Department of Computer Engineering
TE Computer-B (2025-26 Sem I)
Computer Networks and Security
CNS Simulation Assignment 2: TELNET and SSH

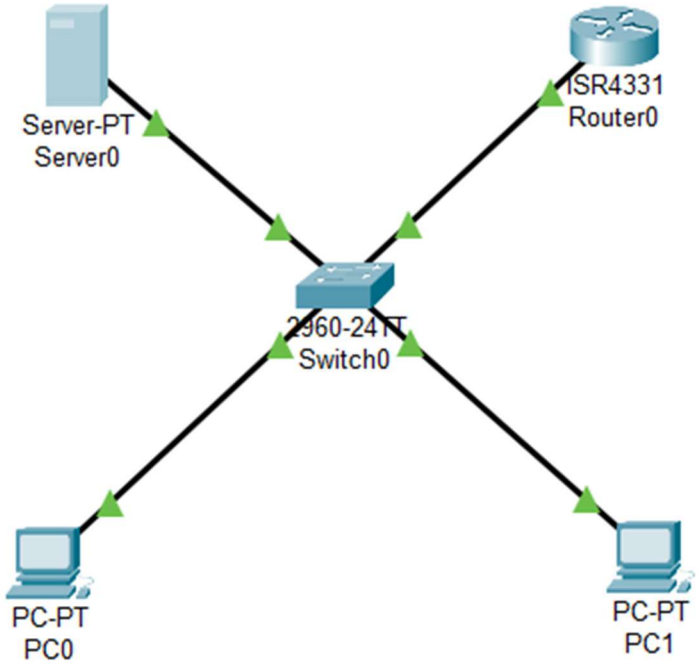
1. Network Topology Setup

i. Create the Network

- Open Cisco Packet Tracer
- Add devices: 1 Router, 1 Server (acts as DHCP Server), 2 PCs (rename to PC0 and PC1), and 1 Switch

ii. Connect Devices

- Connect PC0, PC1, and Server to Switch using Copper Straight-Through cables
- Connect Switch to Router's Gigabit Ethernet 0/0 using Copper Straight-Through cable



2. IP Address Configuration using DHCP

i. Configure Router Interface

- Allocate IP: 192.168.15.1
- Subnet Mask: 255.255.255.0

ii. Configure DHCP Server

Server Configuration:

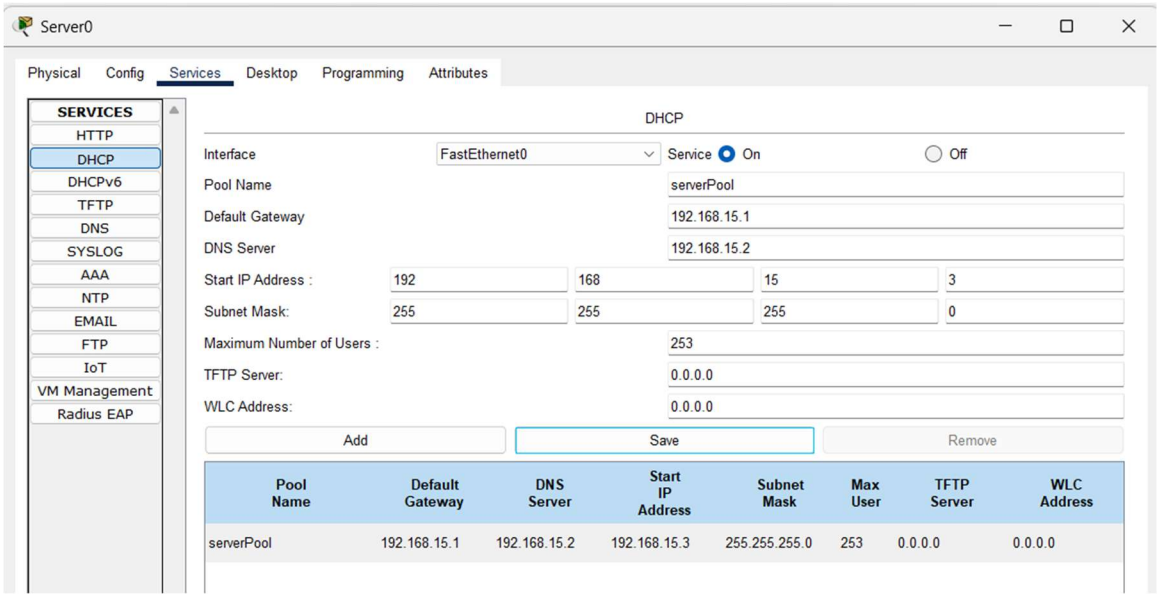
- IP Address: 192.168.15.2
- Default Gateway: 192.168.15.1

