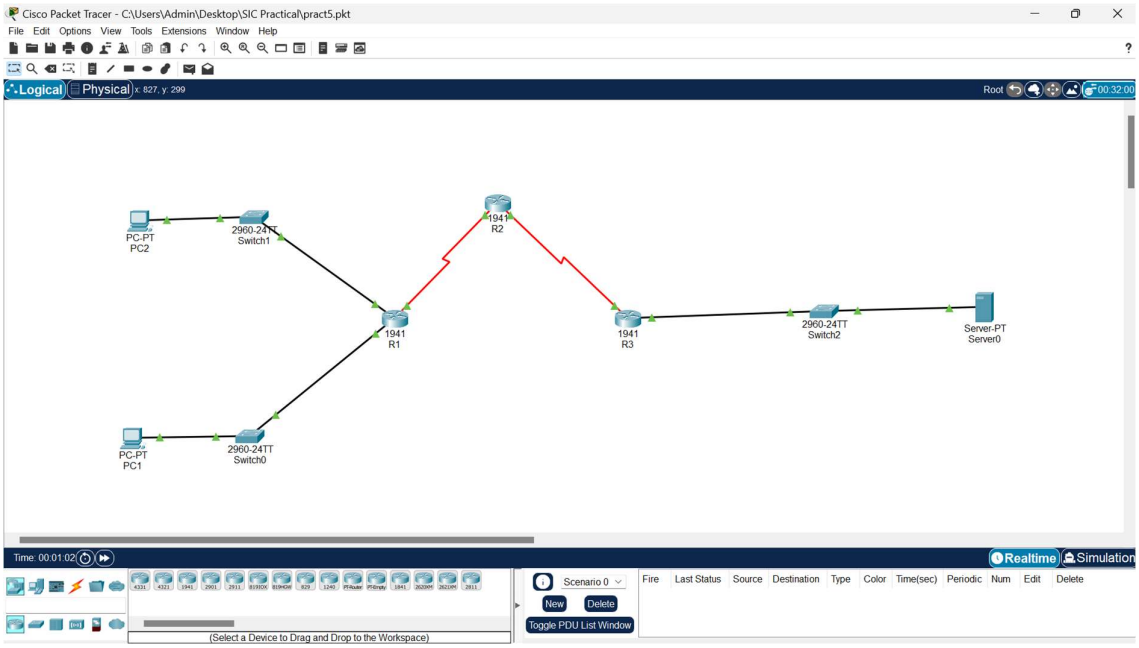
Date: 11/02/2024 **Security in Computing**

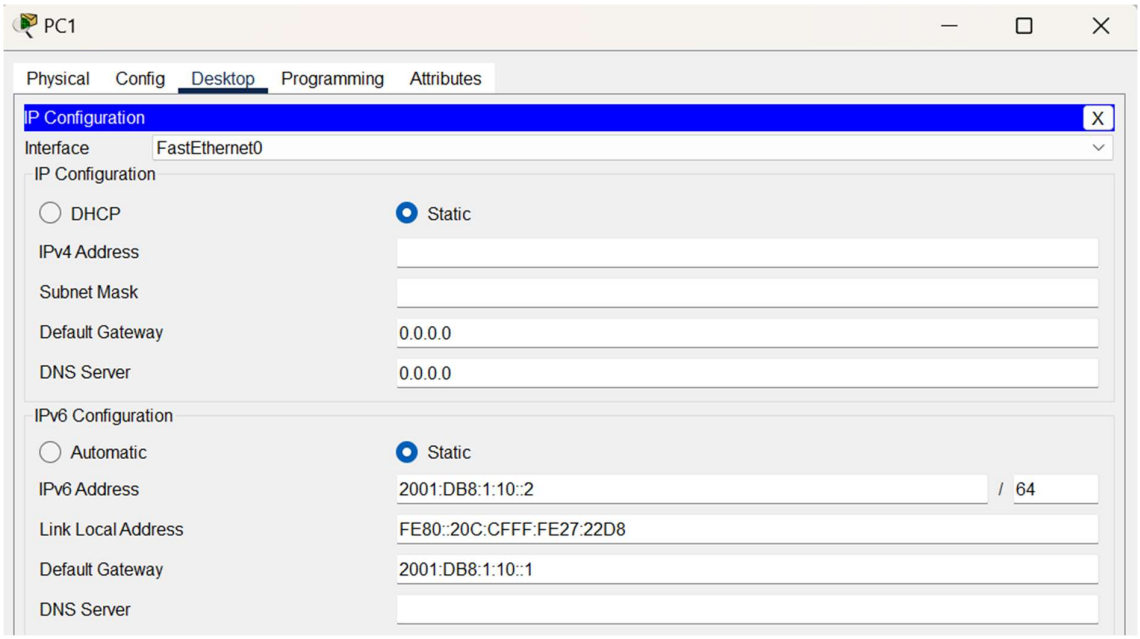
Practical 5:

