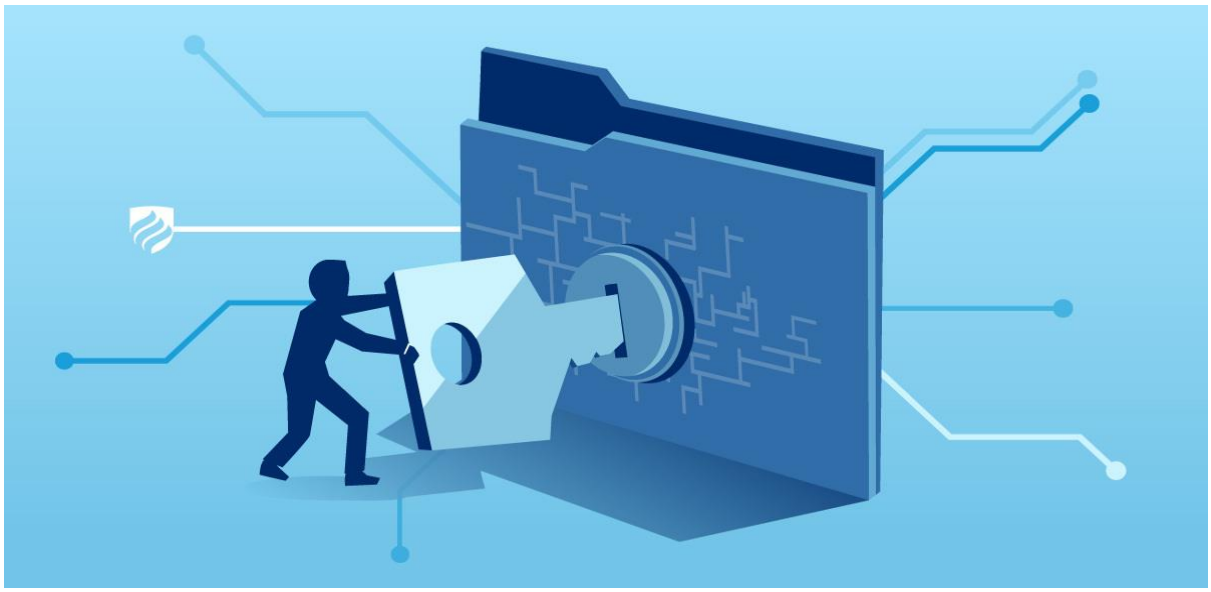
Laxmi Charitable Trust's
Sheth L.U.J College of Arts & Sir
M.V. College
Of Science & Commerce

INFORMATION SECURITY PRACTICAL



Name :Ritesh Yadav

Roll no: T059

Class: TYIT

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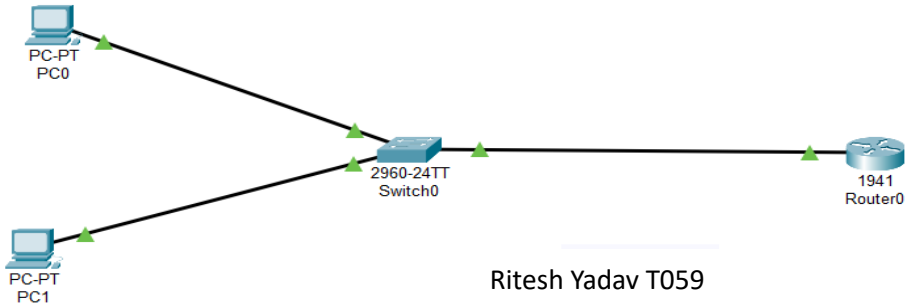
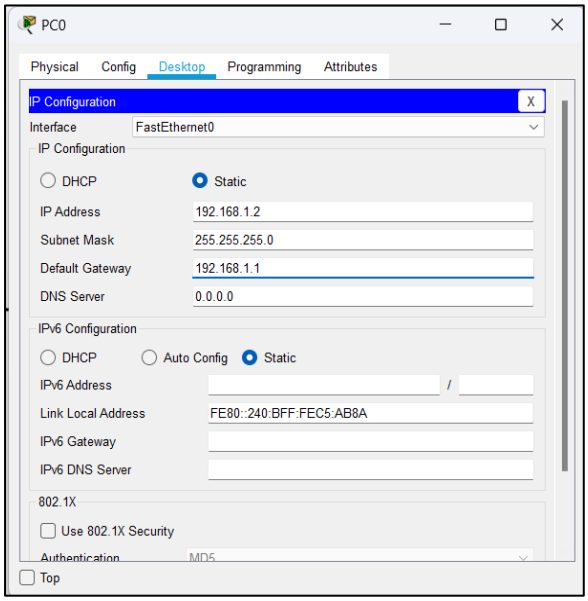
Prac. No.		Aim	Date	Signature
1		Configure local AAA for console line and for VTY(virtual terminal) lines	13/12/2024	
2		Packet Tracer - Configure Cisco Routers for Syslog, NTP, and SSH Operations	20/12/2024	
3		Configure IPV6 ACL (access control list) that will block http and https access on R1 and allow all other IPV6 traffic to pass.	03/01/2024	
4		Configure IPV6 ACL to block ICMP(Internet Control Message Protocol) access on R3 and allow all other IPV6 traffic to pass	10/01/2025	
5		Configure an ACL that will permit FTP and HTTP access on R1 verify ACL implementation on PC1 only FTP and PC2 only HTTP	07/02/2025	

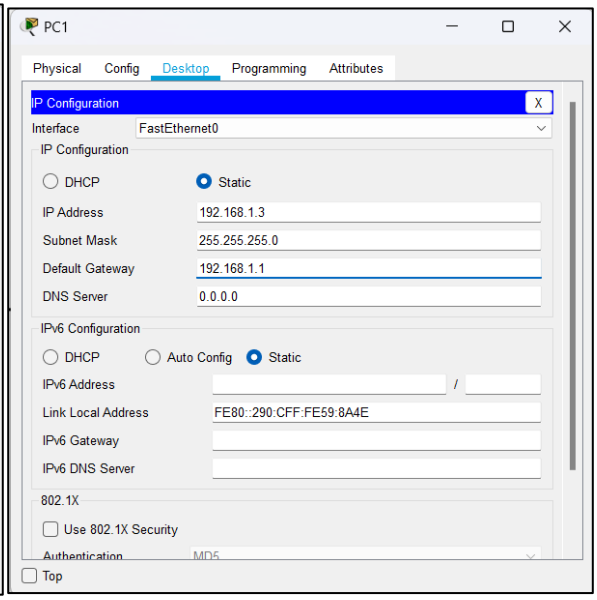
PRACTICAL 1

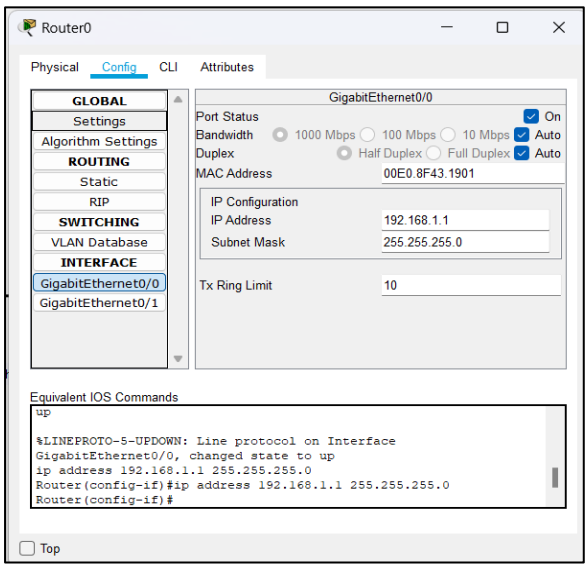
Aim: Configure local AAA(Authentication Authorization Accounting) for console line and for VTY(virtual terminal) lines

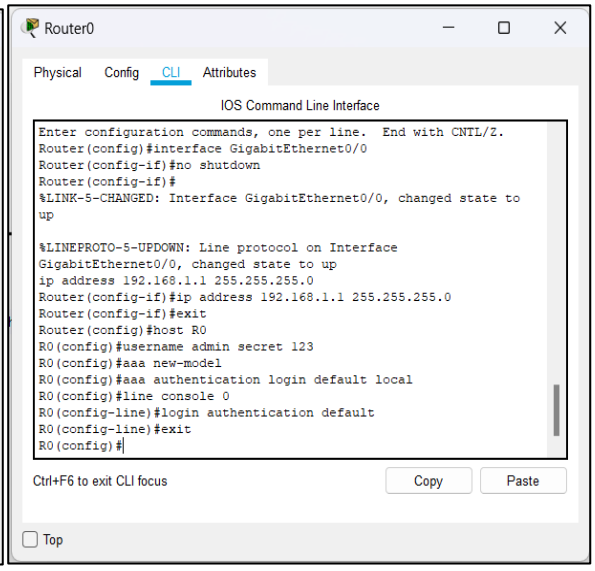


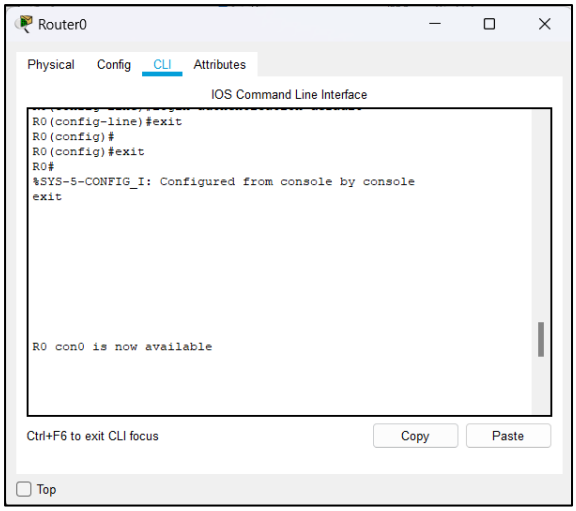
Input:

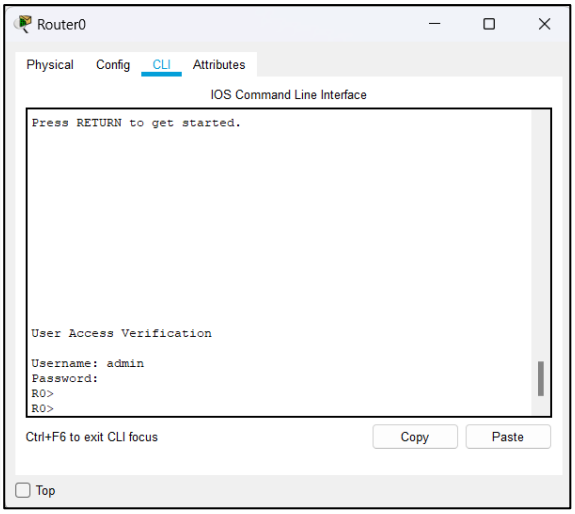


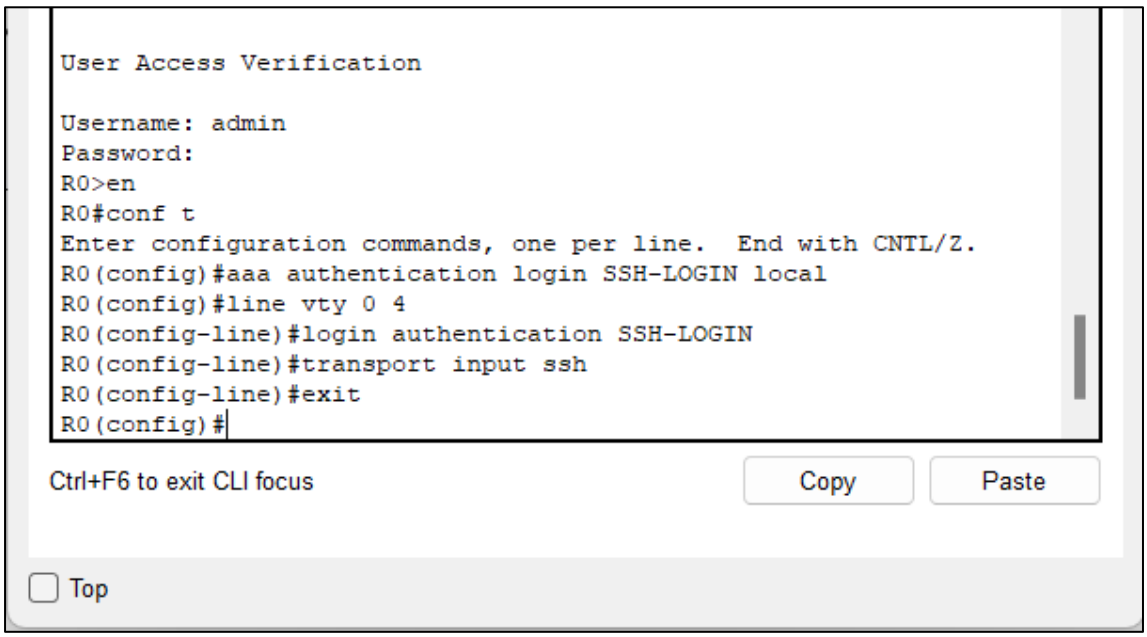


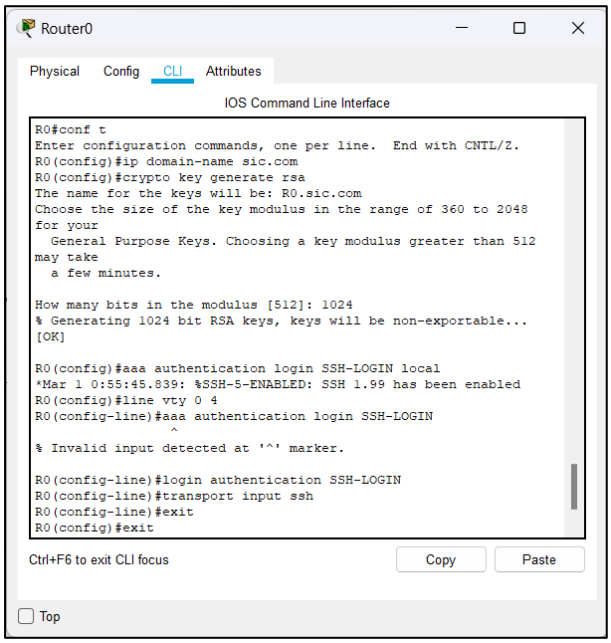


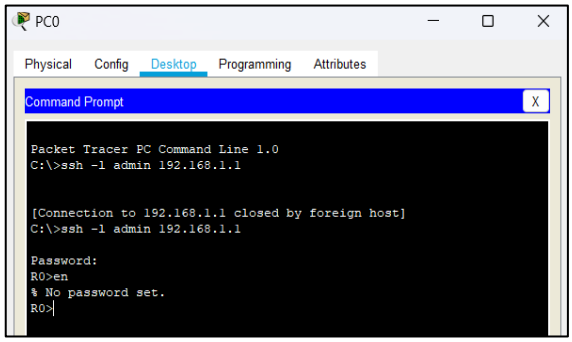


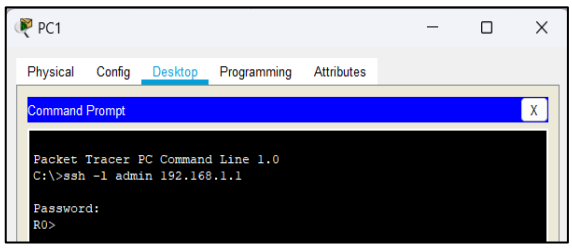

Router0
Physical Config CLI Attributes
IOS Command Line Interface
R0(config-line)#exit
R0(config)#
R0(config)#exit
R0#
%SYS-5-CONFIG_I: Configured from console by console
exit
R0 con0 is now available
Ctrl+F6 to exit CLI focus
Copy
Paste
Top


