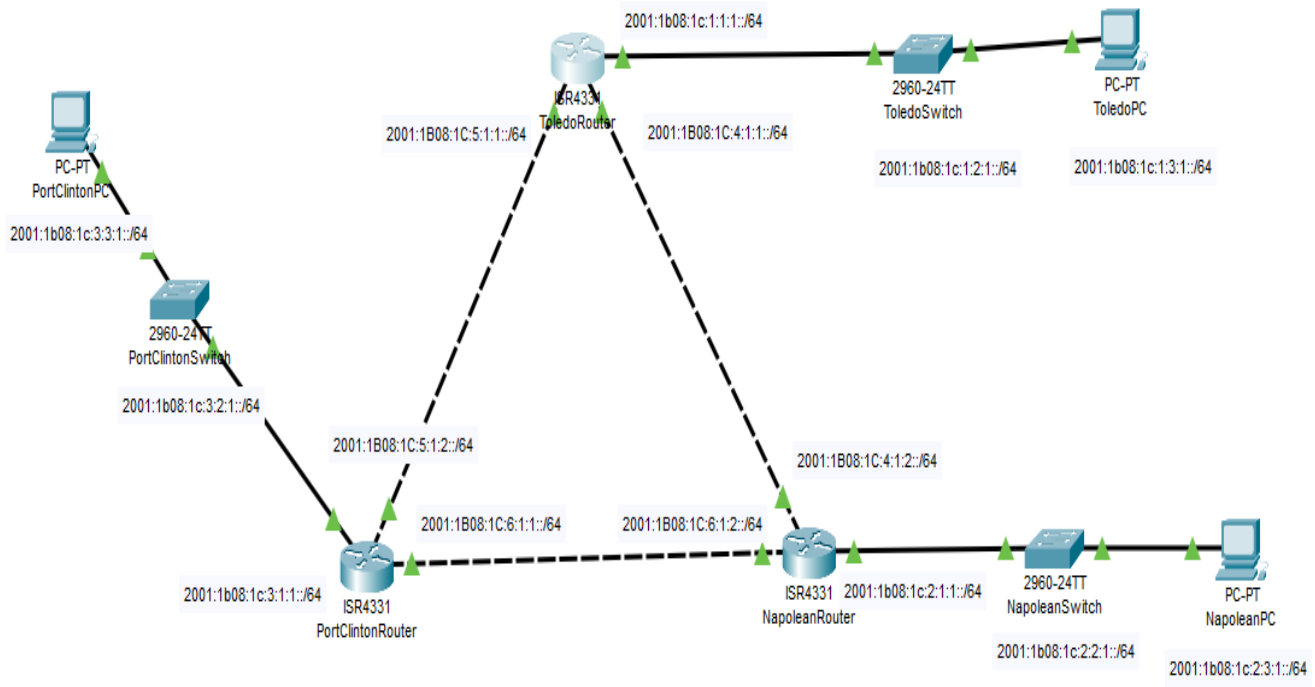
Question 1

Diagram



	Toledo	Napolean	Port Clinton
Fa0	2001:1B08:1C:1:1:1::/64	2001:1B08:1C:2:1:1::/64	2001:1B08:1C:3:1:1::/64
Fa1	2001:1B08:1C:4:1:1::/64	2001:1B08:1C:4:1:2::/64	2001:1B08:1C:5:1:2::/64
Fa2	2001:1B08:1C:5:1:1::/64	2001:1B08:1C:6:1:2::/64	2001:1B08:1C:6:1:1::/64

