CSE3052 - INFORMATION SECURITY MANAGEMENT

DIGITAL ASSIGNMENT-4

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Experiment-7

TITLE:

Dynamic NAT

AIM:

To implement Dynamic NAT

PROCEDURE:

Dynamic NAT

Procedure:

1. Select 3PCs, 2 Switches, 2 Routers and 1 server.

2. Connect 3 PCs to a router with a switch in between them. and connect the server to the another router with a switch.

3. Configure the PCs with ip configurations 192.168.0.1 to PC0, 192.168.0.2 to PC1, 192.168.0.3 to PC2. and 192.168.0.100 as gateway.

4. Set the IP configuration of server as 20.0.0.1 and the gateway with ip address 20.0.0.100.

5. Set both the routers in serial and connect them with Se0/2/0 ports.

6. Set the ip addr of the se 0/2/0 conn^n in router with 11.1.1.1 and Gig 0/0 connect^n with 192.168.0.100 ip address. of Router 0.

7. Similarly set se0/2/0 connct^n with 11.1.1.2 and Gig 0/0 connect^n with 20.0.0.100 IP.

8. Implement Dynamic NAT.

9. We The message can be successfully passed from PC0 to server, PC1 to server and also PC2 to server.

TOPOLOGY
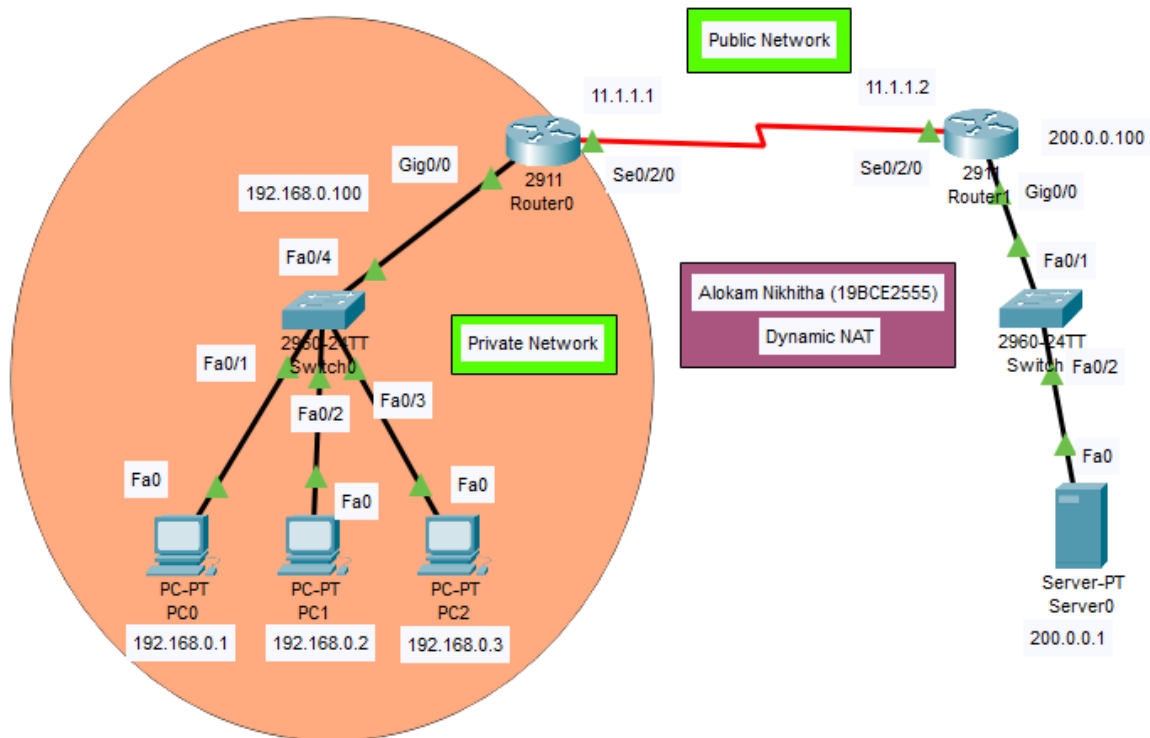