Router0
Physical Config CLI Attributes
IOS Command Line Interface
Press RETURN to get started.
User Access Verification
Username: admin
Password:
R0>
R0>
Ctrl+F6 to exit CLI focus
Copy
Paste
Top


User Access Verification
Username: admin
Password:
R0>en
R0#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R0(config)#aaa authentication login SSH-LOGIN local
R0(config)#line vty 0 4
R0(config-line)#login authentication SSH-LOGIN
R0(config-line)#transport input ssh
R0(config-line)#exit
R0(config)#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top


Router0
Physical Config CLI Attributes
IOS Command Line Interface
R0#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R0(config)#ip domain-name sic.com
R0(config)#crypto key generate rsa
The name for the keys will be: R0.sic.com
Choose the size of the key modulus in the range of 360 to 2048
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]
R0(config)#aaa authentication login SSH-LOGIN local
*Mar 1 0:55:45.839: %SSH-5-ENABLED: SSH 1.99 has been enabled
R0(config)#line vty 0 4
R0(config-line)#aaa authentication login SSH-LOGIN
^
% Invalid input detected at '^' marker.
R0(config-line)#login authentication SSH-LOGIN
R0(config-line)#transport input ssh
R0(config-line)#exit
R0(config)#exit
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

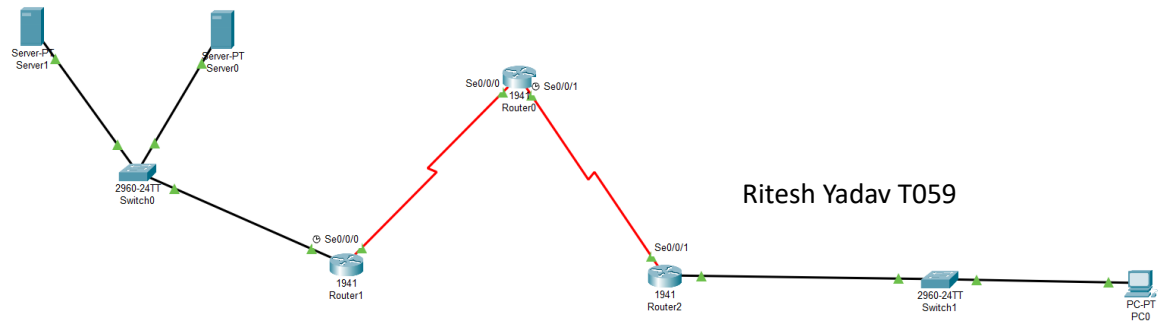

PC0
Physical Config Desktop Programming Attributes
Command Prompt
Packet Tracer PC Command Line 1.0
C:\>ssh -l admin 192.168.1.1
[Connection to 192.168.1.1 closed by foreign host]
C:\>ssh -l admin 192.168.1.1
Password:
R0>en
% No password set.
R0>

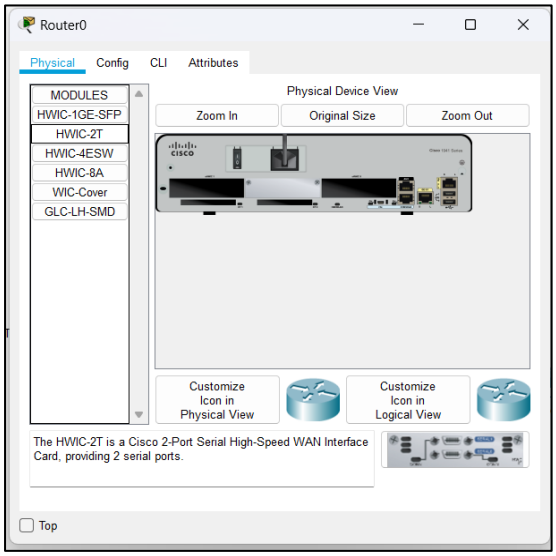

PC1
Physical Config Desktop Programming Attributes
Command Prompt
Packet Tracer PC Command Line 1.0
C:\>ssh -l admin 192.168.1.1
Password:
R0>

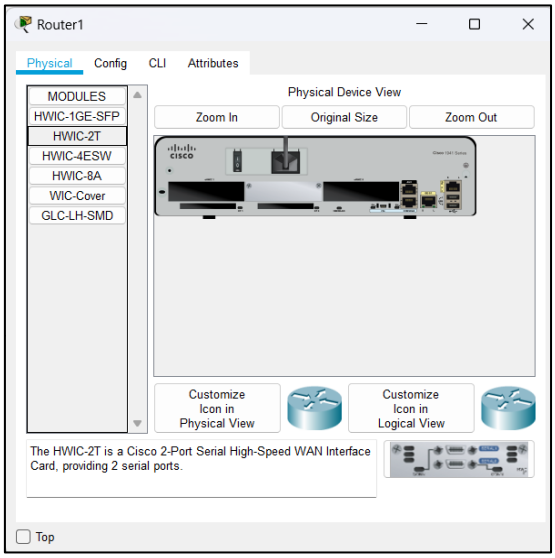
PRACTICAL 2

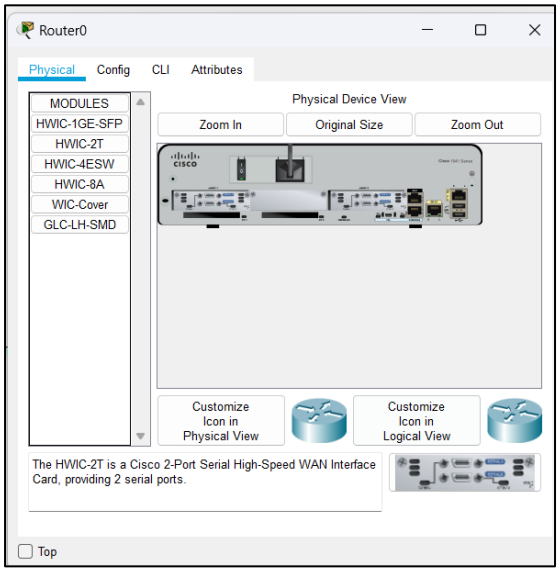
Aim: Packet Tracer - Configure Cisco Routers for Syslog, NTP, and SSH Operations.

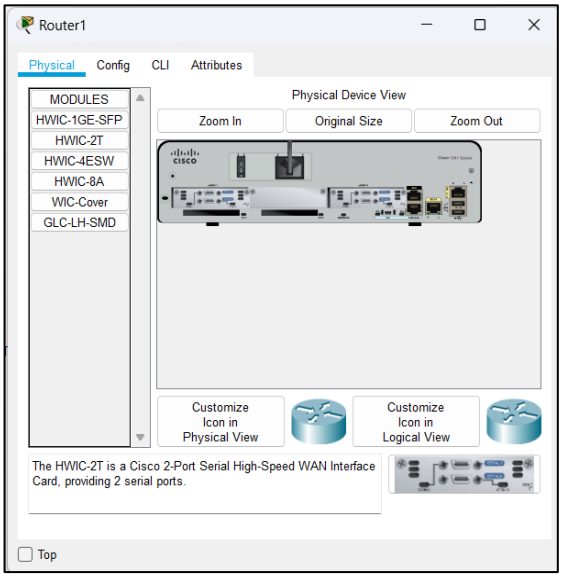
Topology:

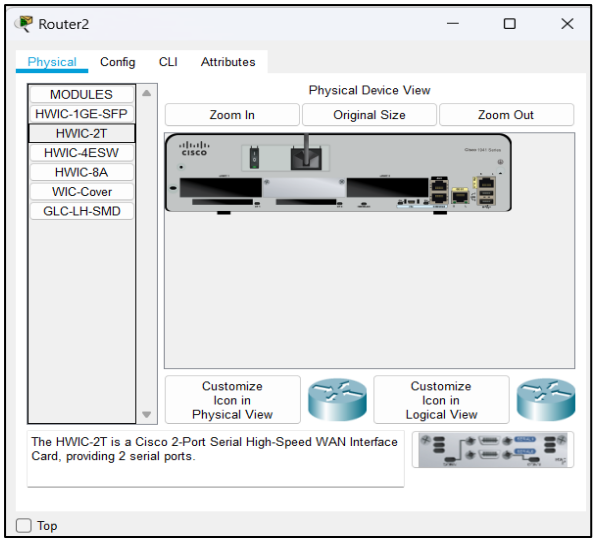


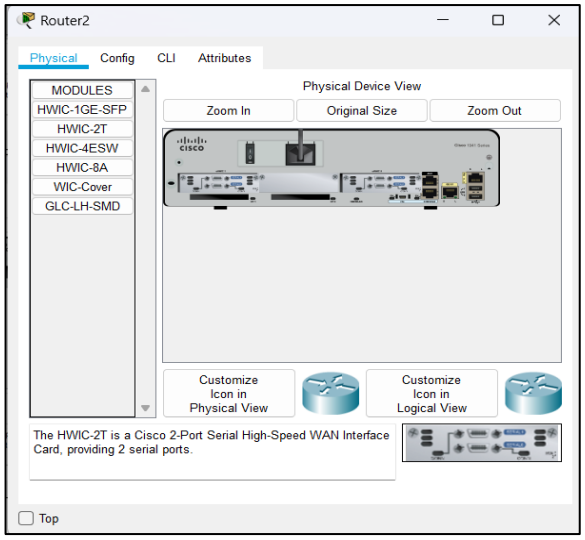









Router2
Physical
Config
CLI
Attributes
MODULES
HWIC-1GE-SFP
HWIC-2T
HWIC-4ESW
HWIC-8A
WIC-Cover
GLC-LH-SMD
Physical Device View
Zoom In
Original Size
Zoom Out
Customize Icon in Physical View
Customize Icon in Logical View
The HWIC-2T is a Cisco 2-Port Serial High-Speed WAN Interface Card, providing 2 serial ports.
Top


Router2
Physical
Config
CLI
Attributes
MODULES
HWIC-1GE-SFP
HWIC-2T
HWIC-4ESW
HWIC-8A
WIC-Cover
GLC-LH-SMD
Physical Device View
Zoom In
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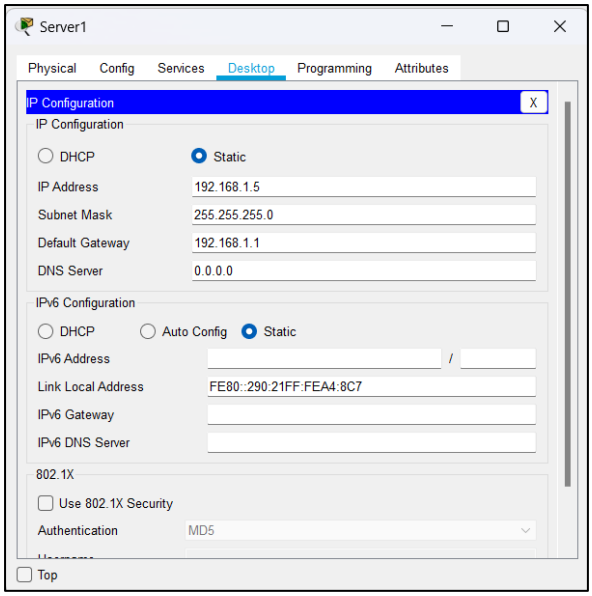
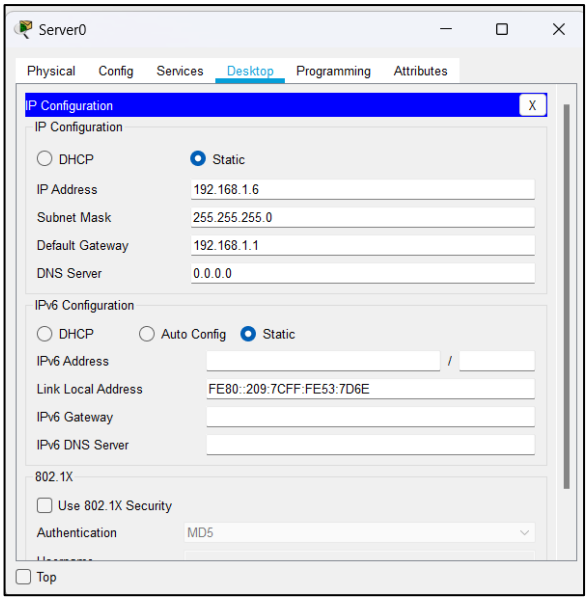
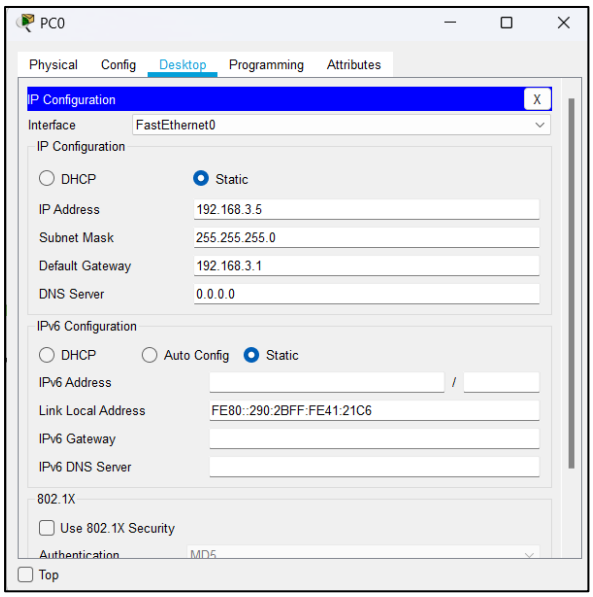
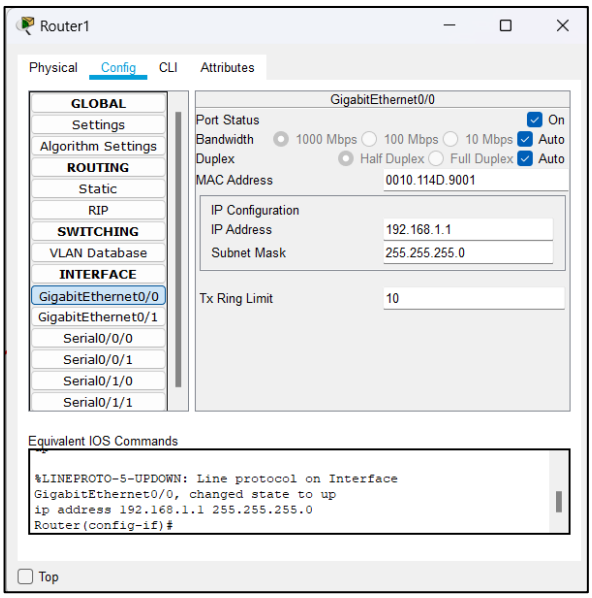
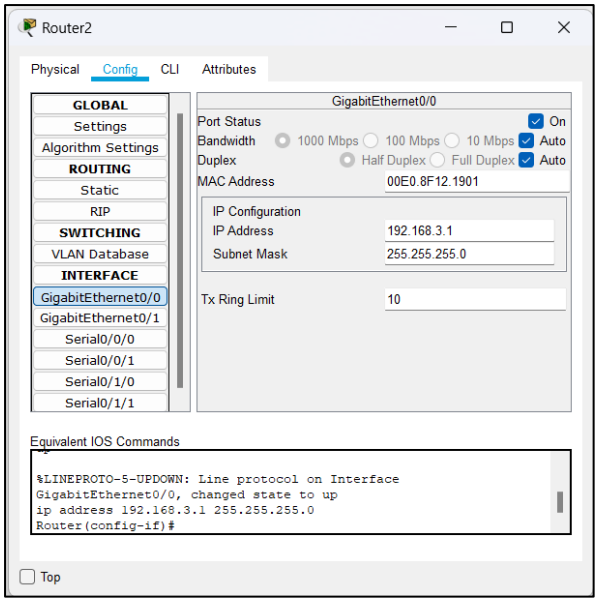
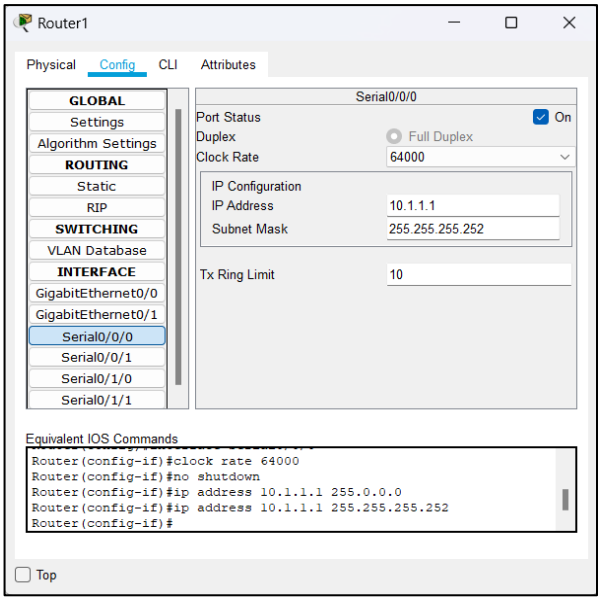