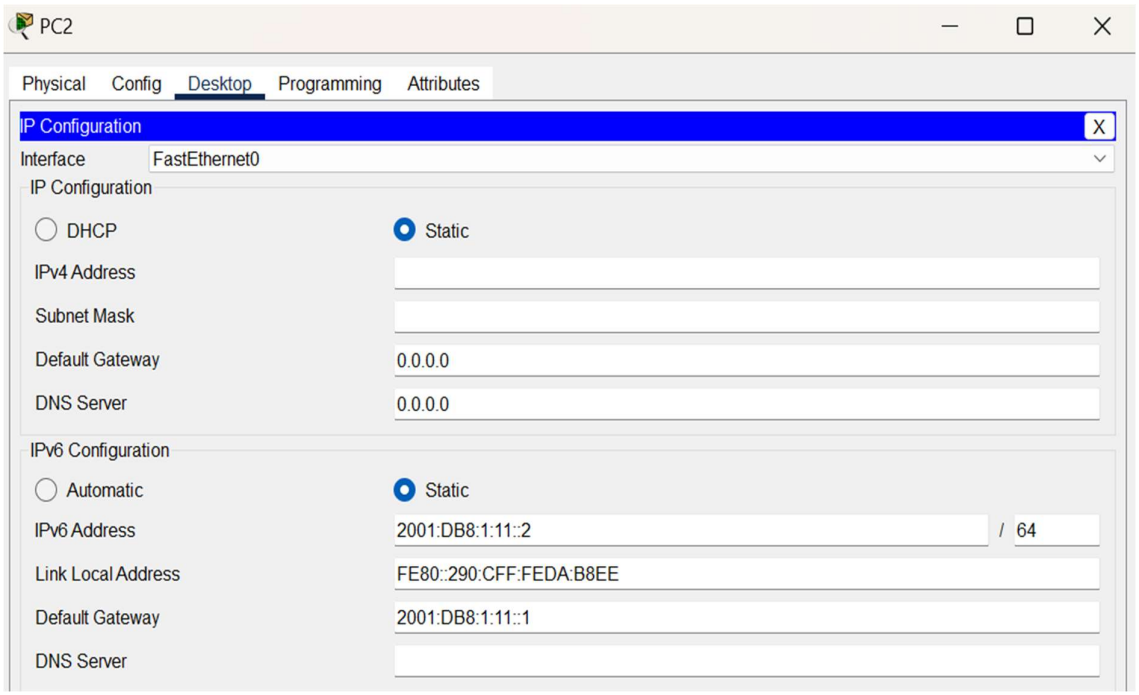
Aim: Configuring IPv6 ACLs

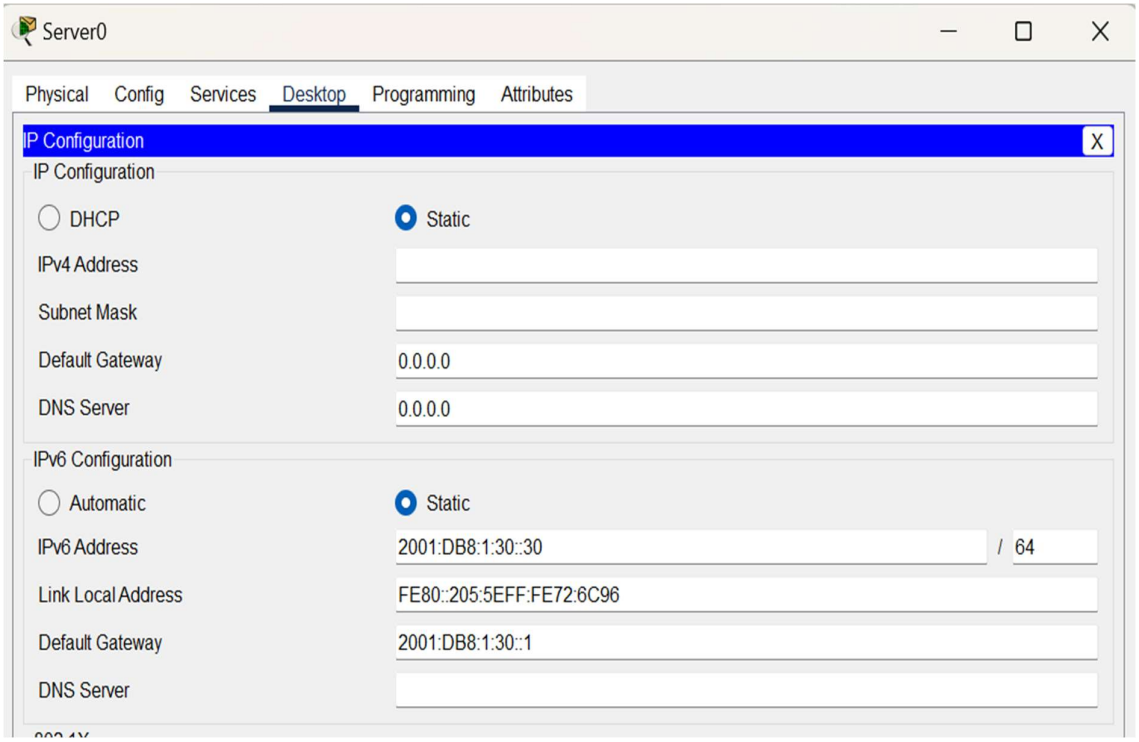
- **Topology Diagram:**

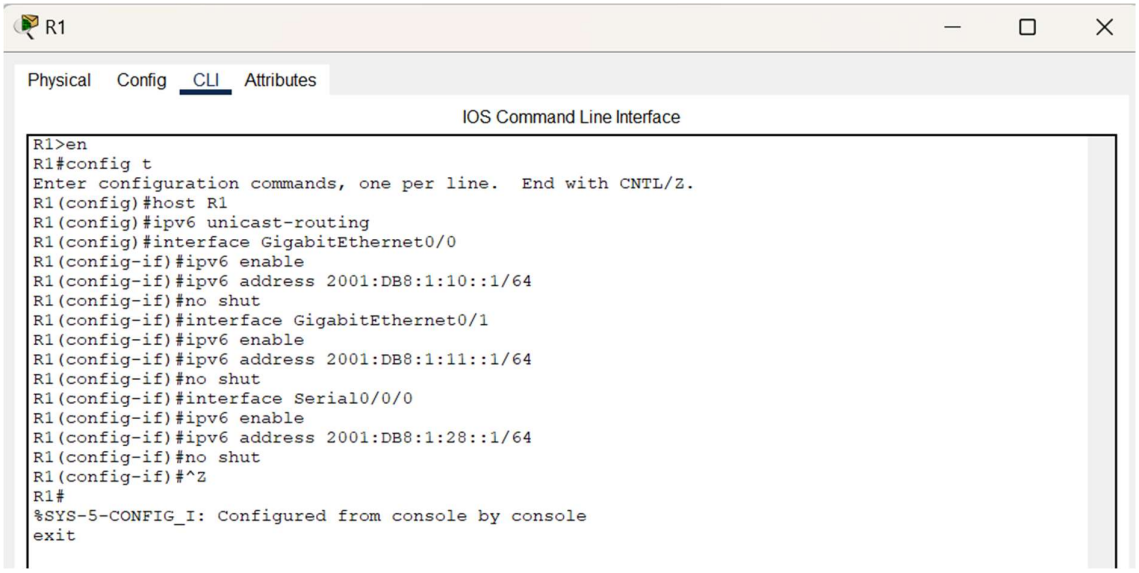


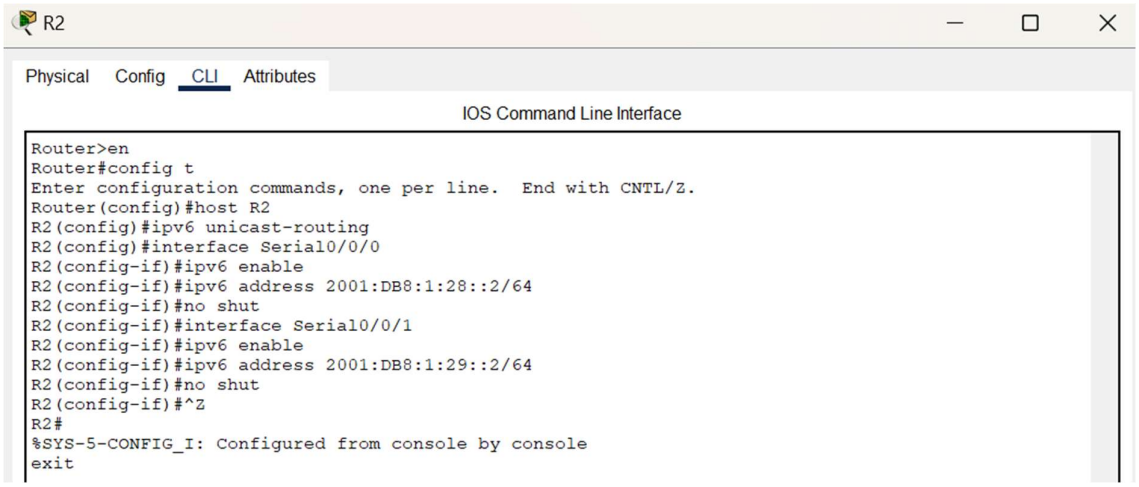
- **Assign IP Address**

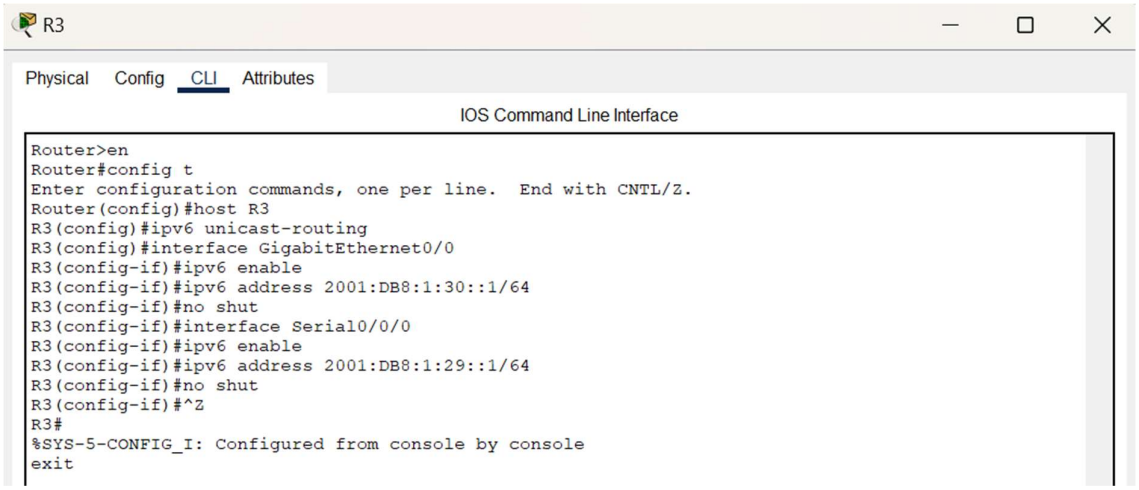



PC2
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
Subnet Mask
Default Gateway
0.0.0.0
DNS Server
0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
2001:DB8:1:11::2
/
64