PC Configuration

PC1

Physical | Config | **Desktop** | Programming | Attributes

IP Configuration | X

Interface: FastEthernet0

IP Configuration

○ DHCP ● Static

IP Address: 192.168.0.2

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.0.100

DNS Server: 0.0.0.0

IPv6 Configuration

○ DHCP ○ Auto Config ● Static

IPv6 Address: _____ / _____

Link Local Address: FE80::230:F2FF:FE88:99CE

IPv6 Gateway: _____

IPv6 DNS Server: _____

802.1X

☐ Use 802.1X Security

☐ Top

PC2

Physical | Config | **Desktop** | Programming | Attributes

IP Configuration | X

Interface: FastEthernet0

IP Configuration

○ DHCP ● Static

IP Address: 192.168.0.3

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.0.100

DNS Server: 0.0.0.0

IPv6 Configuration

○ DHCP ○ Auto Config ● Static

IPv6 Address: _____ / _____

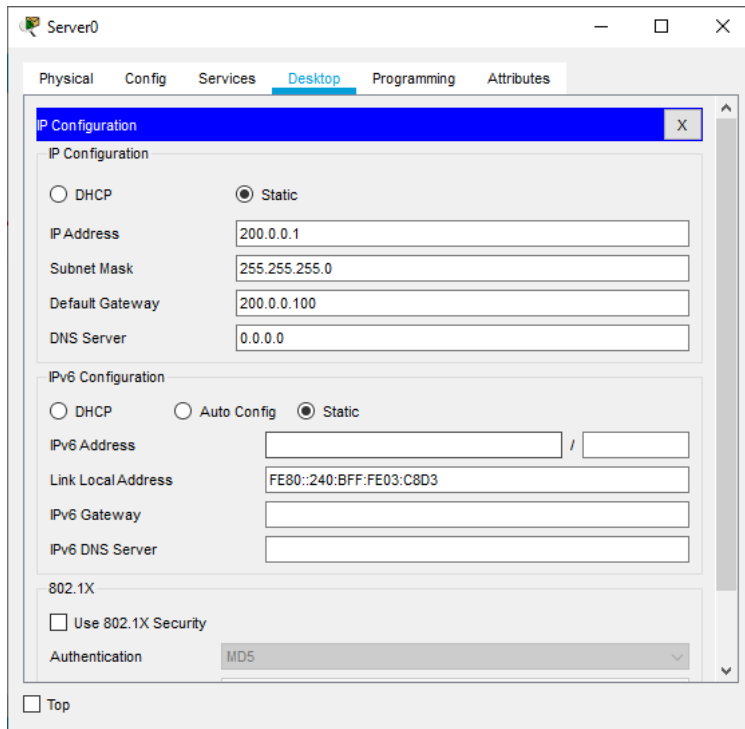Link Local Address: FE80::20C:CFFF:FE95:EDC7

IPv6 Gateway: _____

IPv6 DNS Server: _____

802.1X

☐ Use 802.1X Security

☐ Top

Server Configuration

Router Configuration
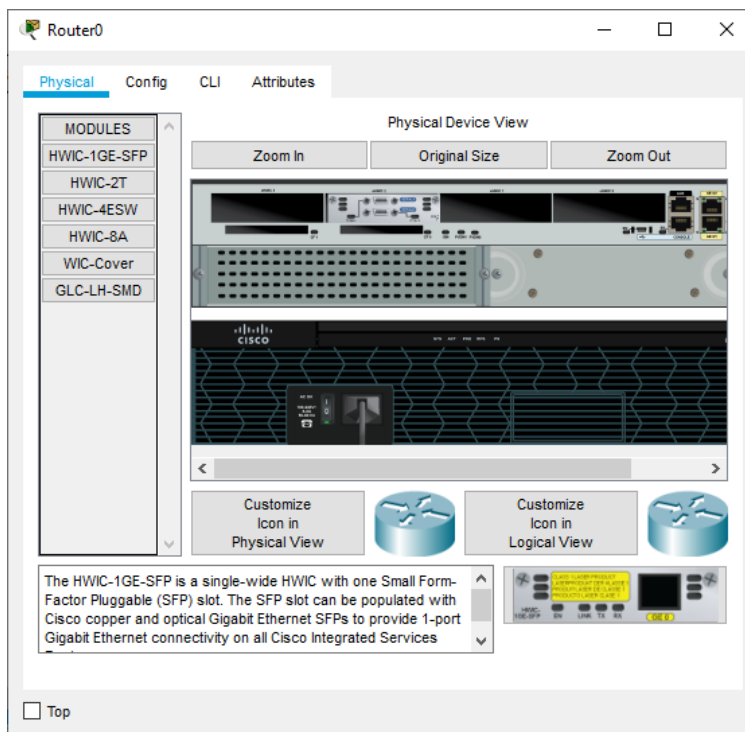
Changing it to serial connection

