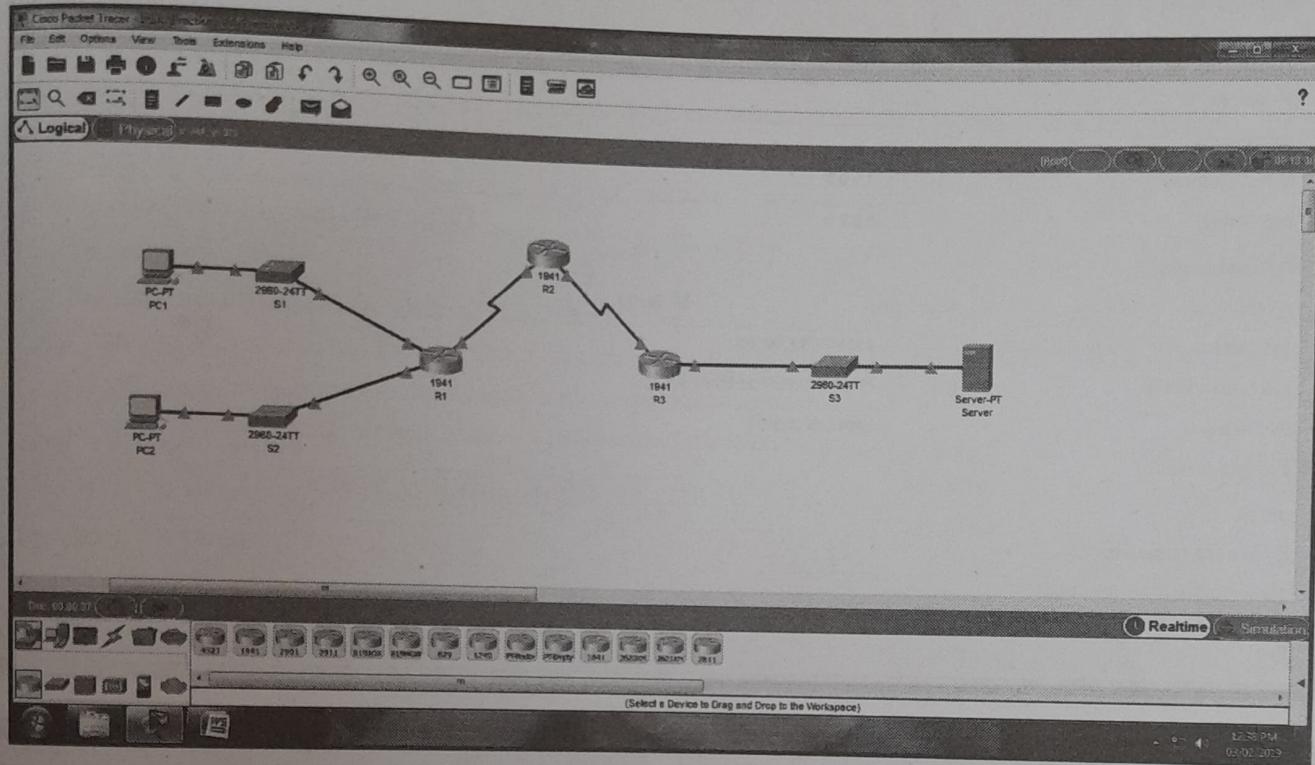
