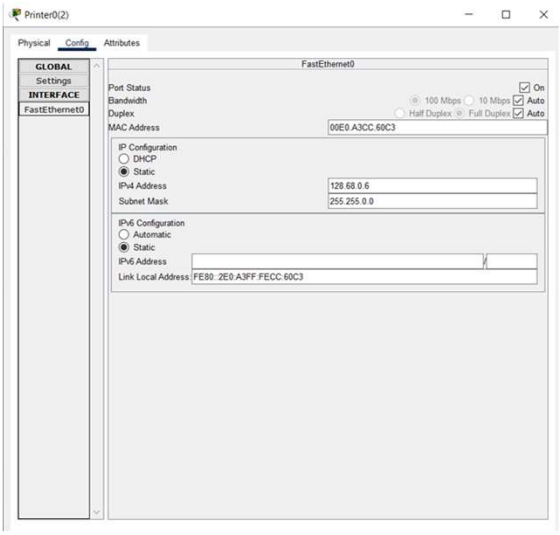


Fig: Default gateway for printer

Procedure:

1. Click on the printer
2. Go to config
3. Click on the FastEthernet0.
4. IP configuration must remain static
5. Give the IP address for the printer
6. Generate the Subnet Maask

Default Gateway for Printer

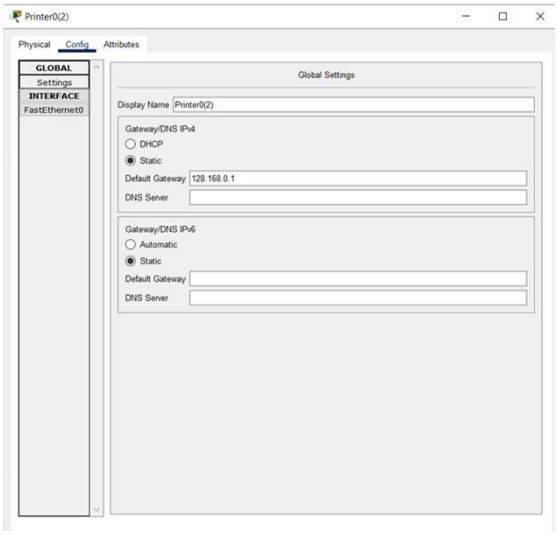


Fig: IP addressing of Printer

Procedure:

1. Click on the printer
2. Go to config
3. Click on the Settings.
4. Provide the IP for the default gateway (IP = 128.168.0.1)

Switch

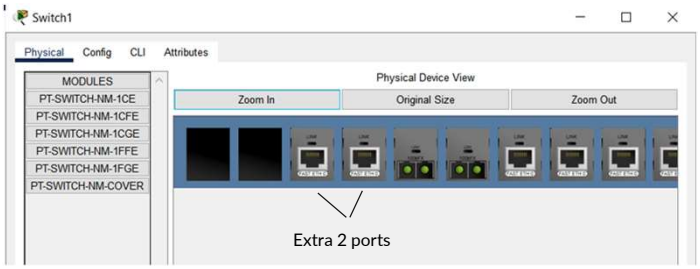


Fig: Ports of switch

Procedure:

1. Click on switch
2. Turn off the switch
3. Drag PT-SWITCH-NM-1CFE to empty slots
4. Turn on the switch

Result

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Successful	PC5	Router0	ICMP		0.000	N	0	(edit)
	Successful	PC3	Router0	ICMP		0.000	N	1	(edit)
	Successful	PC2	Router0	ICMP		0.000	N	2	(edit)

Data packet can easily be sent from internet lab to the other rooms

IT Department

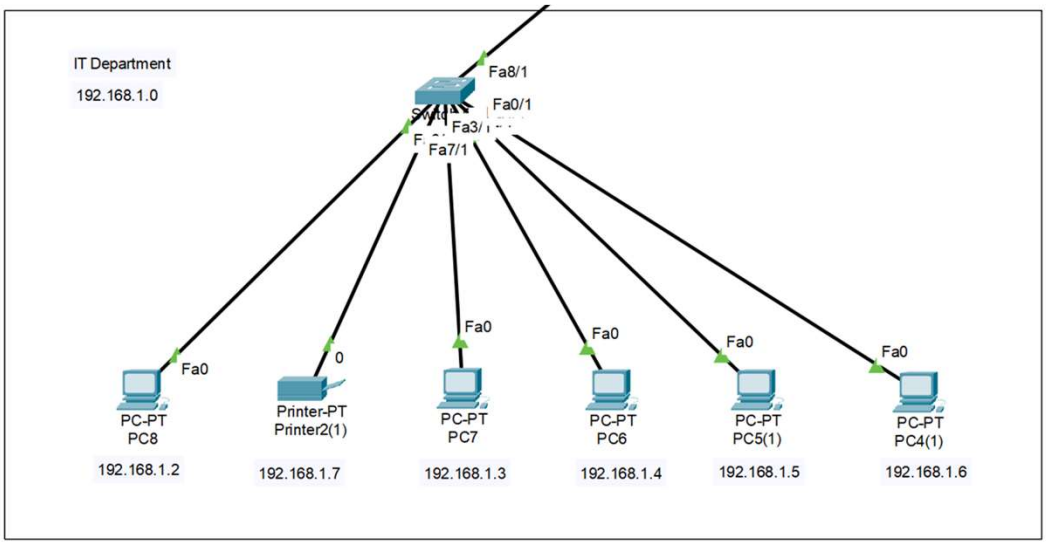


Fig: Network of IT Department

IP Addresses:

IP ADDRESSES OF ALL THE COMPONENTS	
PC0	192.168.1.2
PC1	192.168.1.3
PC2	192.168.1.4
PC3	192.168.1.5
PC4	192.168.1.6
Printer	192.168.1.7
Default Gateway	192.168.1.1