Router0 — Serial0/2/0 Configuration

Physical	Config	CLI	Attributes

GLOBAL
- Settings
- Algorithm Settings

ROUTING
- Static
- RIP

SWITCHING
- VLAN Database

INTERFACE
- GigabitEthernet0/0
- GigabitEthernet0/1
- GigabitEthernet0/2
- Serial0/2/0
- Serial0/2/1

Serial0/2/0

Port Status — ☑ On
Duplex — ⦿ Full Duplex
Clock Rate — 2000000

IP Configuration
IP Address — 11.1.1.1
Subnet Mask — 255.0.0.0

Tx Ring Limit — 10

Equivalent IOS Commands

```
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/2/0
Router(config-if)#ip address 11.1.1.1 255.0.0.0
Router(config-if)#ip address 11.1.1.1 255.0.0.0
Router(config-if)#no shutdown
Router(config-if)#
```

☐ Top

Router0 — GigabitEthernet0/0 Configuration

Physical	Config	CLI	Attributes

GLOBAL
- Settings
- Algorithm Settings

ROUTING
- Static
- RIP

SWITCHING
- VLAN Database

INTERFACE
- GigabitEthernet0/0
- GigabitEthernet0/1
- GigabitEthernet0/2
- Serial0/2/0
- Serial0/2/1

GigabitEthernet0/0

Port Status — ☑ On
Bandwidth — ○ 1000 Mbps ⦿ 100 Mbps ○ 10 Mbps ☑ Auto
Duplex — ○ Half Duplex ⦿ Full Duplex ☑ Auto
MAC Address — 0060.476B.EA01

