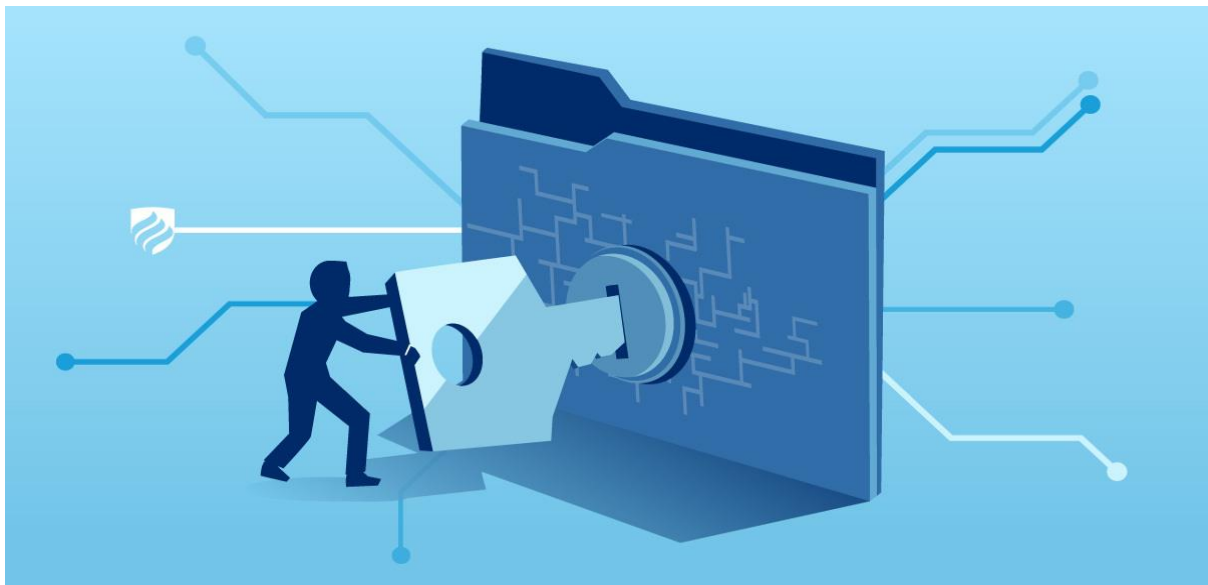




**Laxmi Charitable Trust's**  
**Sheth L.U.J College of Arts & Sir**  
**M.V. College**  
**Of Science & Commerce**

# INFORMATION SECURITY PRACTICAL



Name :Ritesh Yadav

Roll no: T059

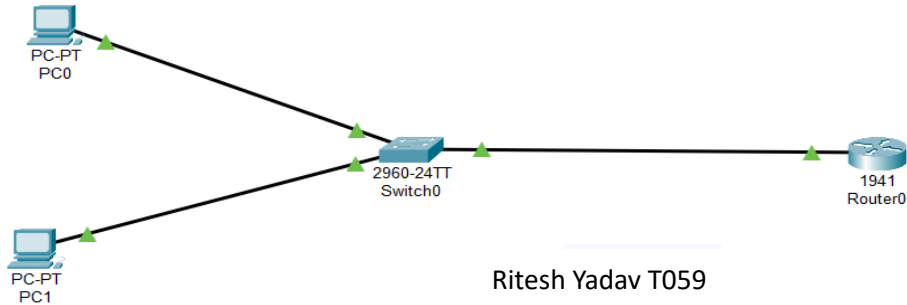
Class: TYIT

# INDEX

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:**

PC0

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IP Address 192.168.1.2

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::240:BFF:FEC5:AB8A

IPv6 Gateway

IPv6 DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

☐ Top

PC1

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IP Address 192.168.1.3

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:CFF:FE59:8A4E

IPv6 Gateway

IPv6 DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

☐ Top

Router0

Physical **Config** CLI Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

GigabitEthernet0/0

GigabitEthernet0/1

Equivalent IOS Commands

up

%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)#ip address 192.168.1.1 255.255.255.0

Router(config-if)#

☐ Top

Router0

Physical Config **CLI** Attributes

IOS Command Line Interface

Enter configuration commands, one per line. End with CNTL/Z.

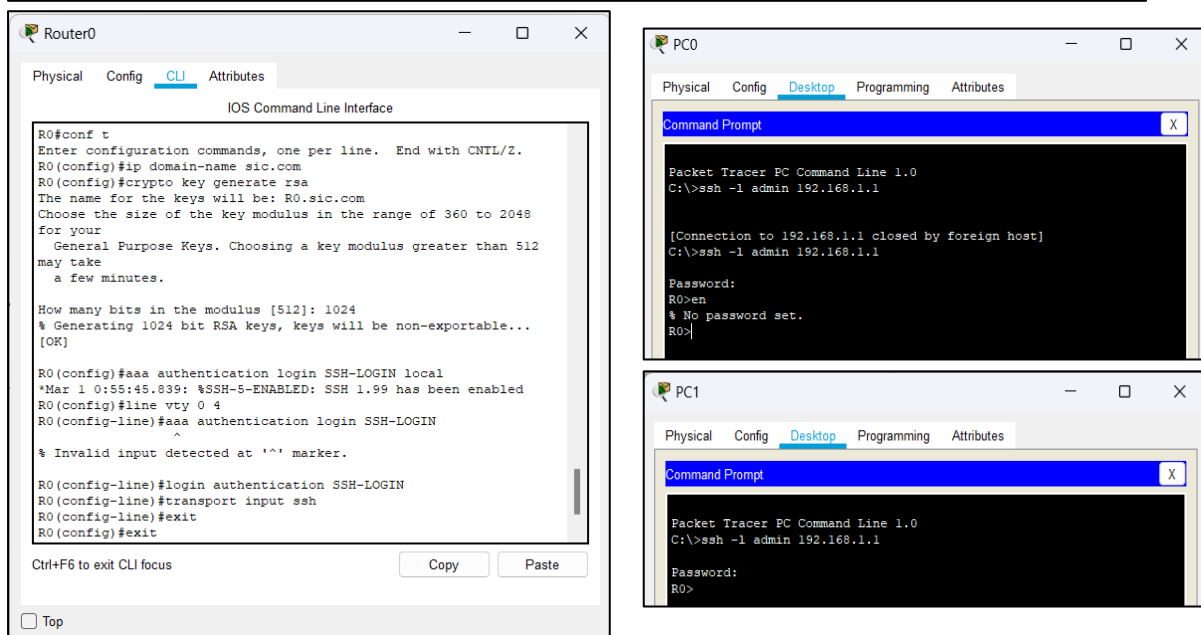
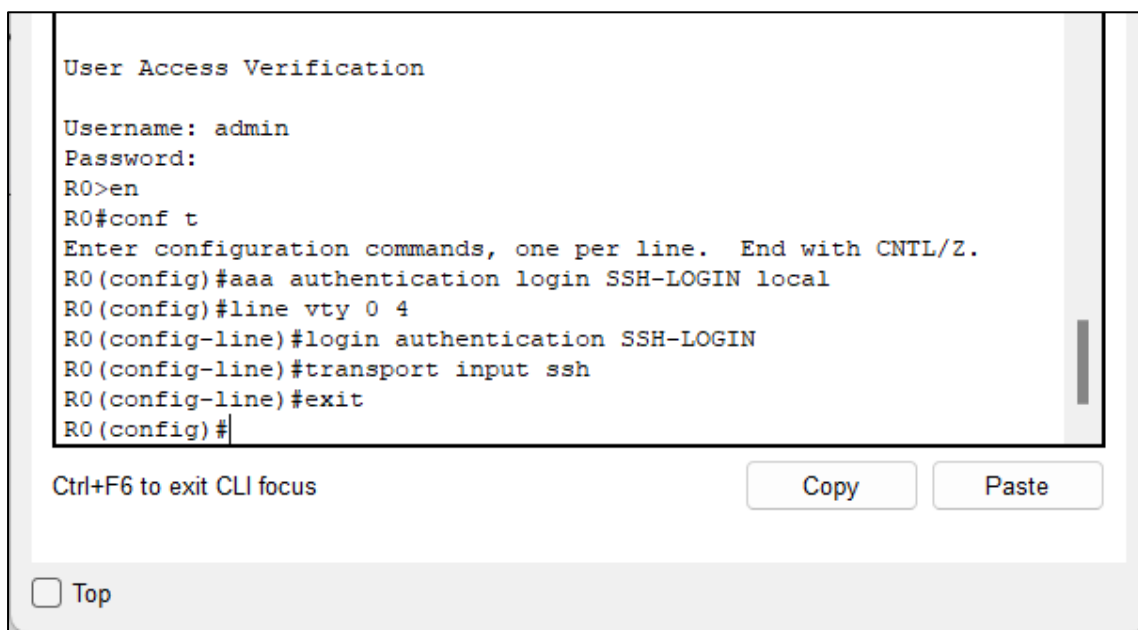
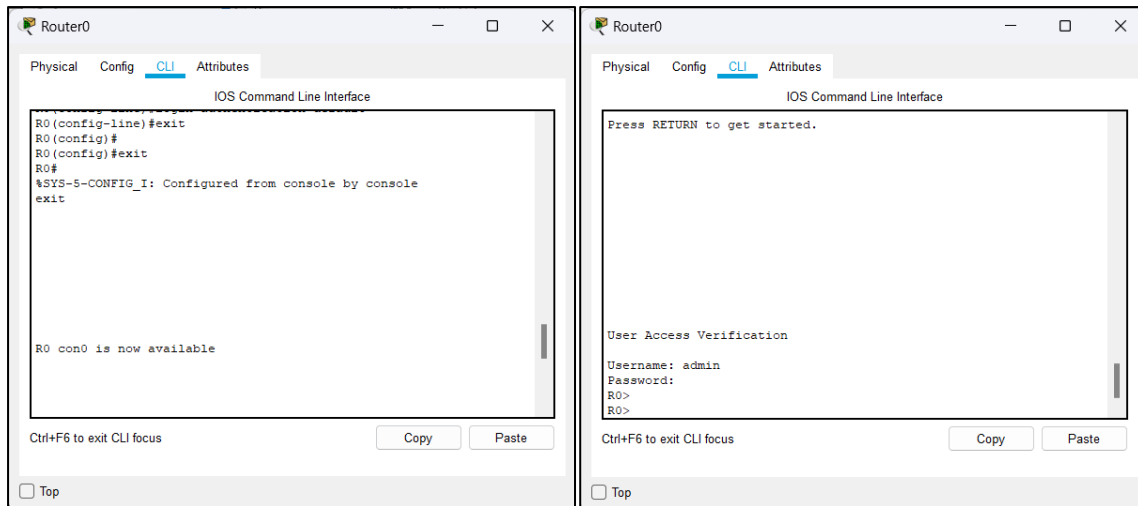
```
Router(config)#interface GigabitEthernet0/0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
ip address 192.168.1.1 255.255.255.0
Router(config-if)#ip address 192.168.1.1 255.255.255.0
Router(config-if)#exit
Router(config)#host R0
R0(config)#username admin secret 123
R0(config)#aaa new-model
R0(config)#aaa authentication login default local
R0(config)#line console 0
R0(config-line)#login authentication default
R0(config-line)#exit
R0(config)#
```