IP Addressing and Default Gateway of PC

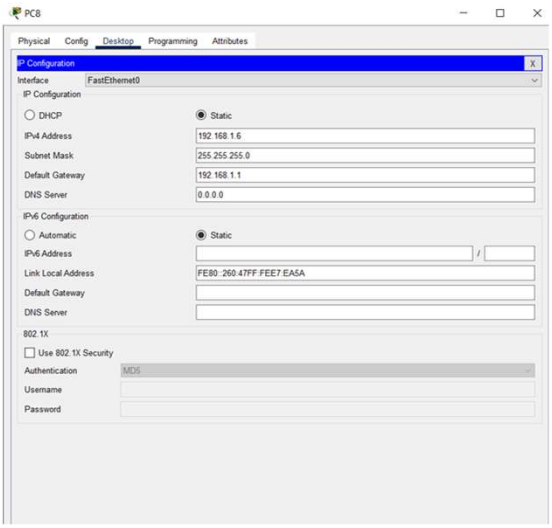


Fig: IP addressing of the components

Procedure:

1. Click on one pc
2. Go to Desktop
3. Click of IP configuration
4. Write the IP address for the pc
5. Generate the Subnet Maask
6. Give a Default Gateway

IP Addressing of Printer

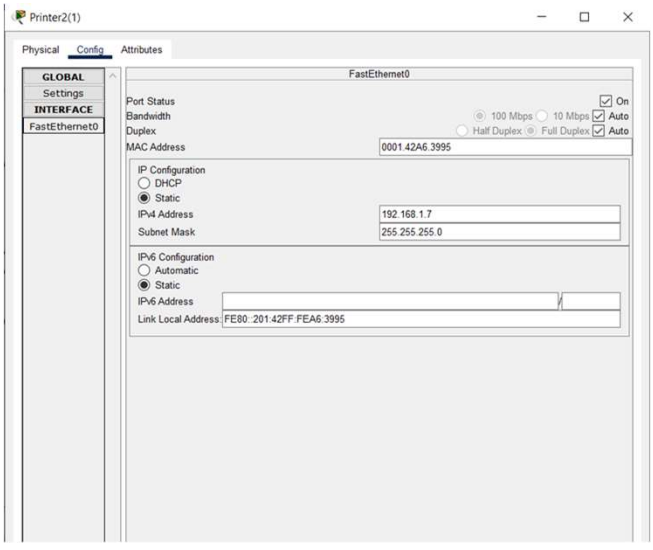


Fig: Default gateway for printer

Procedure:

1. Click on the printer
2. Go to config
3. Click on the FastEthernet0.
4. IP configuration must remain static
5. Give the IP address for the printer
6. Generate the Subnet Maask

Default Gateway for Printer

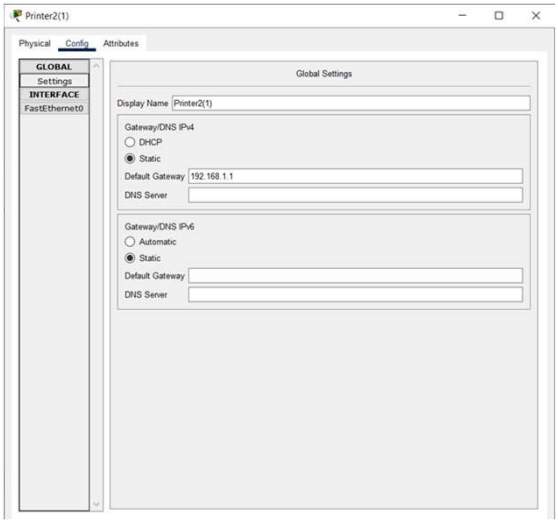


Fig: IP addressing of Printer

Procedure:

1. Click on the printer
2. Go to config
3. Click on the Settings.
4. Provide the IP for default gateway (IP = 192.168.1.1)

Switch

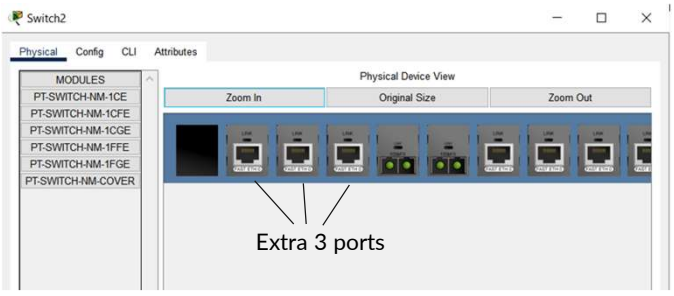


Fig: Ports of switch

Procedure:

1. Click on switch
2. Turn off the switch
3. Drag PT-SWITCH-NM-1CFE to empty slots
4. Turn on the switch

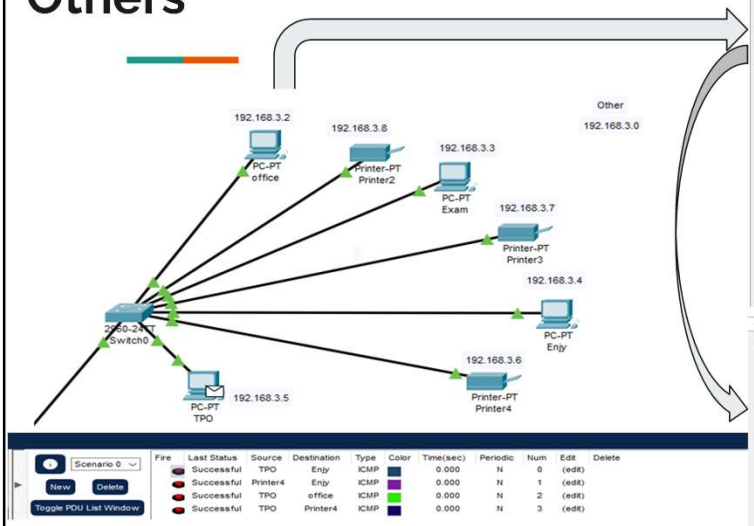
Result

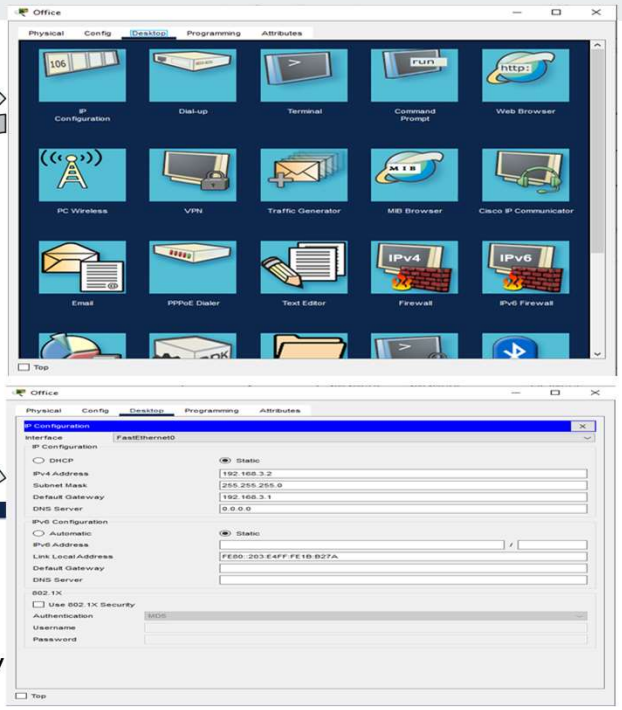
Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Successful	IT LAB 2	Router4	ICMP		0.000	N	0	(edit)
	Successful	HCID ...	Router4	ICMP		0.000	N	1	(edit)
	Successful	IT LAB 3	Router4	ICMP		0.000	N	2	(edit)

Data packet can easily be sent from IT department to the other rooms

NAME: MD NASER BIN HOSSAIN
ID: 1912620042

Others





Packets for own group TPO(PC) to Enjy(PC),Printer4 to Enjy(PC),TPO(PC) to Office(PC)&TPO to Printer4 successfully sended.

Others

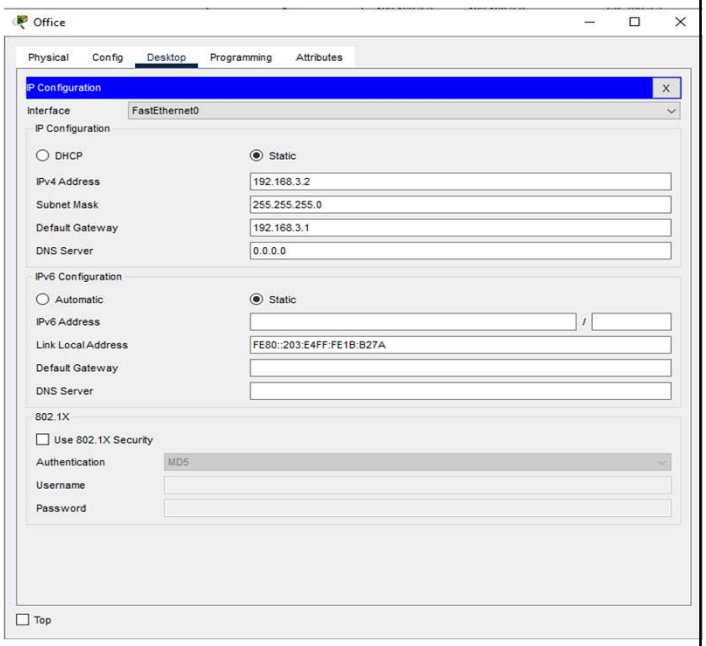
Here we use 4 PCs and 3 Printers.

❖ IP ADDRESSES OF ALL THE COMPONENTS	
Office	192.168.3.2
Exam	192.168.3.3
TPO	192.168.3.5
Enjy	192.168.3.4
Printer2	192.168.3.8
Printer3	192.168.3.7
Printer4	192.168.3.6
Default Gateway	192.168.3.1

IP Addressing For PC

Procedure:

1. Click on one pc
2. Go to Desktop
3. Write the ip address of the pc
4. Keep IP Configuration Static.
5. Generate the Subnet Mask
6. Give a Default Gateway



IP Addressing For Printer

Procedure:

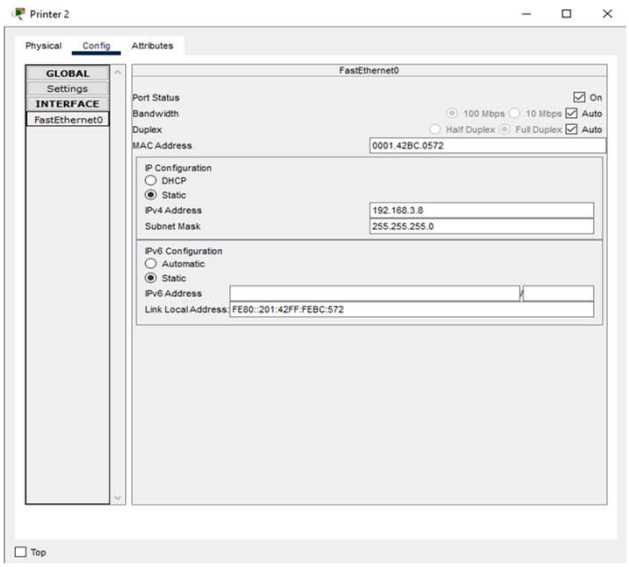
1. Double click on the printer.