Server1
Physical
Config
Services
Desktop
Programming
Attributes
IP Configuration
DHCP
Static
IP Address 192.168.1.5
Subnet Mask 255.255.255.0
Default Gateway 192.168.1.1
DNS Server 0.0.0.0
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
Link Local Address FE80::290:21FF:FEA4:8C7
IPv6 Gateway
IPv6 DNS Server
802.1X
Use 802.1X Security
Authentication MD5
Top

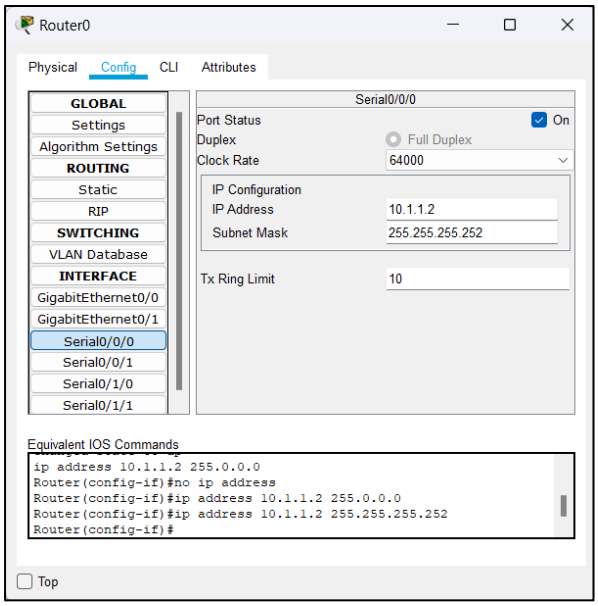

Server0
Physical
Config
Services
Desktop
Programming
Attributes
IP Configuration
DHCP
Static
IP Address 192.168.1.6
Subnet Mask 255.255.255.0
Default Gateway 192.168.1.1
DNS Server 0.0.0.0
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
Link Local Address FE80::209:7CFF:FE53:7D6E
IPv6 Gateway
IPv6 DNS Server
802.1X
Use 802.1X Security
Authentication MD5
Top

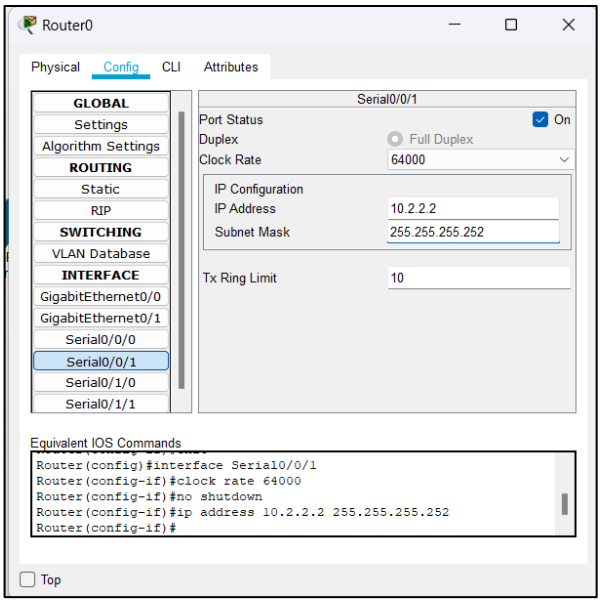

PC0
Physical
Config
Desktop
Programming
Attributes
IP Configuration
Interface FastEthernet0
DHCP
Static
IP Address 192.168.3.5
Subnet Mask 255.255.255.0
Default Gateway 192.168.3.1
DNS Server 0.0.0.0
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
Link Local Address FE80::290:2BFF:FE41:21C6
IPv6 Gateway
IPv6 DNS Server
802.1X
Use 802.1X Security
Top

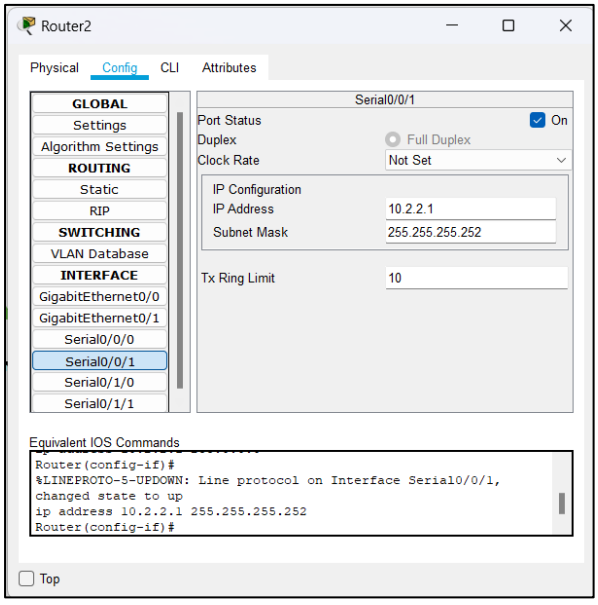

Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0
GigabitEthernet0/1
Serial0/0/0
Serial0/0/1
Serial0/1/0
Serial0/1/1
GigabitEthernet0/0
Port Status On
Bandwidth 1000 Mbps 100 Mbps 10 Mbps Auto
Duplex Half Duplex Full Duplex Auto
MAC Address 0010.114D.9001
IP Configuration
IP Address 192.168.1.1
Subnet Mask 255.255.255.0
Tx Ring Limit 10
Equivalent IOS Commands
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
ip address 192.168.1.1 255.255.255.0
Router(config-if)#
Top

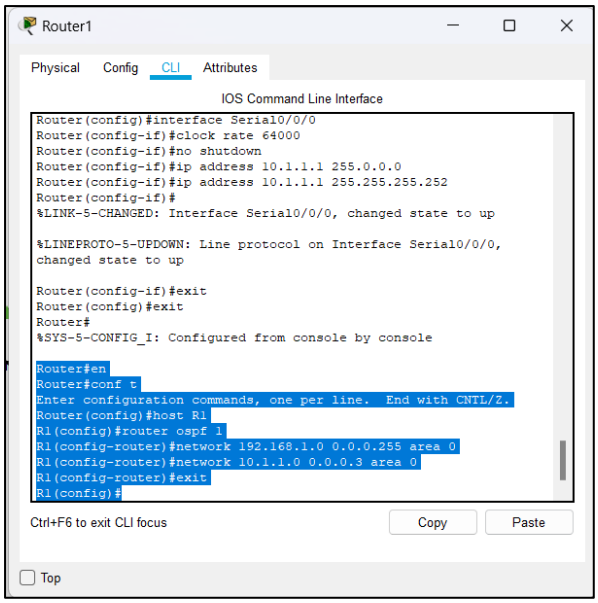

Router2
Physical Config CLI Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0
GigabitEthernet0/1
Serial0/0/0
Serial0/0/1
Serial0/1/0
Serial0/1/1
GigabitEthernet0/0
Port Status On
Bandwidth 1000 Mbps 100 Mbps 10 Mbps Auto
Duplex Half Duplex Full Duplex Auto
MAC Address 00E0.8F12.1901
IP Configuration
IP Address 192.168.3.1
Subnet Mask 255.255.255.0
Tx Ring Limit 10
Equivalent IOS Commands
%LINEPROTO-5-UPDOWN: Line protocol on Interface
GigabitEthernet0/0, changed state to up
ip address 192.168.3.1 255.255.255.0
Router(config-if)#
Top

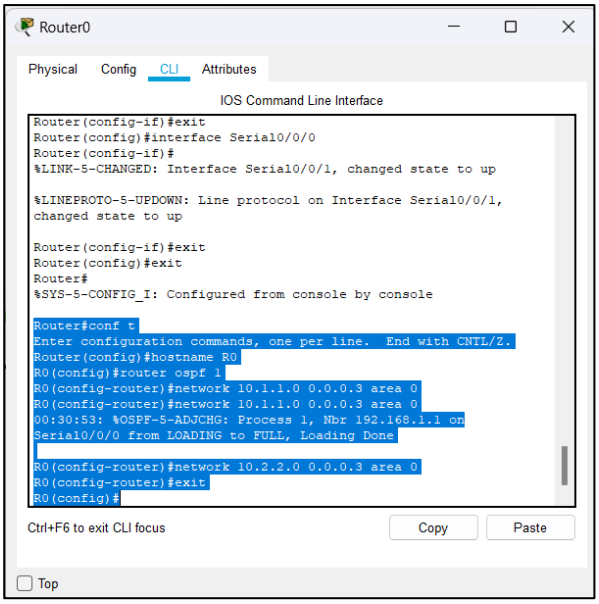

Router1
Physical Config CLI Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0
GigabitEthernet0/1
Serial0/0/0
Serial0/0/1
Serial0/1/0
Serial0/1/1
Serial0/0/0
Port Status On
Duplex Full Duplex
Clock Rate 64000
IP Configuration
IP Address 10.1.1.1
Subnet Mask 255.255.255.252
Tx Ring Limit 10
Equivalent IOS Commands
Router(config-if)#clock rate 64000
Router(config-if)#no shutdown
Router(config-if)#ip address 10.1.1.1 255.0.0.0
Router(config-if)#ip address 10.1.1.1 255.255.255.252
Router(config-if)#
Top

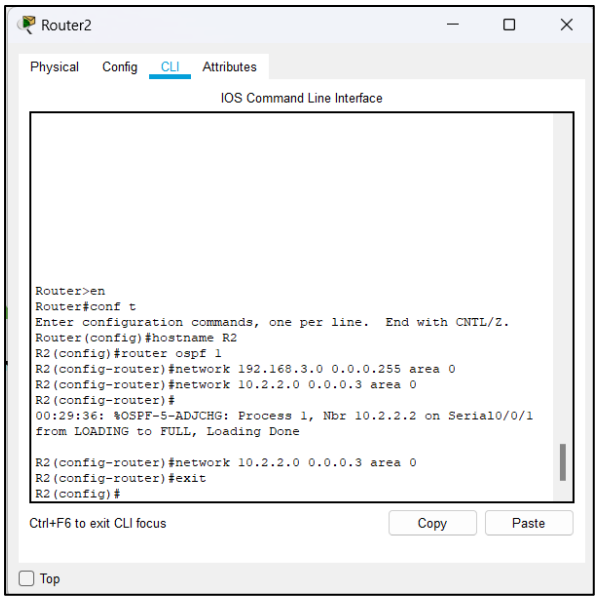

Router0
Physical Config CLI Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0
GigabitEthernet0/1
Serial0/0/0
Serial0/0/1
Serial0/1/0
Serial0/1/1
Serial0/0/0
Port Status On
Duplex Full Duplex
Clock Rate 64000
IP Configuration
IP Address 10.1.1.2
Subnet Mask 255.255.255.252
Tx Ring Limit 10
Equivalent IOS Commands
ip address 10.1.1.2 255.0.0.0
Router(config-if)#no ip address
Router(config-if)#ip address 10.1.1.2 255.0.0.0
Router(config-if)#ip address 10.1.1.2 255.255.255.252
Router(config-if)#
Top


Router0
Physical Config CLI Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0
GigabitEthernet0/1
Serial0/0/0
Serial0/0/1
Serial0/1/0
Serial0/1/1
Serial0/0/1
Port Status On
Duplex Full Duplex
Clock Rate 64000
IP Configuration
IP Address 10.2.2.2
Subnet Mask 255.255.255.252
Tx Ring Limit 10
Equivalent IOS Commands
Router(config)#interface Serial0/0/1
Router(config-if)#clock rate 64000
Router(config-if)#no shutdown
Router(config-if)#ip address 10.2.2.2 255.255.255.252
Router(config-if)#
Top

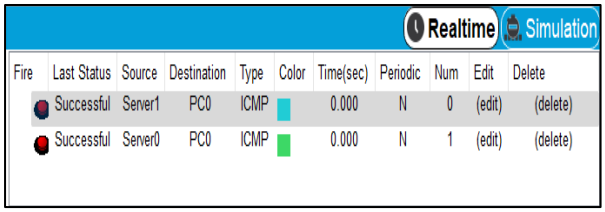

Router2
Physical Config CLI Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0
GigabitEthernet0/1
Serial0/0/0
Serial0/0/1
Serial0/1/0
Serial0/1/1
Serial0/0/1
Port Status On
Duplex Full Duplex
Clock Rate Not Set
IP Configuration
IP Address 10.2.2.1
Subnet Mask 255.255.255.252
Tx Ring Limit 10
Equivalent IOS Commands
Router(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1,
changed state to up
ip address 10.2.2.1 255.255.255.252
Router(config-if)#
Top