IP Configuration
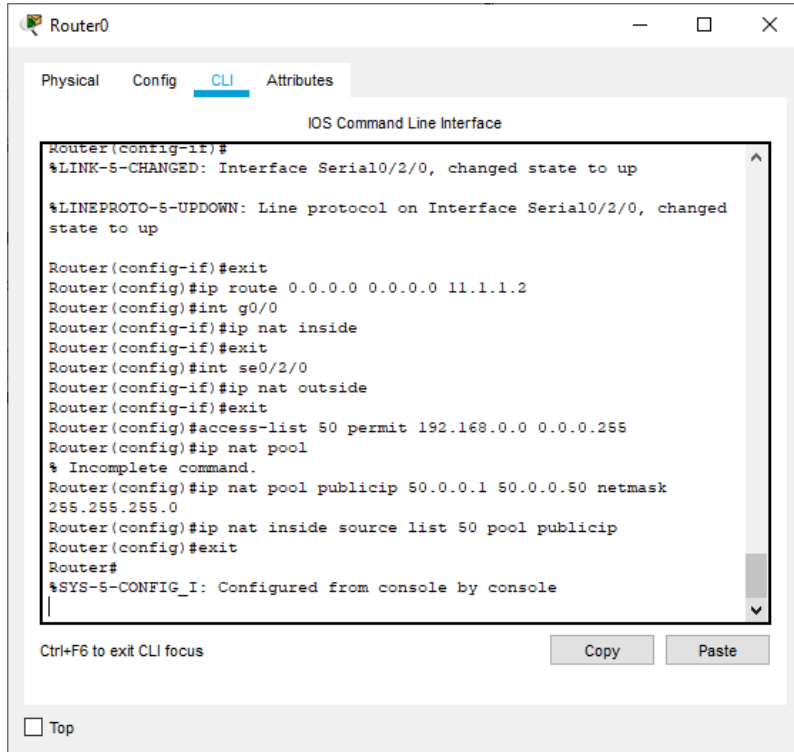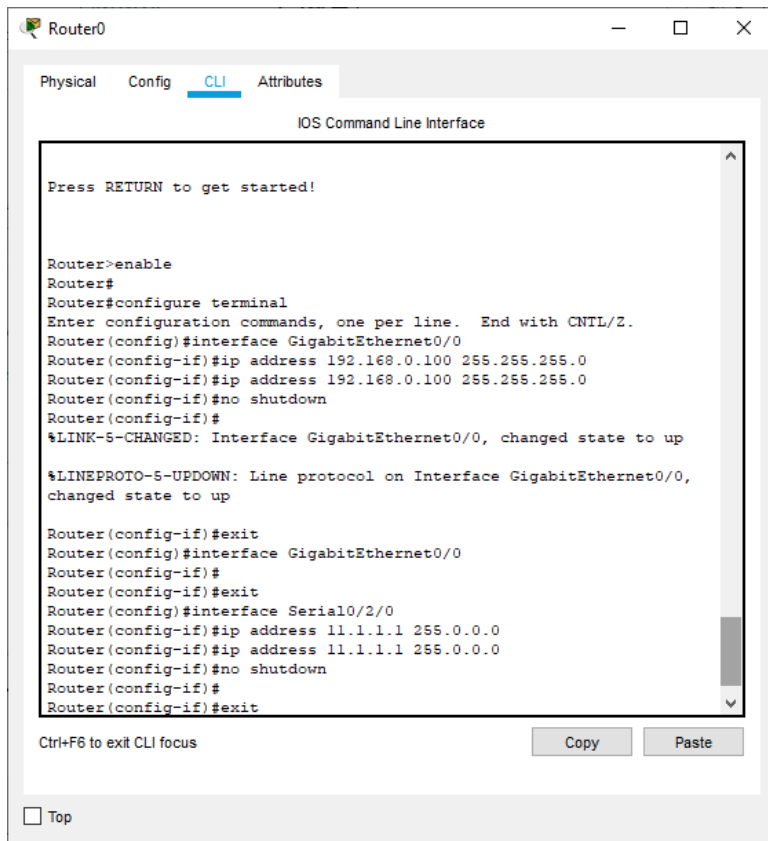IP Address — 192.168.0.100
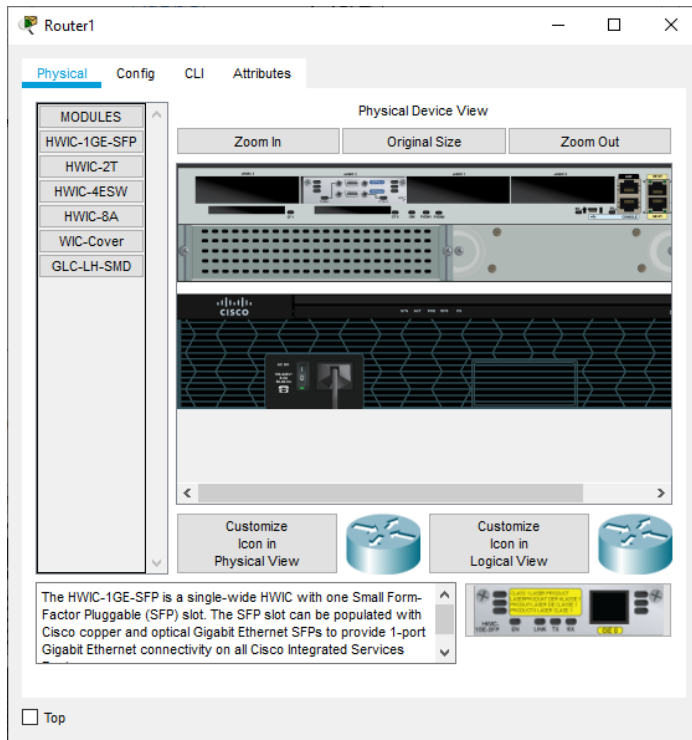Subnet Mask — 255.255.255.0