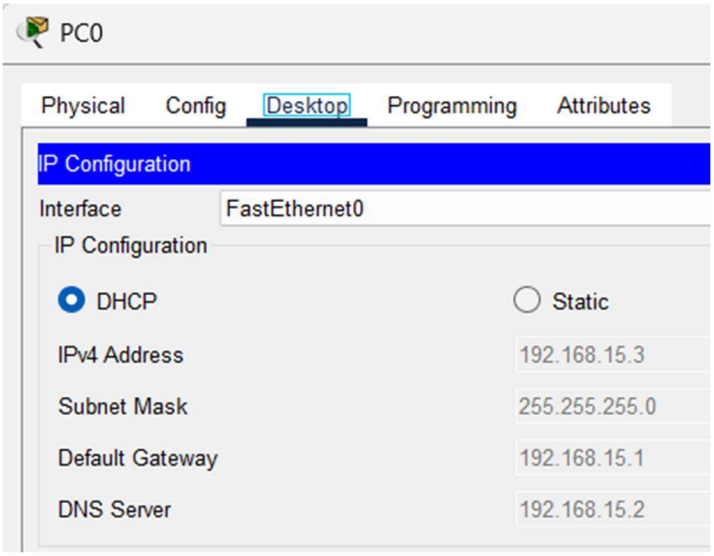
DHCP Pool:

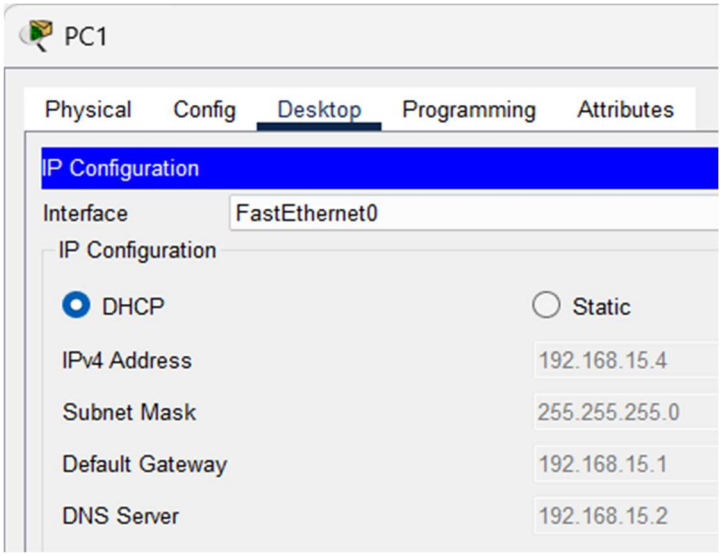
- Default Gateway: 192.168.15.1
- DNS Server: 192.168.15.2
- Start IP: 192.168.15.3
- Subnet Mask: 255.255.255.0

iii. Configure PCs for DHCP

- PC0 → Config Tab → Fast Ethernet → Select DHCP
- PC1 → Config Tab → Fast Ethernet → Select DHCP







3. Router Configuration for Remote Access

i. Basic Router Configuration

Router> enable
Router# configure terminal
Router(config)# hostname HQ
HQ(config)# interface gigabitethernet0/0/0
HQ(config-if)# ip address 192.168.X.1 255.255.255.0