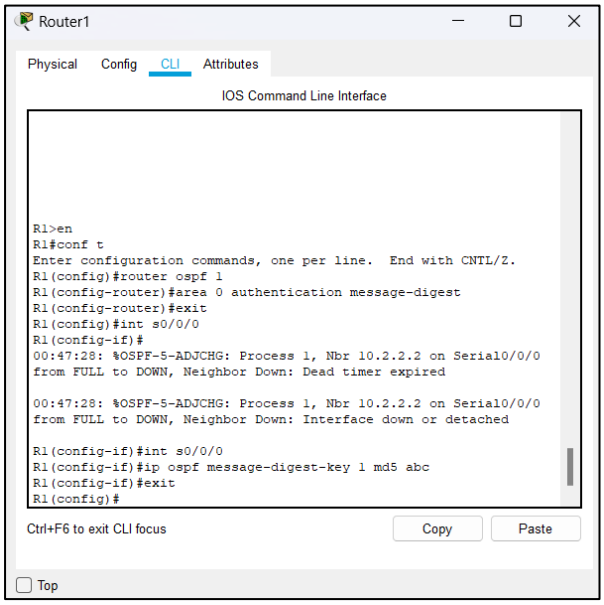


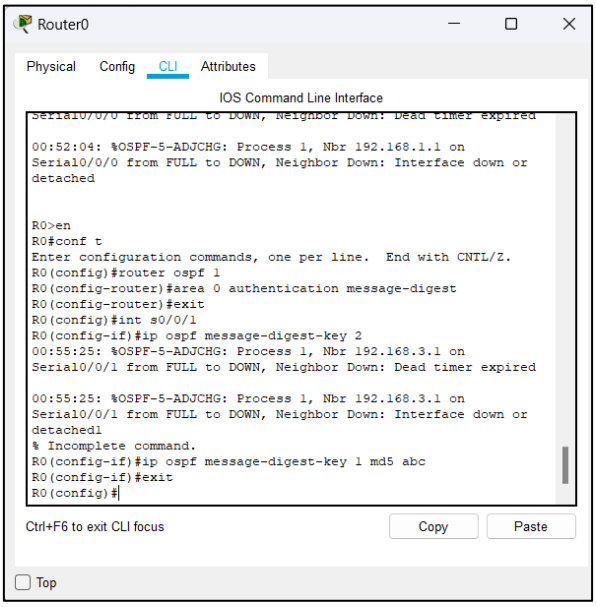


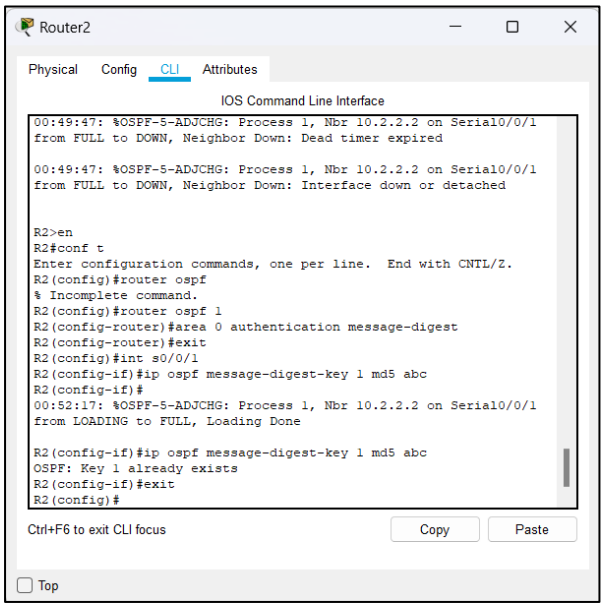
Message transferring successful

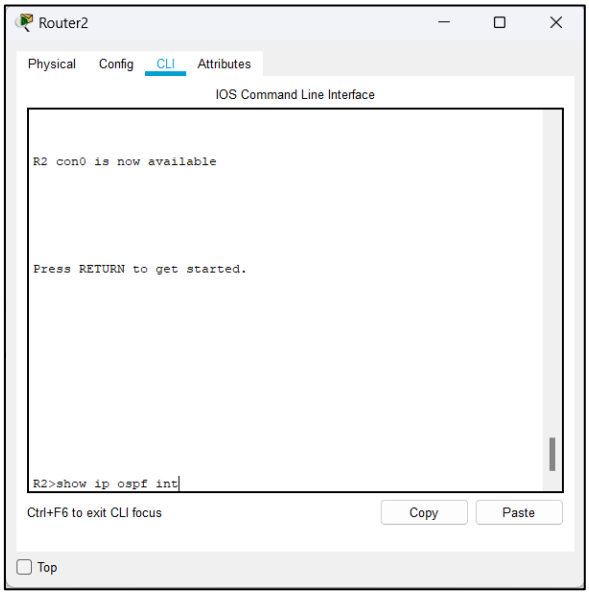


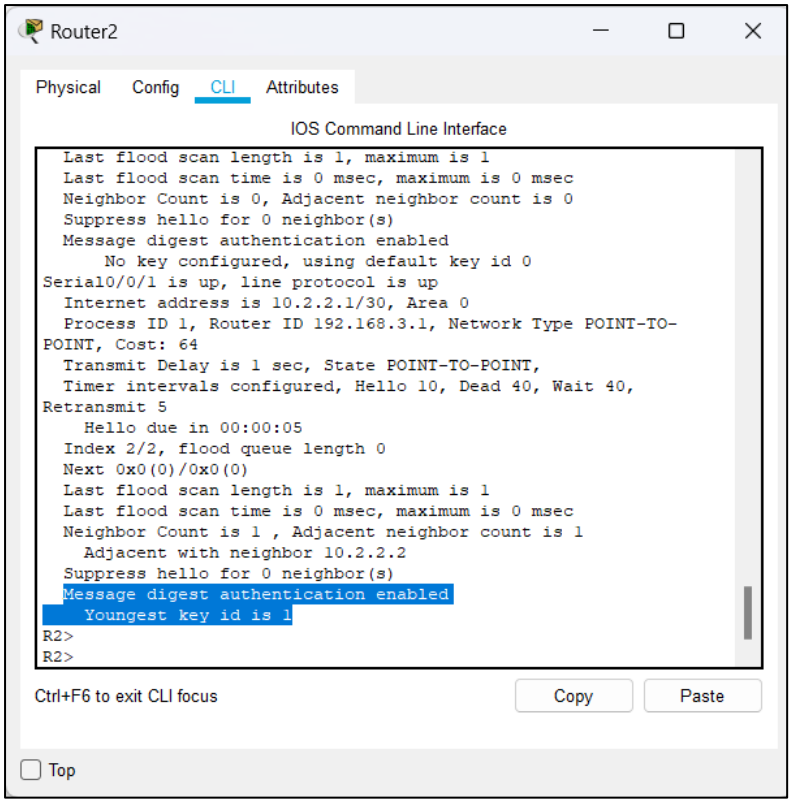
Part 1: Configure OSPF MD5(Message Digest) Authentication

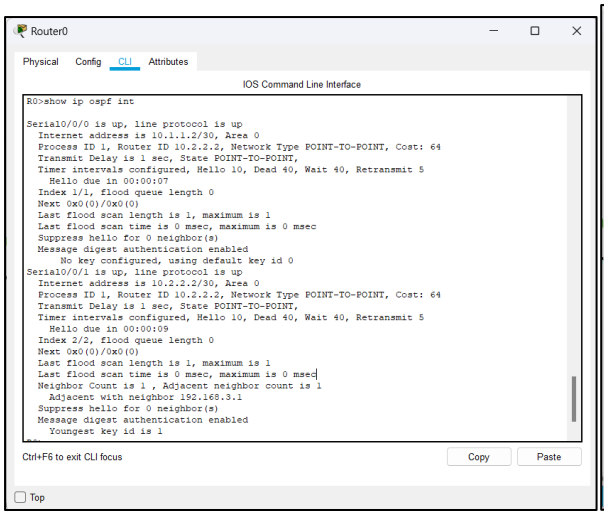


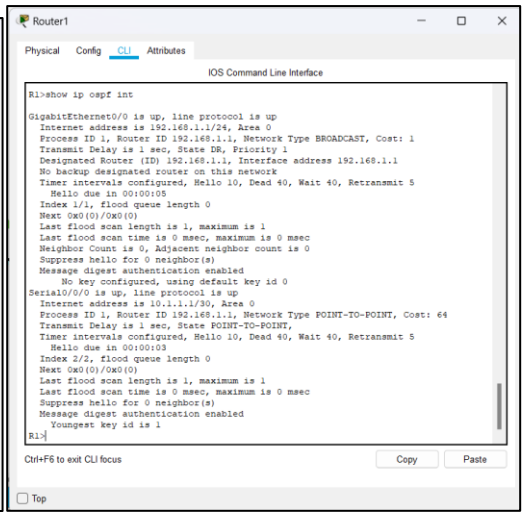




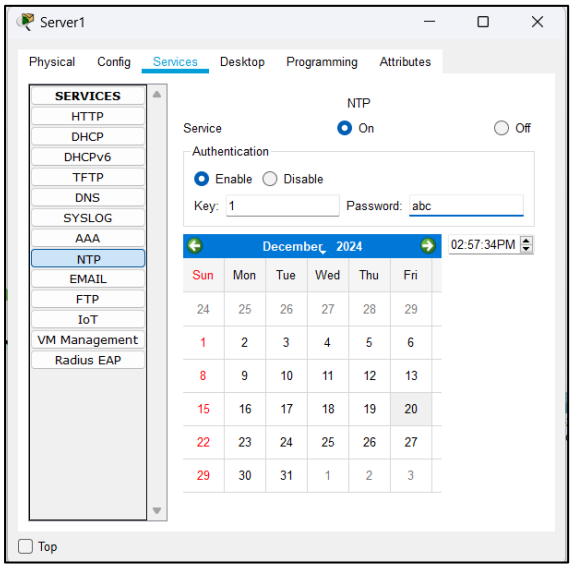


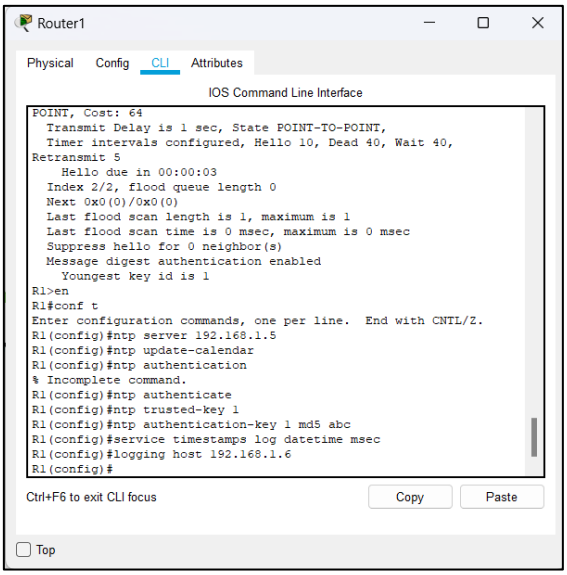

Router2
Physical
Config
CLI
Attributes
IOS Command Line Interface
Last flood scan length is 1, maximum is 1
Last flood scan time is 0 msec, maximum is 0 msec
Neighbor Count is 0, Adjacent neighbor count is 0
Suppress hello for 0 neighbor(s)
Message digest authentication enabled
No key configured, using default key id 0
Serial0/0/1 is up, line protocol is up
Internet address is 10.2.2.1/30, Area 0
Process ID 1, Router ID 192.168.3.1, Network Type POINT-TO-POINT, Cost: 64
Transmit Delay is 1 sec, State POINT-TO-POINT,
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
Hello due in 00:00:05
Index 2/2, flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 1, maximum is 1
Last flood scan time is 0 msec, maximum is 0 msec
Neighbor Count is 1 , Adjacent neighbor count is 1
Adjacent with neighbor 10.2.2.2
Suppress hello for 0 neighbor(s)
Message digest authentication enabled
Youngest key id is 1
R2>
R2>
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

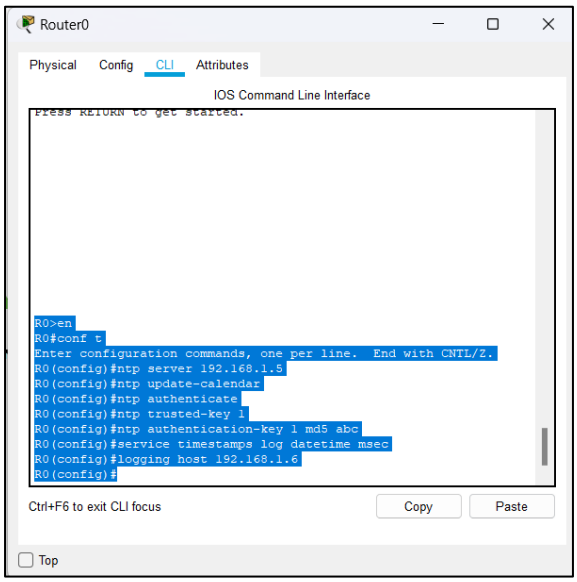

Router0
Physical
Config
CLI
Attributes
IOS Command Line Interface
R0>show ip ospf int
Serial0/0/0 is up, line protocol is up
Internet address is 10.1.1.2/30, Area 0
Process ID 1, Router ID 10.2.2.2, Network Type POINT-TO-POINT, Cost: 64
Transmit Delay is 1 sec, State POINT-TO-POINT,
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
Hello due in 00:00:07
Index 1/1, flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 1, maximum is 1
Last flood scan time is 0 msec, maximum is 0 msec
Suppress hello for 0 neighbor(s)
Message digest authentication enabled
No key configured, using default key id 0
Serial0/0/1 is up, line protocol is up
Internet address is 10.2.2.2/30, Area 0
Process ID 1, Router ID 10.2.2.2, Network Type POINT-TO-POINT, Cost: 64
Transmit Delay is 1 sec, State POINT-TO-POINT,
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
Hello due in 00:00:09
Index 2/2, flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 1, maximum is 1
Last flood scan time is 0 msec, maximum is 0 msec
Neighbor Count is 1 , Adjacent neighbor count is 1
Adjacent with neighbor 192.168.3.1
Suppress hello for 0 neighbor(s)
Message digest authentication enabled
Youngest key id is 1
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

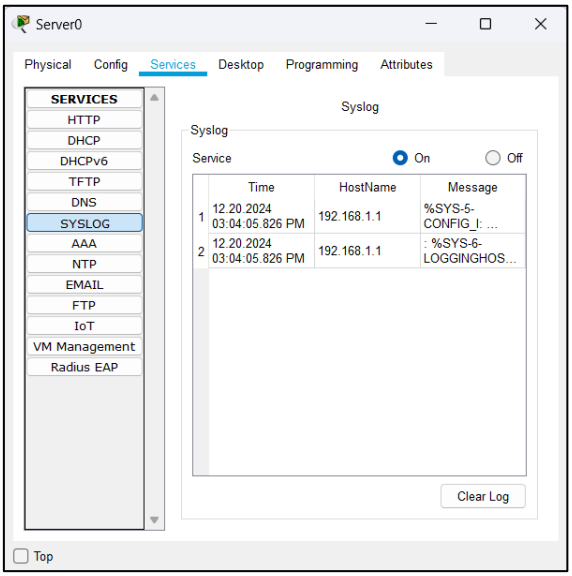

Router1
Physical
Config
CLI
Attributes
IOS Command Line Interface
R1>show ip ospf int
GigabitEthernet0/0 is up, line protocol is up
Internet address is 192.168.1.1/24, Area 0
Process ID 1, Router ID 192.168.1.1, Network Type BROADCAST, Cost: 1
Transmit Delay is 1 sec, State DR, Priority 1
Designated Router (ID) 192.168.1.1, Interface address 192.168.1.1
No backup designated router on this network
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
Hello due in 00:00:05
Index 1/1, flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 1, maximum is 1
Last flood scan time is 0 msec, maximum is 0 msec
Neighbor Count is 0, Adjacent neighbor count is 0
Suppress hello for 0 neighbor(s)
Message digest authentication enabled
No key configured, using default key id 0
Serial0/0/0 is up, line protocol is up
Internet address is 10.1.1.1/30, Area 0
Process ID 1, Router ID 192.168.1.1, Network Type POINT-TO-POINT, Cost: 64
Transmit Delay is 1 sec, State POINT-TO-POINT,
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
Hello due in 00:00:03
Index 2/2, flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 1, maximum is 1
Last flood scan time is 0 msec, maximum is 0 msec
Suppress hello for 0 neighbor(s)
Message digest authentication enabled
Youngest key id is 1
R1>
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

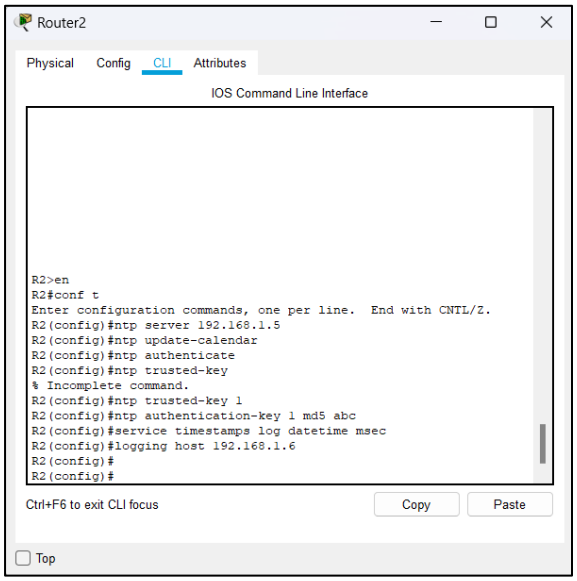
Part 2: Configure NTP(Network Time Protocol)









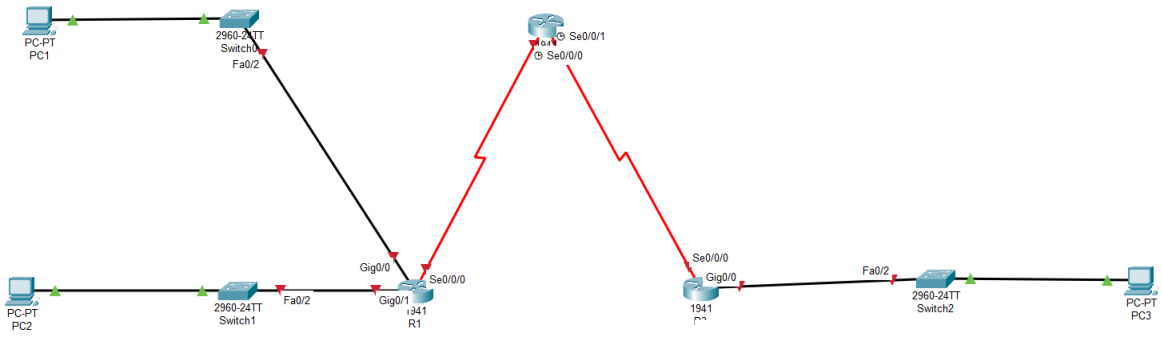


PRACTICAL 3

Aim: Configure IPV6 ACL (access control list) that will block http and https access on R1 and allow all other IPV6 traffic to pass.