2001:1b08:001c::/48

1 – router

2 – switch

3 – PC

Toledo

2001:1b08:1c:1::/64

Router: 2001:1b08:1c:1:1:1::/64

Switch: 2001:1b08:1c:1:2:1::/64

PC: 2001:1b08:1c:1:3:1::/64

Napolean

2001:1b08:1c:2::/64

Router: 2001:1b08:1c:2:1:1::/64

Switch: 2001:1b08:1c:2:2:1::/64

PC: 2001:1b08:1c:2:3:1::/64

Port Clinton

2001:1b08:1c:3::/64

Router: 2001:1b08:1c:3:1:1::/64

Switch: 2001:1b08:1c:3:2:1::/64

PC: 2001:1b08:1c:3:3:1::/64

Toledo-Napolean

2001:1b08:1c:4::/64

Toledo-Port Clinton

2001:1b08:1c:5::/64

Napolean-Port Clinton

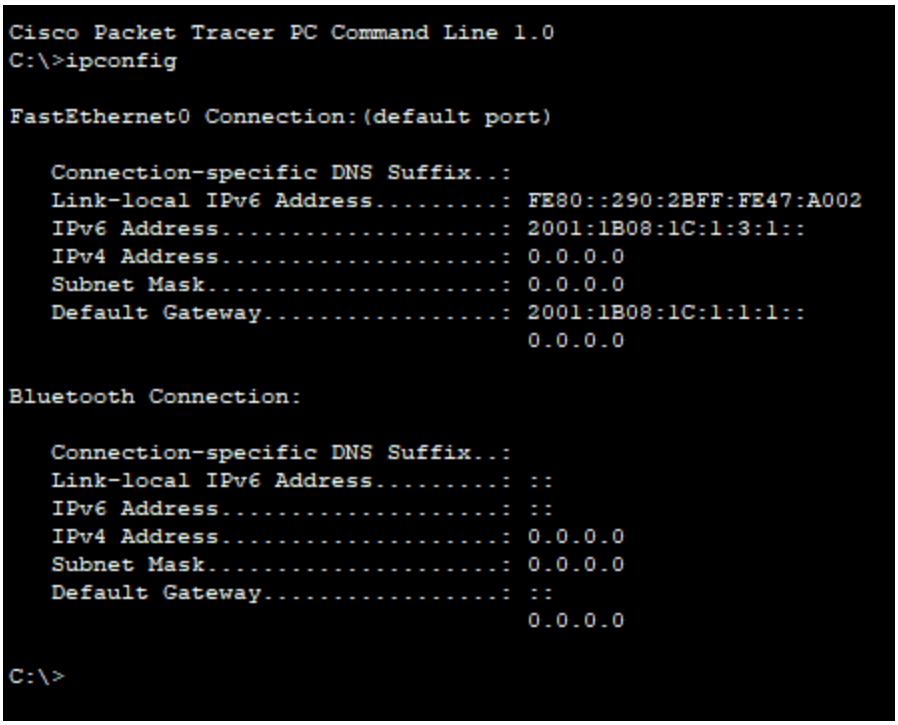
2001:1b08:1c:6::/64

Question 2

Toledo

```
Current configuration : 919 bytes
!
version 15.4
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname ToledoRouter
!
!
!
!
!
!
!
!
no ip cef
ipv6 unicast-routing
!
no ipv6 cef
!
!
!
!
!
!
!
!
!
!
!
!
spanning-tree mode pvst
!
!
!
!
!
!
interface GigabitEthernet0/0/0
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:1:1:1::/64
 ipv6 enable
!
interface GigabitEthernet0/0/1
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:4:1:1::/64
 ipv6 enable
!
interface GigabitEthernet0/0/2
 media-type sfp
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:5:1:1::/64
 ipv6 enable
!
interface GigabitEthernet0/0/0
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:1:1:1::/64
 ipv6 enable
!
interface GigabitEthernet0/0/1
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:4:1:1::/64
 ipv6 enable
!
interface GigabitEthernet0/0/2
 media-type sfp
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:5:1:1::/64
 ipv6 enable
!
interface Vlan1
 no ip address
 shutdown
!
ip classless
!
ip flow-export version 9
!
ipv6 route 2001:1B08:1C:2::/64 2001:1B08:1C:4:1:2::
ipv6 route 2001:1B08:1C:3::/64 2001:1B08:1C:5:1:2::
!
!
!
!
!
!
line con 0
!
line aux 0
!
line vty 0 4
 login
!
!
!
end


ToledoRouter#
```

This is the Toledo router configured with IPv6 address and route.