Ctrl+F6 to exit CLI focus

☐ Top

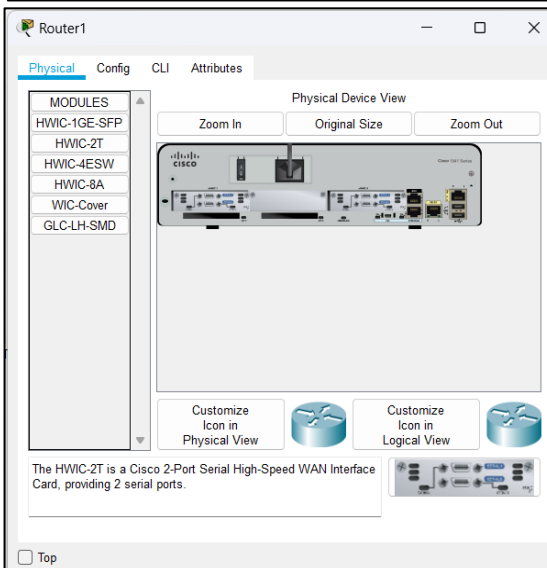
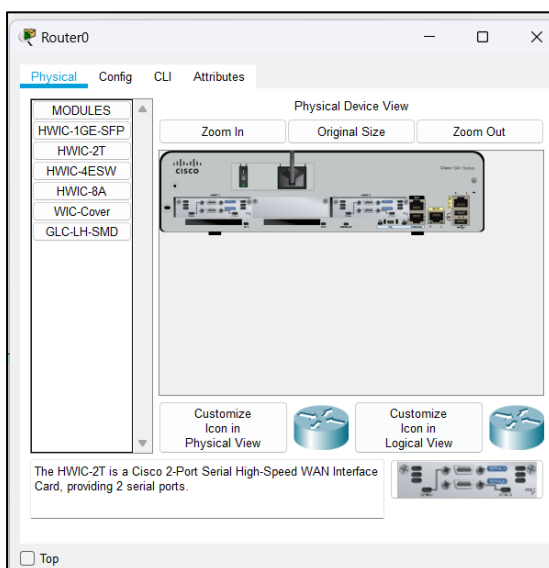
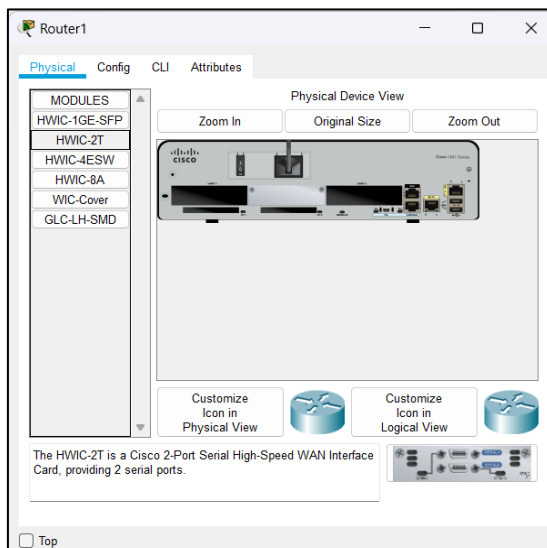
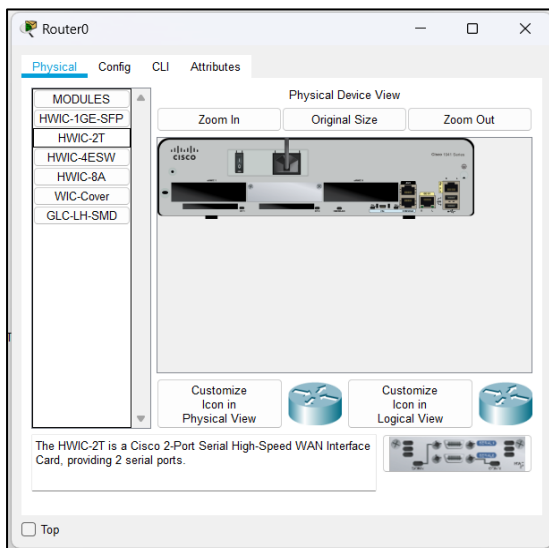
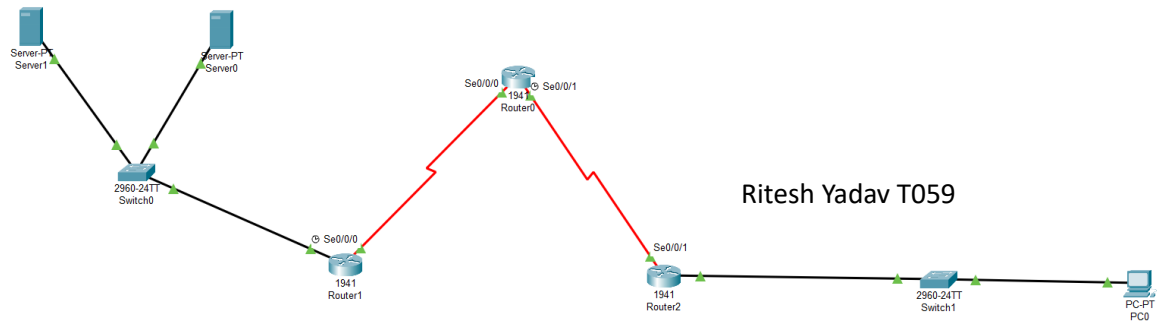
Copy Paste

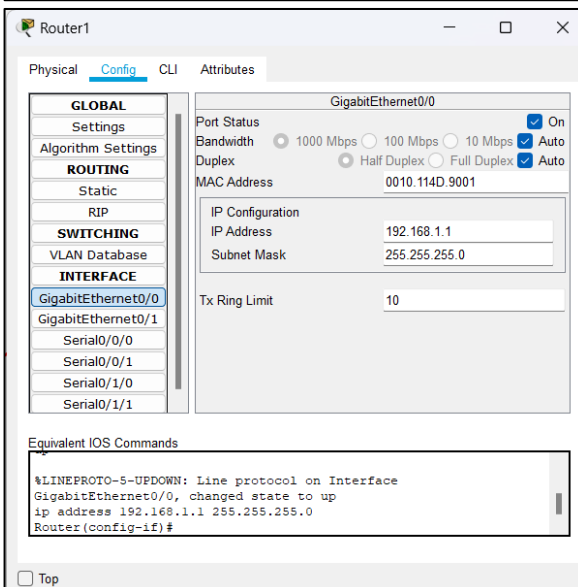
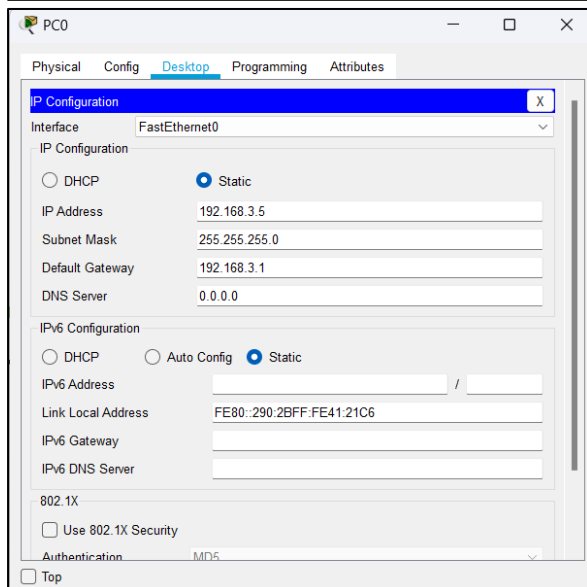
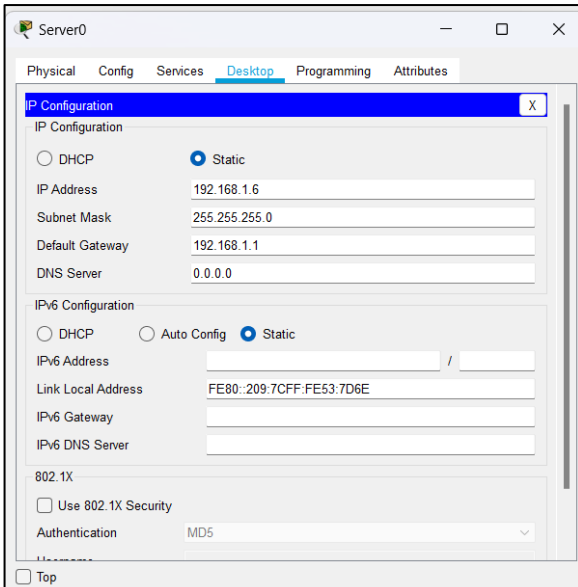
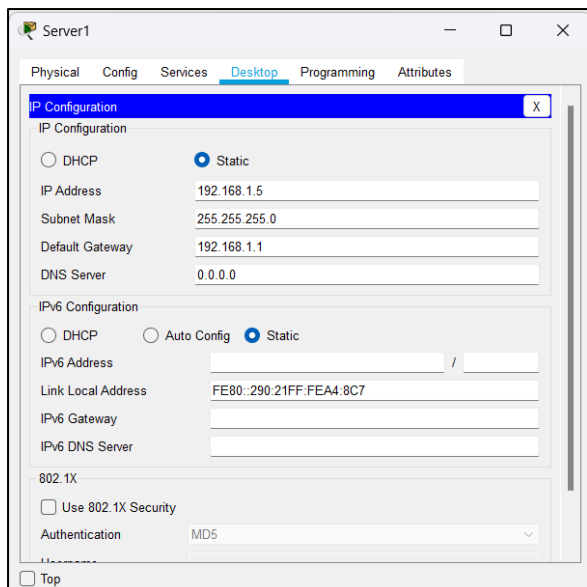
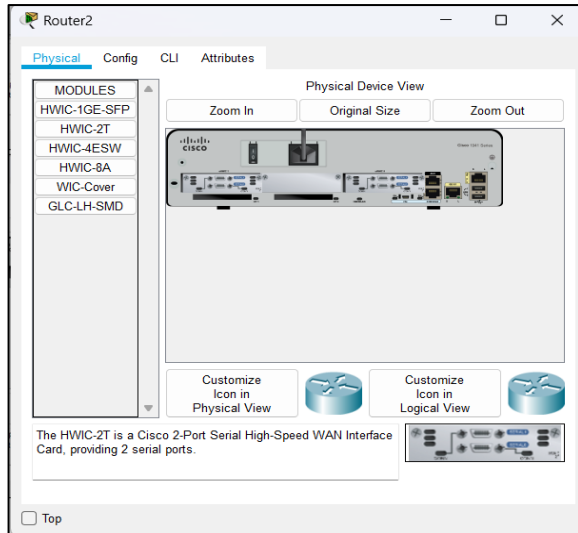
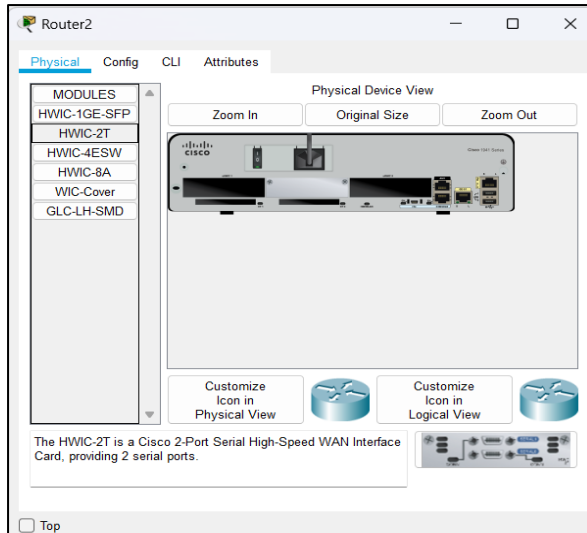


## PRACTICAL 2

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

Topology:





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

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

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

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 shutdown
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

**Serial0/0/1**

Serial0/0/0

Serial0/1/0

Serial0/1/1

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

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

Router1

Physical Config CLI Attributes

IOS Command Line Interface

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

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

Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#host R1
R1(config)#router ospf 1
R1(config-router)#network 192.168.1.0 0.0.0.255 area 0
R1(config-router)#network 10.1.1.0 0.0.0.3 area 0
R1(config-router)#exit
R1(config)#
```

Ctrl+F6 to exit CLI focus

Copy Paste

☐ Top

Router0

Physical Config CLI Attributes

IOS Command Line Interface

```
Router(config-if)#exit
Router(config)#interface Serial0/0/0
Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1,
changed state to up

Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R0
R0(config)#router ospf 1
R0(config-router)#network 10.1.1.0 0.0.0.3 area 0
R0(config-router)#network 10.1.1.0 0.0.0.3 area 0
00:30:53: %OSPF-5-ADJCHG: Process 1, Nbr 192.168.1.1 on
Serial0/0/0 from LOADING to FULL, Loading Done

R0(config-router)#network 10.2.2.0 0.0.0.3 area 0
R0(config-router)#exit
R0(config)#
```

Ctrl+F6 to exit CLI focus

Copy Paste

☐ Top

Router2

Physical Config CLI Attributes

IOS Command Line Interface

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R2
R2(config)#router ospf 1
R2(config-router)#network 192.168.3.0 0.0.0.255 area 0
R2(config-router)#network 10.2.2.0 0.0.0.3 area 0
R2(config-router)#
00:29:36: %OSPF-5-ADJCHG: Process 1, Nbr 10.2.2.2 on Serial0/0/1
from LOADING to FULL, Loading Done

R2(config-router)#network 10.2.2.0 0.0.0.3 area 0
R2(config-router)#exit
R2(config)#
```

Ctrl+F6 to exit CLI focus

Copy Paste

☐ Top

Message transferring successful

Realtime Simulation										
Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	Server1	PC0	ICMP		0.000	N	0	(edit)	(delete)
	Successful	Server0	PC0	ICMP		0.000	N	1	(edit)	(delete)



## Part 1: Configure OSPF MD5(Message Digest) Authentication

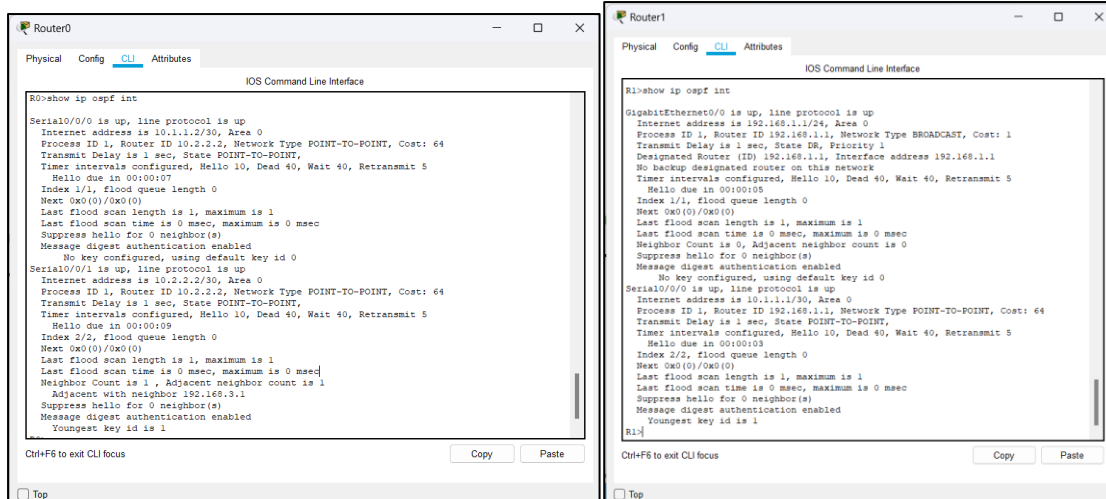
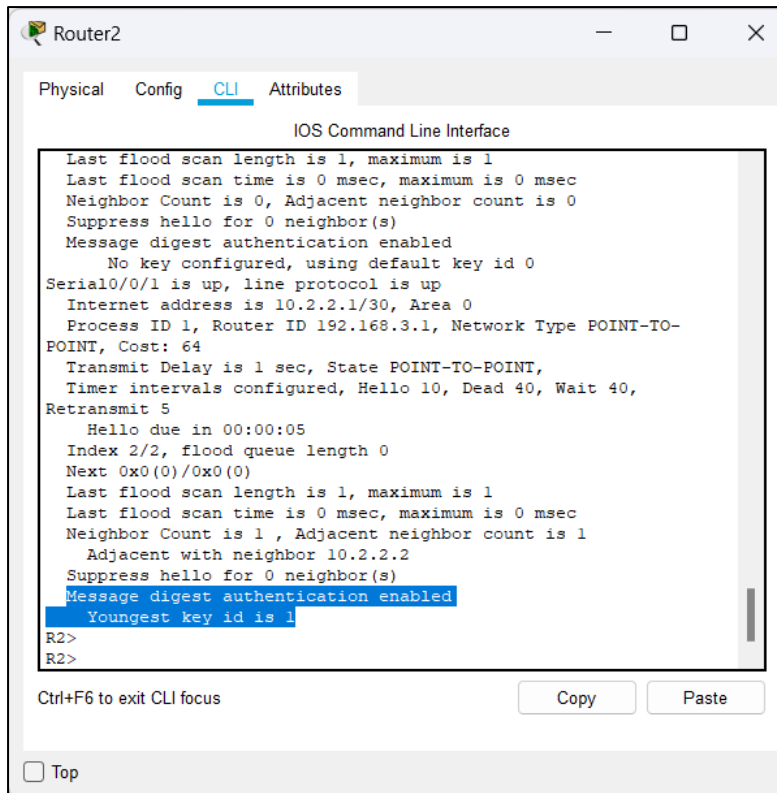
The image displays four screenshots of Cisco IOS Command Line Interface (CLI) windows, arranged in a 2x2 grid, showing the configuration of OSPF MD5 authentication on four routers: Router1, Router0, Router2, and another Router2.