1. For the router go to HWIC-2T and assign the ports.

Topology



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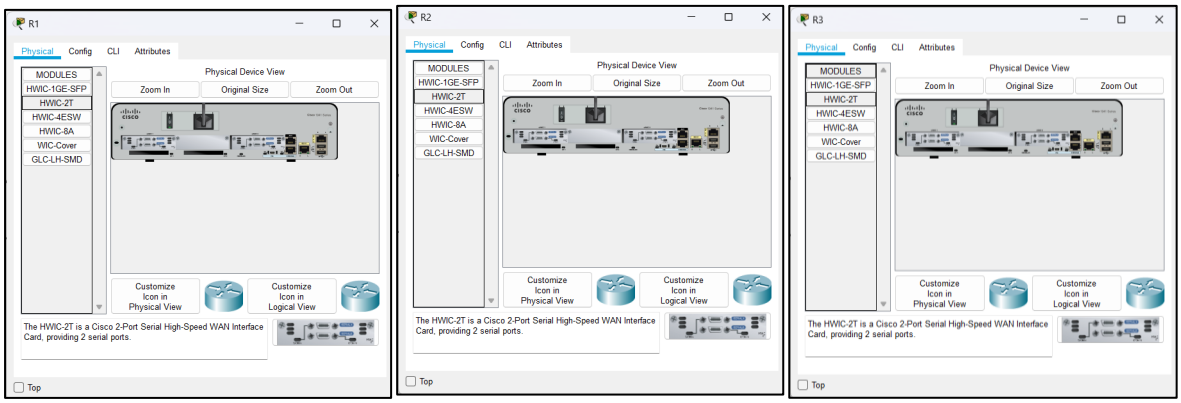
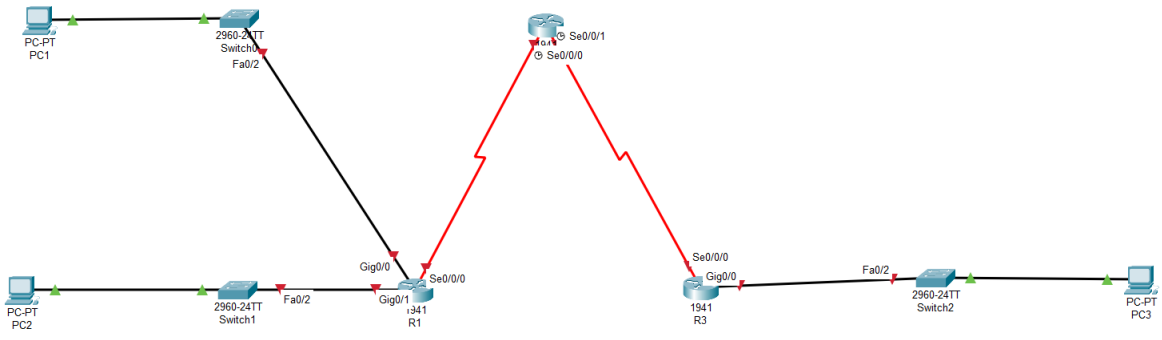
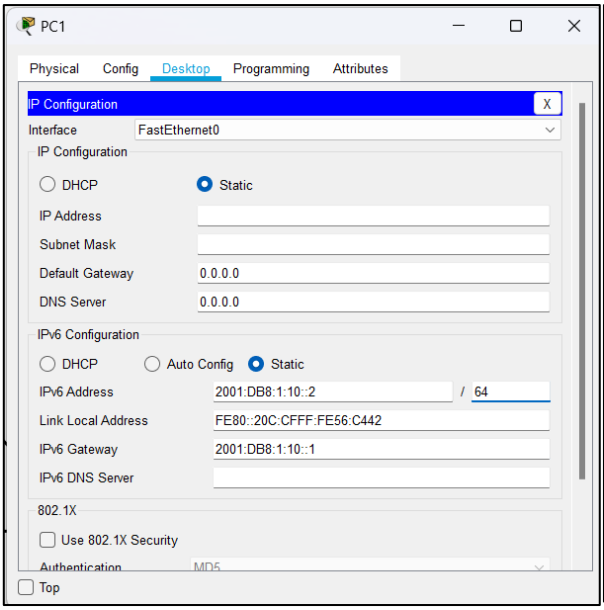
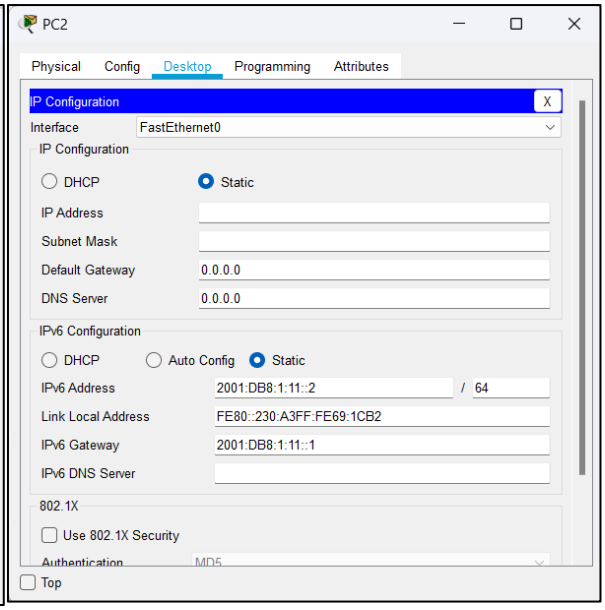
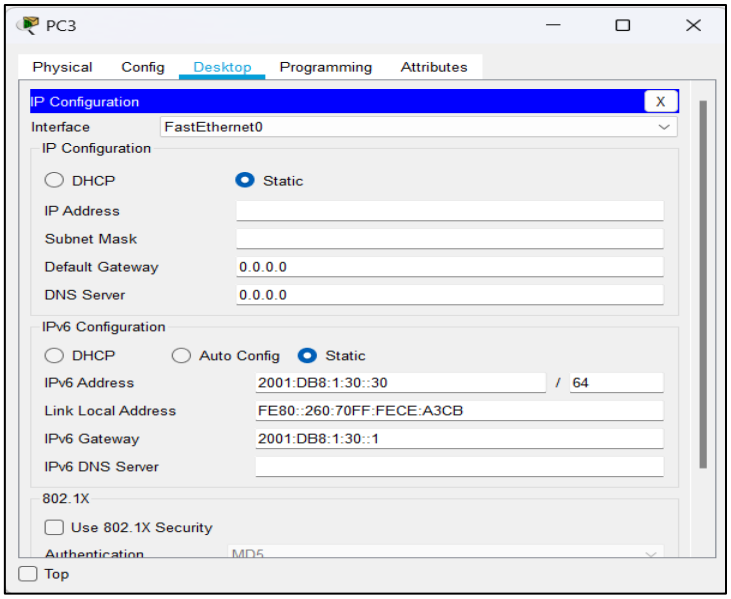
To connect router to router : add port





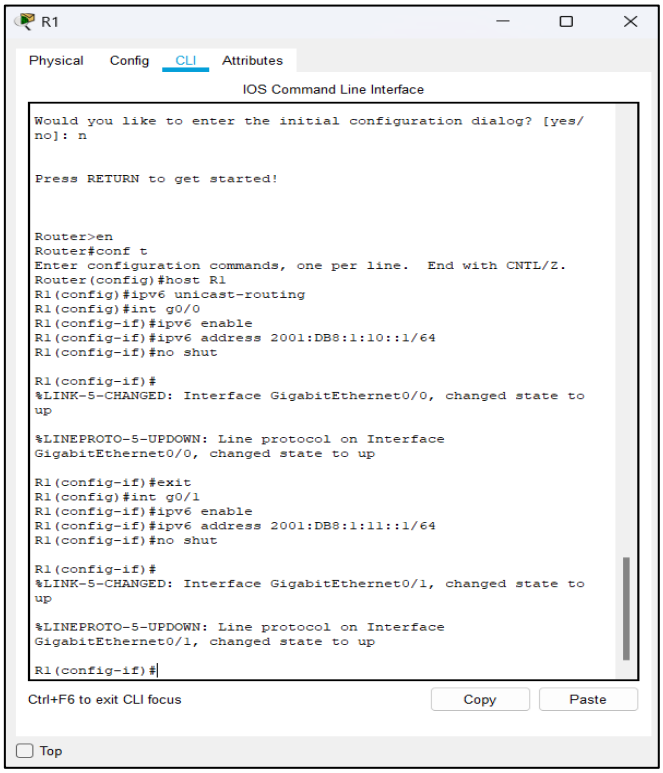

PC1
Physical Config Desktop Programming Attributes
IP Configuration
Interface FastEthernet0
IP Configuration
DHCP Static
IP Address
Subnet Mask
Default Gateway 0.0.0.0
DNS Server 0.0.0.0
IPv6 Configuration
DHCP Auto Config Static
IPv6 Address 2001:DB8:1:10::2 / 64
Link Local Address FE80::20C:CFFF:FE56:C442
IPv6 Gateway 2001:DB8:1:10::1
IPv6 DNS Server
802.1X
Use 802.1X Security
Top


PC2
Physical Config Desktop Programming Attributes
IP Configuration
Interface FastEthernet0
IP Configuration
DHCP Static
IP Address
Subnet Mask
Default Gateway 0.0.0.0
DNS Server 0.0.0.0
IPv6 Configuration
DHCP Auto Config Static
IPv6 Address 2001:DB8:1:11::2 / 64
Link Local Address FE80::230:A3FF:FE69:1CB2
IPv6 Gateway 2001:DB8:1:11::1
IPv6 DNS Server
802.1X
Use 802.1X Security
Top

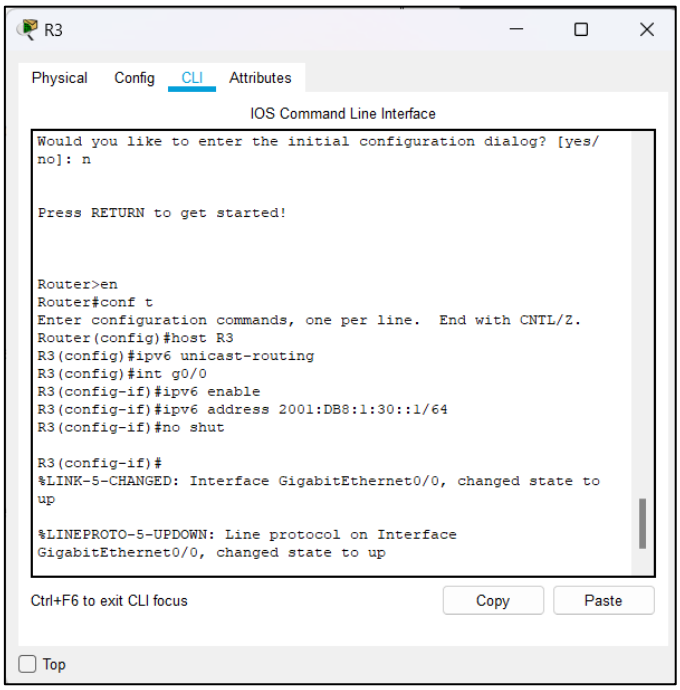

PC3
Physical Config Desktop Programming Attributes
IP Configuration
Interface FastEthernet0
IP Configuration
DHCP Static
IP Address
Subnet Mask
Default Gateway 0.0.0.0
DNS Server 0.0.0.0
IPv6 Configuration
DHCP Auto Config Static
IPv6 Address 2001:DB8:1:30::30 / 64
Link Local Address FE80::260:70FF:FECE:A3CB
IPv6 Gateway 2001:DB8:1:30::1
IPv6 DNS Server
802.1X
Use 802.1X Security
Top

2 Go to the Router's CLI and write the following command.(Between Router and Switch)

R1 (g0/0 & g0/1)

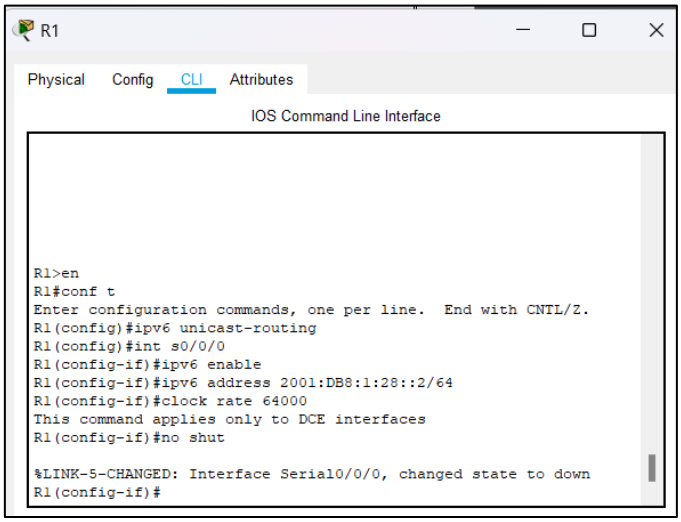


R3(g0/0)

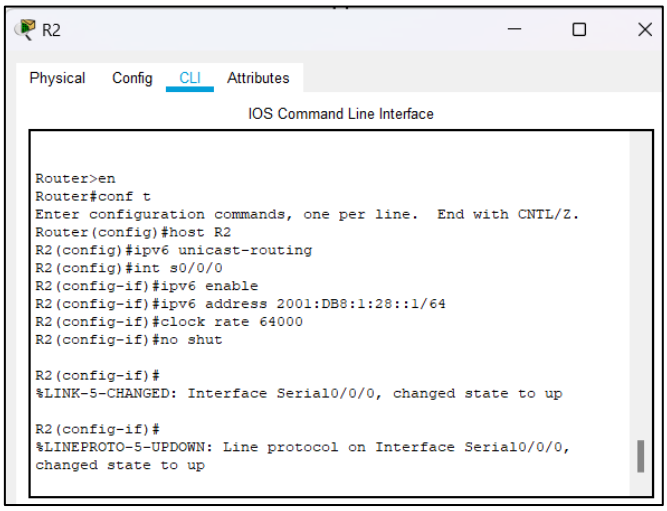


2 : GO to the CLI and write the following command.(Between Router to Router)