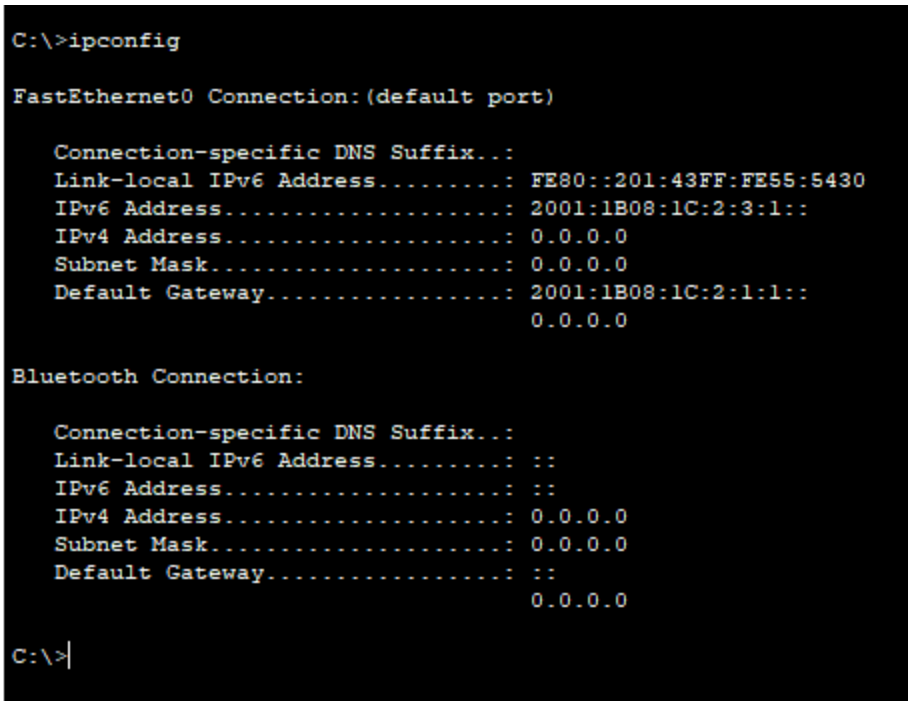


This is the Toledo PC configured with IPv6 address.

Napolean

```
NapoleanRouter#show running-config
Building configuration...

Current configuration : 921 bytes
!
version 15.4
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname NapoleanRouter
!
!
!
!
!
!
!
!
no ip cef
ipv6 unicast-routing
!
no ipv6 cef
!
!
!
!
!
!
!
!
!
!
!
!
spanning-tree mode pvst
!
!
!
!
!
!
interface GigabitEthernet0/0/0
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:2:1:1::/64
 ipv6 enable
!
interface GigabitEthernet0/0/1
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:4:1:2::/64
 ipv6 enable
!
interface GigabitEthernet0/0/2
 media-type sfp
 no ip address
!
interface GigabitEthernet0/0/0
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:2:1:1::/64
 ipv6 enable
!
interface GigabitEthernet0/0/1
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:4:1:2::/64
 ipv6 enable
!
interface GigabitEthernet0/0/2
 media-type sfp
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:6:1:2::/64
 ipv6 enable
!
interface Vlan1
 no ip address
 shutdown
!
ip classless
!
ip flow-export version 9
!
ipv6 route 2001:1B08:1C:1::/64 2001:1B08:1C:4:1:1::
ipv6 route 2001:1B08:1C:3::/64 2001:1B08:1C:6:1:1::
!
!
!
!
!
!
line con 0
!
line aux 0
!
line vty 0 4
 login
!
!
!
end


NapoleanRouter#
```

This is Napolean router configured with IPv6 address.