**Router1:** The CLI shows the configuration of OSPF MD5 authentication on interface Serial0/0/0. The configuration commands are: `R1>en`, `R1#conf t`, `R1(config)#router ospf 1`, `R1(config-router)#area 0 authentication message-digest`, `R1(config-router)#exit`, `R1(config)#int s0/0/0`, `R1(config-if)#`, `R1(config-if)#ip ospf message-digest-key 1 md5 abc`, `R1(config-if)#exit`, and `R1(config)#`. The output shows the OSPF process starting and the interface being configured.

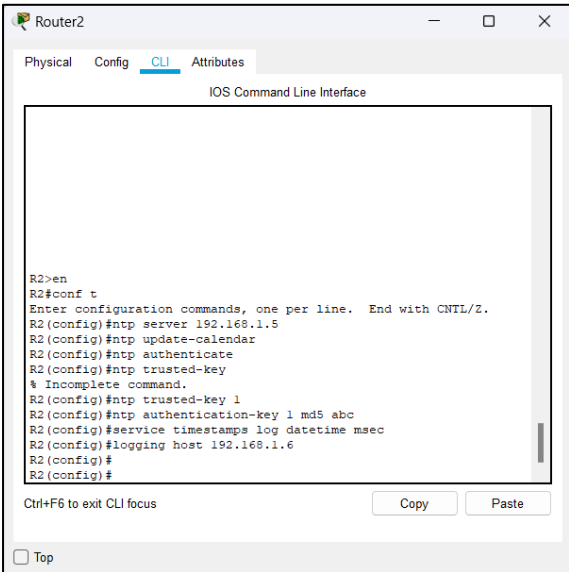
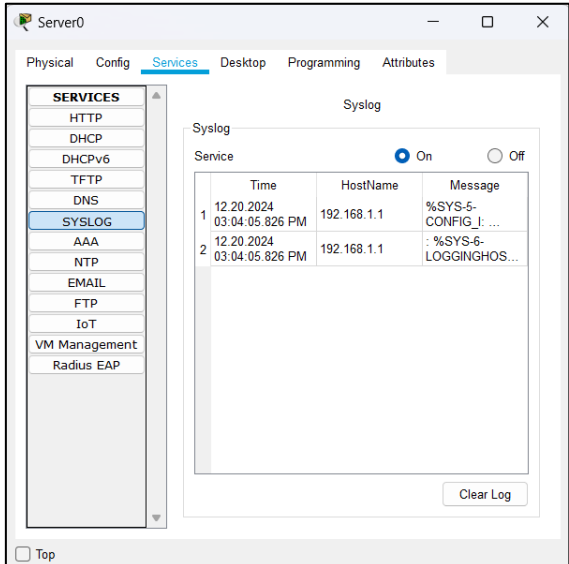
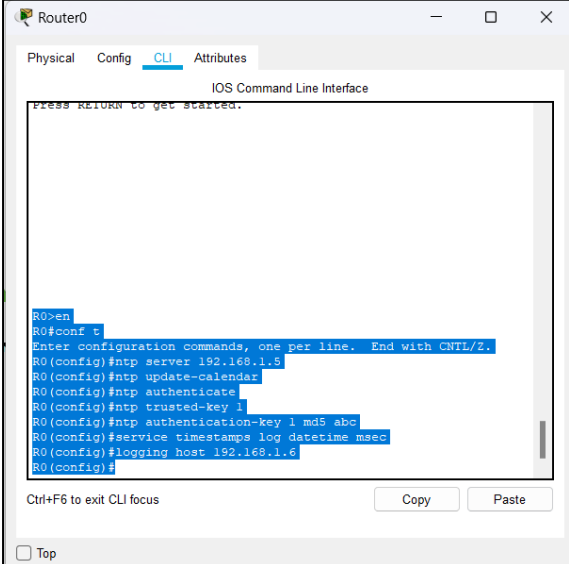
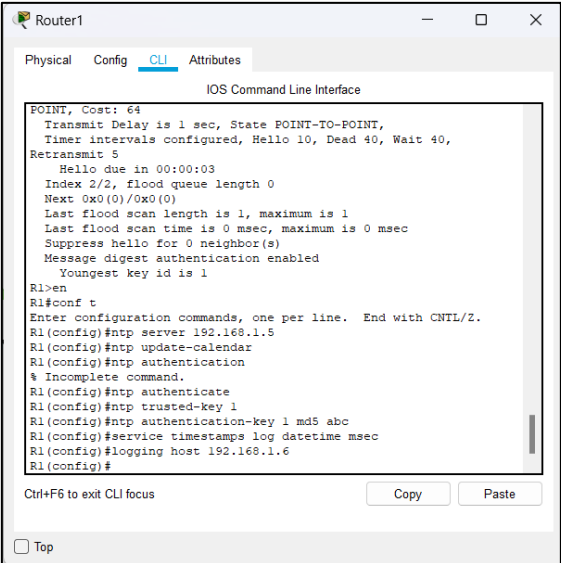
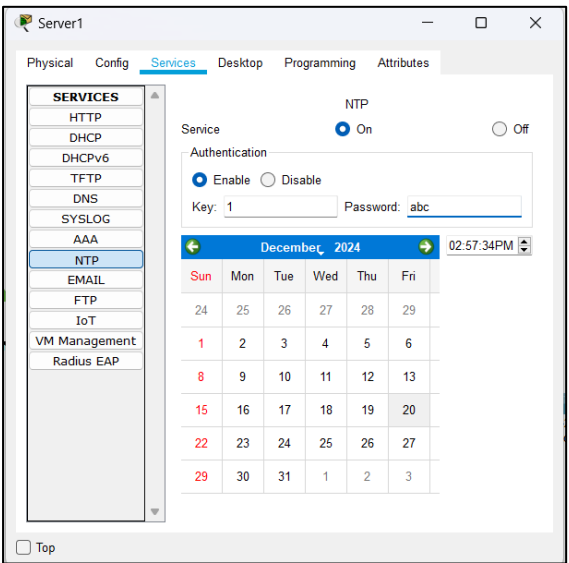
**Router0:** The CLI shows the configuration of OSPF MD5 authentication on interface Serial0/0/0. The configuration commands are: `R0>en`, `R0#conf t`, `R0(config)#router ospf 1`, `R0(config-router)#area 0 authentication message-digest`, `R0(config-router)#exit`, `R0(config)#int s0/0/1`, `R0(config-if)#ip ospf message-digest-key 2`, `R0(config-if)#ip ospf message-digest-key 1 md5 abc`, `R0(config-if)#exit`, and `R0(config)#`. The output shows the OSPF process starting and the interface being configured.

**Router2 (top):** The CLI shows the configuration of OSPF MD5 authentication on interface Serial0/0/1. The configuration commands are: `R2>en`, `R2#conf t`, `R2(config)#router ospf 1`, `R2(config-router)#area 0 authentication message-digest`, `R2(config-router)#exit`, `R2(config)#int s0/0/1`, `R2(config-if)#ip ospf message-digest-key 1 md5 abc`, `R2(config-if)#`, `R2(config-if)#ip ospf message-digest-key 1 md5 abc`, `R2(config-if)#exit`, and `R2(config)#`. The output shows the OSPF process starting and the interface being configured.

**Router2 (bottom):** The CLI shows the configuration of OSPF MD5 authentication on interface Serial0/0/1. The configuration commands are: `R2>en`, `R2#conf t`, `R2(config)#router ospf 1`, `R2(config-router)#area 0 authentication message-digest`, `R2(config-router)#exit`, `R2(config)#int s0/0/1`, `R2(config-if)#ip ospf message-digest-key 1 md5 abc`, `R2(config-if)#`, `R2(config-if)#ip ospf message-digest-key 1 md5 abc`, `R2(config-if)#exit`, and `R2(config)#`. The output shows the OSPF process starting and the interface being configured.



Part 2: Configure NTP(Network Time Protocol)

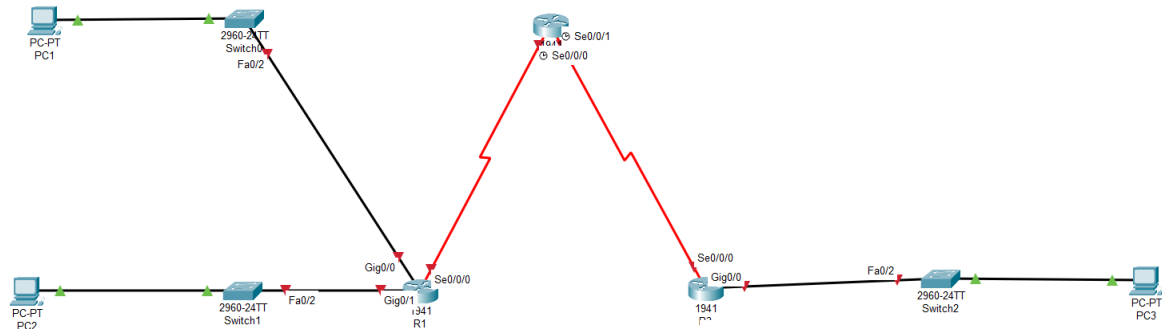


## PRACTICAL 3

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

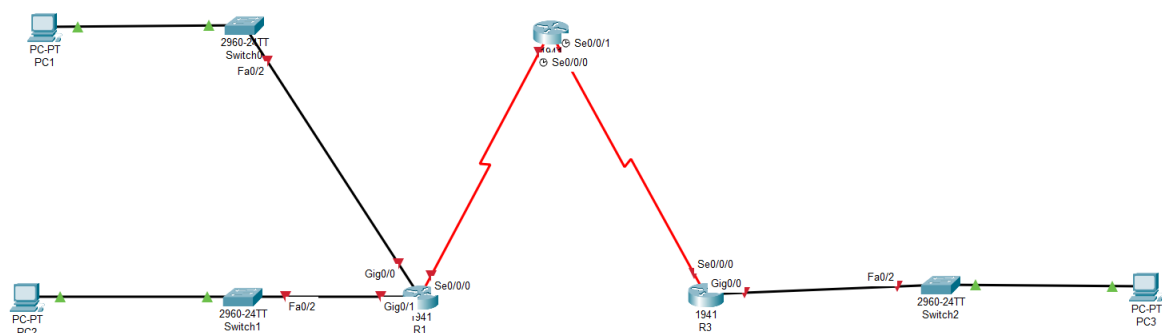
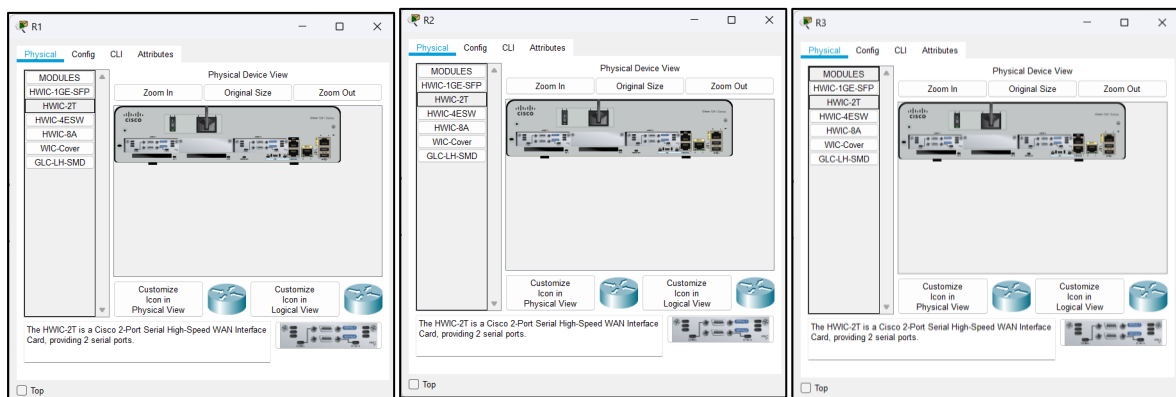
1. For the router go to HWIC-2T and assign the ports.