Link Local Address
FE80::290:CFF:FEDA:B8EE
Default Gateway
2001:DB8:1:11::1
DNS Server

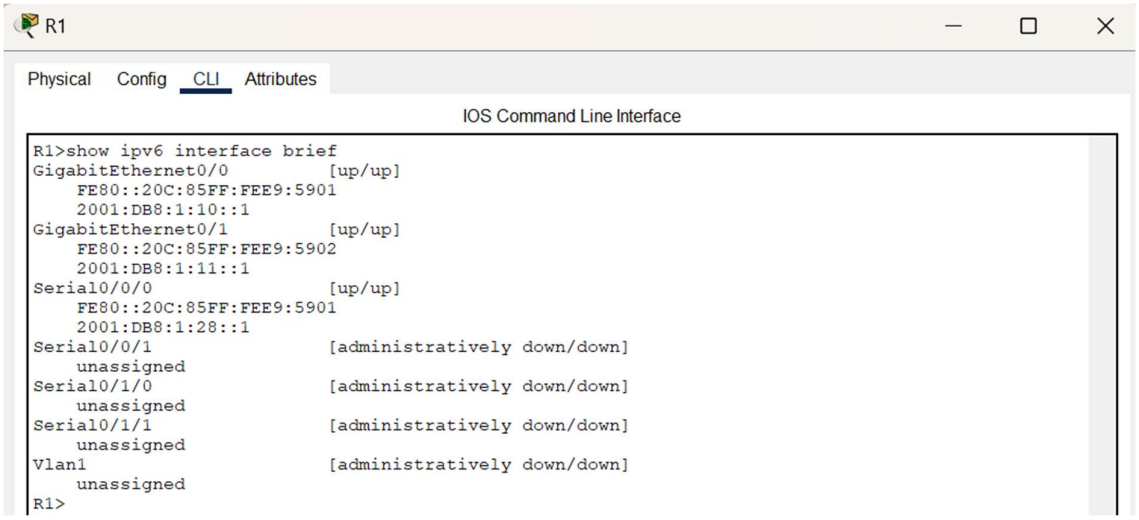

Server0
Physical
Config
Services
Desktop
Programming
Attributes
IP Configuration
X
IP Configuration
DHCP
Static
IPv4 Address
Subnet Mask
Default Gateway
0.0.0.0
DNS Server
0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
2001:DB8:1:30::30
/
64
Link Local Address
FE80::205:5EFF:FE72:6C96
Default Gateway
2001:DB8:1:30::1
DNS Server