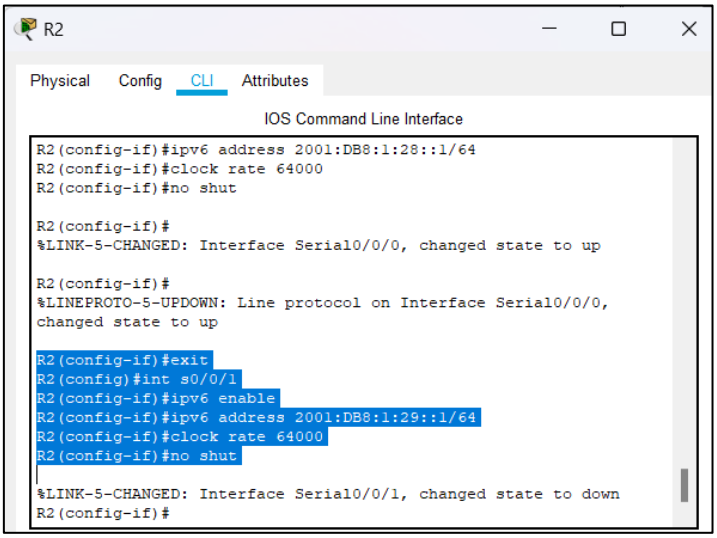
R1(s0/0/0)



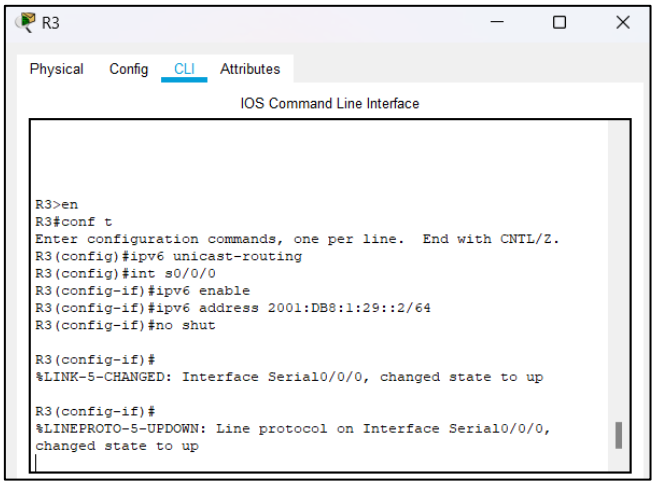
R2 (s0/0/0)



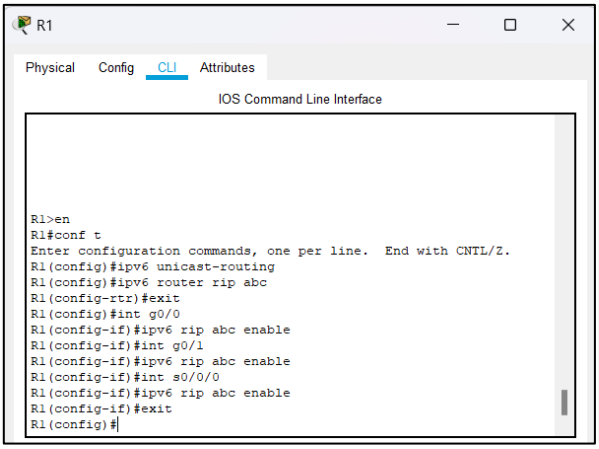
R2(s0/0/1)

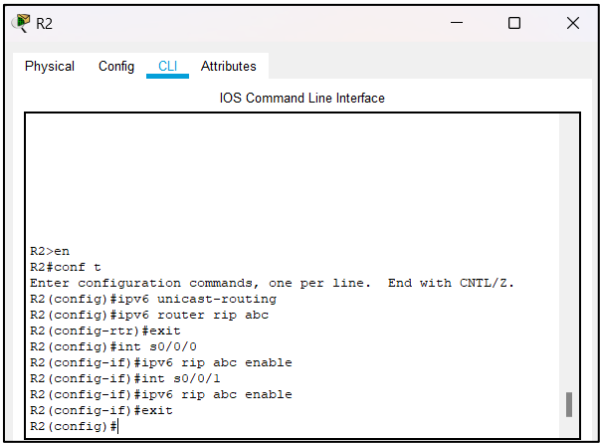


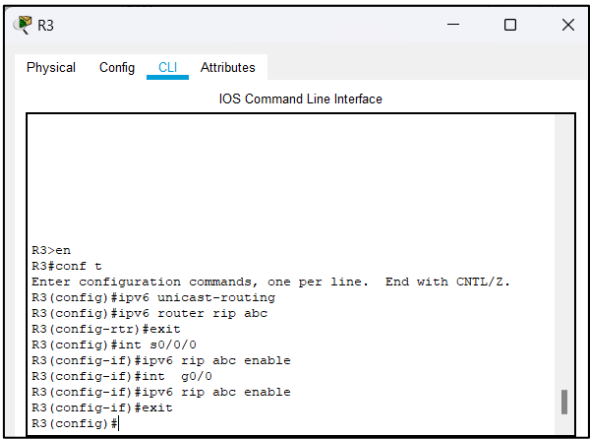
R3(s0/0/0)

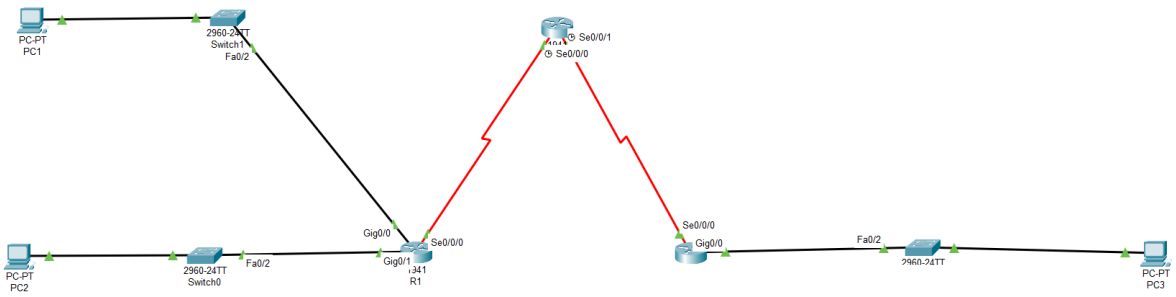


2. We do RIP.



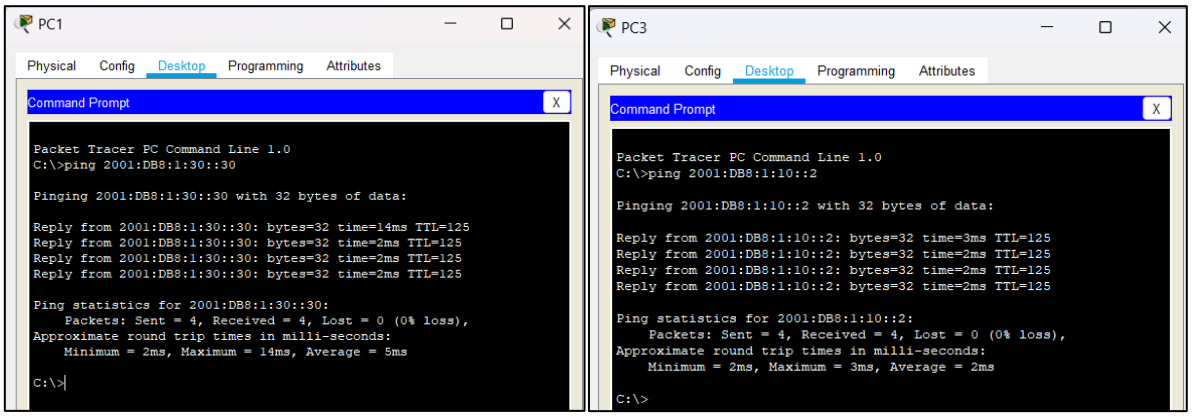




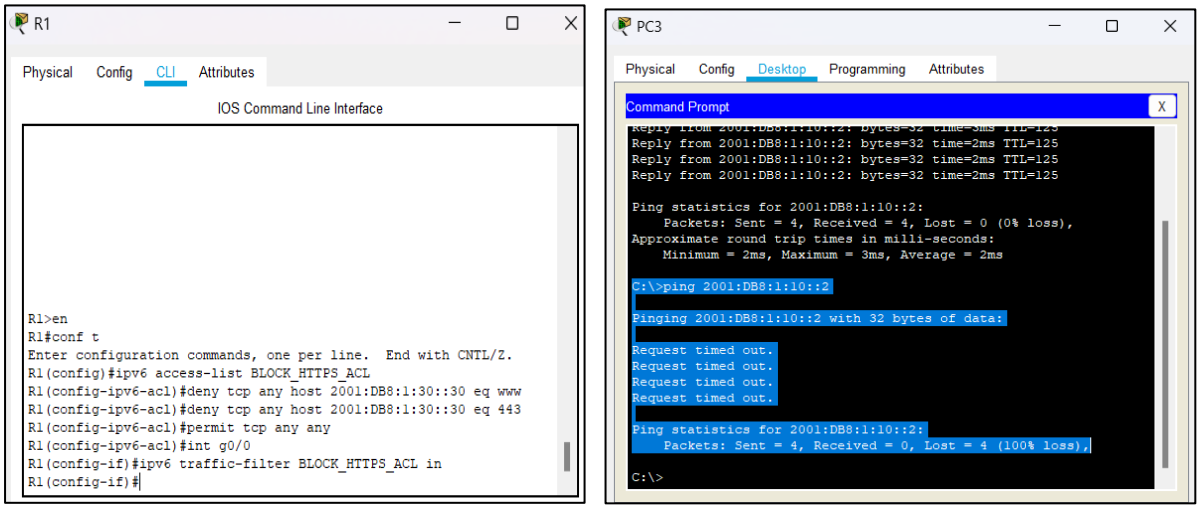


3. Go to the PC's command line and write the following command.

PC1 and PC3



4. To block the https and http access.

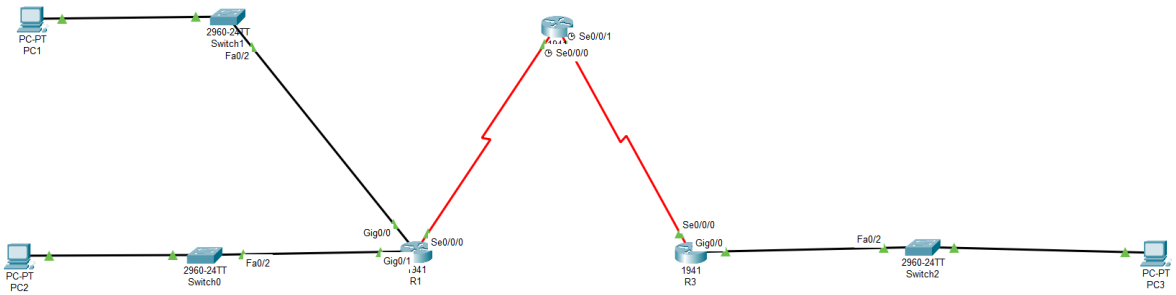


PRACTICAL 4

Aim: Configure IPv6 ACL to block ICMP(Internet Control Messaging Protocol) access on R3 and allow all other IPv6 traffic to pass.

1. For the router go to HWIC-2T and assign the ports.

Topology



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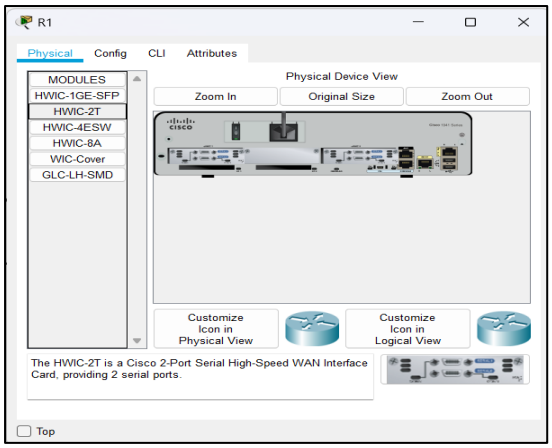
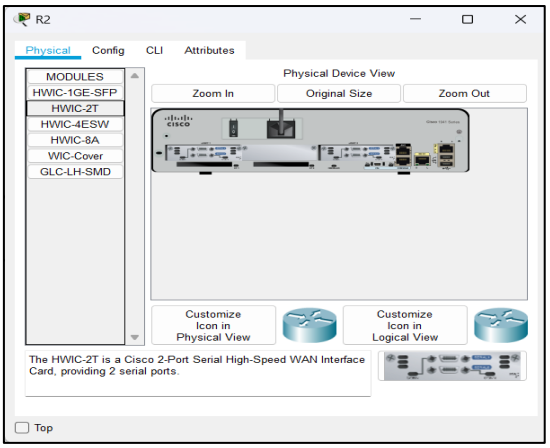
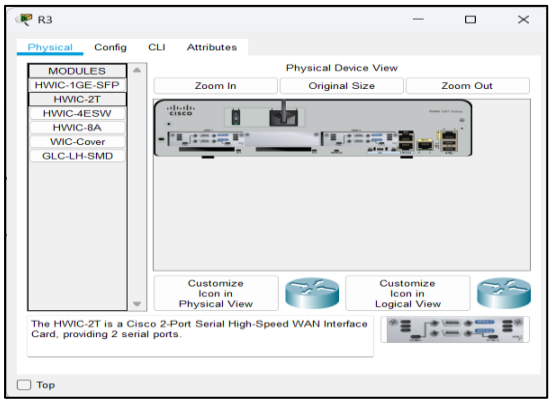
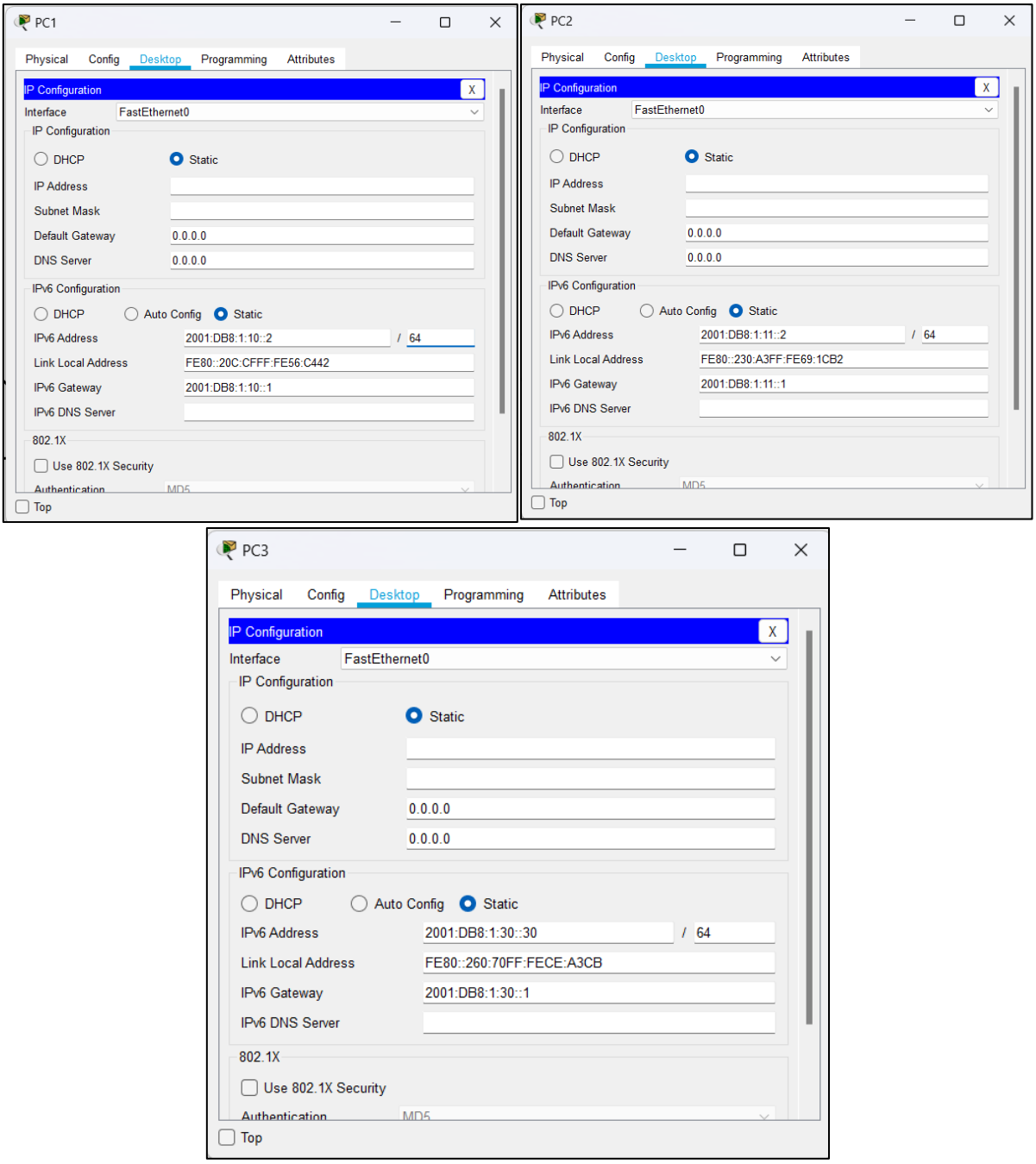