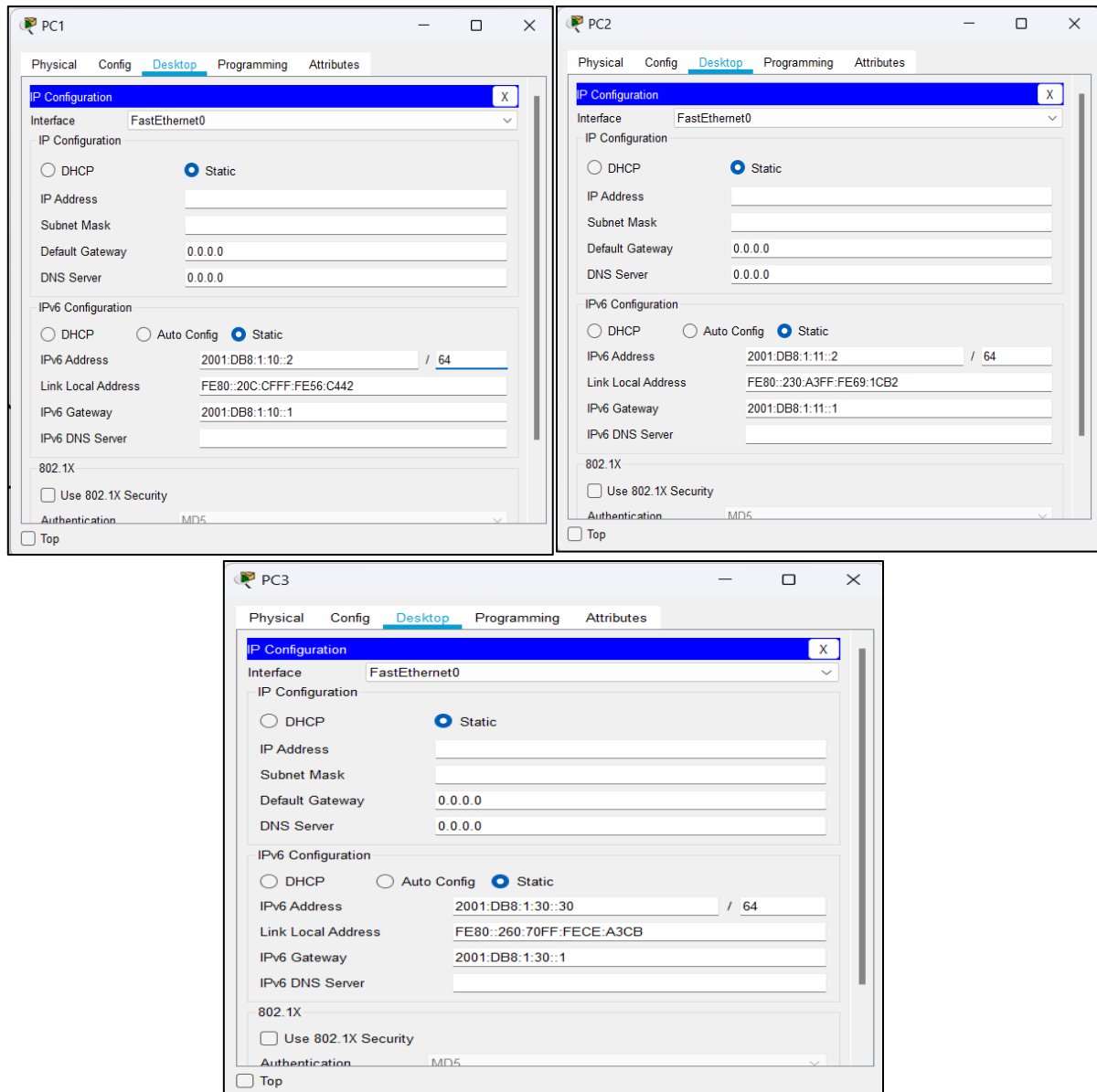
### Topology



Ritesh Yadav T059

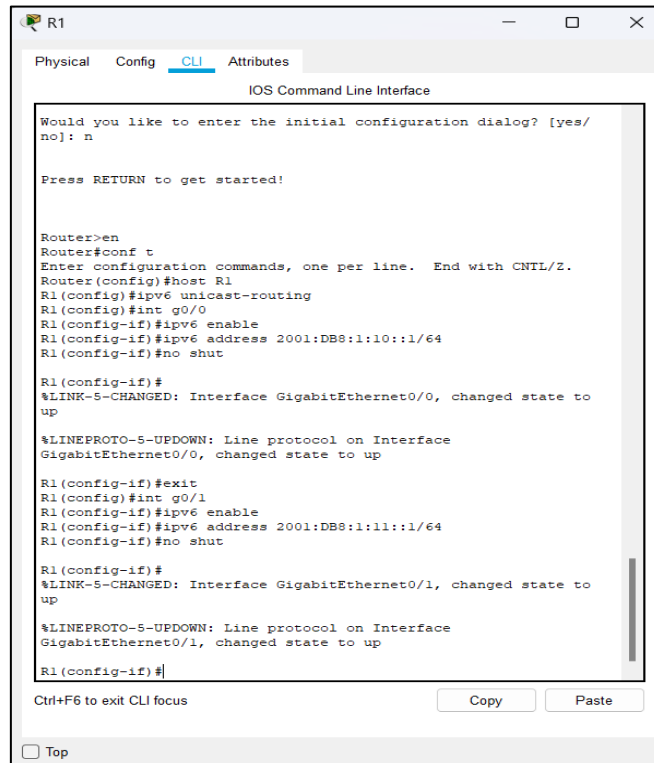
To connect router to router : add port





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

R1 (g0/0 & g0/1)

A screenshot of a network simulator window titled 'R1'. It shows the 'CLI' tab with the 'IOS Command Line Interface'. The terminal displays the following commands and outputs:

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#host R1
R1(config)#ipv6 unicast-routing
R1(config)#int g0/0
R1(config-if)#ipv6 enable
R1(config-if)#ipv6 address 2001:DB8:1:10::1/64
R1(config-if)#no shut

R1(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

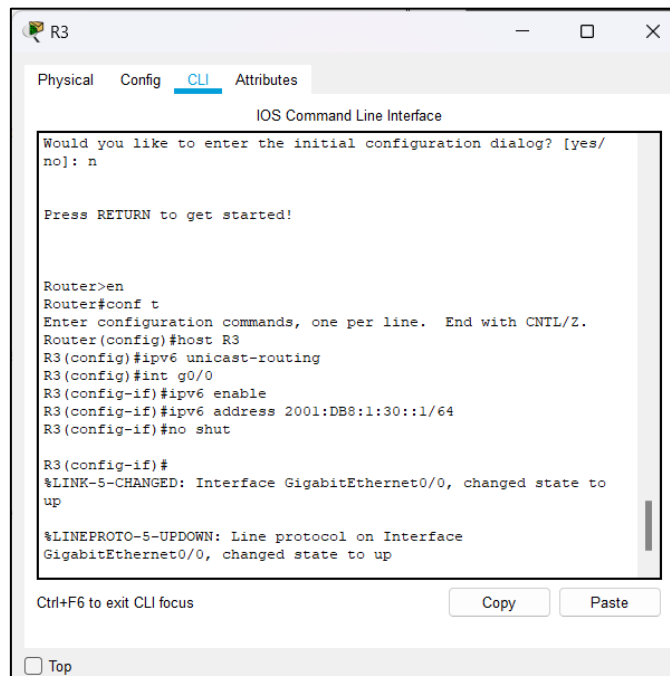
R1(config-if)#exit
R1(config)#int g0/1
R1(config-if)#ipv6 enable
R1(config-if)#ipv6 address 2001:DB8:1:11::1/64
R1(config-if)#no shut

R1(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to
up
%LINEPROTO-5-UPDOWN: Line protocol on Interface
GigabitEthernet0/1, changed state to up

R1(config-if)#
```

At the bottom, there is a 'Ctrl+F6 to exit CLI focus' message, 'Copy' and 'Paste' buttons, and a 'Top' link.

R3(g0/0)

A screenshot of a network simulator window titled 'R3'. It shows the 'CLI' tab with the 'IOS Command Line Interface'. The terminal displays the following commands and outputs:

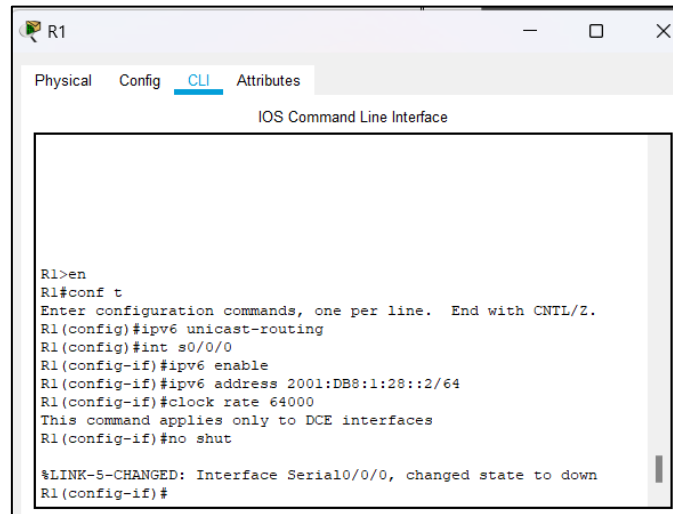
```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#host R3
R3(config)#ipv6 unicast-routing
R3(config)#int g0/0
R3(config-if)#ipv6 enable
R3(config-if)#ipv6 address 2001:DB8:1:30::1/64
R3(config-if)#no shut

R3(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
```

At the bottom, there is a 'Ctrl+F6 to exit CLI focus' message, 'Copy' and 'Paste' buttons, and a 'Top' link.

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

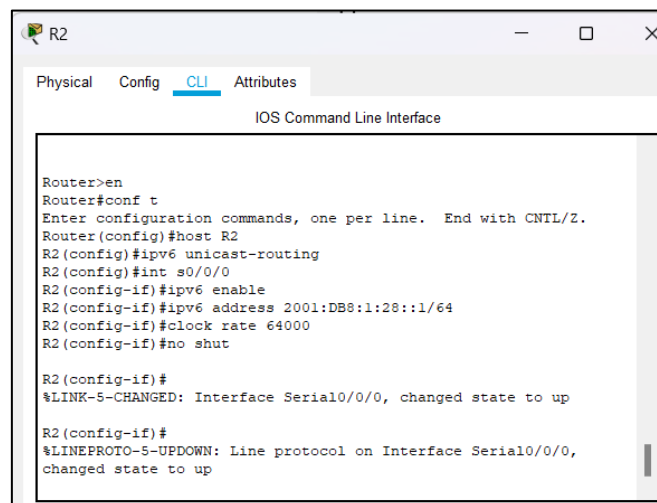
R1(s0/0/0)

A screenshot of a network simulator window titled 'R1'. It has tabs for 'Physical', 'Config', 'CLI' (selected), and 'Attributes'. The main area is titled 'IOS Command Line Interface' and contains a terminal window with the following text:

```
R1>en
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#ipv6 unicast-routing
R1(config)#int s0/0/0
R1(config-if)#ipv6 enable
R1(config-if)#ipv6 address 2001:DB8:1:28::2/64
R1(config-if)#clock rate 64000
This command applies only to DCE interfaces
R1(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
R1(config-if)#
```

R2 (s0/0/0)

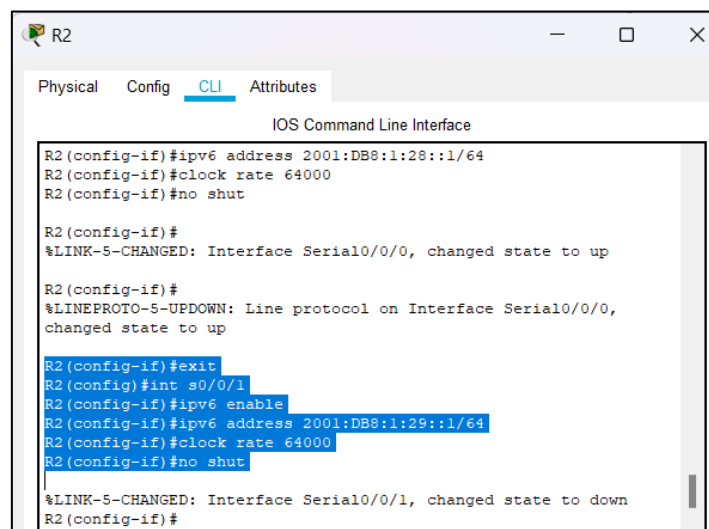
A screenshot of a network simulator window titled 'R2'. It has tabs for 'Physical', 'Config', 'CLI' (selected), and 'Attributes'. The main area is titled 'IOS Command Line Interface' and contains a terminal window with the following text:

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#host R2
R2(config)#ipv6 unicast-routing
R2(config)#int s0/0/0
R2(config-if)#ipv6 enable
R2(config-if)#ipv6 address 2001:DB8:1:28::1/64
R2(config-if)#clock rate 64000
R2(config-if)#no shut

R2(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

R2(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0,
changed state to up
```

R2(s0/0/1)