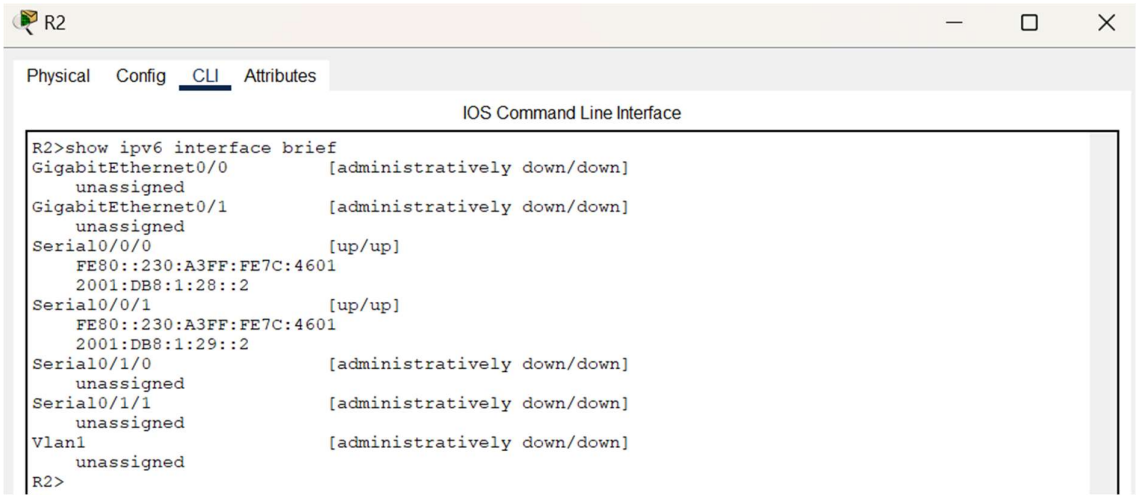

R1
Physical
Config
CLI
Attributes
IOS Command Line Interface
R1>en
R1#config t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#host R1
R1(config)#ipv6 unicast-routing
R1(config)#interface GigabitEthernet0/0
R1(config-if)#ipv6 enable
R1(config-if)#ipv6 address 2001:DB8:1:10::1/64
R1(config-if)#no shut
R1(config-if)#interface GigabitEthernet0/1
R1(config-if)#ipv6 enable
R1(config-if)#ipv6 address 2001:DB8:1:11::1/64
R1(config-if)#no shut
R1(config-if)#interface Serial0/0/0
R1(config-if)#ipv6 enable
R1(config-if)#ipv6 address 2001:DB8:1:28::1/64
R1(config-if)#no shut
R1(config-if)#^Z
R1#
%SYS-5-CONFIG_I: Configured from console by console
exit

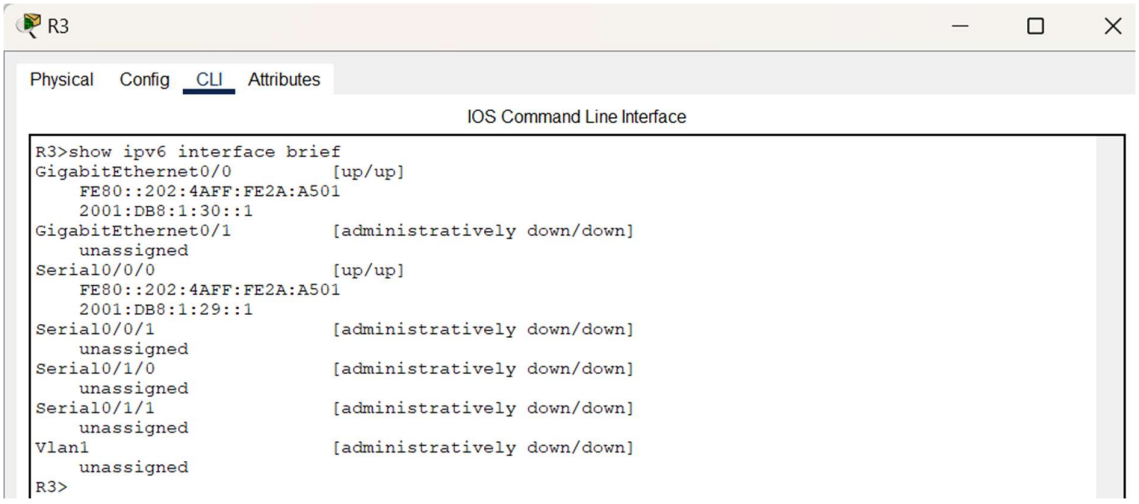

R2
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router>en
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#host R2
R2(config)#ipv6 unicast-routing
R2(config)#interface Serial0/0/0
R2(config-if)#ipv6 enable
R2(config-if)#ipv6 address 2001:DB8:1:28::2/64
R2(config-if)#no shut
R2(config-if)#interface Serial0/0/1
R2(config-if)#ipv6 enable
R2(config-if)#ipv6 address 2001:DB8:1:29::2/64
R2(config-if)#no shut
R2(config-if)#^Z
R2#
%SYS-5-CONFIG_I: Configured from console by console
exit


R3
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router>en
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#host R3
R3(config)#ipv6 unicast-routing
R3(config)#interface GigabitEthernet0/0
R3(config-if)#ipv6 enable
R3(config-if)#ipv6 address 2001:DB8:1:30::1/64
R3(config-if)#no shut
R3(config-if)#interface Serial0/0/0
R3(config-if)#ipv6 enable
R3(config-if)#ipv6 address 2001:DB8:1:29::1/64
R3(config-if)#no shut
R3(config-if)#^Z
R3#
%SYS-5-CONFIG_I: Configured from console by console
exit

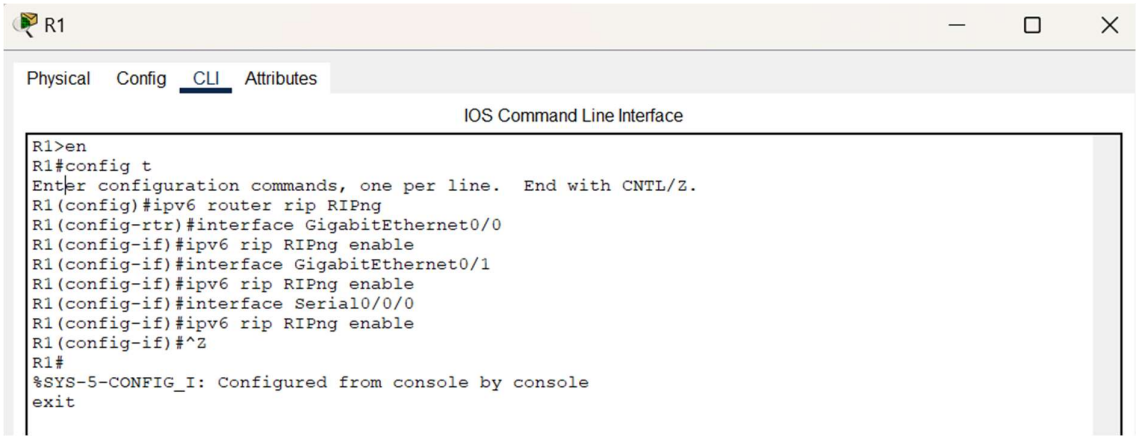
➢ Displaying IP Address Details of Routers