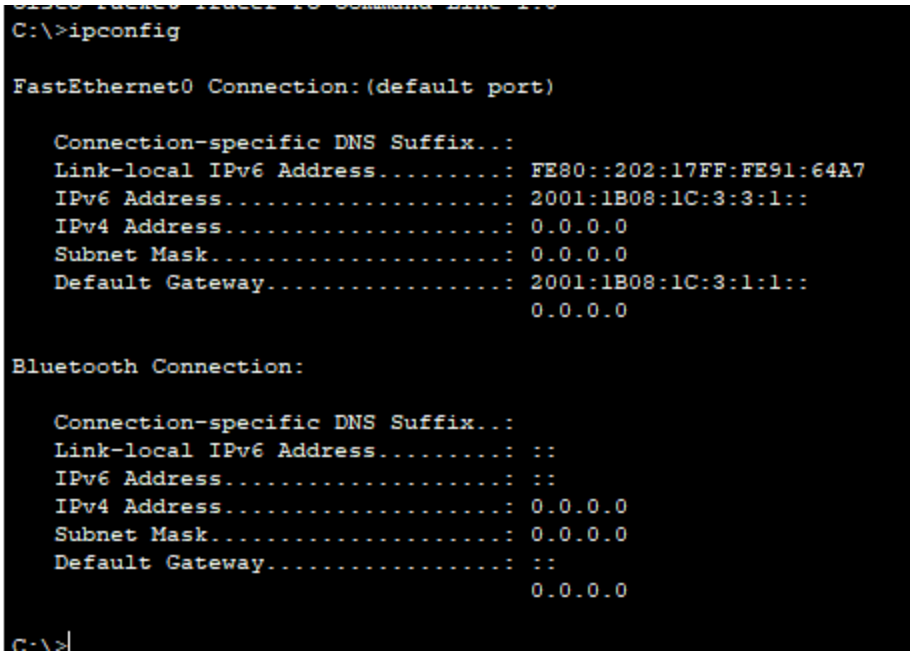
This is Napolean PC configured with IPv6 address.

Port Clinton

```
PortClintonRouter#show running-config
Building configuration...

Current configuration : 924 bytes
!
version 15.4
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname PortClintonRouter
!
!
!
!
!
!
!
!
no ip cef
ipv6 unicast-routing
!
no ipv6 cef
!
!
!
!
!
!
!
!
!
!
!
!
spanning-tree mode pvst
!
!
!
!
!
!
interface GigabitEthernet0/0/0
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:3:1:1::/64
 ipv6 enable
!
interface GigabitEthernet0/0/1
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:5:1:2::/64
 ipv6 enable
!
interface GigabitEthernet0/0/2
 media-type sfp
 no ip address
```

```
!
interface GigabitEthernet0/0/0
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:3:1:1::/64
 ipv6 enable
!
interface GigabitEthernet0/0/1
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:5:1:2::/64
 ipv6 enable
!
interface GigabitEthernet0/0/2
 media-type sfp
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:6:1:1::/64
 ipv6 enable
!
interface Vlan1
 no ip address
 shutdown
!
ip classless
!
ip flow-export version 9
!
ipv6 route 2001:1B08:1C:2::/64 2001:1B08:1C:6:1:2::
ipv6 route 2001:1B08:1C:1::/64 2001:1B08:1C:5:1:1::
!
!
!
!
!
!
line con 0
!
line aux 0
!
line vty 0 4
 login
!
!
!
end


PortClintonRouter#
```

This is Port Clinton router configured with IPv6 address.



This is Port Clinton PC configured with IPv6 address.

Question 3 - Static route

Toledo

```
ToledoRouter#ping 2001:1b08:1c:3:3:1::

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:1b08:1c:3:3:1::, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/1 ms

ToledoRouter#ping 2001:1b08:1c:2:3:1::

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:1b08:1c:2:3:1::, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/0 ms

ToledoRouter#
```