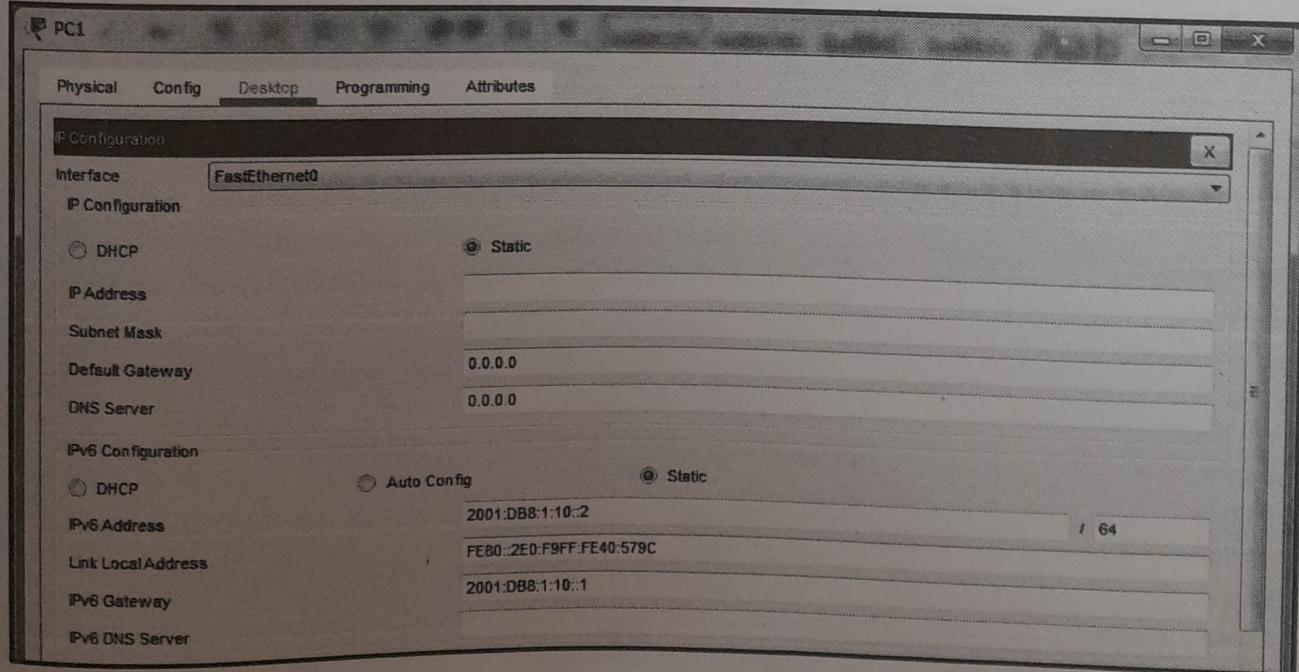
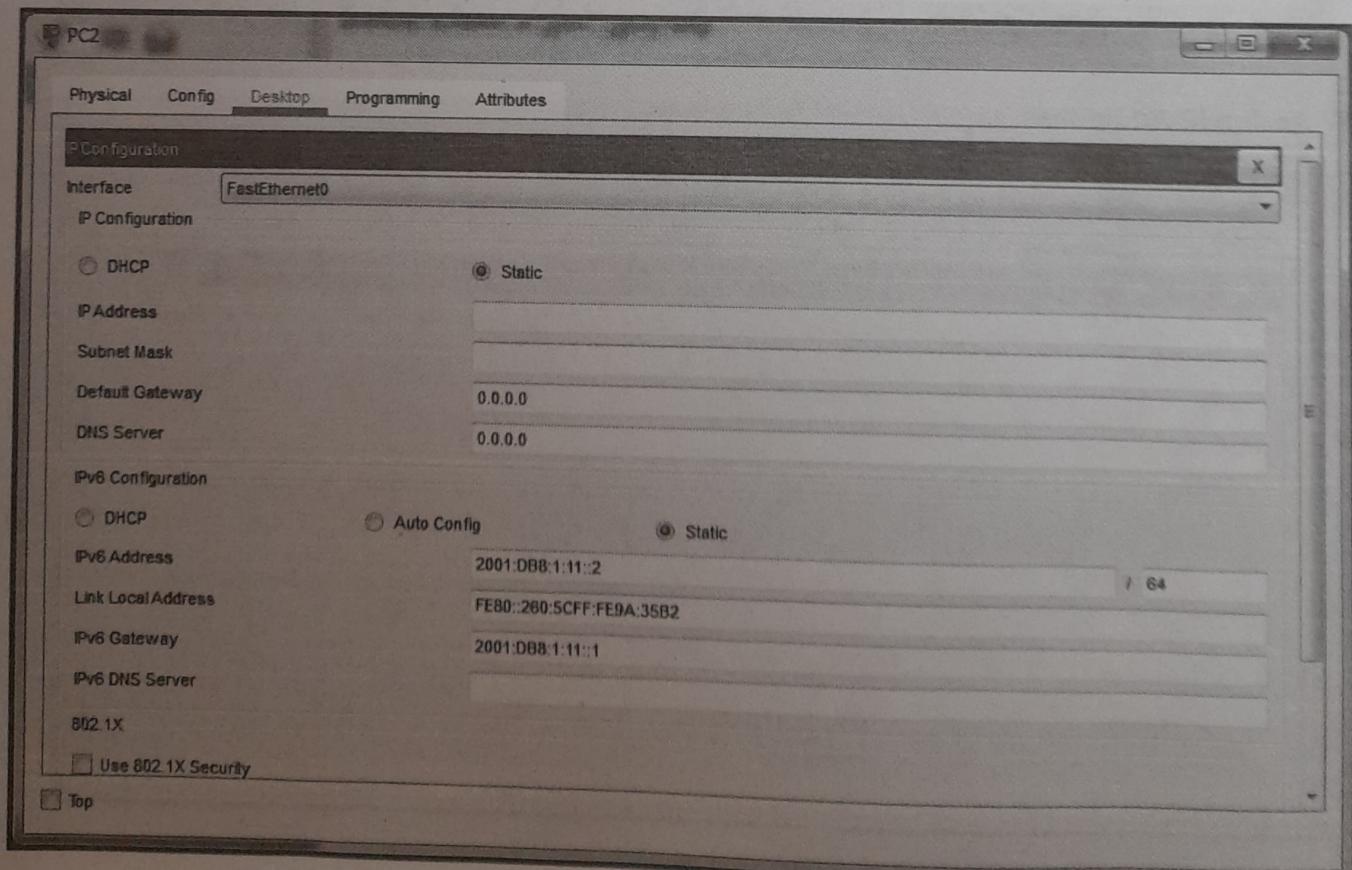