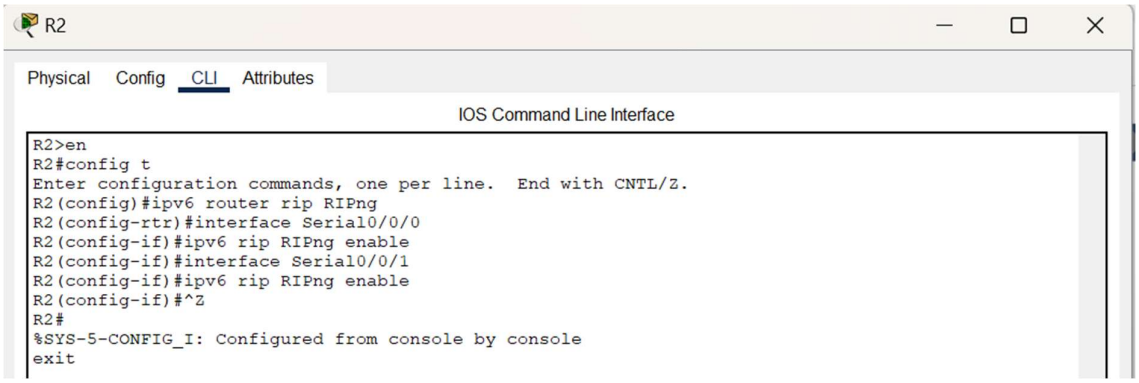


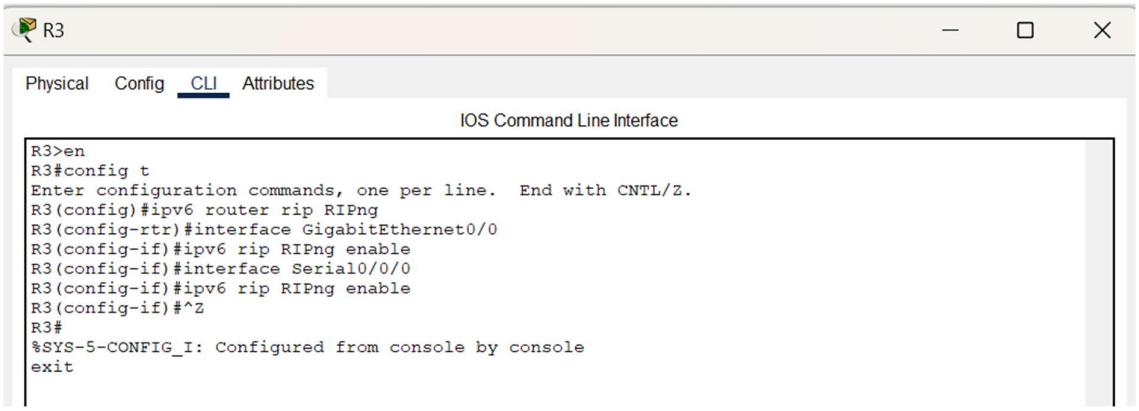




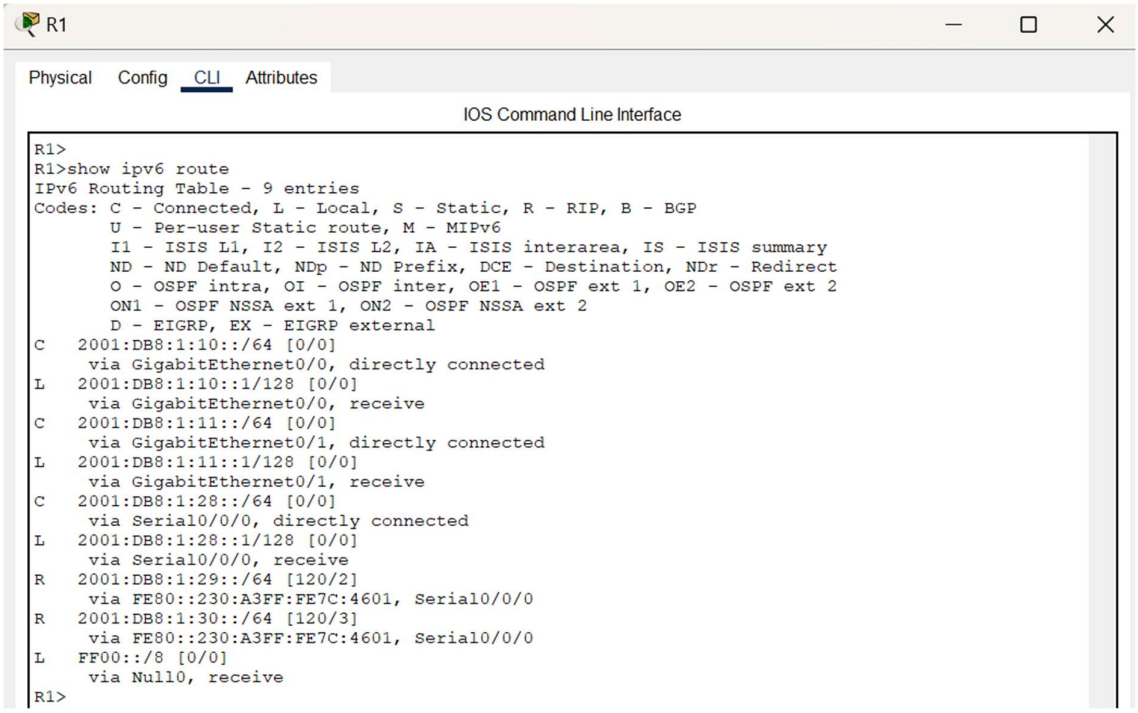
➢ Configure RIPng on routers

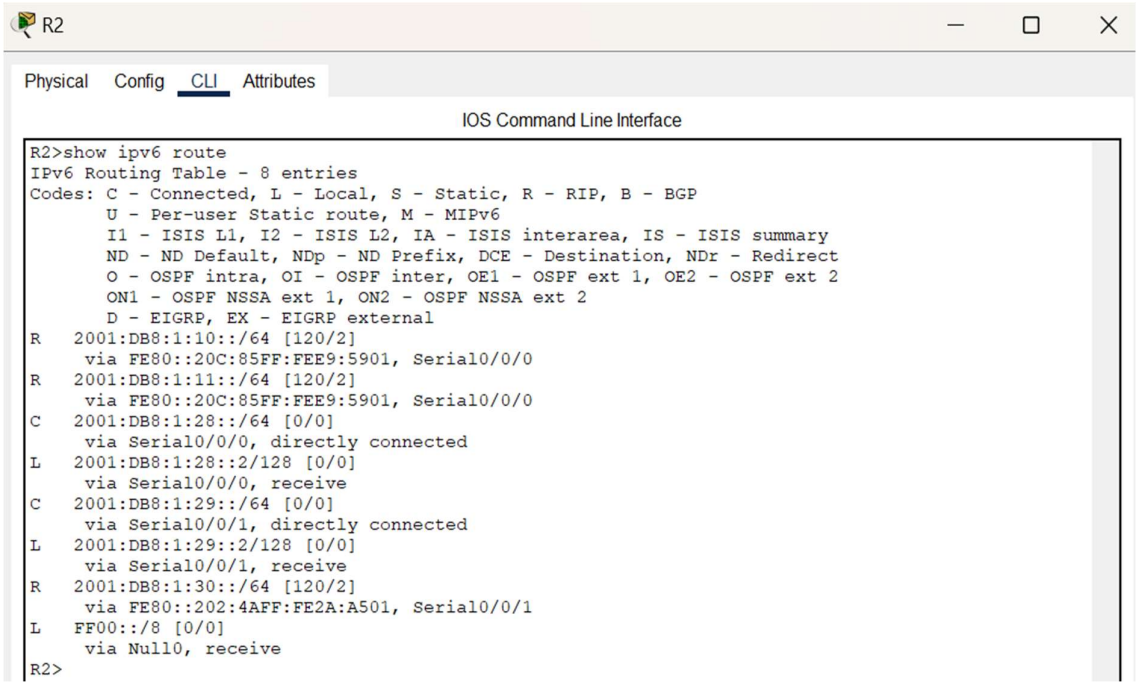