Tx Ring Limit — 10

Equivalent IOS Commands

```
Router(config-if)#ip address 11.1.1.1 255.0.0.0
Router(config-if)#ip address 11.1.1.1 255.0.0.0
Router(config-if)#no shutdown
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0
Router(config-if)#
```
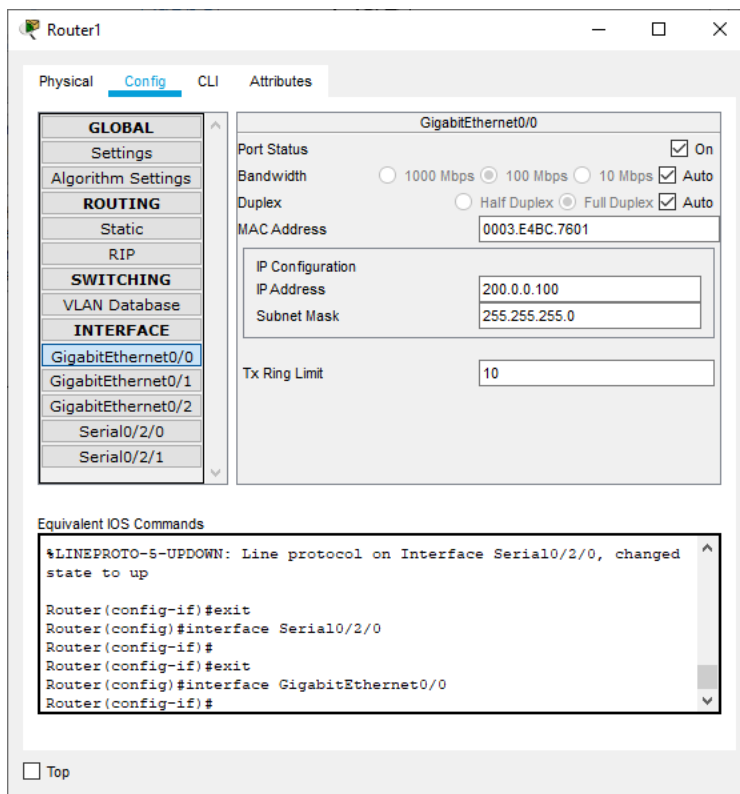
☐ Top

Router0 — IOS Command Line Interface

Physical | Config | CLI | Attributes

```
Press RETURN to get started!


Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0
Router(config-if)#ip address 192.168.0.100 255.255.255.0
Router(config-if)#ip address 192.168.0.100 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0,
changed state to up

Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/2/0
Router(config-if)#ip address 11.1.1.1 255.0.0.0
Router(config-if)#ip address 11.1.1.1 255.0.0.0
Router(config-if)#no shutdown
Router(config-if)#
Router(config-if)#exit
```

Ctrl+F6 to exit CLI focus   Copy   Paste

☐ Top

Router0 — IOS Command Line Interface

Physical | Config | CLI | Attributes

```
Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/2/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/2/0, changed
state to up

Router(config-if)#exit
Router(config)#ip route 0.0.0.0 0.0.0.0 11.1.1.2
Router(config)#int g0/0
Router(config-if)#ip nat inside
Router(config-if)#exit
Router(config)#int se0/2/0
Router(config-if)#ip nat outside
Router(config-if)#exit
Router(config)#access-list 50 permit 192.168.0.0 0.0.0.255
Router(config)#ip nat pool
% Incomplete command.
Router(config)#ip nat pool publicip 50.0.0.1 50.0.0.50 netmask
255.255.255.0
Router(config)#ip nat inside source list 50 pool publicip
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

```

Ctrl+F6 to exit CLI focus   Copy   Paste

☐ Top

Router 1

Changing it to serial connection

Router1

Physical | Config | CLI | Attributes

GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0
GigabitEthernet0/1
GigabitEthernet0/2
Serial0/2/0
Serial0/2/1

Serial0/2/0

Port Status ☑ On

Duplex ◉ Full Duplex

Clock Rate 2000000

IP Configuration
IP Address 11.1.1.2
Subnet Mask 255.0.0.0

Tx Ring Limit 10

Equivalent IOS Commands

```
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/2/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/2/0, changed
state to up

Router(config-if)#exit
Router(config)#interface Serial0/2/0
Router(config-if)#
```