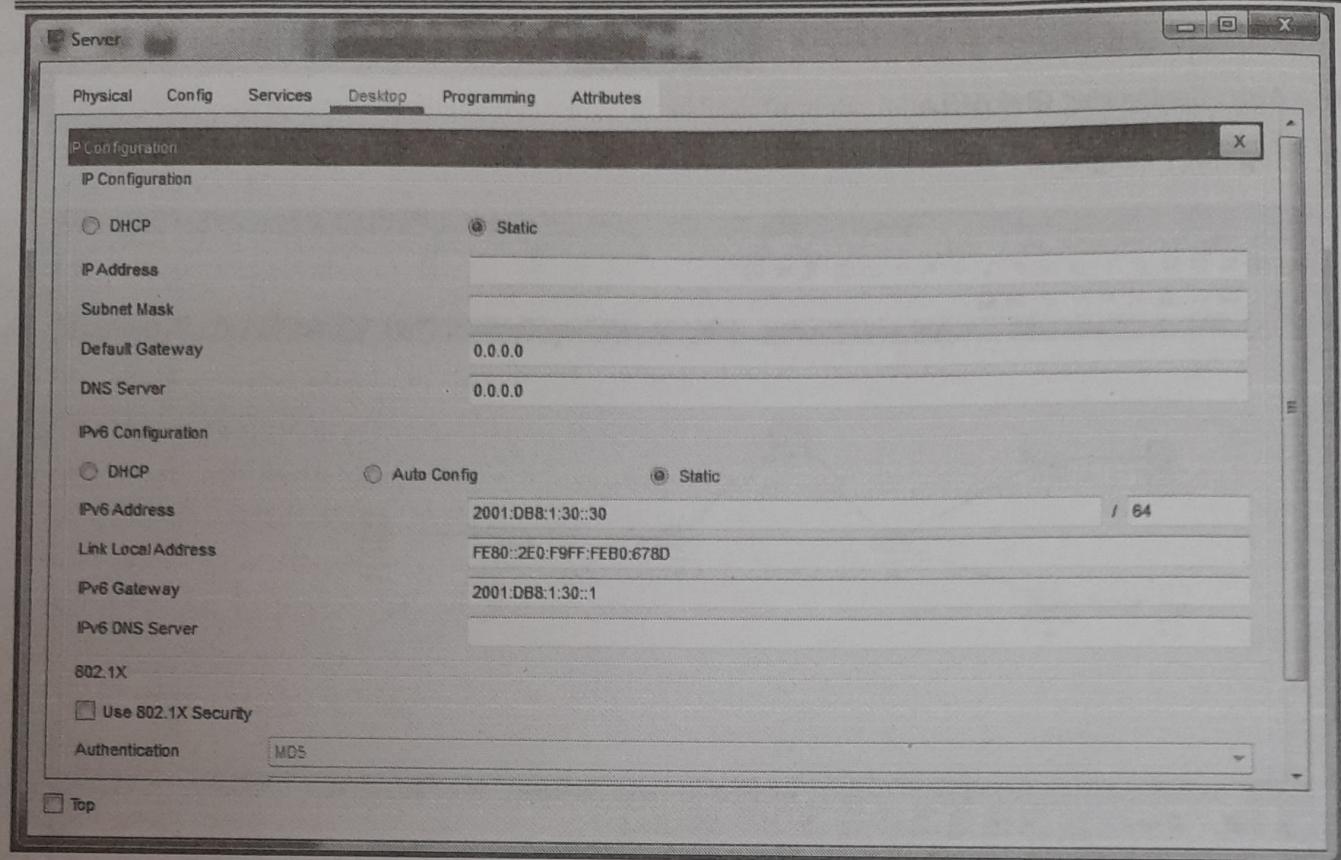