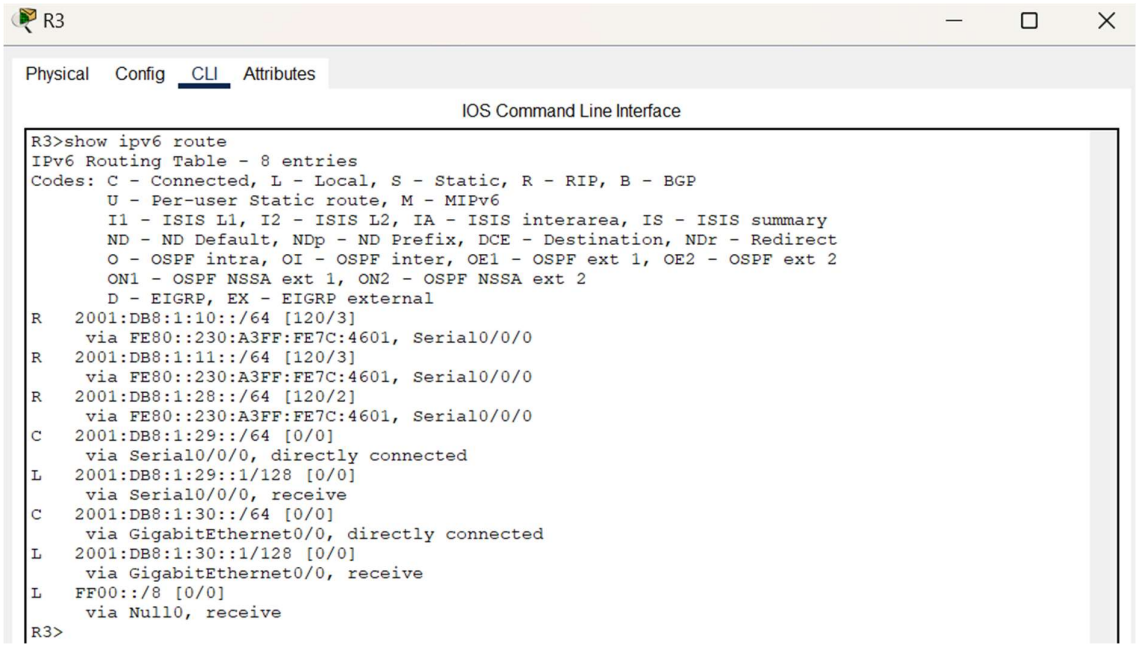




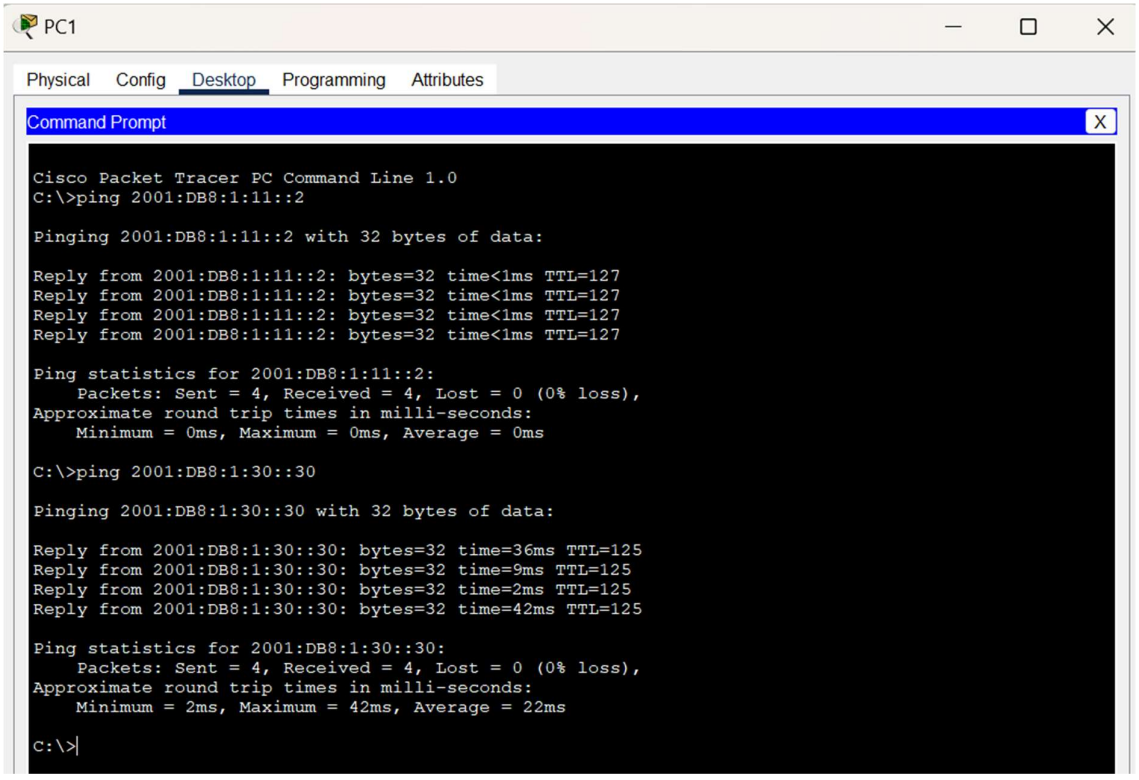
➢ Displaying routing table of routers

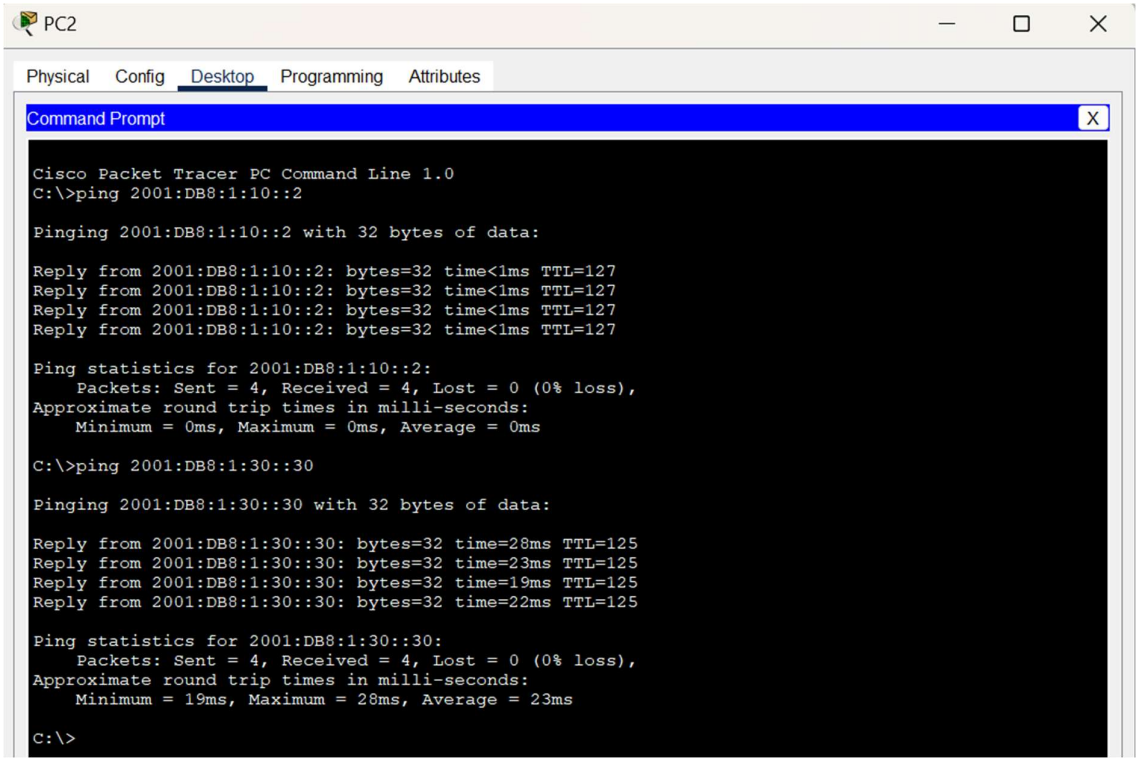


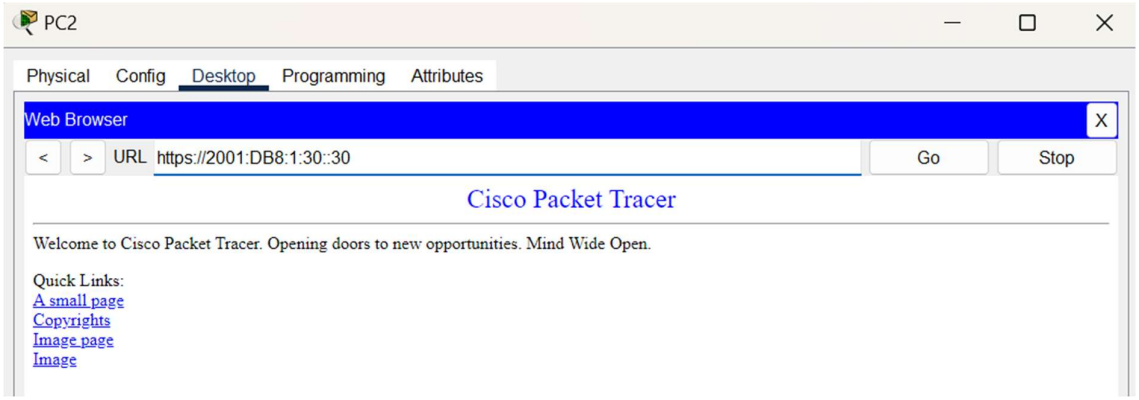