2. Then click on the FastEthernet0 and Turn on the Port Status.

3. IP Configuration in Static.

4. IP address: 192.168.3.8

5. Subnet Mask: 255.255.255.0



Printer

Procedure:

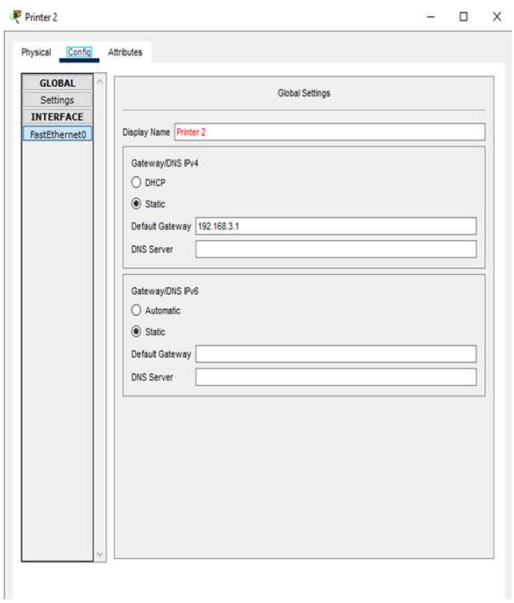
1. Double click on the Printer.

2. Then click on the config.

3. Then on settings.

4. Gateway/DNS IPV4 in Static.

5. Default Gateway: 192.168.3.1



Routing

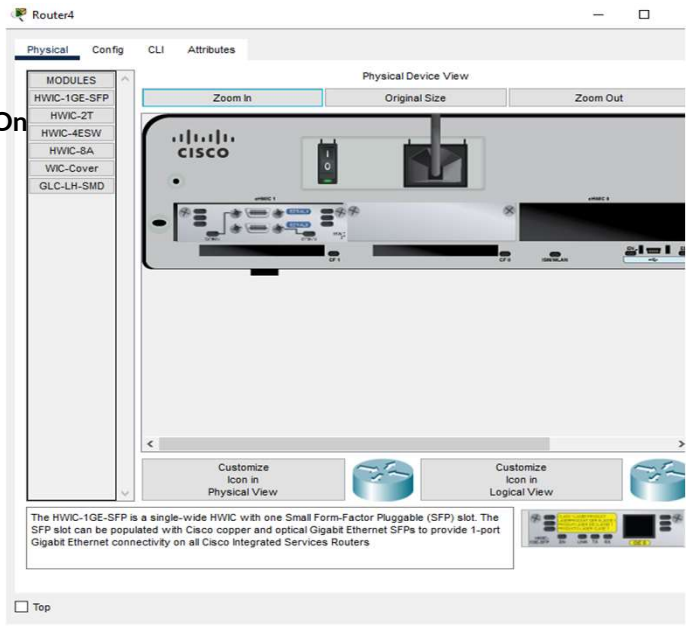
Router 4

Procedure:

1. Click on Router
2. Turn off the switch
3. Drag HWIC-2T to empty slots
4. Turn on the switch

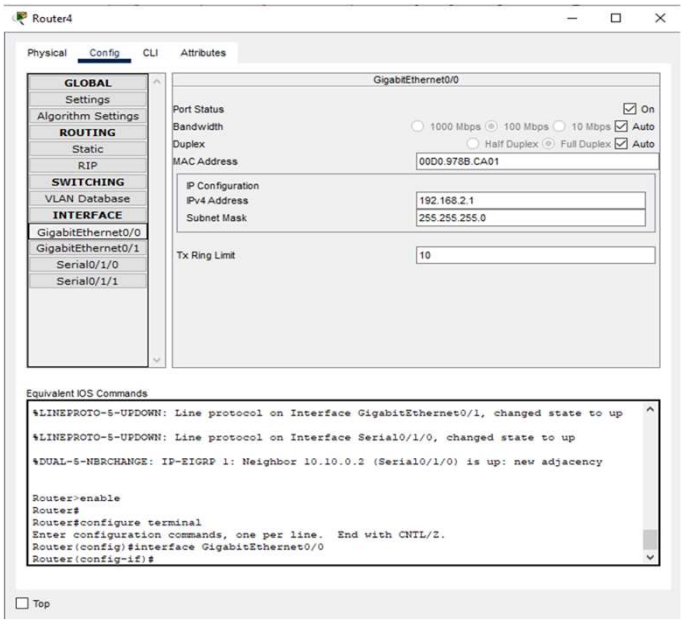
1. Switch Off

2. Switch On



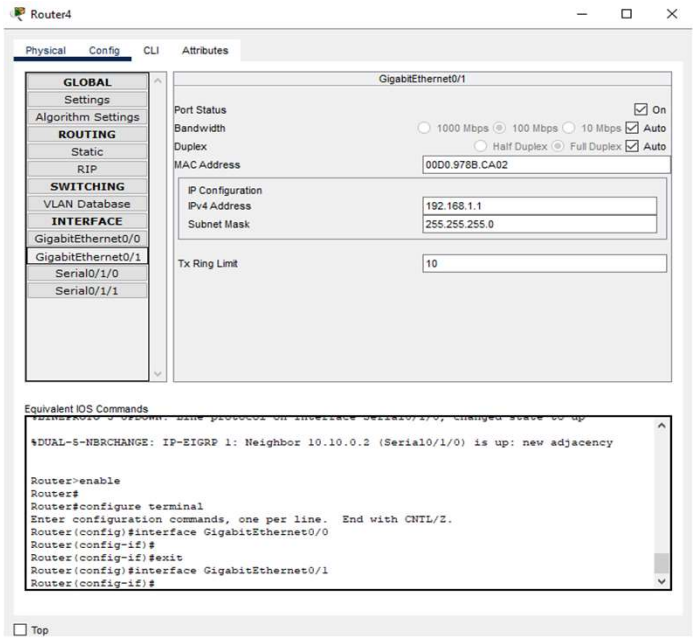
Router 4

1. Click on Config and turn on the Port Status.
2. Click on GigabitEthernet0/0 .
3. Give IPv4 Addressing 192.168.2.1.
4. Subnet Mask 255.255.255.0.