A screenshot of a network simulator window titled 'R2'. It has tabs for 'Physical', 'Config', 'CLI' (selected), and 'Attributes'. The main area is titled 'IOS Command Line Interface' and contains a terminal window with the following text:

```
R2(config-if)#ipv6 address 2001:DB8:1:28::1/64
R2(config-if)#clock rate 64000
R2(config-if)#no shut

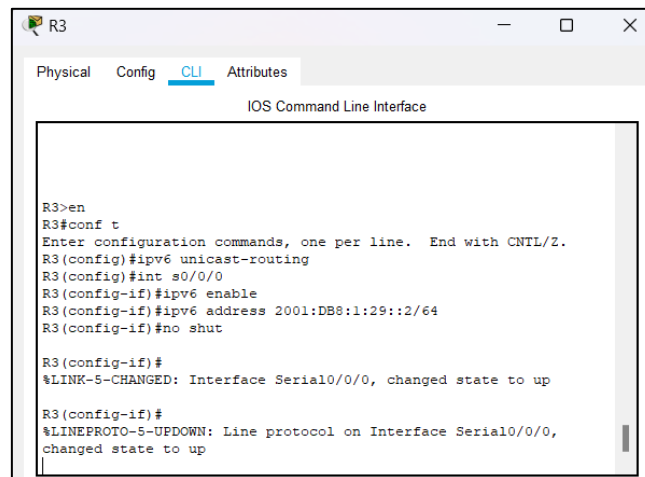
R2(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

R2(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0,
changed state to up

R2(config-if)#exit
R2(config)#int s0/0/1
R2(config-if)#ipv6 enable
R2(config-if)#ipv6 address 2001:DB8:1:29::1/64
R2(config-if)#clock rate 64000
R2(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
R2(config-if)#
```

R3(s0/0/0)

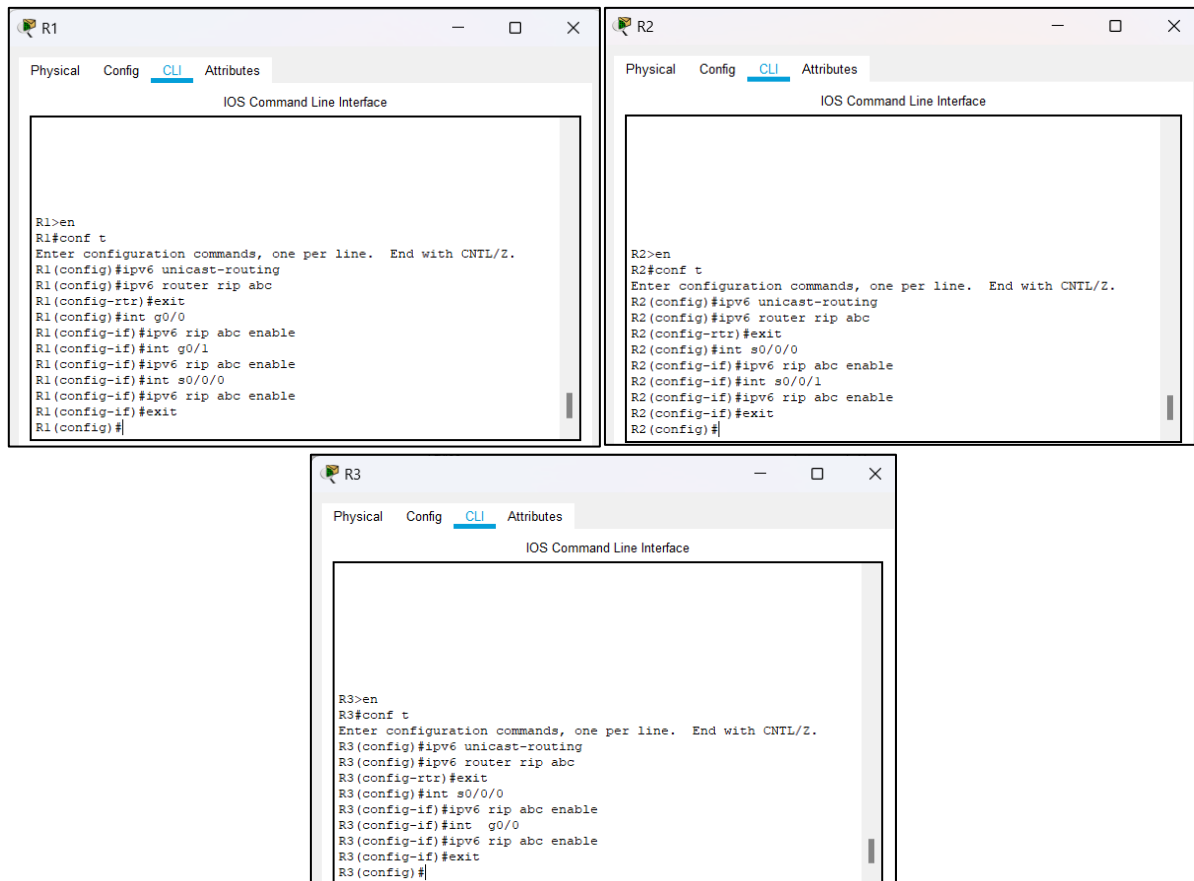


```
R3>en
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#ipv6 unicast-routing
R3(config)#int s0/0/0
R3(config-if)#ipv6 enable
R3(config-if)#ipv6 address 2001:DB8:1:29::2/64
R3(config-if)#no shut

R3(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

R3(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0,
changed state to up
```

## 2. We do RIP.

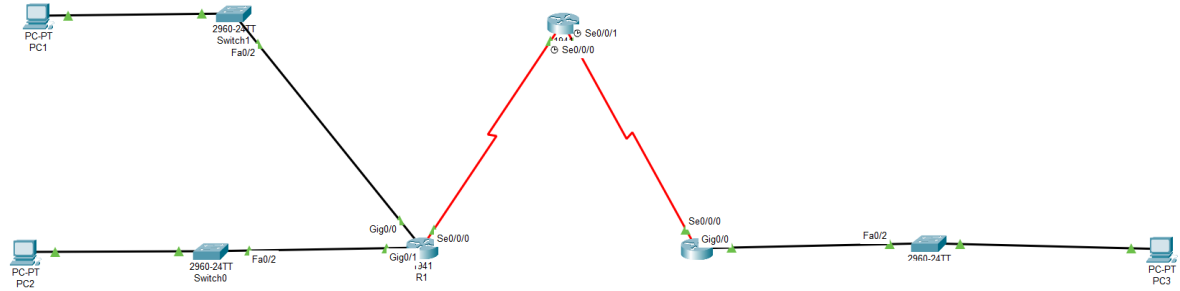


```
R1>en
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#ipv6 unicast-routing
R1(config)#ipv6 router rip abc
R1(config-rtr)#exit
R1(config)#int g0/0
R1(config-if)#ipv6 rip abc enable
R1(config-if)#int g0/1
R1(config-if)#ipv6 rip abc enable
R1(config-if)#int s0/0/0
R1(config-if)#ipv6 rip abc enable
R1(config-if)#exit
R1(config)#

R2>en
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#ipv6 unicast-routing
R2(config)#ipv6 router rip abc
R2(config-rtr)#exit
R2(config)#int s0/0/0
R2(config-if)#ipv6 rip abc enable
R2(config-if)#int s0/0/1
R2(config-if)#ipv6 rip abc enable
R2(config-if)#exit
R2(config)#

R3>en
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#ipv6 unicast-routing
R3(config)#ipv6 router rip abc
R3(config-rtr)#exit
R3(config)#int s0/0/0
R3(config-if)#ipv6 rip abc enable
R3(config-if)#int g0/0
R3(config-if)#ipv6 rip abc enable
R3(config-if)#exit
R3(config)#
```





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

PC1 and PC3

PC1

Physical Config Desktop Programming Attributes

Command Prompt

```

Packet Tracer PC Command Line 1.0
C:\>ping 2001:DB8:1:30::30

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

Reply from 2001:DB8:1:30::30: bytes=32 time=14ms TTL=125
Reply from 2001:DB8:1:30::30: bytes=32 time=2ms TTL=125
Reply from 2001:DB8:1:30::30: bytes=32 time=2ms TTL=125
Reply from 2001:DB8:1:30::30: bytes=32 time=2ms TTL=125

Ping statistics for 2001:DB8:1:30::30:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 14ms, Average = 5ms

C:\>

```

PC3

Physical Config Desktop Programming Attributes

Command Prompt

```

Packet Tracer PC Command Line 1.0
C:\>ping 2001:DB8:1:10::2

Pinging 2001:DB8:1:10::2 with 32 bytes of data:

Reply from 2001:DB8:1:10::2: bytes=32 time=3ms TTL=125
Reply from 2001:DB8:1:10::2: bytes=32 time=2ms TTL=125
Reply from 2001:DB8:1:10::2: bytes=32 time=2ms TTL=125
Reply from 2001:DB8:1:10::2: bytes=32 time=2ms TTL=125
Reply from 2001:DB8:1:10::2: bytes=32 time=2ms TTL=125

Ping statistics for 2001:DB8:1:10::2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 3ms, Average = 2ms

C:\>

```

4. To block the https and http access.

R1

Physical Config CLI Attributes

IOS Command Line Interface

```

R1>en
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#ipv6 access-list BLOCK_HTTPS_ACL
R1(config-ipv6-acl)#deny tcp any host 2001:DB8:1:30::30 eq www
R1(config-ipv6-acl)#deny tcp any host 2001:DB8:1:30::30 eq 443
R1(config-ipv6-acl)#permit tcp any any
R1(config-ipv6-acl)#int g0/0
R1(config-if)#ipv6 traffic-filter BLOCK_HTTPS_ACL in
R1(config-if)#

```

PC3

Physical Config Desktop Programming Attributes

Command Prompt

```

Reply from 2001:DB8:1:10::2: bytes=32 time=3ms TTL=125
Reply from 2001:DB8:1:10::2: bytes=32 time=2ms TTL=125
Reply from 2001:DB8:1:10::2: bytes=32 time=2ms TTL=125
Reply from 2001:DB8:1:10::2: bytes=32 time=2ms TTL=125

Ping statistics for 2001:DB8:1:10::2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 3ms, Average = 2ms

C:\>ping 2001:DB8:1:10::2
Pinging 2001:DB8:1:10::2 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 2001:DB8:1:10::2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>

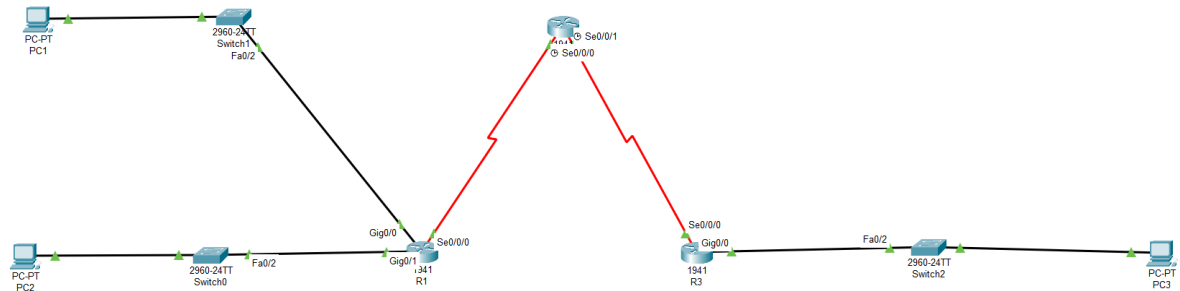
```

## PRACTICAL 4

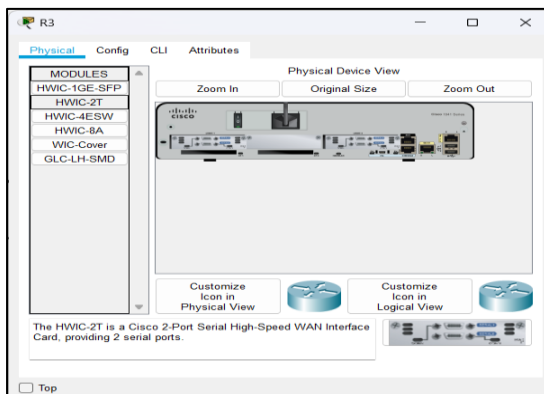
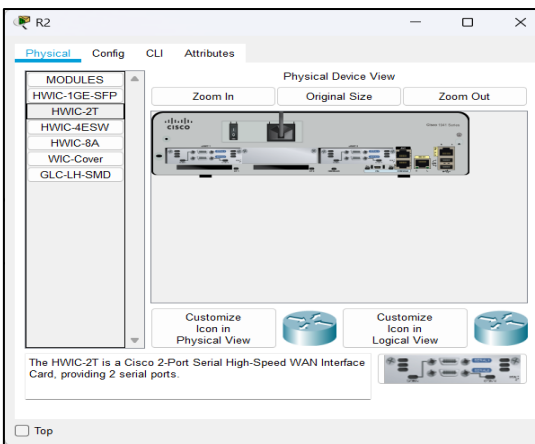
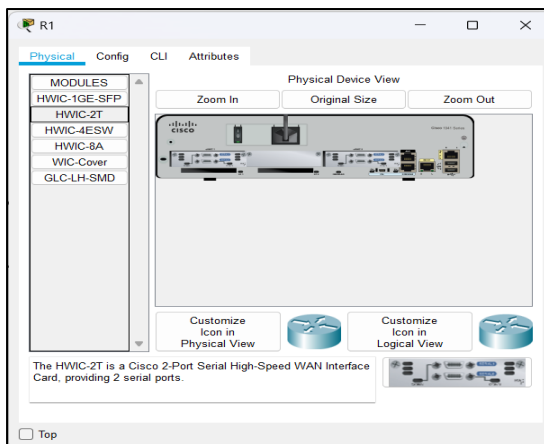
**Aim:** Configure IPv6 ACL to block ICMP(Internet Control Messaging Protocol) access on R3 and allow all other IPv6 traffic to pass.