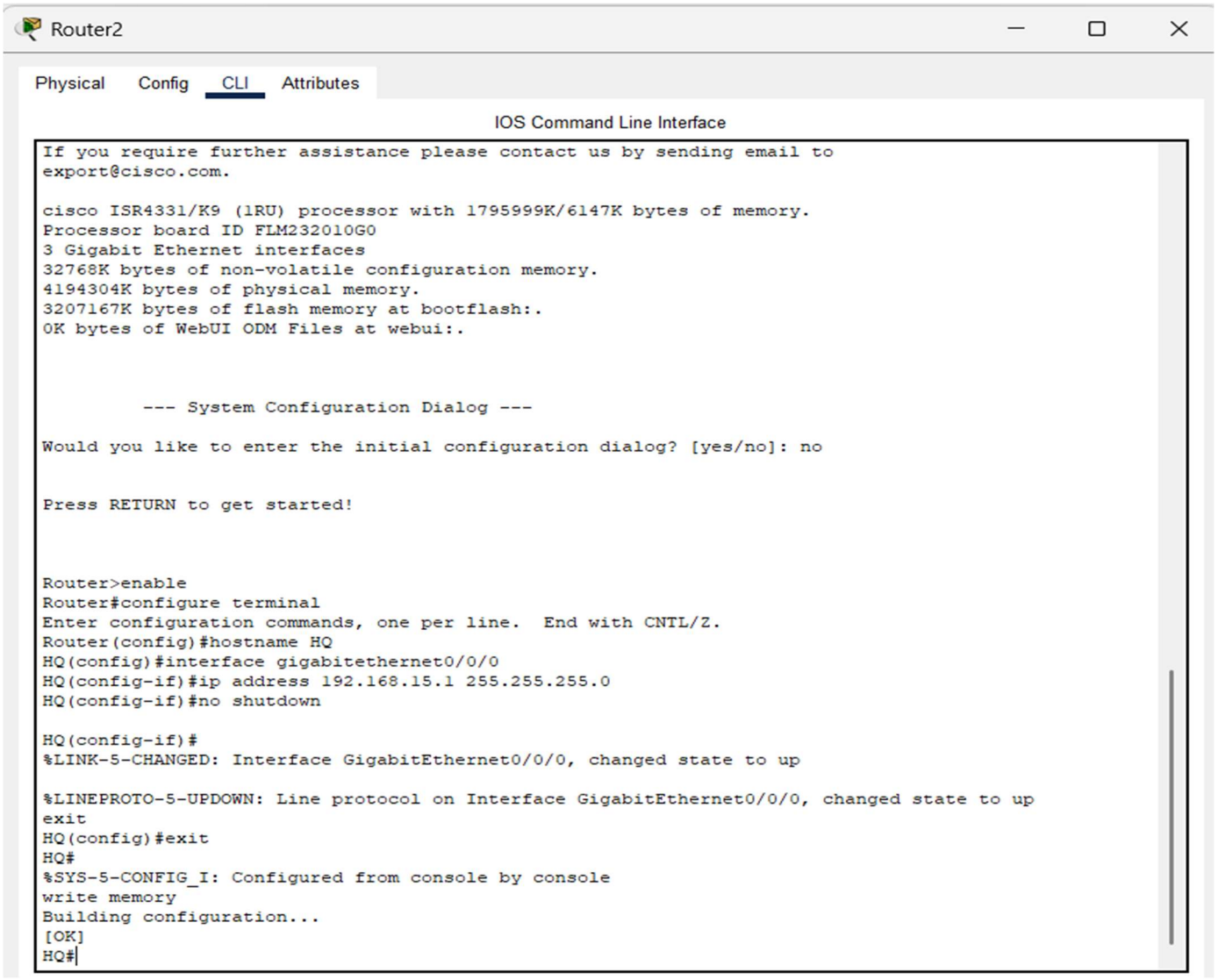
HQ(config-if)# no shutdown
HQ(config-if)# exit