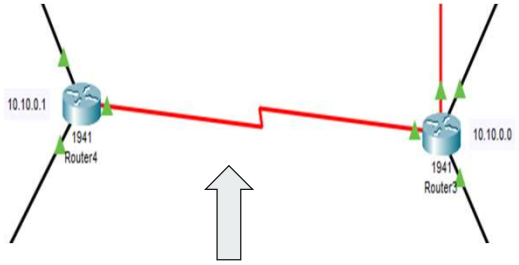
Router 4

1. Click on Config
2. Click on GigabitEthernet0/1
3. Give IPv4 Addressing 192.168.1.1
4. Subnet Mask 255.255.255.0

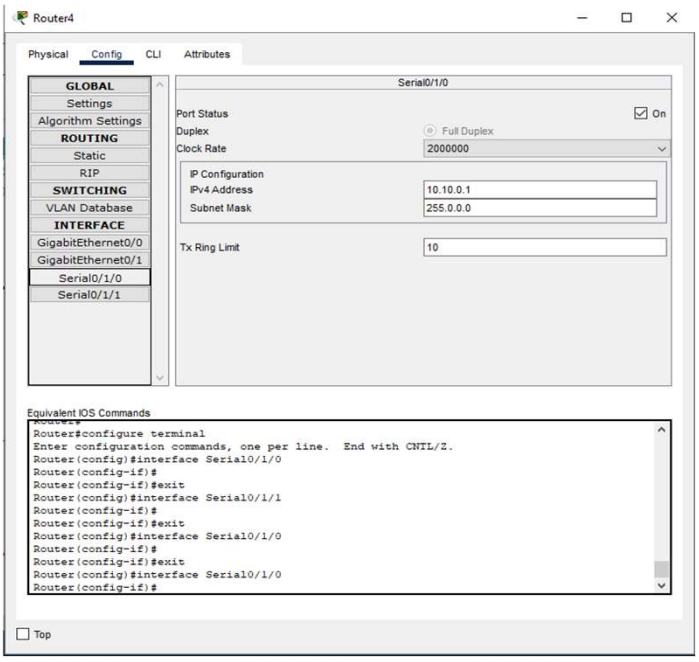


Router 4

1. Click on Config
2. Click on Serial0/1/0
3. Give IPv4 Addressing 10.10.0.1
4. Subnet Mask 255.0.0.0
5. Finally connected the router4 to router3 .



Connection between router 3 and router 4



Router 4

1. Use here EIGRP(Enhanced Interior Gateway Routing Protocol) .
2. EIGRP enables routers to exchange data more efficiently than earlier network protocols.
3. Click on GigabitEthernet0/0
4. Then, Click on CLI .
5. Type #exit
6. Then type #router eigrp 1
7. Then type #network 192.168.2.0 255.255.255.0
8. Next,Type #network 192.168.1.0 255.255.255.0

```
Router(config)#interface GigabitEthernet0/0
Router(config-if)#exit
Router(config)#router eigrp 1
Router(config-router)#network 192.168.2.0 255.255.255.0
Router(config-router)#network 10.10.0.0 255.0.0.0
Router(config-router)#
Router(config-router)#end
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
```

Router 4

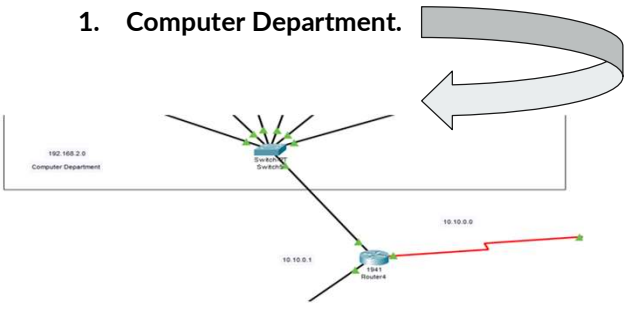
1. Use here EIGRP(Enhanced Interior Gateway Routing Protocol) for the routing.
2. Click on GigabitEthernet0/1
3. Then, Click on CLI .
4. Type #exit
5. Then type #router eigrp 1
6. Then type #network 192.168.1.0 255.255.255.0
7. Next,Type #network 10.10.0.0 255.255.255.0

```
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#exit
Router(config)#router eigrp 1
Router(config-router)#network 192.168.1.0 255.255.255.0
Router(config-router)#network 10.10.0.0 255.0.0.0
Router(config-router)#
Router(config-router)#end
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
```

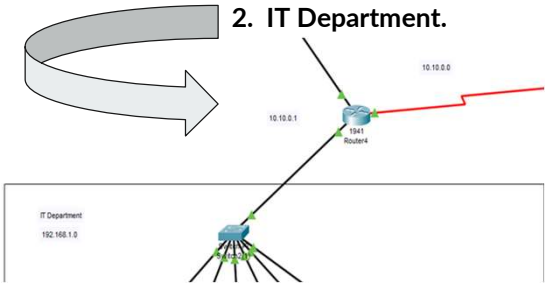
Router 4

Next, I connected the router-4 with switch-0 for the IT Department and switch-1 for the Computer Department.

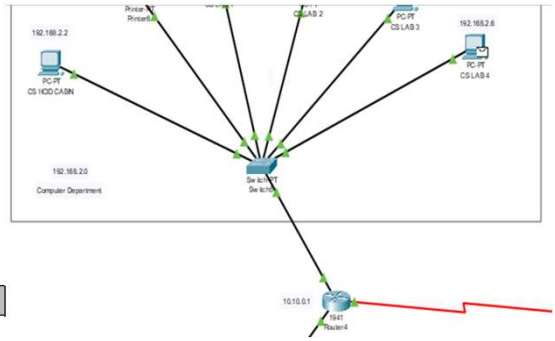
1. Computer Department.