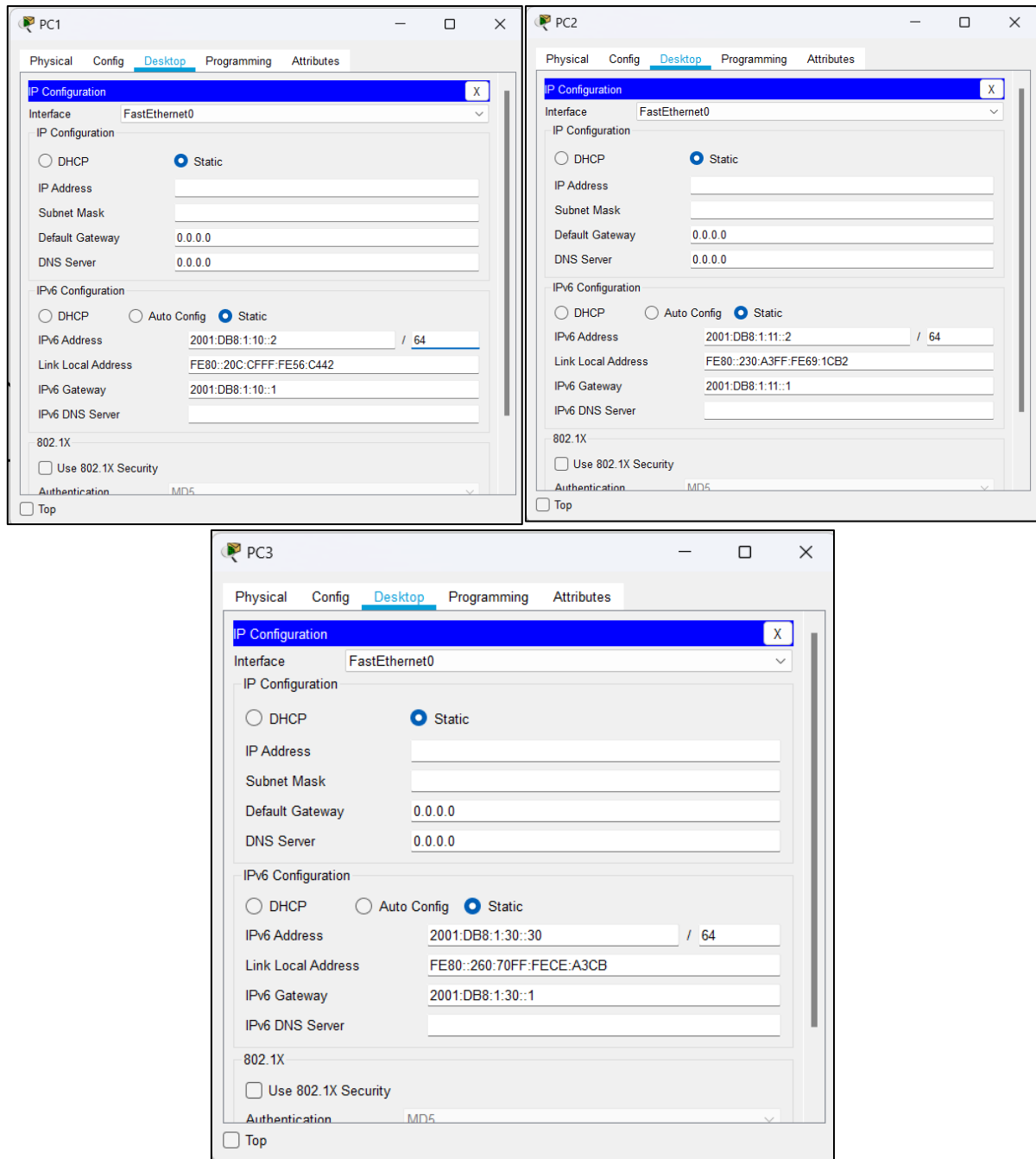
1. For the router go to HWIC-2T and assign the ports.

Topology



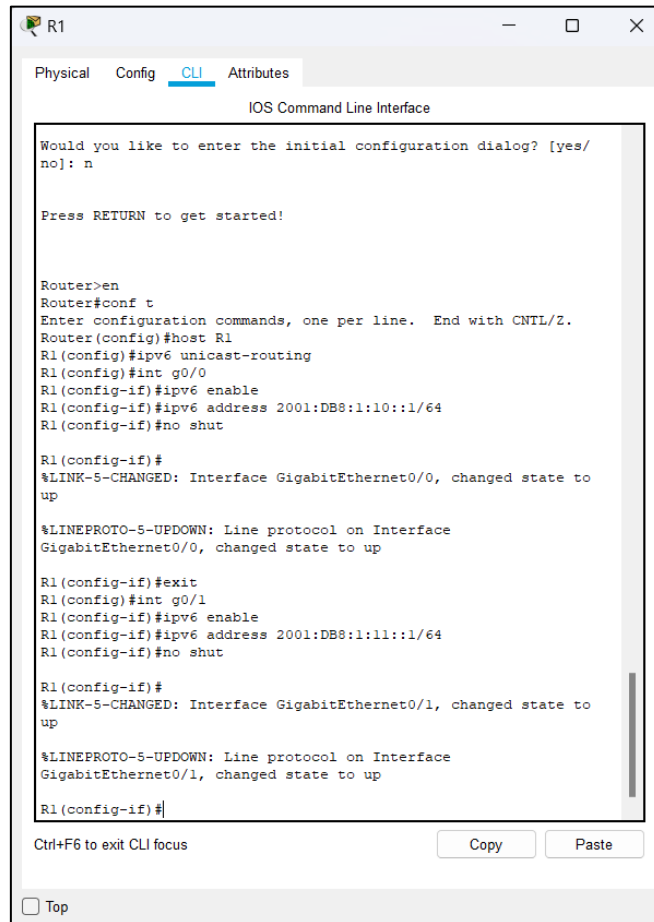
Ritesh Yadav T059





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

R1 (g0/0 & g0/1)

A screenshot of a network configuration window for router R1. The window has tabs for Physical, Config, CLI, and Attributes, with CLI selected. The title is 'IOS Command Line Interface'. The main text area shows a series of commands and their outputs. The commands configure the router host name to R1, enable IPv6 unicast-routing, and configure interfaces g0/0 and g0/1 with IPv6 addresses 2001:DB8:1:10::1/64 and 2001:DB8:1:11::1/64 respectively. The outputs show the interfaces being brought up. At the bottom, there are buttons for 'Copy' and 'Paste', and a 'Top' link.

```
R1
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#host R1
R1(config)#ipv6 unicast-routing
R1(config)#int g0/0
R1(config-if)#ipv6 enable
R1(config-if)#ipv6 address 2001:DB8:1:10::1/64
R1(config-if)#no shut

R1(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

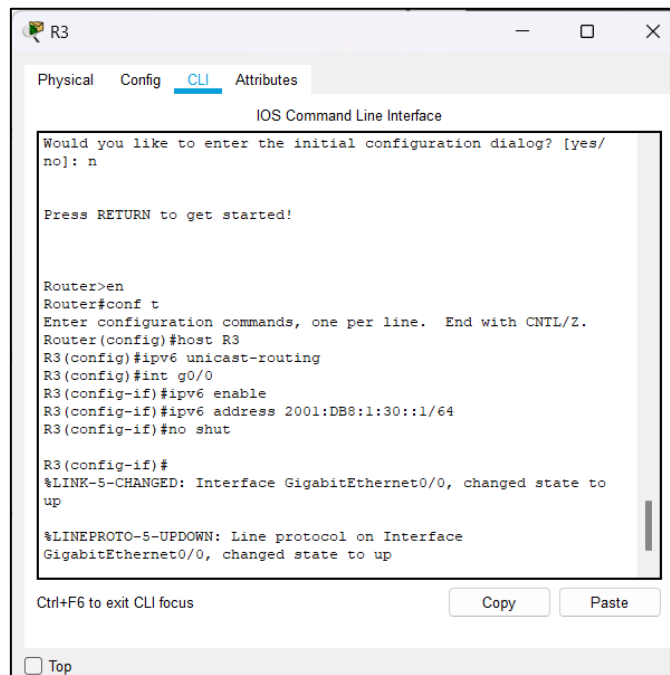
R1(config-if)#exit
R1(config)#int g0/1
R1(config-if)#ipv6 enable
R1(config-if)#ipv6 address 2001:DB8:1:11::1/64
R1(config-if)#no shut

R1(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to
up

%LINEPROTO-5-UPDOWN: Line protocol on Interface
GigabitEthernet0/1, changed state to up

R1(config-if)#
```

R3(g0/0)

A screenshot of a network configuration window for router R3. The window has tabs for Physical, Config, CLI, and Attributes, with CLI selected. The title is 'IOS Command Line Interface'. The main text area shows a series of commands and their outputs. The commands configure the router host name to R3, enable IPv6 unicast-routing, and configure interface g0/0 with IPv6 address 2001:DB8:1:30::1/64. The outputs show the interface being brought up. At the bottom, there are buttons for 'Copy' and 'Paste', and a 'Top' link.

```
R3
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#host R3
R3(config)#ipv6 unicast-routing
R3(config)#int g0/0
R3(config-if)#ipv6 enable
R3(config-if)#ipv6 address 2001:DB8:1:30::1/64
R3(config-if)#no shut

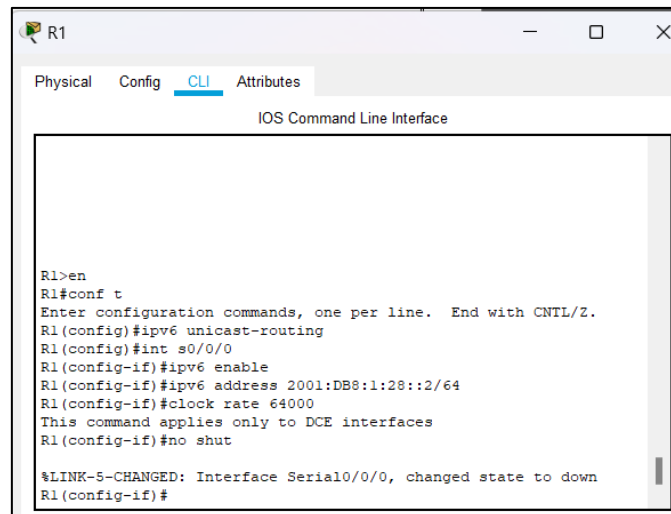
R3(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to
up

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

R3(config-if)#
```

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

R1(s0/0/0)

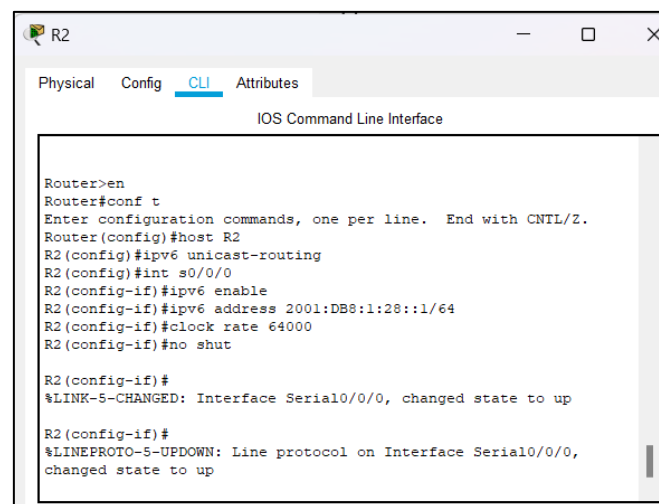


The screenshot shows the CLI window for router R1. The 'CLI' tab is selected. The command history shows the following sequence: 'R1>en', 'R1#conf t', 'R1(config)#ipv6 unicast-routing', 'R1(config)#int s0/0/0', 'R1(config-if)#ipv6 enable', 'R1(config-if)#ipv6 address 2001:DB8:1:28::2/64', 'R1(config-if)#clock rate 64000', and 'R1(config-if)#no shut'. A system message indicates that the interface Serial0/0/0 has changed state to down.

```
R1>en
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#ipv6 unicast-routing
R1(config)#int s0/0/0
R1(config-if)#ipv6 enable
R1(config-if)#ipv6 address 2001:DB8:1:28::2/64
R1(config-if)#clock rate 64000
This command applies only to DCE interfaces
R1(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
R1(config-if)#
```

R2 (s0/0/0)



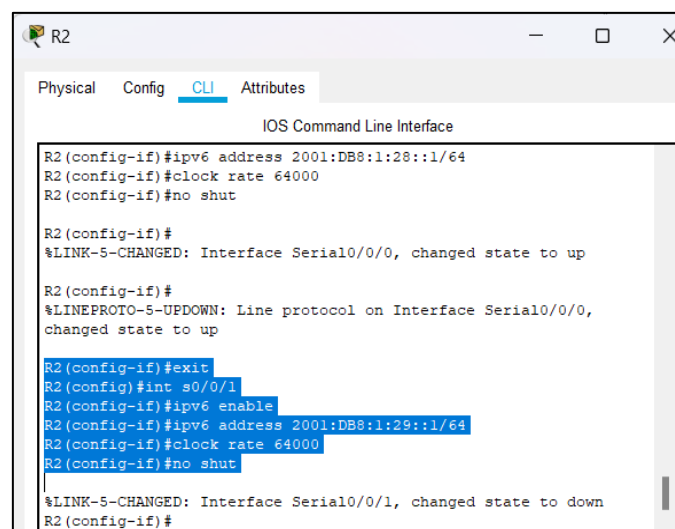
The screenshot shows the CLI window for router R2. The 'CLI' tab is selected. The command history shows: 'Router>en', 'Router#conf t', 'Router(config)#host R2', 'R2(config)#ipv6 unicast-routing', 'R2(config)#int s0/0/0', 'R2(config-if)#ipv6 enable', 'R2(config-if)#ipv6 address 2001:DB8:1:28::1/64', 'R2(config-if)#clock rate 64000', and 'R2(config-if)#no shut'. Two system messages follow: '%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up' and '%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up'.