ii. SSH Configuration

HQ(config)# ip domain-name cns-assignment.com
HQ(config)# crypto key generate rsa
(Choose 1024 bits modulus)
HQ(config)# ip ssh version 2
HQ(config)# ip ssh time-out 60
HQ(config)# ip ssh authentication-retries 2

iii. User and Line Configuration

HQ(config)# username admin secret admin123
HQ(config)# enable secret class123
HQ(config)# line vty 0 15
HQ(config-line)# login local
HQ(config-line)# transport input all
HQ(config-line)# exit
HQ(config)# exit
HQ# write memory



```
HQ#enable
HQ#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
HQ(config)#ip domain-name cns-assignment.com
HQ(config)#crypto key generate rsa
The name for the keys will be: HQ.cns-assignment.com
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]

HQ(config)#ip ssh version 2
*Mar 1 0:13:27.367: %SSH-5-ENABLED: SSH 1.99 has been enabled
HQ(config)#ip ssh time-out 60
HQ(config)#ip ssh authentication-retries 2
HQ(config)#username admin secret admin123
HQ(config)#enable secret class123
HQ(config)#line vty 0 4
HQ(config-line)#login local
HQ(config-line)#transport input telnet ssh
                                       ^
% Invalid input detected at '^' marker.

HQ(config-line)#transport input ssh
HQ(config-line)#exit
HQ(config)#exit
HQ#
%SYS-5-CONFIG_I: Configured from console by console
write memory
Building configuration...
[OK]
HQ#
```

```
HQ#enable
HQ#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
HQ(config)#line vty 0 15
HQ(config-line)#login local
HQ(config-line)#transport input all
HQ(config-line)#exit
HQ(config)#exit
HQ#
%SYS-5-CONFIG_I: Configured from console by console
write memory
Building configuration...
[OK]
HQ#show running-config | include transport
HQ#
```