2. IT Department.



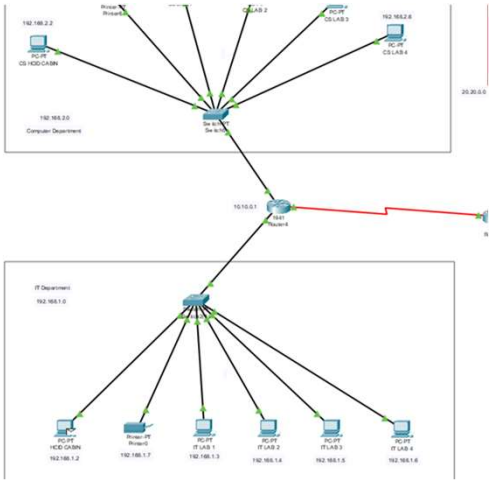
Result



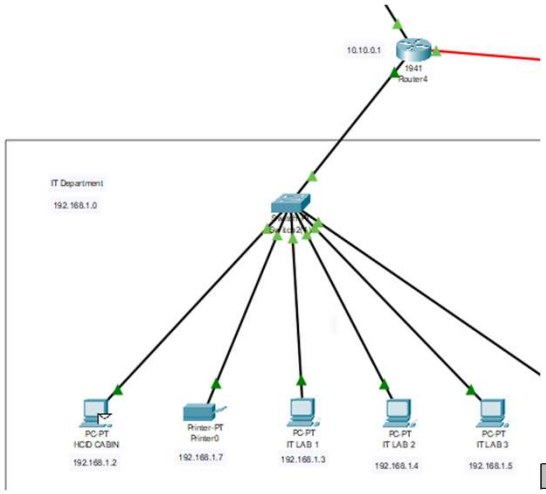
Computer Department to Router-04

Router-04 to Router-03

Result



Computer Department to IT Department



IT Department to Router-04

Result

Finally, We measured the the router to router and Department to Department packets Successfully.

Name: Suria Yesmin Enath
ID: 1921413042

Server Room

- Use here 1 PC and 3 Server.
- 3 Servers are - FTP,DNS and, WEB.
- Servers and PC are connected to the switch because they can not direct configure to the router.
- Uses different IP addresses for Server and PC. Here network ID 1.0.0.0 and default IP address 1.0.0.1.

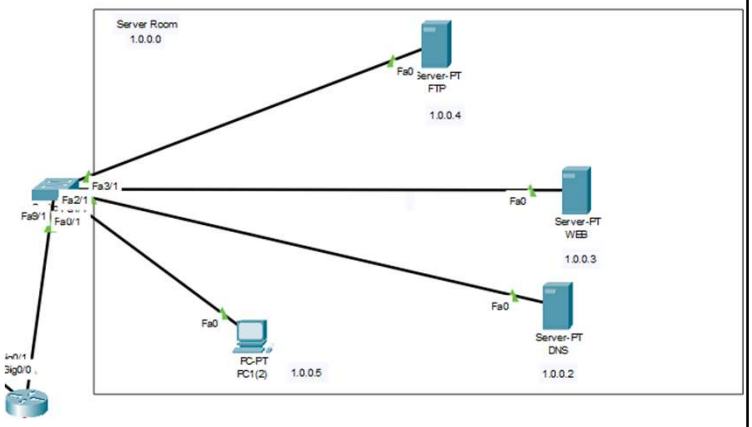


Fig: Server room Implementation

Server Room

FTP Server:

For FTP Server we use here:

IP Address	1.0.0.4
Subnet Mask	255.0.0.0
Default Gateway	1.0.0.1
DNS Server	1.0.0.2

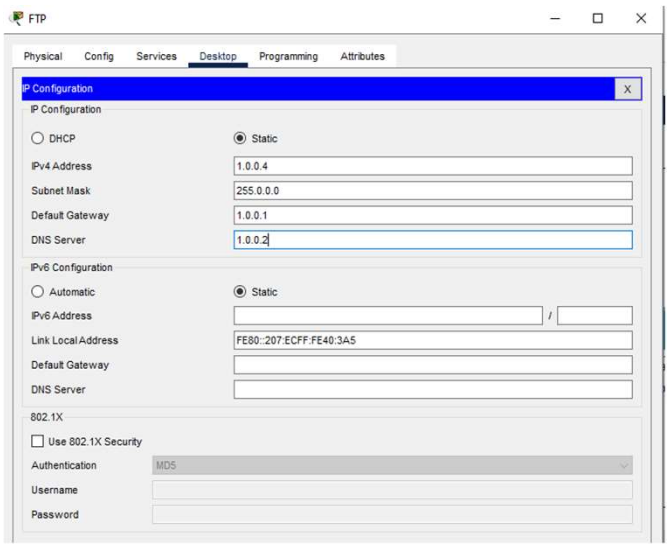


Fig: IP addressing for FTP server

Server Room

WEB Server:

For WEB Server we use here:

IP Address	1.0.0.3
Subnet Mask	255.0.0.0
Default Gateway	1.0.0.1
DNS Server	1.0.0.2