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#host R2
R2(config)#ipv6 unicast-routing
R2(config)#int s0/0/0
R2(config-if)#ipv6 enable
R2(config-if)#ipv6 address 2001:DB8:1:28::1/64
R2(config-if)#clock rate 64000
R2(config-if)#no shut

R2(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

R2(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0,
changed state to up
```

R2(s0/0/1)



The screenshot shows the CLI window for router R2. The 'CLI' tab is selected. The command history shows: 'R2(config-if)#ipv6 address 2001:DB8:1:28::1/64', 'R2(config-if)#clock rate 64000', 'R2(config-if)#no shut', 'R2(config-if)#', '%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up', 'R2(config-if)#', '%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up', 'R2(config-if)#exit', 'R2(config)#int s0/0/1', 'R2(config-if)#ipv6 enable', 'R2(config-if)#ipv6 address 2001:DB8:1:29::1/64', 'R2(config-if)#clock rate 64000', and 'R2(config-if)#no shut'. A final system message indicates that the interface Serial0/0/1 has changed state to down.

```
R2(config-if)#ipv6 address 2001:DB8:1:28::1/64
R2(config-if)#clock rate 64000
R2(config-if)#no shut

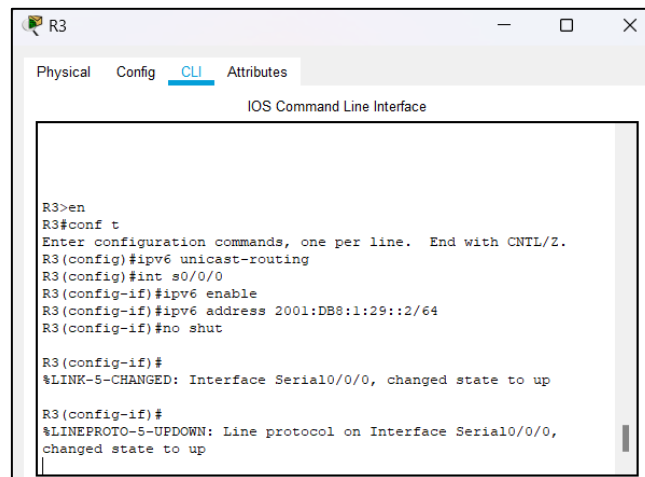
R2(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

R2(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0,
changed state to up

R2(config-if)#exit
R2(config)#int s0/0/1
R2(config-if)#ipv6 enable
R2(config-if)#ipv6 address 2001:DB8:1:29::1/64
R2(config-if)#clock rate 64000
R2(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
R2(config-if)#
```

R3(s0/0/0)

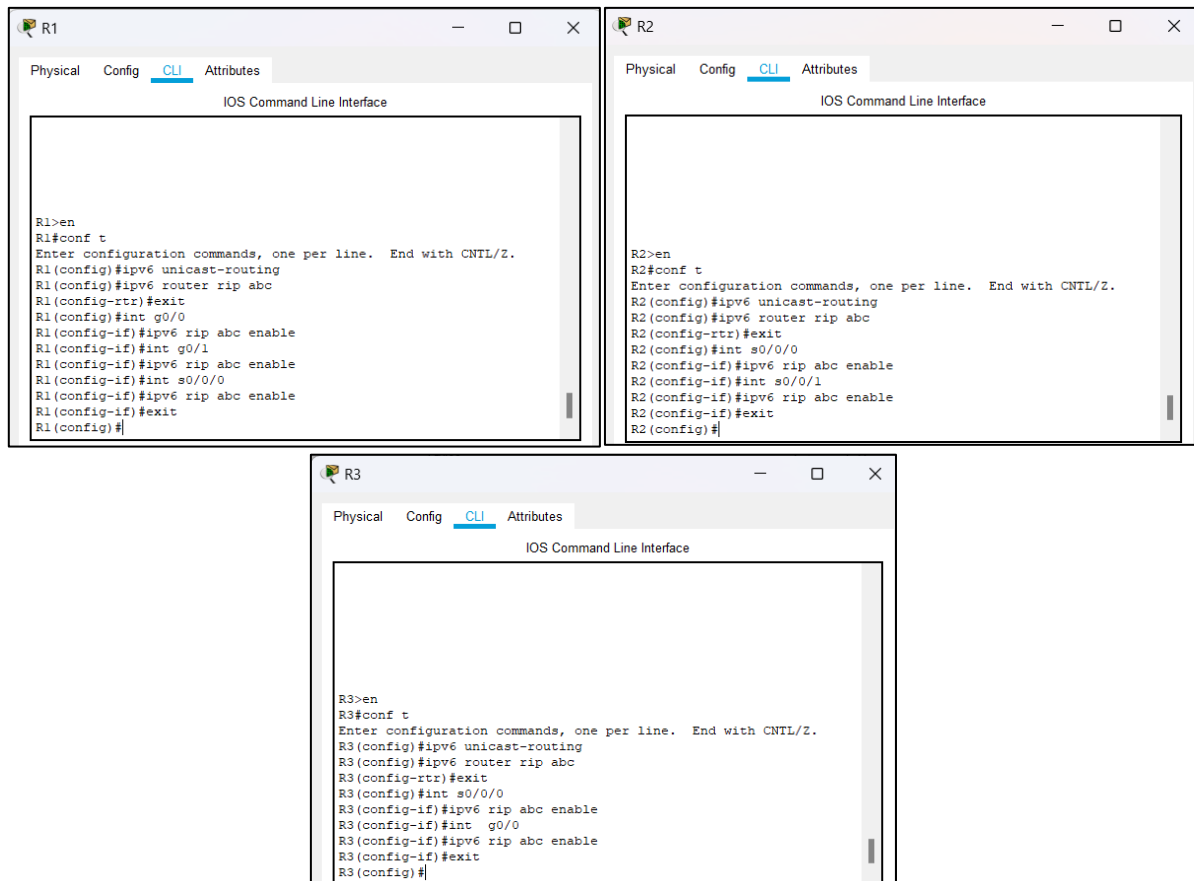


```
R3>en
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#ipv6 unicast-routing
R3(config)#int s0/0/0
R3(config-if)#ipv6 enable
R3(config-if)#ipv6 address 2001:DB8:1:29::2/64
R3(config-if)#no shut

R3(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

R3(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0,
changed state to up
```

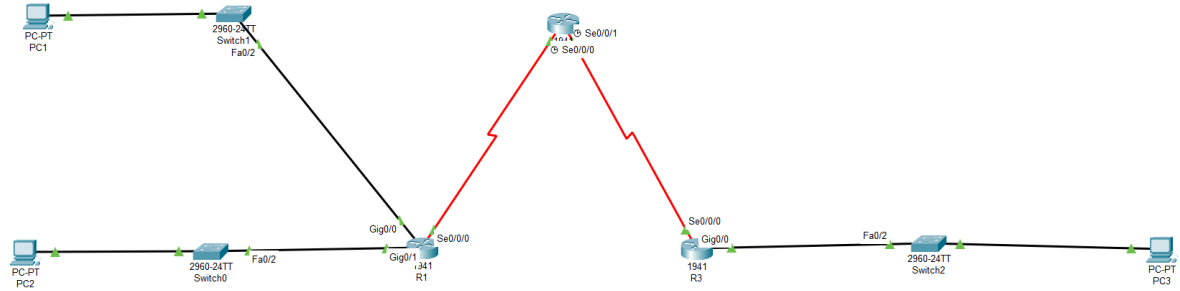
#### 4. We do RIP.



```
R1>en
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#ipv6 unicast-routing
R1(config)#ipv6 router rip abc
R1(config-rtr)#exit
R1(config)#int g0/0
R1(config-if)#ipv6 rip abc enable
R1(config-if)#int g0/1
R1(config-if)#ipv6 rip abc enable
R1(config-if)#int s0/0/0
R1(config-if)#ipv6 rip abc enable
R1(config-if)#exit
R1(config)#

R2>en
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#ipv6 unicast-routing
R2(config)#ipv6 router rip abc
R2(config-rtr)#exit
R2(config)#int s0/0/0
R2(config-if)#ipv6 rip abc enable
R2(config-if)#int s0/0/1
R2(config-if)#ipv6 rip abc enable
R2(config-if)#exit
R2(config)#

R3>en
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#ipv6 unicast-routing
R3(config)#ipv6 router rip abc
R3(config-rtr)#exit
R3(config)#int s0/0/0
R3(config-if)#ipv6 rip abc enable
R3(config-if)#int g0/0
R3(config-if)#ipv6 rip abc enable
R3(config-if)#exit
R3(config)#
```



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

PC1

Physical Config Desktop Programming Attributes

Command Prompt

```
Packet Tracer PC Command Line 1.0
C:\>ping 2001:DB8:1:30::30

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

Reply from 2001:DB8:1:30::30: bytes=32 time=14ms TTL=125
Reply from 2001:DB8:1:30::30: bytes=32 time=2ms TTL=125
Reply from 2001:DB8:1:30::30: bytes=32 time=2ms TTL=125
Reply from 2001:DB8:1:30::30: bytes=32 time=2ms TTL=125

Ping statistics for 2001:DB8:1:30::30:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 14ms, Average = 5ms

C:\>
```

PC3

Physical Config Desktop Programming Attributes

Command Prompt

```
Packet Tracer PC Command Line 1.0
C:\>ping 2001:DB8:1:10::2

Pinging 2001:DB8:1:10::2 with 32 bytes of data:

Reply from 2001:DB8:1:10::2: bytes=32 time=3ms TTL=125
Reply from 2001:DB8:1:10::2: bytes=32 time=2ms TTL=125
Reply from 2001:DB8:1:10::2: bytes=32 time=2ms TTL=125
Reply from 2001:DB8:1:10::2: bytes=32 time=2ms TTL=125

Ping statistics for 2001:DB8:1:10::2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 3ms, Average = 2ms

C:\>
```

PC2

Physical Config Desktop Programming Attributes

Command Prompt

```
Packet Tracer PC Command Line 1.0
C:\>ping 2001:DB8:1:30::30

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

Reply from 2001:DB8:1:30::30: bytes=32 time=2ms TTL=125
Reply from 2001:DB8:1:30::30: bytes=32 time=2ms TTL=125
Reply from 2001:DB8:1:30::30: bytes=32 time=2ms TTL=125
Reply from 2001:DB8:1:30::30: bytes=32 time=2ms TTL=125

Ping statistics for 2001:DB8:1:30::30:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 2ms, Average = 2ms

C:\>
```

1. Block ICMP

R3

Physical Config CLI Attributes

IOS Command Line Interface

```
R3>en
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#ipv6 access-list BLOCK_ICMP_ACL
R3(config-ipv6-acl)#deny icmp any any
R3(config-ipv6-acl)#permit ipv6 any any
R3(config-ipv6-acl)#int g0/0
R3(config-if)#ipv6 traffic-filter BLOCK_ICMP_ACL in
R3(config-if)#exit
R3(config)#
```

## 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

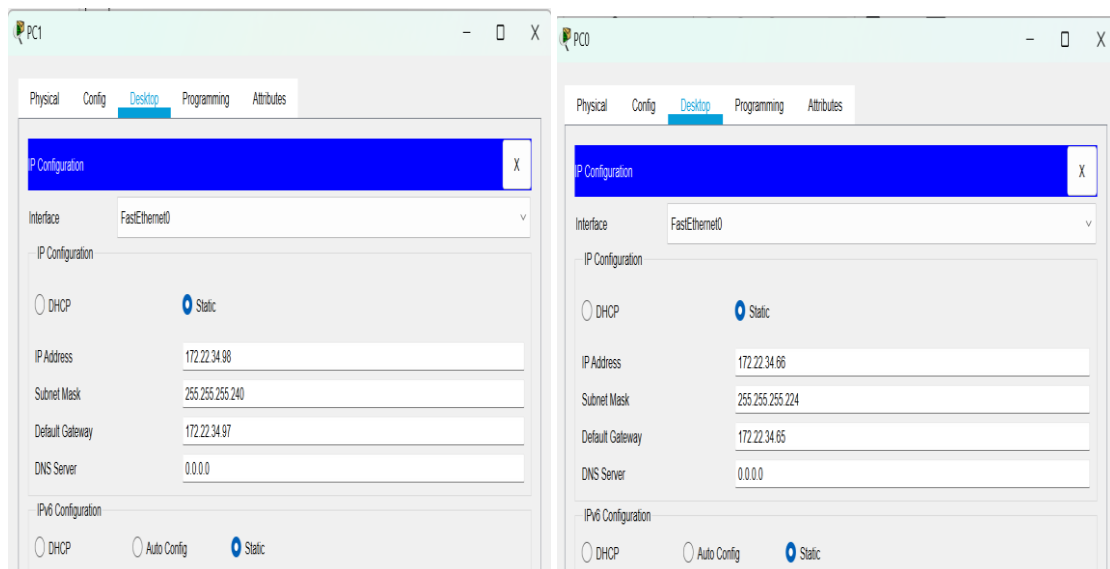
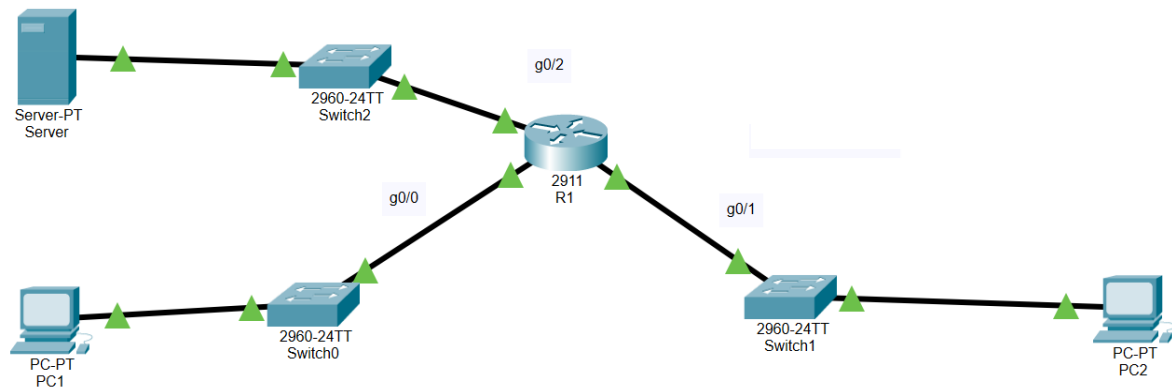
Pinging 2001:DB8:1:30::30 with 32 bytes of data:

Request timed out.
```