**Practical 5****► Aim : Configuring IPv6 ACLs****☞ Topology Diagram****☞ Assign IP Addresses**





```
Router>en
Router#conf t
Router(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)#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)#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#exit
```

```
Router>en
Router#conf t
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)#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#exit
```



```
Router>en
Router#conf t
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)#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#exit
```

### Displaying IP Address Details of Routers

```
R1>show ipv6 interface brief
GigabitEthernet0/0 [up/up]
FE80::2D0:FFFF:FE0D:1E01
2001:DB8:1:10::1
GigabitEthernet0/1 [up/up]
FE80::2D0:FFFF:FE0D:1E02
2001:DB8:1:11::1
Serial0/0/0 [up/up]
FE80::2D0:FFFF:FE0D:1E01
2001:DB8:1:28::1
Serial0/0/1 [administratively down/down]
unassigned
Vlan1 [administratively down/down]
Unassigned
```

```
R2>show ipv6 interface brief
GigabitEthernet0/0 [administratively down/down]
unassigned
GigabitEthernet0/1 [administratively down/down]
Unassigned
```



```
Serial0/0/0 [up/up]
FE80::2E0:BOFF:FEAB:1001
2001:DB8:1:28::2
Serial0/0/1 [up/up]
FE80::2E0:BOFF:FEAB:1001
2001:DB8:1:29::2
Vlan1 [administratively down/down]
Unassigned
```

```
R3> show ipv6 interface brief
GigabitEthernet0/0 [up/up]
FE80::200:CFF:FEE7:4B01
2001:DB8:1:30::1
GigabitEthernet0/1 [administratively down/down]
unassigned
Serial0/0/0 [up/up]
FE80::200:CFF:FEE7:4B01
2001:DB8:1:29::1
Serial0/0/1 [administratively down/down]
unassigned
Vlan1 [administratively down/down]
unassigned
```