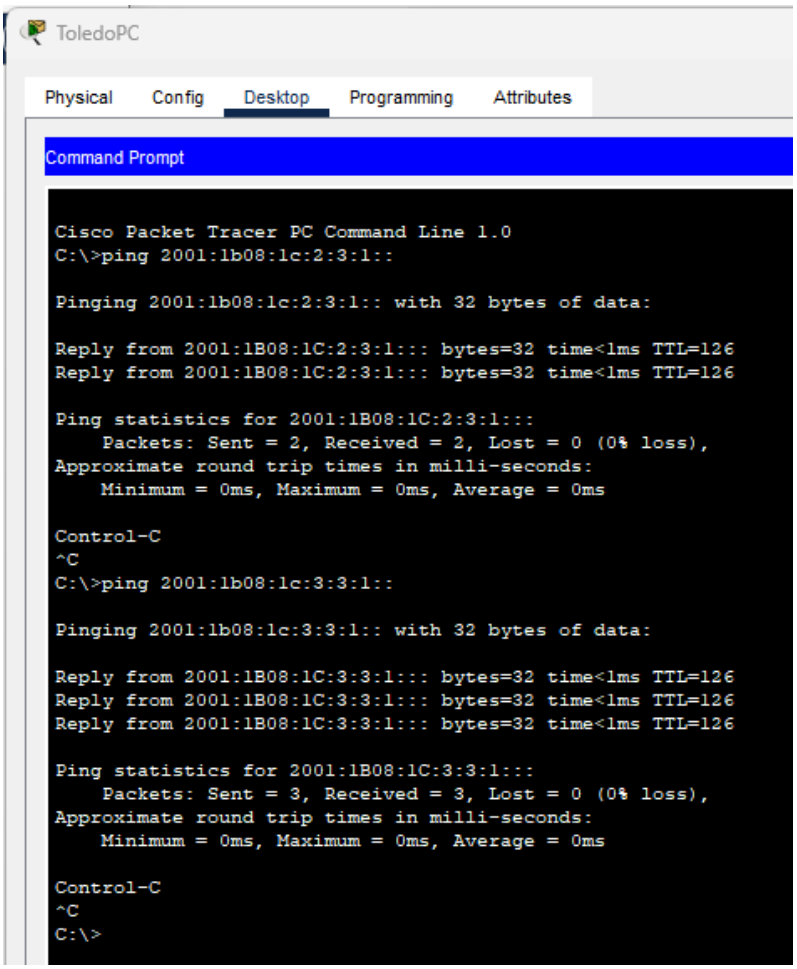
This is the screenshot of ping from Toledo router to Port Clinton PC and Napolean PC

```
ToledoRouter#traceroute 2001:1b08:1c:2:3:1::
Type escape sequence to abort.
Tracing the route to 2001:1b08:1c:2:3:1::

  1   2001:1B08:1C:4:1:2:: 1 msec    0 msec    0 msec
  2   2001:1B08:1C:2:3:1:: 1 msec    0 msec    0 msec
ToledoRouter#traceroute 2001:1b08:1c:3:3:1::
Type escape sequence to abort.
Tracing the route to 2001:1b08:1c:3:3:1::

  1   2001:1B08:1C:5:1:2:: 0 msec    0 msec    0 msec
  2   2001:1B08:1C:3:3:1:: 0 msec    1 msec    1 msec
ToledoRouter#
```

This is the screenshot of traceroute from Toledo router to Napolean PC and Port Clinton PC

```
ToledoRouter#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
       ND - ND Default, NDp - ND Prefix, DCE - Destination, NDr - Redirect
       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   2001:1B08:1C:1::/64 [0/0]
     via GigabitEthernet0/0/0, directly connected
L   2001:1B08:1C:1:1:1::/128 [0/0]
     via GigabitEthernet0/0/0, receive
S   2001:1B08:1C:2::/64 [1/0]
     via 2001:1B08:1C:4:1:2::
S   2001:1B08:1C:3::/64 [1/0]
     via 2001:1B08:1C:5:1:2::
C   2001:1B08:1C:4::/64 [0/0]
     via GigabitEthernet0/0/1, directly connected
L   2001:1B08:1C:4:1:1::/128 [0/0]
     via GigabitEthernet0/0/1, receive
C   2001:1B08:1C:5::/64 [0/0]
     via GigabitEthernet0/0/2, directly connected
L   2001:1B08:1C:5:1:1::/128 [0/0]
     via GigabitEthernet0/0/2, receive
L   FF00::/8 [0/0]
     via Null0, receive
ToledoRouter#
```

This is the screenshot of the route table from Toledo router



This is the screenshot of ping from Toledo PC to Napolean PC and Port Clinton PC

Port Clinton

```
PortClintonRouter#ping 2001:1b08:1c:1:3:1::

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:1b08:1c:1:3:1::, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/1 ms

PortClintonRouter#ping 2001:1b08:1c:2:3:1::

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:1b08:1c:2:3:1::, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/1 ms

PortClintonRouter#
```