4. Access Remote Device – Telnet

PC1 → Desktop Tab → Command Prompt

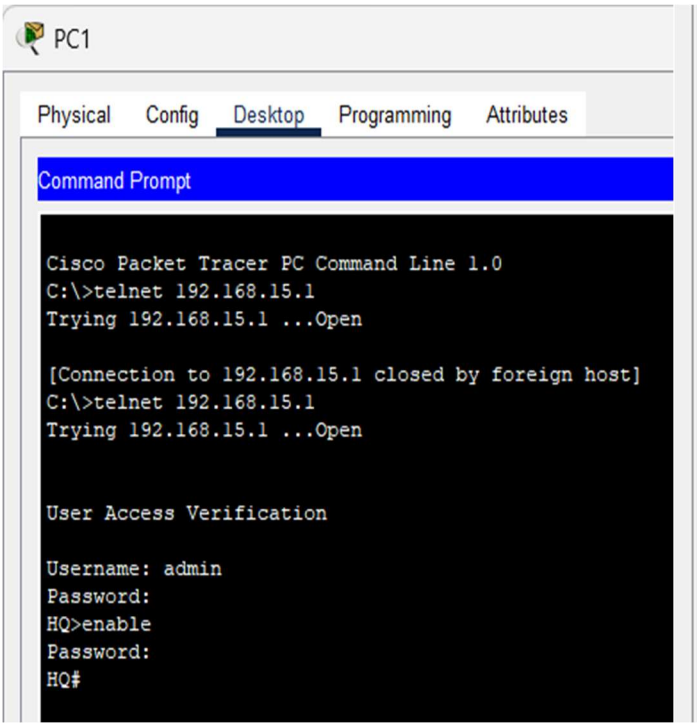
> telnet 192.168.15.1

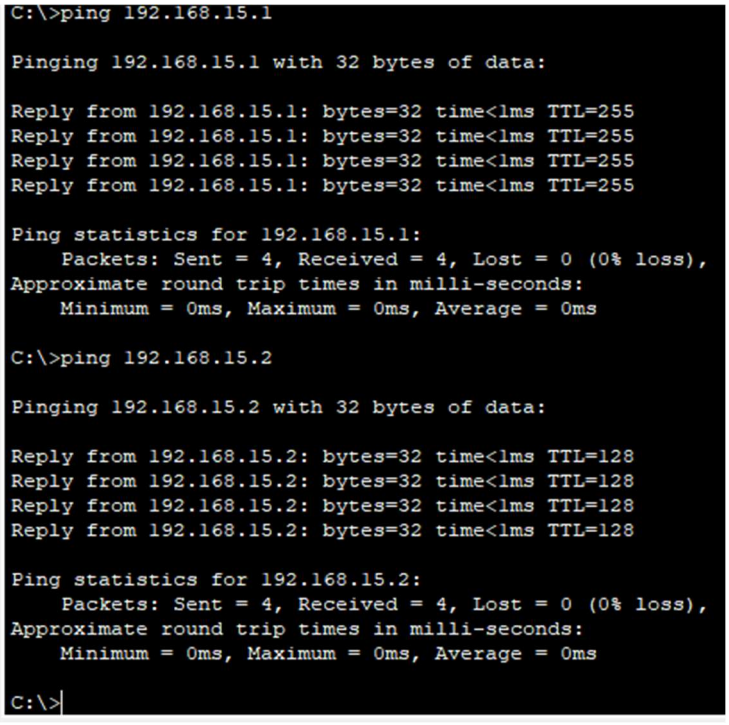
Username: admin

Password: admin123

HQ> enable

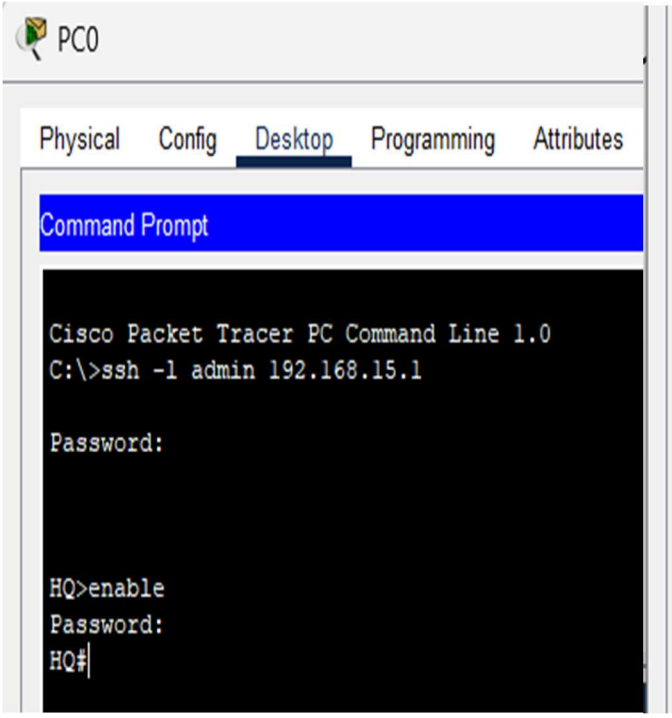
Password: class123





5. Access Remote Device – SSH

PC0 → Desktop Tab → Command Prompt
C:\> ssh -l admin 192.168.15.1
Password: admin123
HQ> enable
Password: class123