☐ Top

Router1

Physical | Config | CLI | Attributes

IOS Command Line Interface

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0
Router(config-if)#ip address
% Incomplete command.
Router(config-if)#ip address 200.0.0.100 255.255.255.0
Router(config-if)#ip address 200.0.0.100 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0,
changed state to up

Router(config-if)#exit
Router(config)#interface Serial0/2/0
Router(config-if)#ip address 11.1.1.2 255.0.0.0
Router(config-if)#ip address 11.1.1.2 255.0.0.0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/2/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/2/0, changed
state to up
```

Ctrl+F6 to exit CLI focus

Copy | Paste

☐ Top
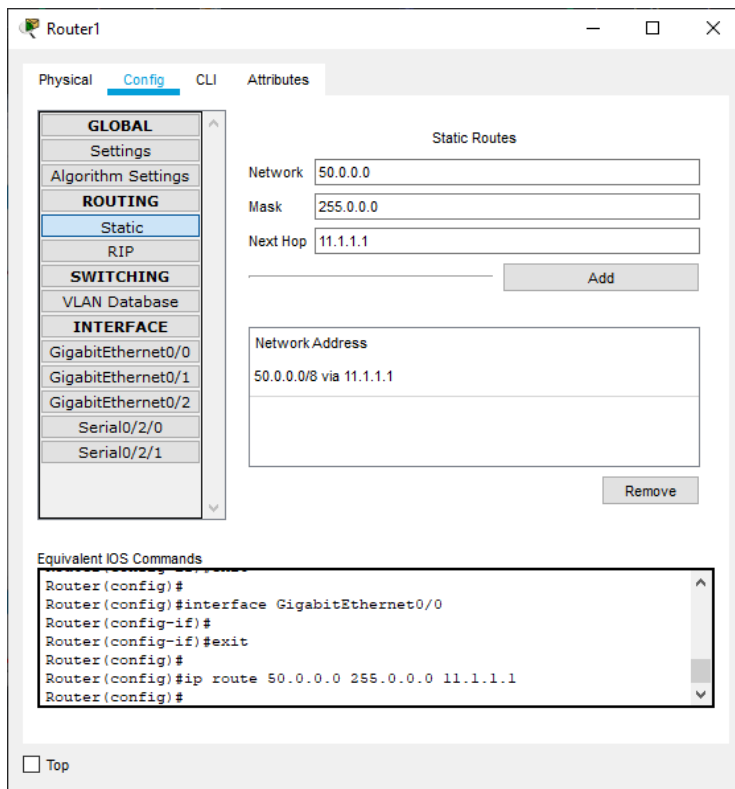
Results

PC0 to server
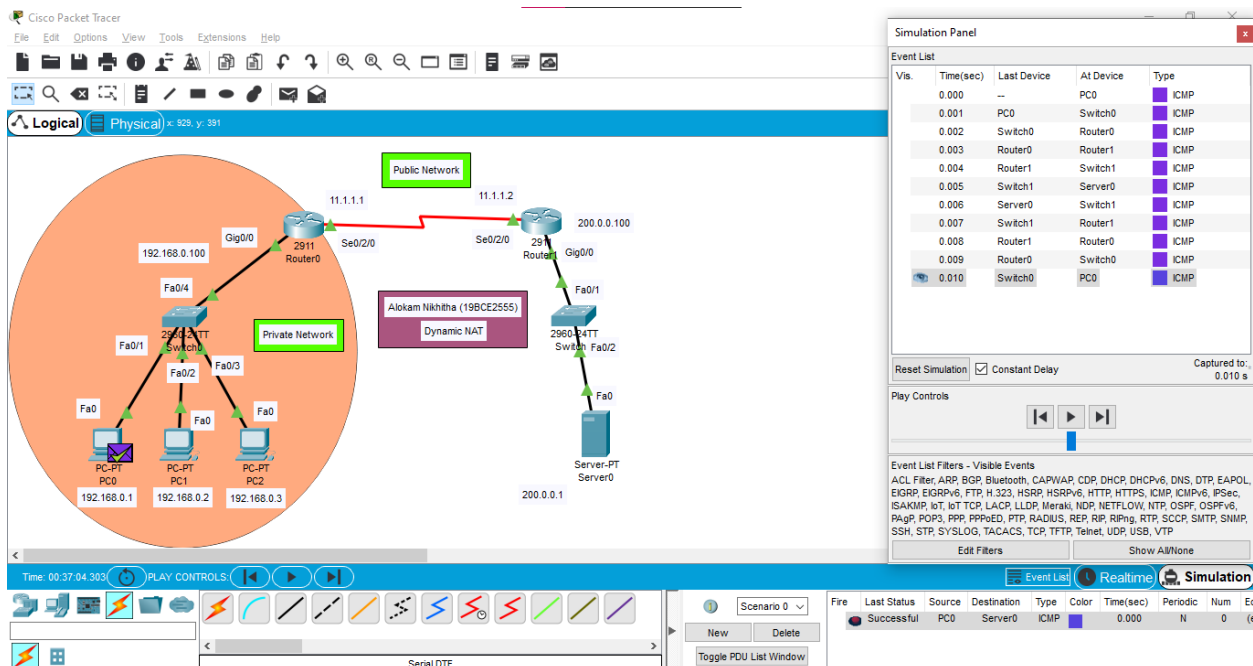
Event List

Vis.	Time(sec)	Last Device	At Device	Type	
	0.000	--	PC0	■	ICMP
	0.001	PC0	Switch0	■	ICMP
	0.002	Switch0	Router0	■	ICMP
	0.003	Router0	Router1	■	ICMP
	0.004	Router1	Switch1	■	ICMP
	0.005	Switch1	Server0	■	ICMP
	0.006	Server0	Switch1	■	ICMP
	0.007	Switch1	Router1	■	ICMP
	0.008	Router1	Router0	■	ICMP
	0.009	Router0	Switch0	■	ICMP
👓	0.010	Switch0	PC0	■	ICMP

Simulation Panel

Event List

PDU List Window

PDU List Window

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
●	Successful	PC0	Server0	ICMP	■	0.000	N	0	(edit)	

PC1 to server

Event List

Simulation Panel

Event List