➢ Displaying IP Address Details of Routers

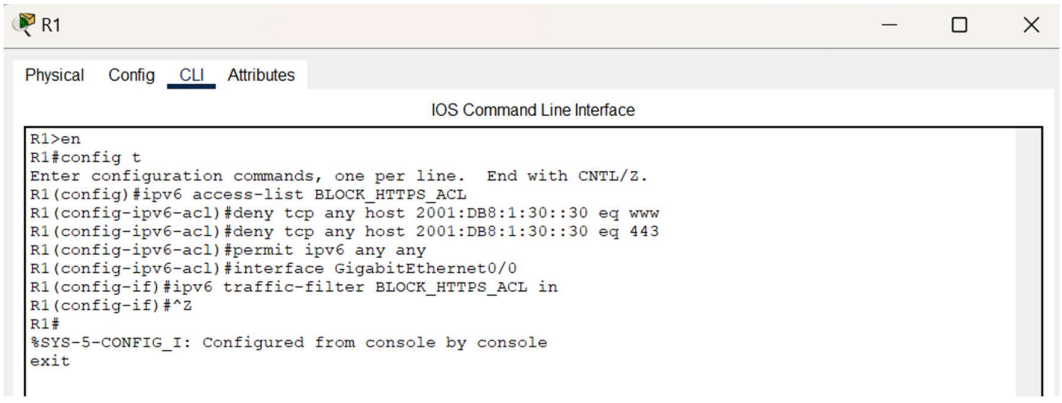






➢ Configuring ACL

(Block HTTP and HTTPS access and Allow all other IPv6 traffic to pass)