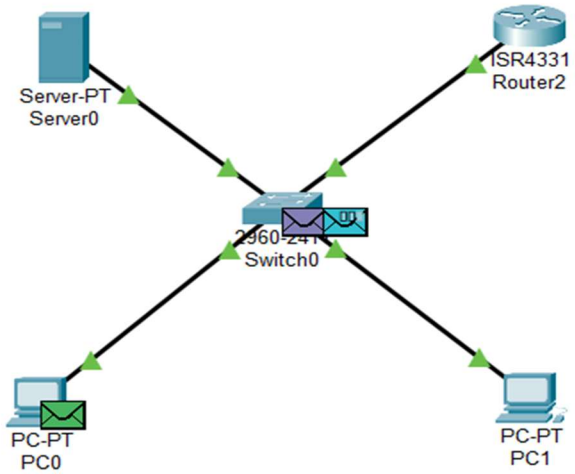

```
C:\>ping 192.168.15.1

Pinging 192.168.15.1 with 32 bytes of data:

Reply from 192.168.15.1: bytes=32 time=10ms TTL=255
Reply from 192.168.15.1: bytes=32 time<1ms TTL=255
Reply from 192.168.15.1: bytes=32 time<1ms TTL=255
Reply from 192.168.15.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.15.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 10ms, Average = 2ms

C:\>ping 192.168.15.2

Pinging 192.168.15.2 with 32 bytes of data:

Reply from 192.168.15.2: bytes=32 time<1ms TTL=128
Reply from 192.168.15.2: bytes=32 time<1ms TTL=128
Reply from 192.168.15.2: bytes=32 time<1ms TTL=128
Reply from 192.168.15.2: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.15.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

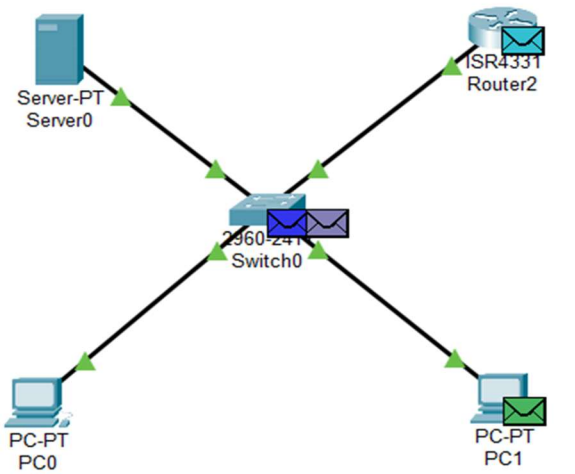
6. Real Mode and Event Simulation

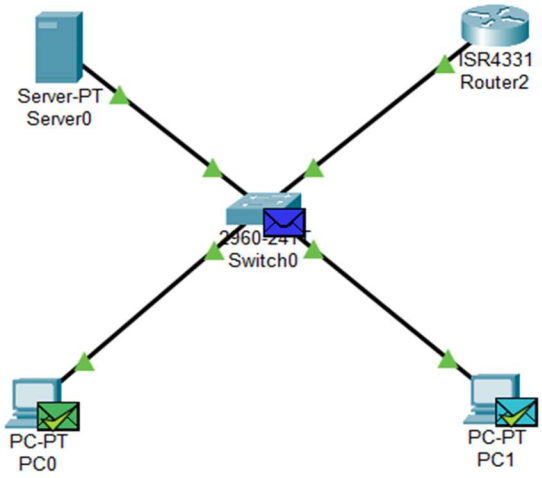
i. Real Mode

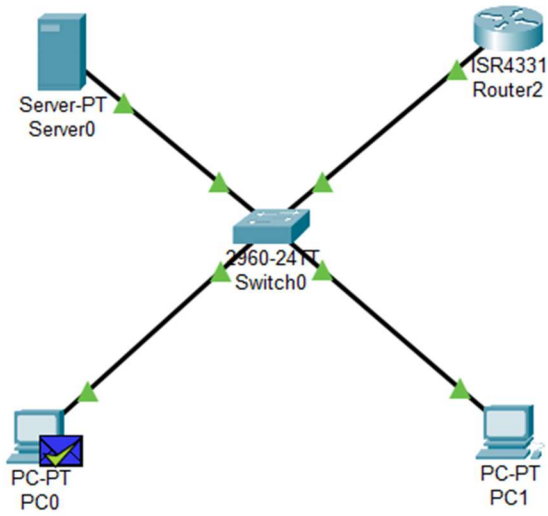
Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC0	Router2	ICMP		0.000	N	0	(edit)	(delete)
	Successful	PC1	Router2	ICMP		0.000	N	1	(edit)	(delete)
	Successful	PC0	PC1	ICMP		0.000	N	2	(edit)	(delete)

ii. Event Simulation






Server-PT
Server0
ISR4331
Router2
2960-24TT
Switch0
PC-PT
PC0
PC-PT
PC1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