Vis.	Time(sec)	Last Device	At Device	Type
	0.000	--	PC1	ICMP
	0.001	PC1	Switch0	ICMP
	0.002	Switch0	Router0	ICMP
	0.003	Router0	Router1	ICMP
	0.004	Router1	Switch1	ICMP
	0.005	Switch1	Server0	ICMP
	0.006	Server0	Switch1	ICMP
	0.007	Switch1	Router1	ICMP
	0.008	Router1	Router0	ICMP
	0.009	Router0	Switch0	ICMP
	0.010	Switch0	PC1	ICMP

PDU List window

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC1	Server0	ICMP		0.000	N	0	(edit)	

PC2 to server

Event List

Simulation Panel

Event List

Vis.	Time(sec)	Last Device	At Device	Type	
	0.000	--	PC2	■	ICMP
	0.001	PC2	Switch0	■	ICMP
	0.002	Switch0	Router0	■	ICMP
	0.003	Router0	Router1	■	ICMP
	0.004	Router1	Switch1	■	ICMP
	0.005	Switch1	Server0	■	ICMP
	0.006	Server0	Switch1	■	ICMP
	0.007	Switch1	Router1	■	ICMP
	0.008	Router1	Router0	■	ICMP
	0.009	Router0	Switch0	■	ICMP
👁	0.010	Switch0	PC2	■	ICMP

PDU List Window

PDU List Window

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
●	Successful	PC2	Server0	ICMP	■	0.000	N	0	(edit)	

PDU List Window

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
●	Successful	PC0	Server0	ICMP	■	0.000	N	0	(edit)	
●	Successful	PC1	Server0	ICMP	■	0.000	N	1	(edit)	
●	Successful	PC2	Server0	ICMP	■	0.000	N	2	(edit)	

Conclusion

We have successfully implemented Dynamic NAT by connecting the 2 routers in serial connection and the message packet is passed from PC0 to Server0 , PC1 to Server0 and also PC2 to Server0.