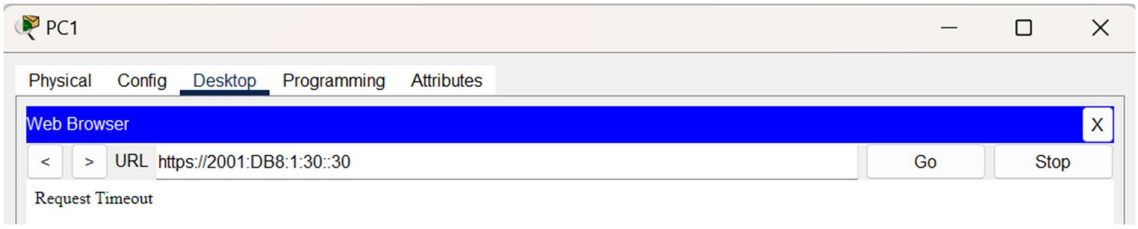
- **Verifying the working of ACL**

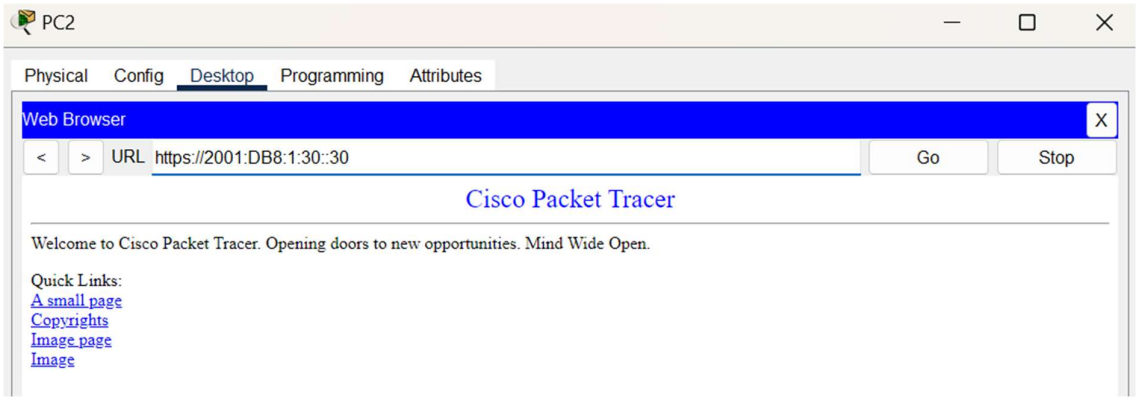
PC1

```
C:\>ping 2001:DB8:1:11::2

Pinging 2001:DB8:1:11::2 with 32 bytes of data:

Reply from 2001:DB8:1:11::2: bytes=32 time<1ms TTL=127
Reply from 2001:DB8:1:11::2: bytes=32 time<1ms TTL=127
Reply from 2001:DB8:1:11::2: bytes=32 time<1ms TTL=127
Reply from 2001:DB8:1:11::2: bytes=32 time=11ms TTL=127

Ping statistics for 2001:DB8:1:11::2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 11ms, Average = 2ms

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=67ms TTL=125
Reply from 2001:DB8:1:30::30: bytes=32 time=12ms TTL=125
Reply from 2001:DB8:1:30::30: bytes=32 time=45ms TTL=125
Reply from 2001:DB8:1:30::30: bytes=32 time=3ms 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 = 3ms, Maximum = 67ms, Average = 31ms

C:\>
```

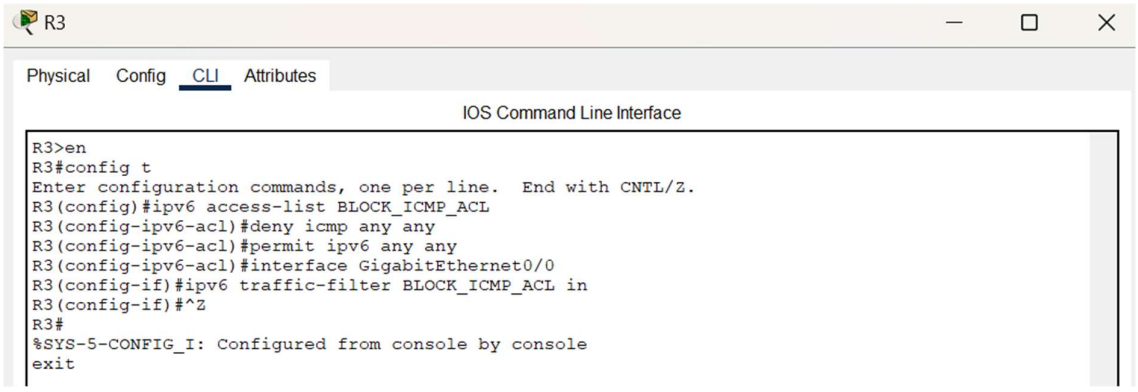
PC2

```
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<1ms TTL=127
Reply from 2001:DB8:1:10::2: bytes=32 time=1ms TTL=127
Reply from 2001:DB8:1:10::2: bytes=32 time<1ms TTL=127
Reply from 2001:DB8:1:10::2: bytes=32 time<1ms TTL=127

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 = 0ms, Maximum = 1ms, Average = 0ms

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=23ms TTL=125
Reply from 2001:DB8:1:30::30: bytes=32 time=12ms TTL=125
Reply from 2001:DB8:1:30::30: bytes=32 time=21ms TTL=125
Reply from 2001:DB8:1:30::30: bytes=32 time=10ms 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 = 10ms, Maximum = 23ms, Average = 16ms

C:\>
```





- **Configuring ACL**
  (Block ICMP access and Allow all other IPv6 traffic to pass)



➢ Verifying the working of ACL