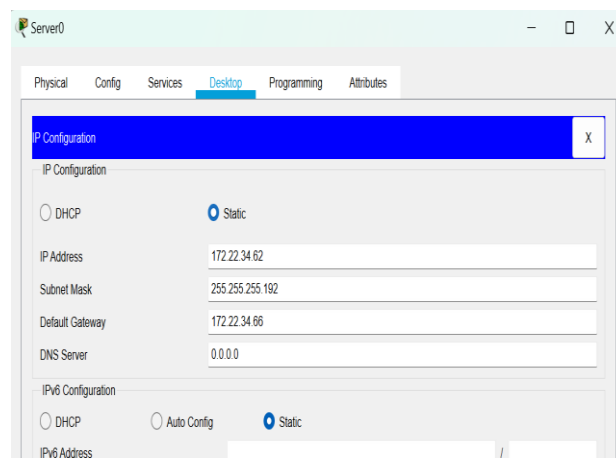


## PRACTICAL 5

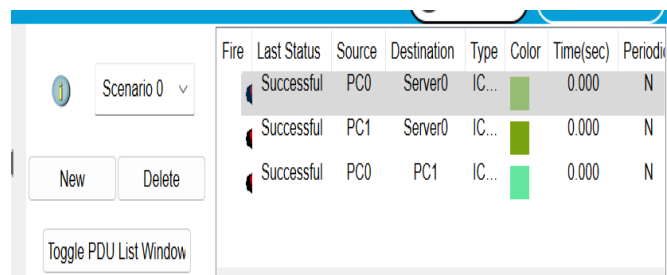
**Aim:** Configure an ACL that will permit FTP and HTTP access on R1 verify ACL implementation on PC1 only FTP and PC2 only HTTP



Server :



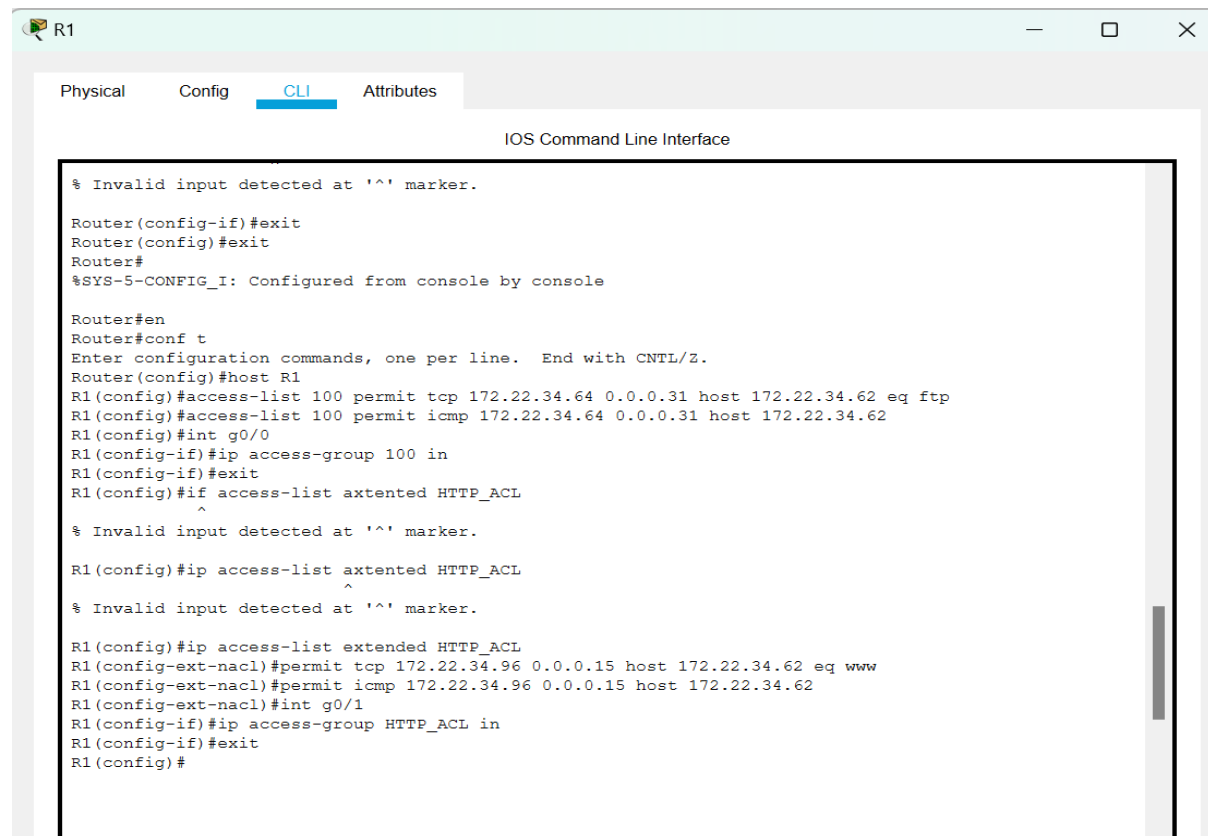
Message transferring successful:



The screenshot shows a network simulation interface. On the left, there is a control panel with a 'Scenario 0' dropdown, 'New' and 'Delete' buttons, and a 'Toggle PDU List Window' button. On the right, a table displays the results of message transfers.

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic
	Successful	PC0	Server0	IC...		0.000	N
	Successful	PC1	Server0	IC...		0.000	N
	Successful	PC0	PC1	IC...		0.000	N

Router configuration :



The screenshot shows a router configuration window titled 'R1'. It has tabs for 'Physical', 'Config', 'CLI', and 'Attributes'. The 'CLI' tab is selected, showing the 'IOS Command Line Interface'. The interface displays the following commands and their outputs:

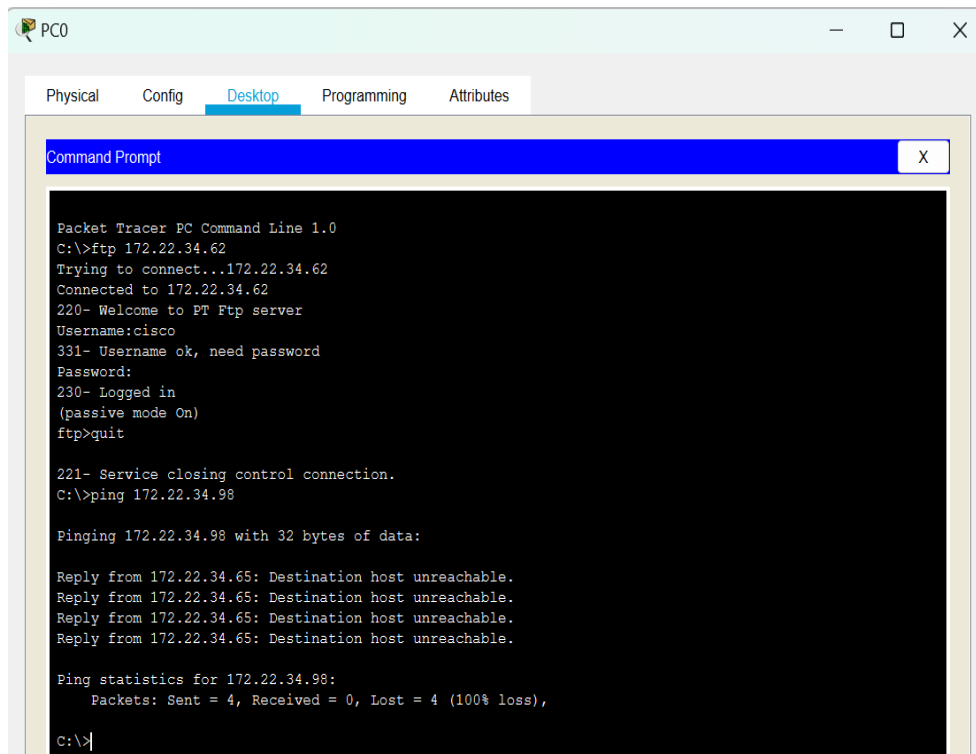
```
% Invalid input detected at '^' marker.

Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#host R1
R1(config)#access-list 100 permit tcp 172.22.34.64 0.0.0.31 host 172.22.34.62 eq ftp
R1(config)#access-list 100 permit icmp 172.22.34.64 0.0.0.31 host 172.22.34.62
R1(config)#int g0/0
R1(config-if)#ip access-group 100 in
R1(config-if)#exit
R1(config)#if access-list axtented HTTP_ACL
^
% Invalid input detected at '^' marker.

R1(config)#ip access-list axtented HTTP_ACL
^
% Invalid input detected at '^' marker.

R1(config)#ip access-list extended HTTP_ACL
R1(config-ext-nacl)#permit tcp 172.22.34.96 0.0.0.15 host 172.22.34.62 eq www
R1(config-ext-nacl)#permit icmp 172.22.34.96 0.0.0.15 host 172.22.34.62
R1(config-ext-nacl)#int g0/1
R1(config-if)#ip access-group HTTP_ACL in
R1(config-if)#exit
R1(config)#
```



The screenshot shows the 'PC0' window in Cisco Packet Tracer. The 'Desktop' tab is selected, displaying a 'Command Prompt' window. The command prompt shows the following sequence of commands and outputs:

```
Packet Tracer PC Command Line 1.0
C:\>ftp 172.22.34.62
Trying to connect...172.22.34.62
Connected to 172.22.34.62
220- Welcome to FT Ftp server
Username:cisco
331- Username ok, need password
Password:
230- Logged in
(passive mode On)
ftp>quit

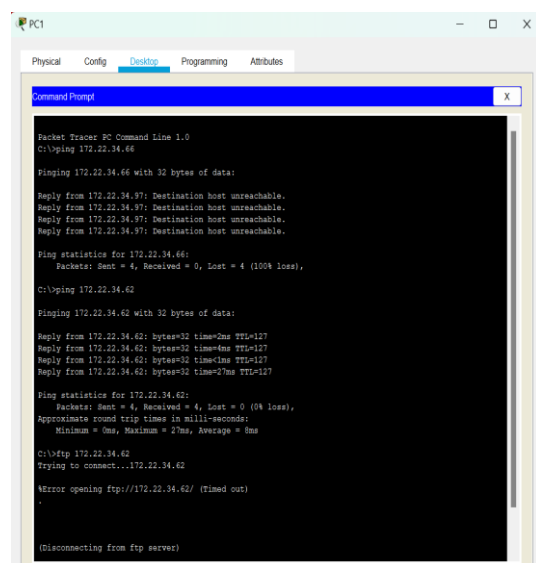
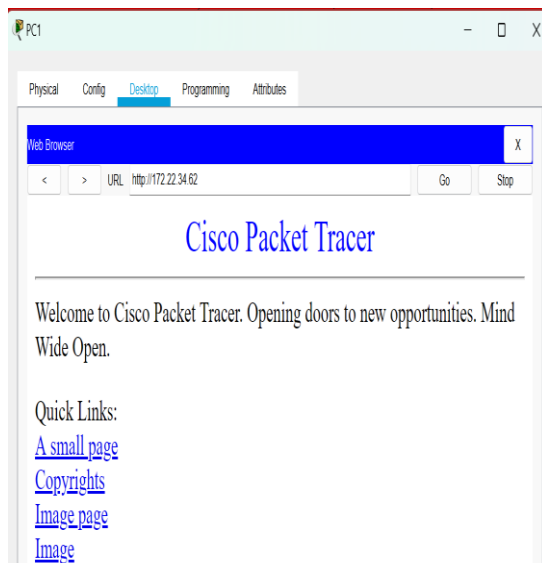
221- Service closing control connection.
C:\>ping 172.22.34.98

Pinging 172.22.34.98 with 32 bytes of data:

Reply from 172.22.34.65: Destination host unreachable.
Reply from 172.22.34.65: Destination host unreachable.
Reply from 172.22.34.65: Destination host unreachable.
Reply from 172.22.34.65: Destination host unreachable.

Ping statistics for 172.22.34.98:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
c:\>|
```

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



The screenshot shows the 'PC1' window in Cisco Packet Tracer. The 'Desktop' tab is selected, displaying a 'Command Prompt' window. The command prompt shows the following sequence of commands and outputs:

```
Packet Tracer PC Command Line 1.0
C:\>ping 172.22.34.66

Pinging 172.22.34.66 with 32 bytes of data:

Reply from 172.22.34.97: Destination host unreachable.
Reply from 172.22.34.97: Destination host unreachable.
Reply from 172.22.34.97: Destination host unreachable.
Reply from 172.22.34.97: Destination host unreachable.

Ping statistics for 172.22.34.66:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
C:\>ping 172.22.34.62

Pinging 172.22.34.62 with 32 bytes of data:

Reply from 172.22.34.62: bytes=32 time=2ms TTL=127
Reply from 172.22.34.62: bytes=32 time=4ms TTL=127
Reply from 172.22.34.62: bytes=32 time=4ms TTL=127
Reply from 172.22.34.62: bytes=32 time=2ms TTL=127

Ping statistics for 172.22.34.62:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 2ms, Average = 8ms
C:\>ftp 172.22.34.62
Trying to connect...172.22.34.62
Error opening ftp://172.22.34.62/ (Timed out)
.
(Disconnecting from ftp server)
```