### Configure RIPng on routers

```
R1>en
R1#conf t
R1(config)#ipv6 router rip RIPng
R1(config)#interface GigabitEthernet0/0
R1(config-if)#ipv6 rip RIPng enable
R1(config)#interface GigabitEthernet0/1
R1(config-if)#ipv6 rip RIPng enable
R1(config)#interface Serial0/0/0
R1(config-if)#ipv6 rip RIPng enable
R1(config-if)# ^ Z
R1#exit
```

```
R2>en
R2#conf t
R2(config)#ipv6 router rip RIPng
R2(config)#interface Serial0/0/0
R2(config-if)#ipv6 rip RIPng enable
R2(config)#interface Serial0/0/1
R2(config-if)#ipv6 rip RIPng enable
R2(config-if)# ^ Z
R2#exit
R3>en
R3#conf t
R3(config)#ipv6 router rip RIPng
R3(config)#interface GigabitEthernet0/0
R3(config-if)#ipv6 rip RIPng enable
R3(config)#interface Serial0/0/0
R3(config-if)#ipv6 rip RIPng enable
R3(config-if)# ^ Z
R3#exit
```

### Displaying routing table of routers

```
R1>show ipv6 route
IPv6 Routing Table - 9 entries
Codes: C - Connected, L - Local, S - Static, R - RIP, B - BGP
U - Per-user Static route, M - MIPv6*
I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary
O - OSPF intra, OI - OSPF inter, OE1 - OSPF ext 1, OE2 - OSPF ext 2
ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2
D - EIGRP, EX - EIGRP external
C 2001:DB8:1:10::/64 [0/0]
via GigabitEthernet0/0, directly connected
L 2001:DB8:1:10::1/128 [0/0]
via GigabitEthernet0/0, receive
C 2001:DB8:1:11::/64 [0/0]
via GigabitEthernet0/1, directly connected
L 2001:DB8:1:11::1/128 [0/0]
via GigabitEthernet0/1, receive
C 2001:DB8:1:28::/64 [0/0]
```



via Serial0/0/0, directly connected  
L 2001:DB8:1:28::1/128 [0/0]  
via Serial0/0/0, receive  
R 2001:DB8:1:29::/64 [120/2]  
via FE80::2E0:B0FF:FEAB:1001, Serial0/0/0  
R 2001:DB8:1:30::/64 [120/3]  
via FE80::2E0:B0FF:FEAB:1001, Serial0/0/0  
L FF00::/8 [0/0]  
via Null0, receive

R2> show ipv6 route

IPv6 Routing Table - 8 entries

Codes: C - Connected, L - Local, S - Static, R - RIP, B - BGP

U - Per-user Static route, M - MIPv6

I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary

O - OSPF intra, OI - OSPF inter, OE1 - OSPF ext 1, OE2 - OSPF ext 2

ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2

D - EIGRP, EX - EIGRP external

R 2001:DB8:1:10::/64 [120/2]

via FE80::2D0:FFFF:FE0D:1E01, Serial0/0/0

R 2001:DB8:1:11::/64 [120/2]

via FE80::2D0:FFFF:FE0D:1E01, Serial0/0/0

C 2001:DB8:1:28::/64 [0/0]

via Serial0/0/0, directly connected

L 2001:DB8:1:28::2/128 [0/0]

via Serial0/0/0, receive

C 2001:DB8:1:29::/64 [0/0]

via Serial0/0/1, directly connected

L 2001:DB8:1:29::2/128 [0/0]

via Serial0/0/1, receive

R 2001:DB8:1:30::/64 [120/2]

via FE80::200:CFF:FEE7:4B01, Serial0/0/1

L FF00::/8 [0/0]

via Null0, receive



## Checking network connectivity

PC1

Physical Config Desktop Programming Attributes

Command Prompt

```
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=2ms 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<1ms 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 = 2ms, 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=12ms TTL=125
Reply from 2001:DB8:1:30::30: bytes=32 time=3ms TTL=125
Reply from 2001:DB8:1:30::30: bytes=32 time=11ms TTL=125
Reply from 2001:DB8:1:30::30: bytes=32 time=11ms 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 = 12ms, Average = 9ms
```