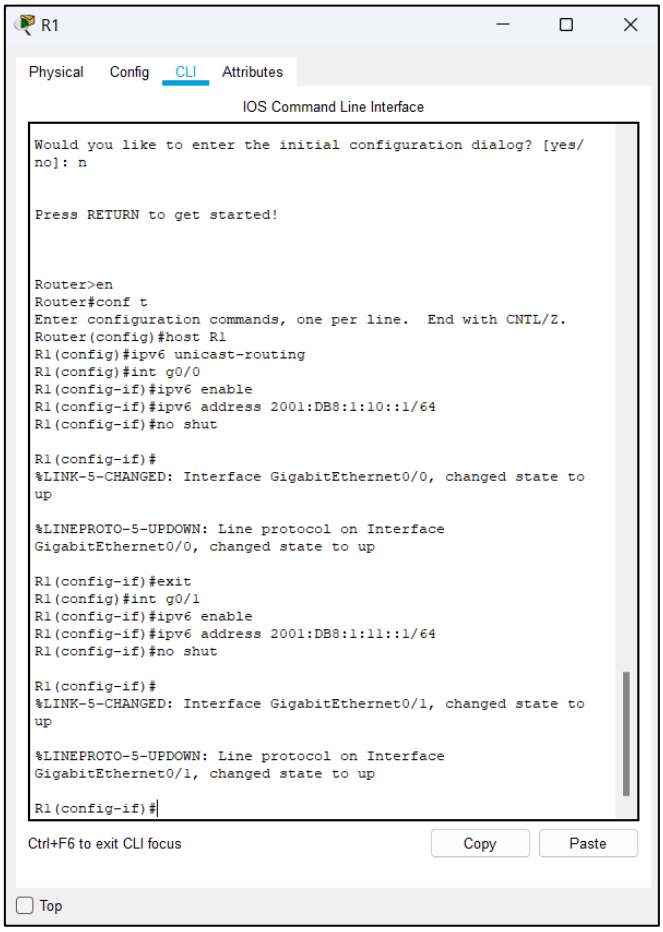




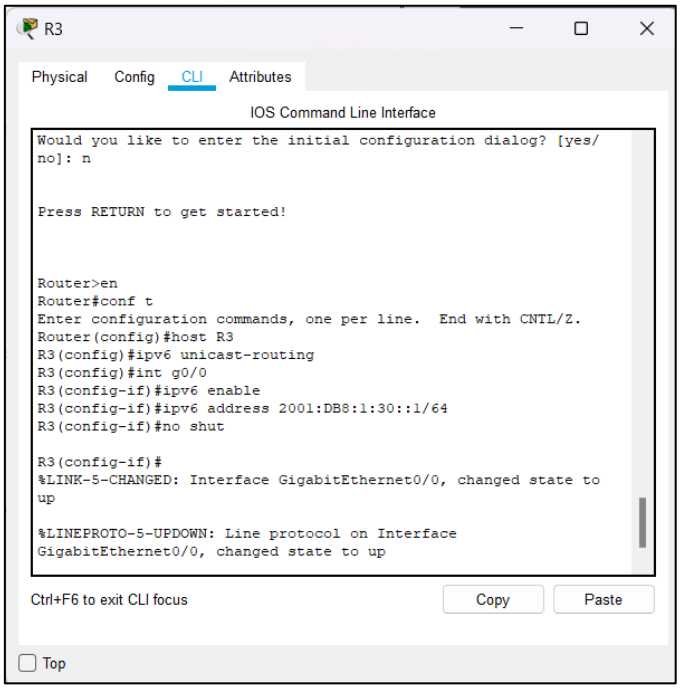

PC1
Physical Config Desktop Programming Attributes
IP Configuration
Interface FastEthernet0
IP Configuration
DHCP Static
IP Address
Subnet Mask
Default Gateway 0.0.0.0
DNS Server 0.0.0.0
IPv6 Configuration
DHCP Auto Config Static
IPv6 Address 2001:DB8:1:10::2 / 64
Link Local Address FE80::20C:CFFF:FE56:C442
IPv6 Gateway 2001:DB8:1:10::1
IPv6 DNS Server
802.1X
Use 802.1X Security
Authentication MD5
Top
PC2
Physical Config Desktop Programming Attributes
IP Configuration
Interface FastEthernet0
IP Configuration
DHCP Static
IP Address
Subnet Mask
Default Gateway 0.0.0.0
DNS Server 0.0.0.0
IPv6 Configuration
DHCP Auto Config Static
IPv6 Address 2001:DB8:1:11::2 / 64
Link Local Address FE80::230:A3FF:FE69:1CB2
IPv6 Gateway 2001:DB8:1:11::1
IPv6 DNS Server
802.1X
Use 802.1X Security
Authentication MD5
Top
PC3
Physical Config Desktop Programming Attributes
IP Configuration
Interface FastEthernet0
IP Configuration
DHCP Static
IP Address
Subnet Mask
Default Gateway 0.0.0.0
DNS Server 0.0.0.0
IPv6 Configuration
DHCP Auto Config Static
IPv6 Address 2001:DB8:1:30::30 / 64
Link Local Address FE80::260:70FF:FECE:A3CB
IPv6 Gateway 2001:DB8:1:30::1
IPv6 DNS Server
802.1X
Use 802.1X Security
Authentication MD5
Top

2. Go to the Router's CLI and write the following command.(Between Router and Switch)

R1 (g0/0 & g0/1)

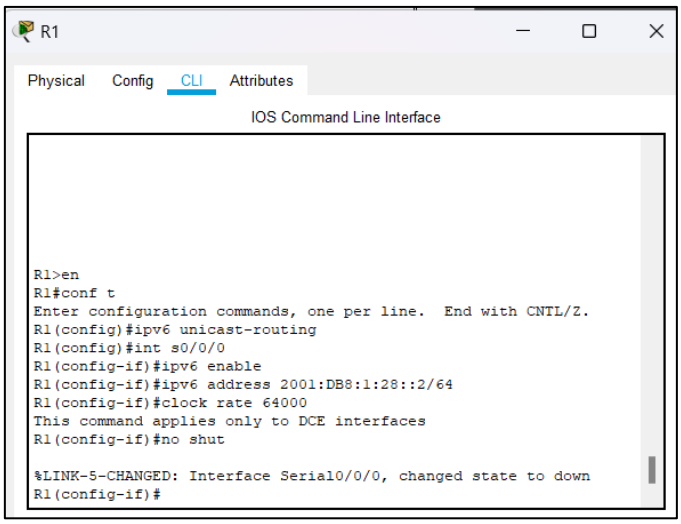


R3(g0/0)

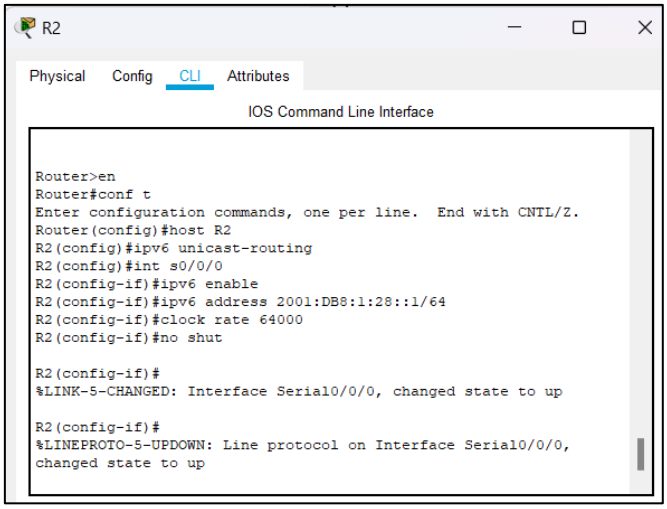


3. GO to the CLI and write the following command.(Between Router to Router)

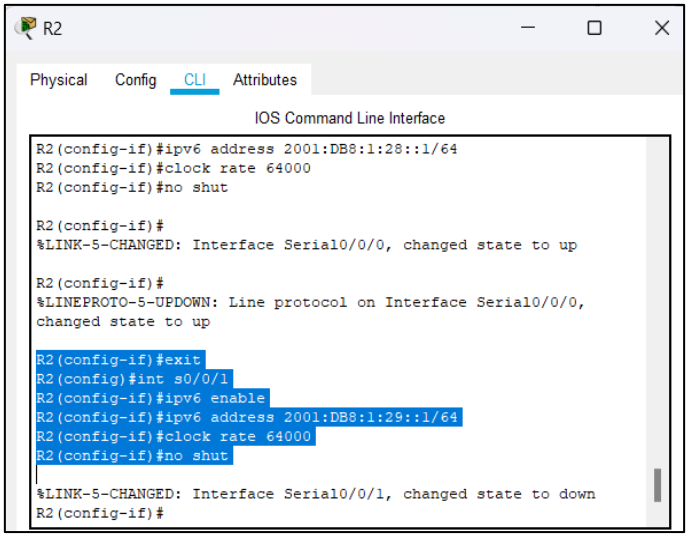
R1(s0/0/0)



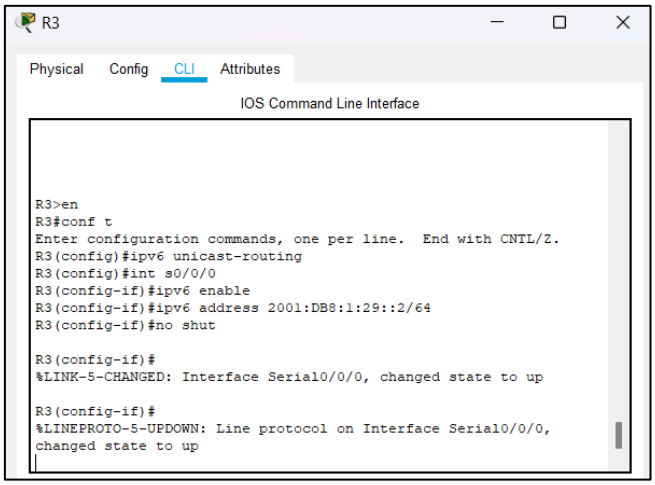
R2 (s0/0/0)



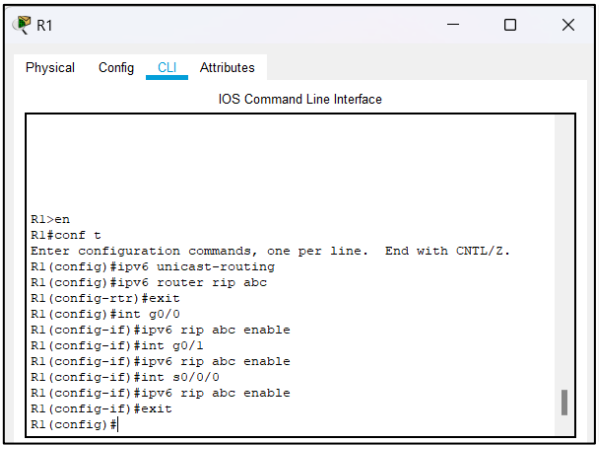
R2(s0/0/1)

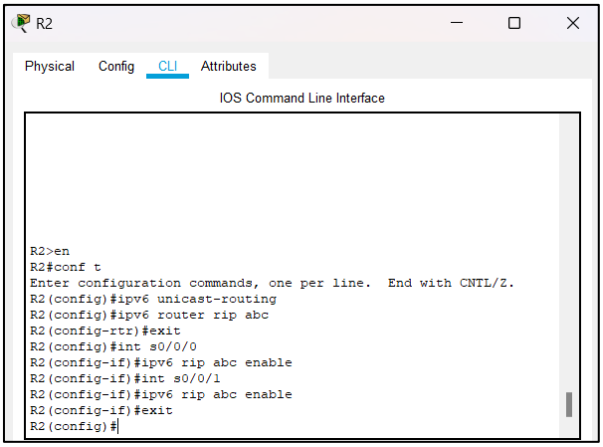


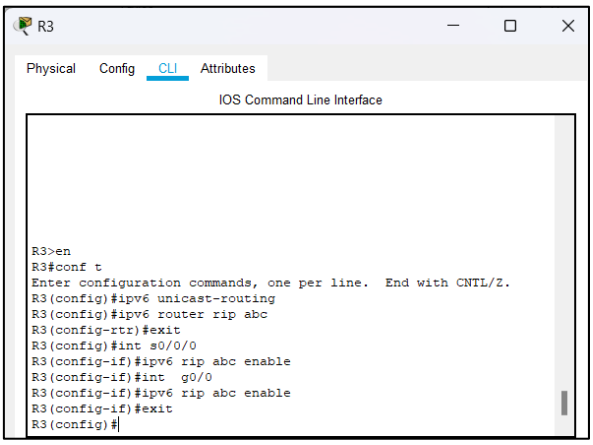
R3(s0/0/0)