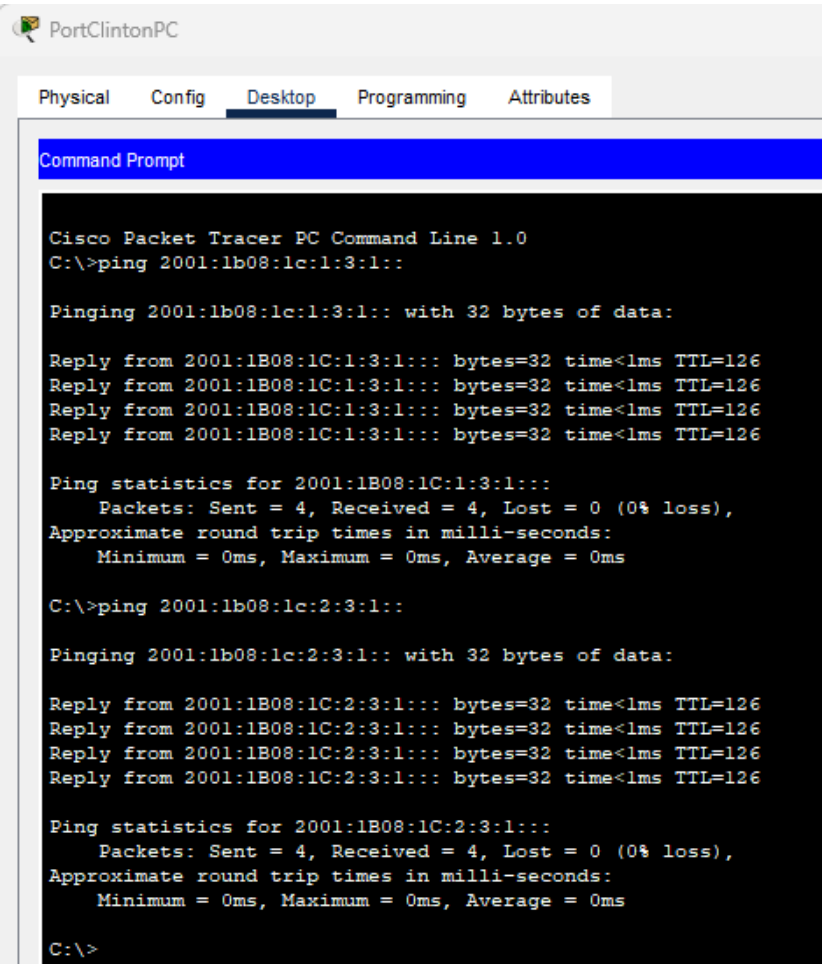
This is the screenshot ping from Port Clinton router to Toledo PC and Napolean PC

```
PortClintonRouter#traceroute 2001:1b08:1c:1:3:1::
Type escape sequence to abort.
Tracing the route to 2001:1b08:1c:1:3:1::

  1   2001:1B08:1C:5:1:1:: 0 msec    0 msec    0 msec
  2   2001:1B08:1C:1:3:1:: 0 msec    0 msec    4 msec
PortClintonRouter#traceroute 2001:1b08:1c:2:3:1::
Type escape sequence to abort.
Tracing the route to 2001:1b08:1c:2:3:1::

  1   2001:1B08:1C:6:1:2:: 0 msec    0 msec    0 msec
  2   2001:1B08:1C:2:3:1:: 1 msec    1 msec    1 msec
PortClintonRouter#
```

This is the screenshot of traceroute from Port Clinton router to Toledo PC and Napolean PC

```
PortClintonRouter#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
       ND - ND Default, NDp - ND Prefix, DCE - Destination, NDr - Redirect
       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
S   2001:1B08:1C:1::/64 [1/0]
     via 2001:1B08:1C:5:1:1::
S   2001:1B08:1C:2::/64 [1/0]
     via 2001:1B08:1C:6:1:2::
C   2001:1B08:1C:3::/64 [0/0]
     via GigabitEthernet0/0/0, directly connected
L   2001:1B08:1C:3:1:1::/128 [0/0]
     via GigabitEthernet0/0/0, receive
C   2001:1B08:1C:5::/64 [0/0]
     via GigabitEthernet0/0/1, directly connected
L   2001:1B08:1C:5:1:2::/128 [0/0]
     via GigabitEthernet0/0/1, receive
C   2001:1B08:1C:6::/64 [0/0]
     via GigabitEthernet0/0/2, directly connected
L   2001:1B08:1C:6:1:1::/128 [0/0]
     via GigabitEthernet0/0/2, receive
L   FF00::/8 [0/0]
     via Null0, receive
PortClintonRouter#
```