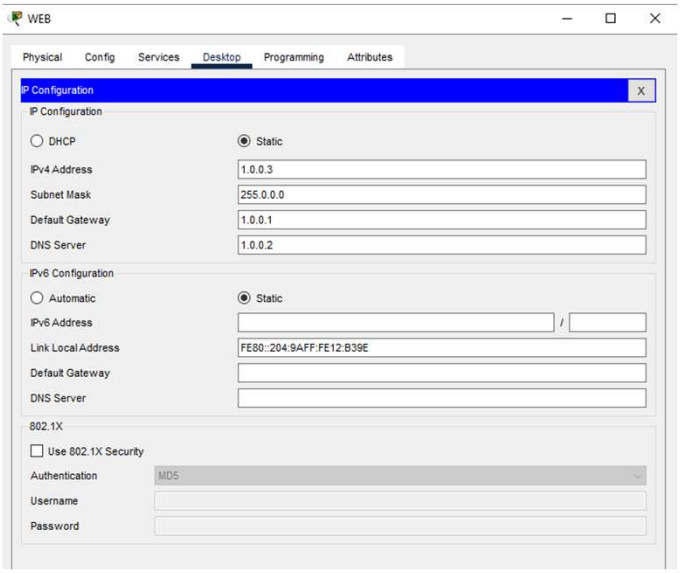


Fig: IP addressing for WEB server

Server Room

DNS Server:

For DNS Server we use here:

IP Address	1.0.0.2
Subnet Mask	255.0.0.0
Default Gateway	1.0.0.1
DNS Server	1.0.0.2

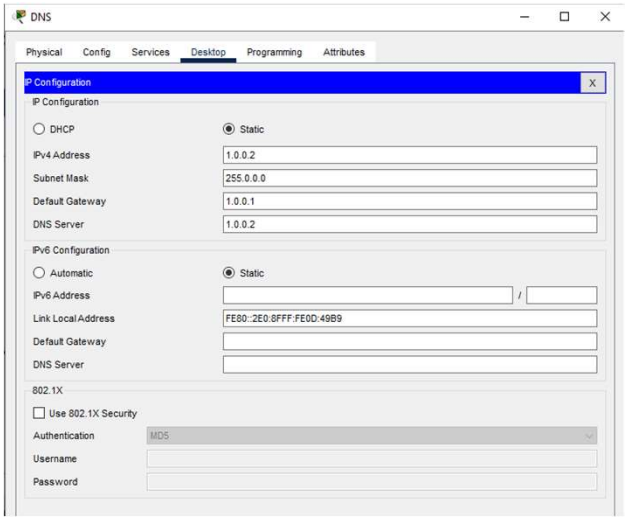


Fig: IP addressing for DNS server

Routing

- Use here **EIGRP**(Enhanced Interior Gateway Routing Protocol), Because in eigrp we don't need to use any area easier than other routing.
- For Router-3 here added 2 Switches and 2 Router (Router 0 and Router 4).

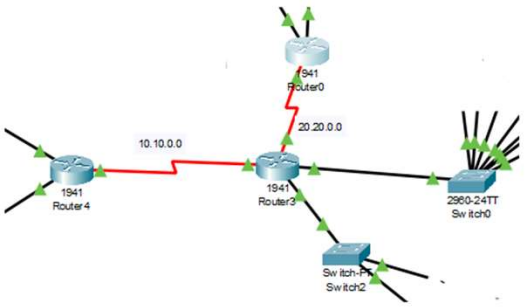


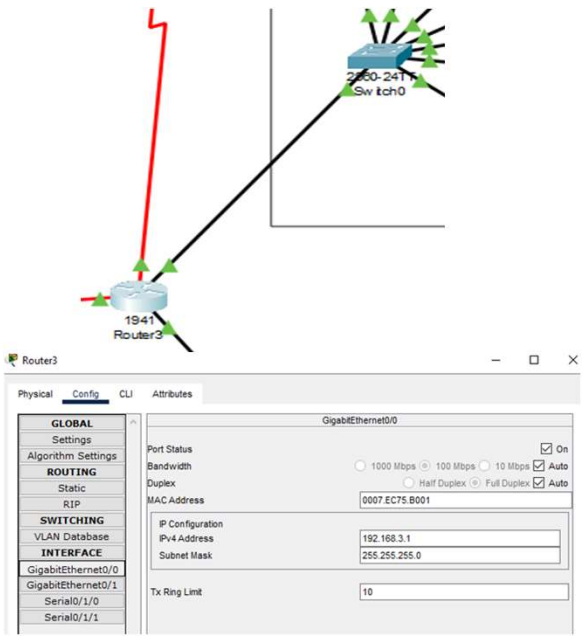
Fig: Routing for Router 3

Routing

Router-3

Switch 0:

- Switch 0 config with router-3 at GigabitEthernet0/0.
- At first "ON" the Port Status.
- Then done the IP Configuration. Here set the IP address 192.168.3.1 which is Others room default IP and subnet mask.
- Then go to "CLI" for routing .



Routing

Procedure:

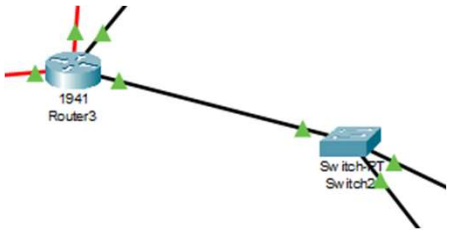
- #exit
- #router eigrp 1
- #network 192.168.3.0 (Network ID) 255.255.255.0
- #network 10.10.0.0 (Network ID) 255.0.0.0

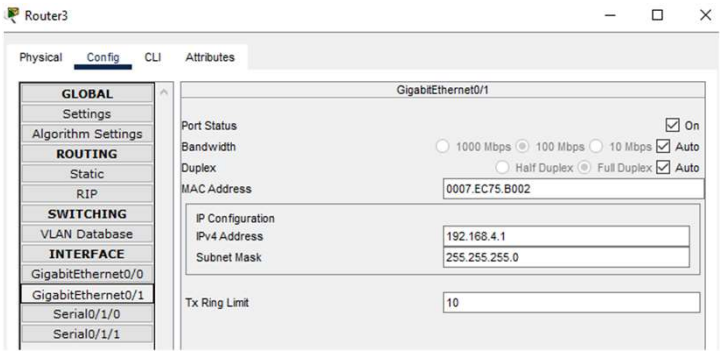
```
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0
Router(config-if)#exit
Router(config)#router eigrp 1
Router(config-router)#network 192.168.3.0 255.255.255.0
Router(config-router)#network 10.10.0.0 255.0.0.0
Router(config-router)#
Router(config-router)#end
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
```

Routing

Switch 2:

- Switch 2 config with router-3 at GigabitEthernet0/1.
- At first “ON” the Port Status.
- Then done the IP Configuration. Here set the IP address 192.168.4.1 which is Principle room default IP and subnet mask.
- Then go to “CLI” for routing .