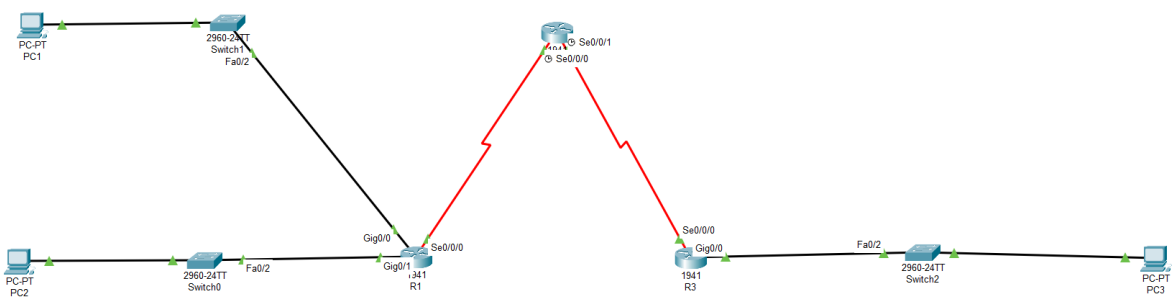


4. We do RIP.

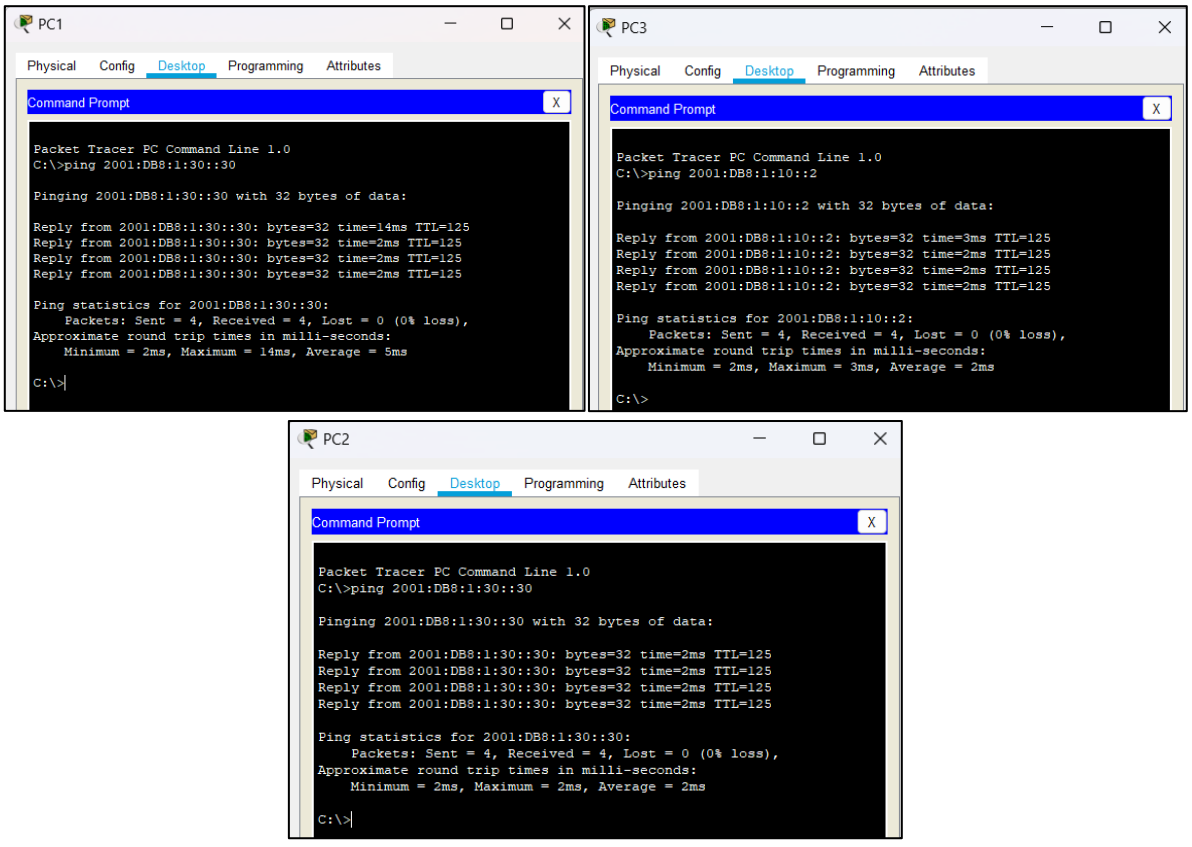




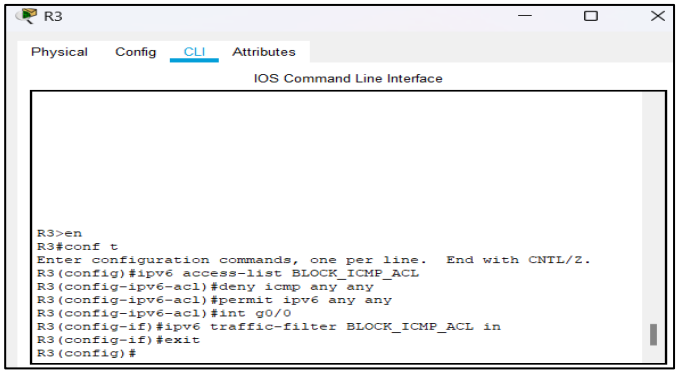




5. Go to the PC's command line and write the following command.



1. Block ICMP



PC1

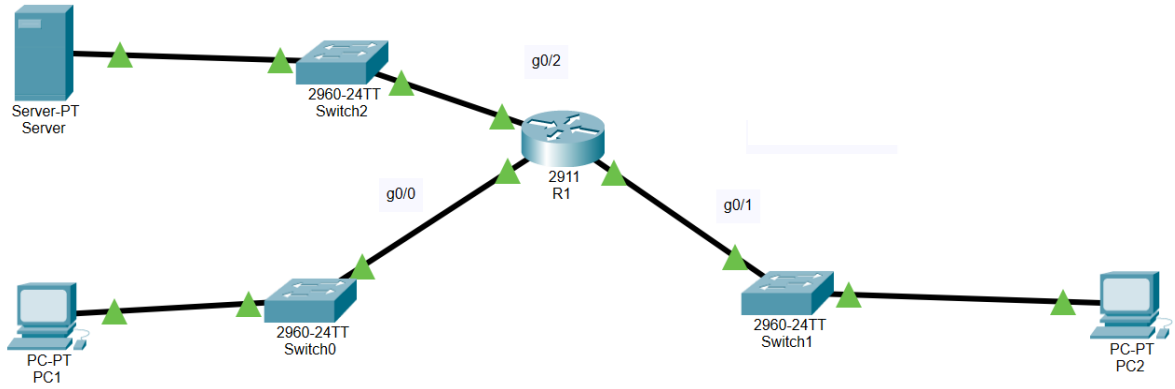
```
C:\>ping 2001:DB8:1:30::30

Pinging 2001:DB8:1:30::30 with 32 bytes of data:

Reply from 2001:DB8:1:10::1: Destination host unreachable.
Reply from 2001:DB8:1:10::1: Destination host unreachable.
Reply from 2001:DB8:1:10::1: Destination host unreachable.
Reply from 2001:DB8:1:10::1: Destination host unreachable.

Ping statistics for 2001:DB8:1:30::30:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

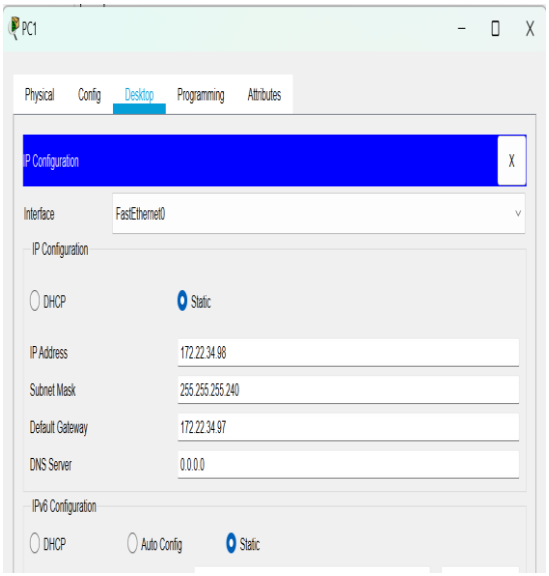
PC2

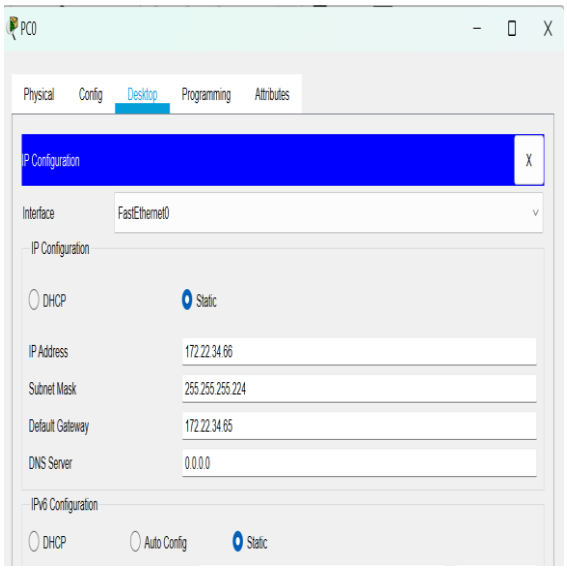
```
C:\>ping 2001:DB8:1:30::30

Pinging 2001:DB8:1:30::30 with 32 bytes of data:

Request timed out.
```

PRACTICAL 5

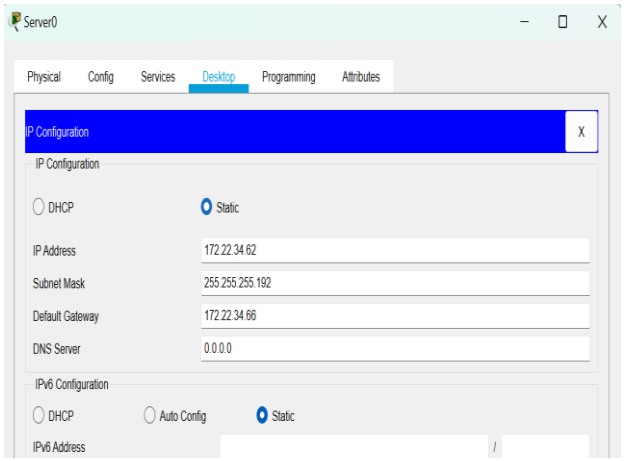
Aim: Configure an ACL that will permit FTP and HTTP access on R1 verify ACL implementation on PC1 only FTP and PC2 only HTTP



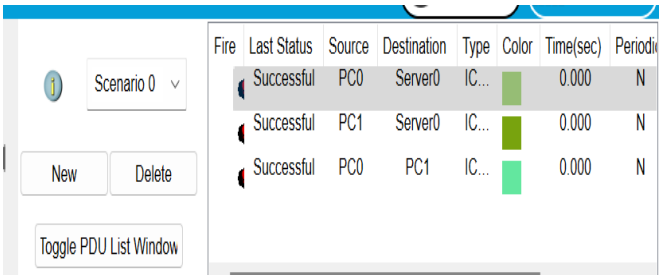




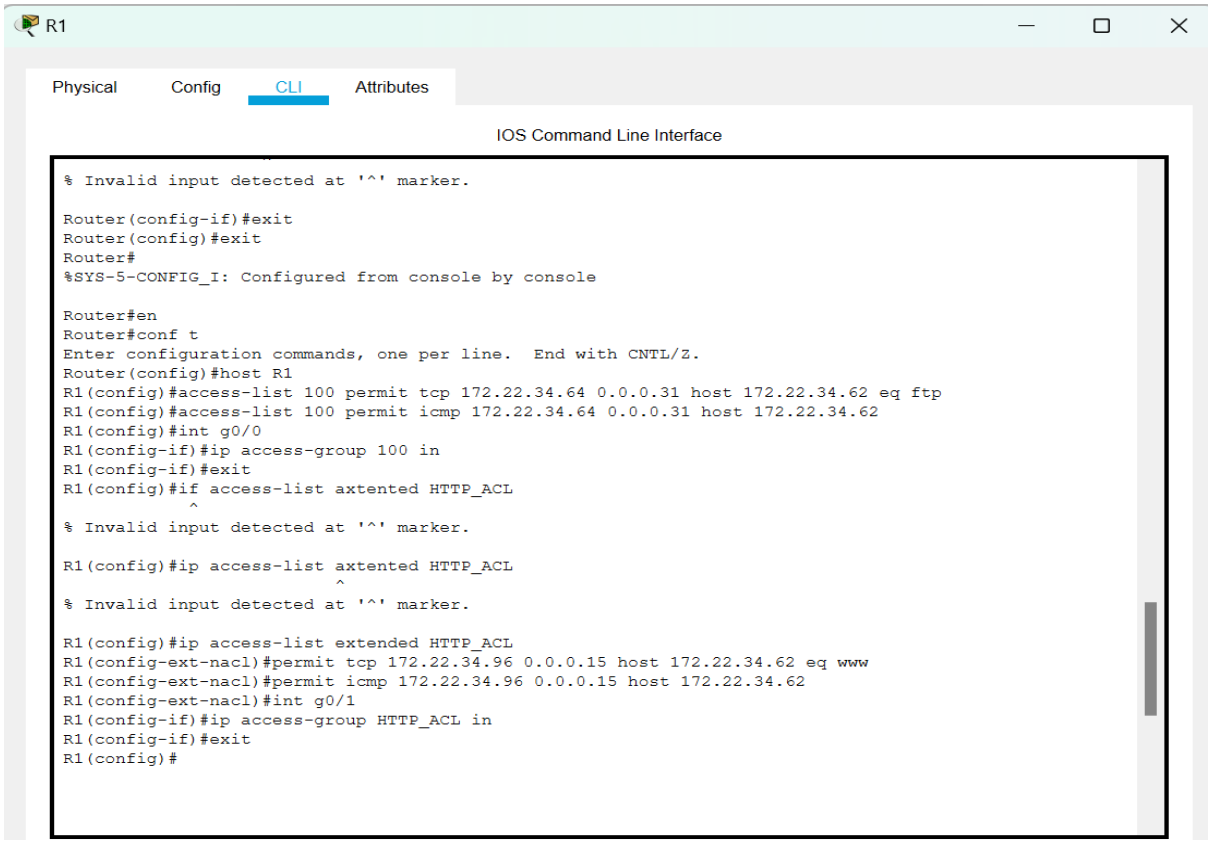
Server :

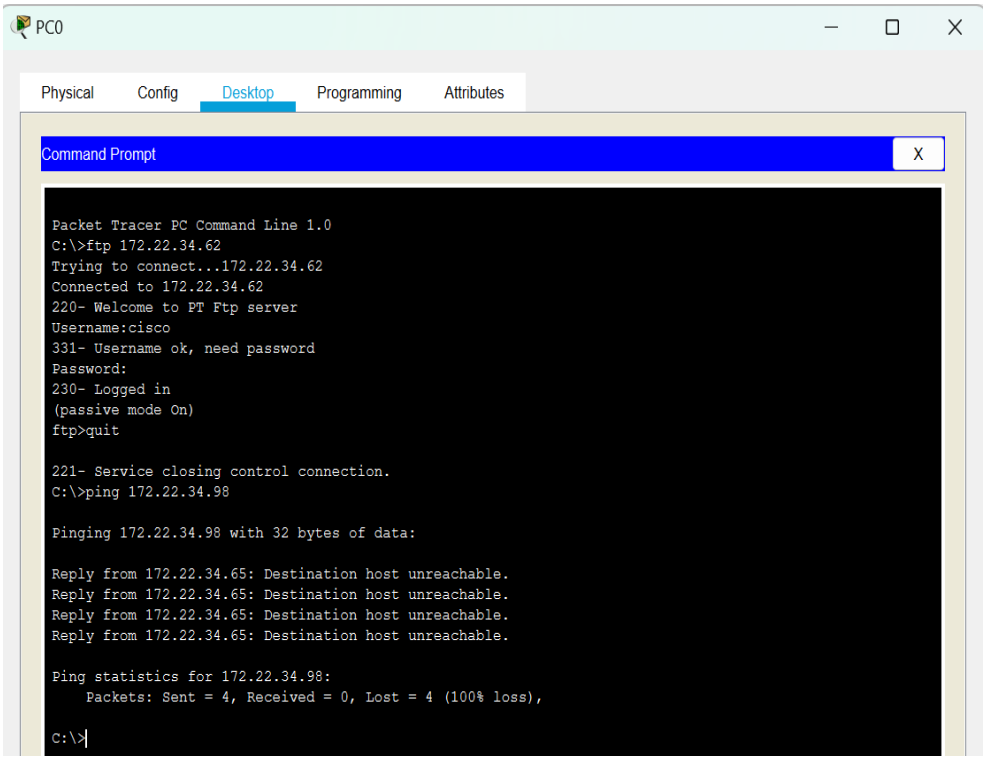


Message transferring successful:



Router configuration :





B) PC2 needs only web access and should be able to ping the server but PC1