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PC2

Physical Config Desktop Programming Attributes

Command Prompt

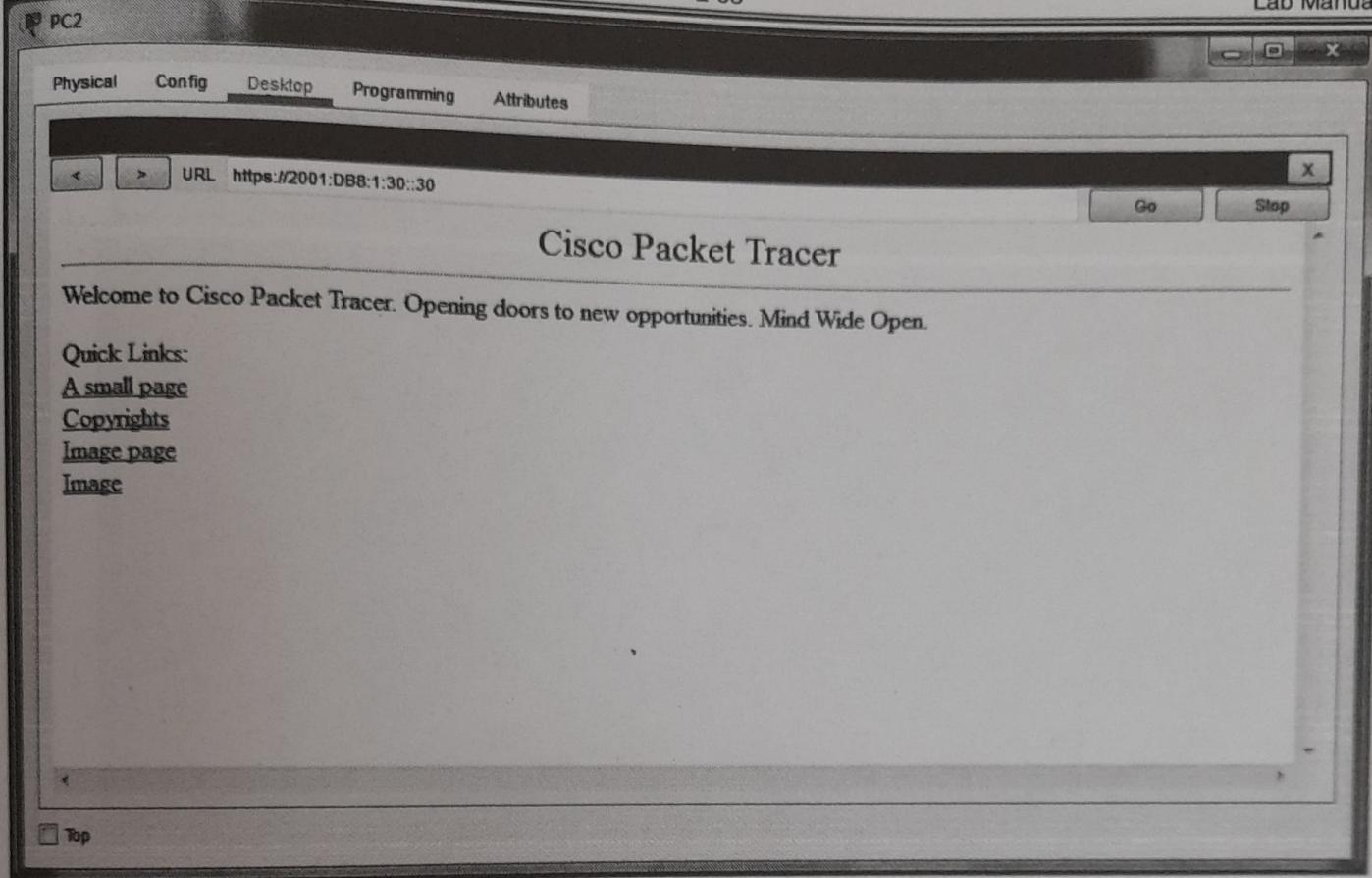
```
C:\>ping 2001:DB8:1:10::2
Pinging 2001:DB8:1:10::2 with 32 bytes of data:
Reply from 2001:DB8:1:10::2: bytes=32 time<1ms TTL=127

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 = 0ms, 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=16ms TTL=125
Reply from 2001:DB8:1:30::30: bytes=32 time=10ms TTL=125
Reply from 2001:DB8:1:30::30: bytes=32 time=14ms 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 = 16ms, Average = 10ms
```

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## ☞ Configuring ACL

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

```
R1>en
R1#conf t
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 ipv6 any any
R1(config-ipv6-acl)#interface GigabitEthernet0/0
R1(config-if)#ipv6 traffic-filter BLOCK_HTTPS_ACL in
R1(config-if)# ^Z
R1#exit
```



## Verifying the working of ACL

PC1

Physical Config Desktop Programming Attributes

Command Prompt

```
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

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 = 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=13ms TTL=128
Reply from 2001:DB8:1:30::30: bytes=32 time=3ms TTL=128
Reply from 2001:DB8:1:30::30: bytes=32 time=11ms TTL=128
Reply from 2001:DB8:1:30::30: bytes=32 time=11ms TTL=128

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 = 12ms, Average = 9ms
```