Routing

Procedure:

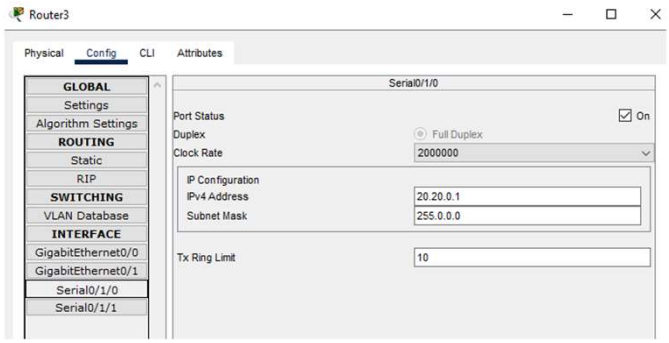
- #exit
- #router eigrp 1
- #network 192.168.4.0 (Network ID) 255.255.255.0
- #network [illegible]

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface GigabitEthernet0/1
Router(config-if)#exit
Router(config)#router eigrp  1
Router(config-router)#network 192.168.4.0 255.255.255.0
Router(config-router)#network 10.10.0.0 255.0.0.0
Router(config-router)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to down
```

Routing

Router 0:

- Router-0 config with router-3 at Serial 0/1/0.
- At first “ON” the Port Status.
- Then done the IP Configuration. Here set the IP address 20.20.0.1 and subnet mask 255.0.0.0.
- Then go to “CLI” for routing .



Routing

Procedure:

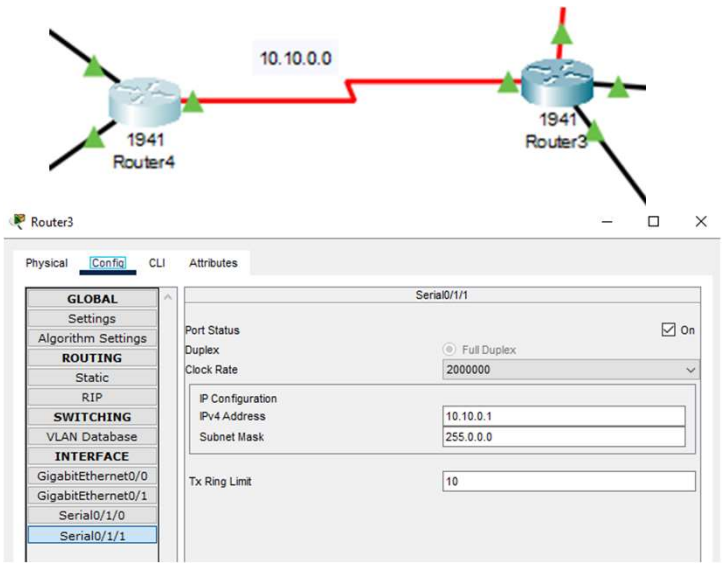
- #exit
- #router eigrp 1
- #network 20.20.0.0 (Network ID) 255.0.0.0
- #network 10.10.0.0 (Network ID) 255.0.0.0

```
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#exit
Router(config)#router eigrp 1
Router(config-router)#network 20.20.0.0 255.0.0.0
Router(config-router)#network 10.10.0.0 255.0.0.0
Router(config-router)#
Router(config-router)#end
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
```

Routing

Router 4:

- Router-4 config with router-3 at Serial 0/1/1.
- At first “ON” the Port Status.
- Then done the IP Configuration. Here set the IP address 10.10.0.1 and subnet mask 255.0.0.0.
- Then go to “CLI” for routing .



Routing

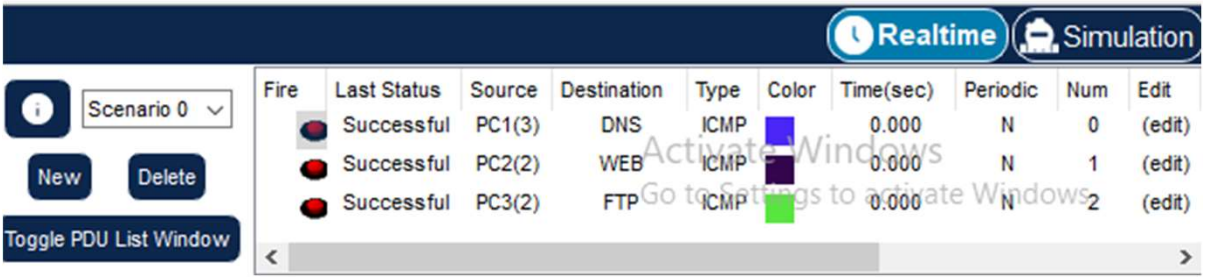
Procedure:

- #exit
- #router eigrp 1
- #network 10.10.0.0 (Network ID) 255.0.0.0
- #network 20.20.0.0 (Network ID) 255.0.0.0

```
Router(config-if)#exit
Router(config)#interface Serial0/1/1
Router(config-if)#exit
Router(config)#router eigrp 1
Router(config-router)#network 10.10.0.0 255.0.0.0
Router(config-router)#network 20.20.0.0 255.0.0.0
Router(config-router)#
Router(config-router)#end
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
```

Result

When we send the packets from different room for three server it shows successful . So we successfully build the network.



Thank You