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PC2

Physical Config Desktop Programming Attributes

Command Prompt

```
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

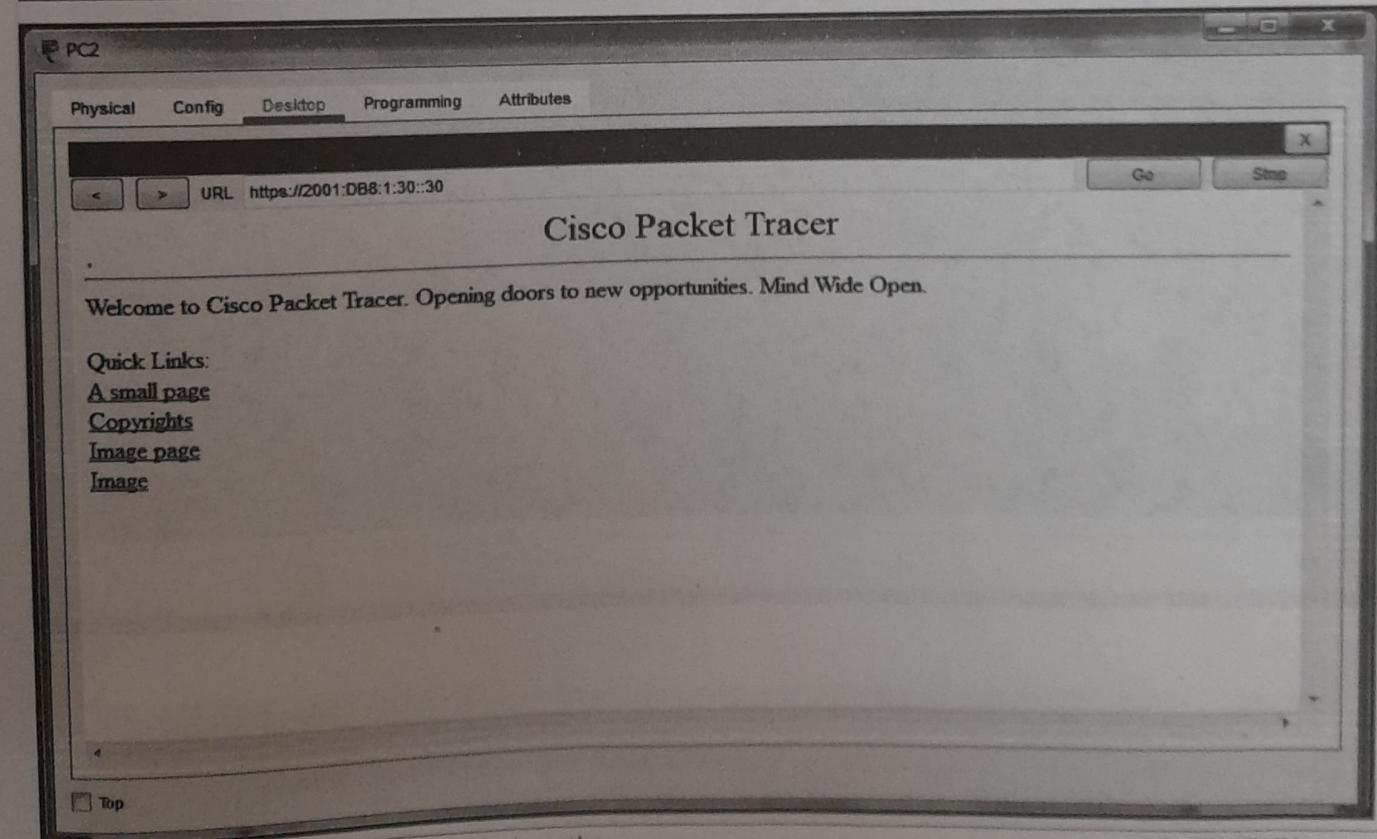
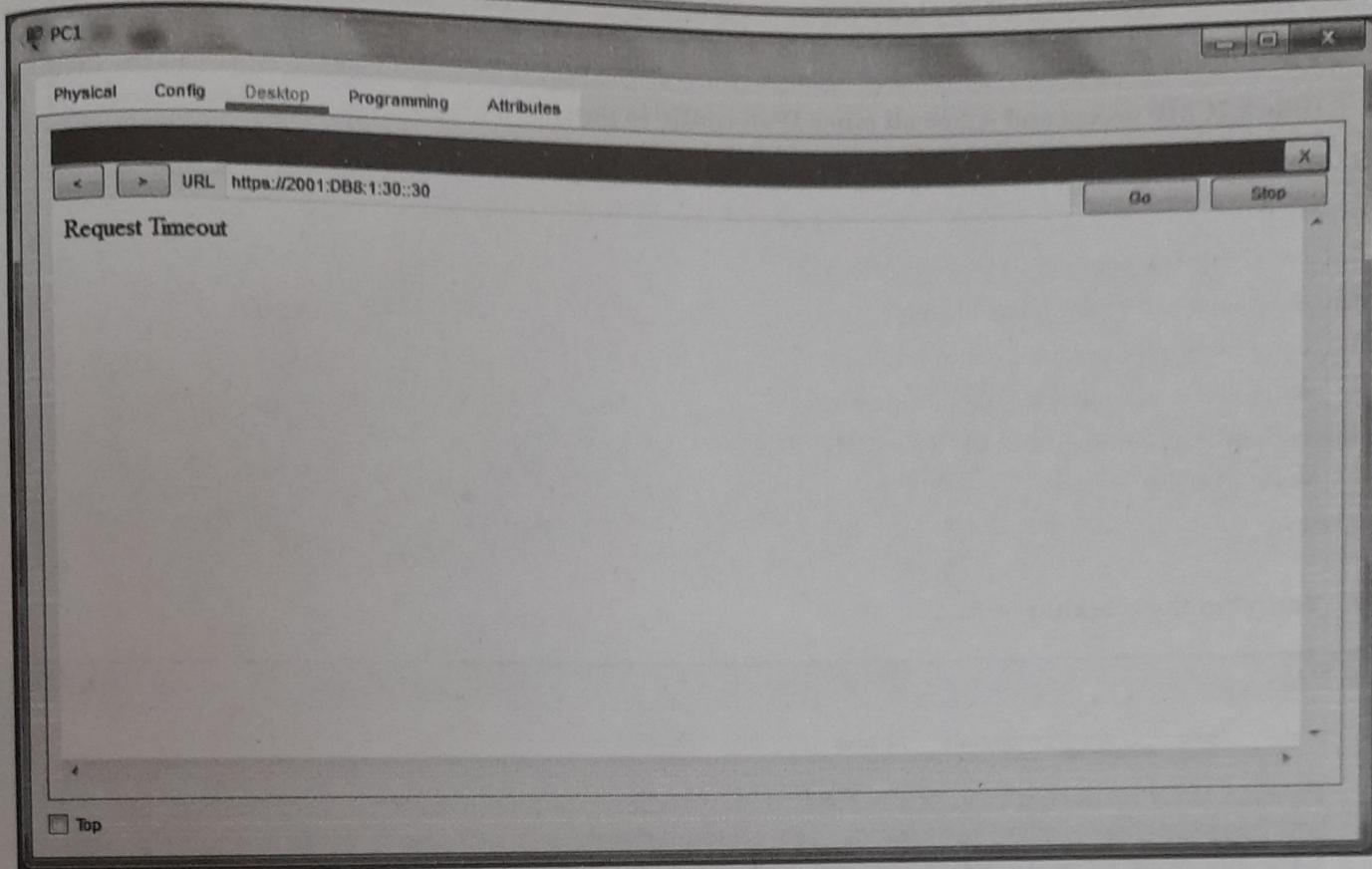
Ping statistics for 2001:DB8:1:10::2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

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=16ms TTL=128
Reply from 2001:DB8:1:30::30: bytes=32 time=10ms TTL=128
Reply from 2001:DB8:1:30::30: bytes=32 time=14ms TTL=128
Reply from 2001:DB8:1:30::30: bytes=32 time=16ms TTL=128

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 = 16ms, Average = 10ms
```





## Configuring ACL

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

```
R3>en
R3#conf t
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)#interface GigabitEthernet0/0
R3(config-if)#ipv6 traffic-filter BLOCK_ICMP_ACL in
R3(config-if)# ^Z
R3#exit
```

## Verifying the working of ACL

```
PC1
Physical Config Desktop Programming Attributes
Command Prompt X
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:DB8:1:10::1: Destination host unreachable.

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



PC2

Physical Config Desktop Programming Attributes

Command Prompt X

```
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:DB8:1:11::1: Destination host unreachable.

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

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