This is the screenshot of route table from the Port Clinton router



This is the screenshot of ping from Port Clinton PC to Toledo and Napolean PC

Napolean

```
NapoleanRouter#ping 2001:1b08:1c:1:3:1::

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:1b08:1c:1:3:1::, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/1 ms

NapoleanRouter#ping 2001:1b08:1c:3:3:1::

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:1b08:1c:3:3:1::, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/3 ms

NapoleanRouter#
```

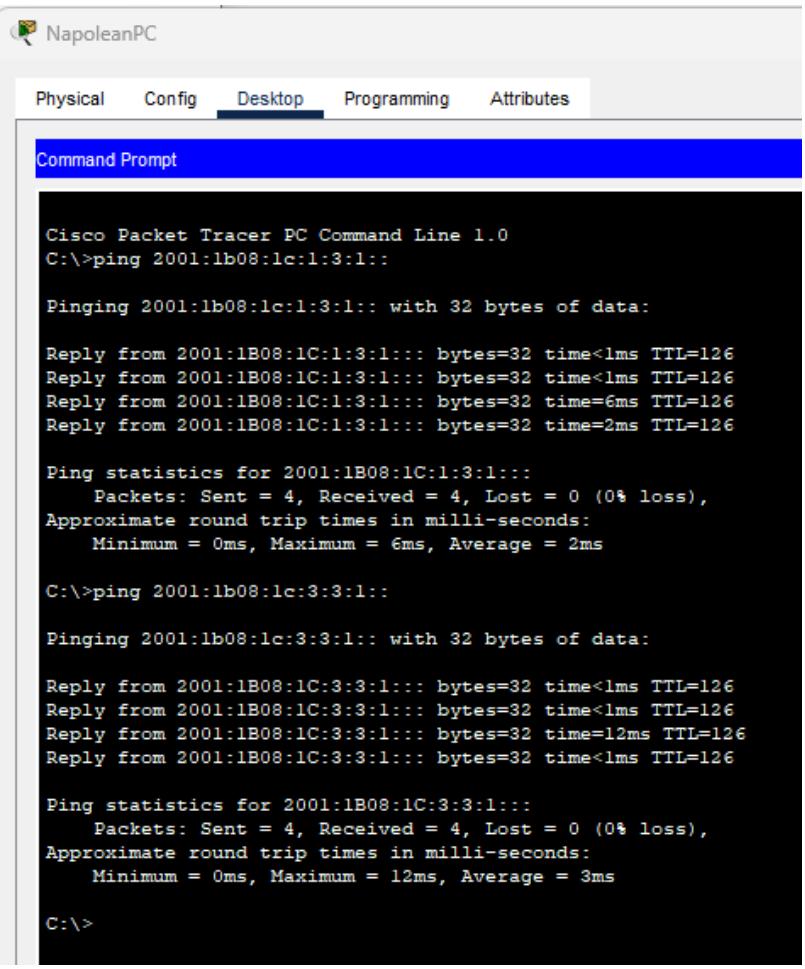
This is the screenshot of ping from Napolean router to Toledo PC and Port Clinton PC

```
NapoleanRouter#traceroute 2001:1b08:1c:1:3:1::
Type escape sequence to abort.
Tracing the route to 2001:1b08:1c:1:3:1::

  1   2001:1B08:1C:4:1:1:: 0 msec    0 msec    0 msec
  2   2001:1B08:1C:1:3:1:: 0 msec    0 msec    1 msec
NapoleanRouter#traceroute 2001:1b08:1c:3:3:1::
Type escape sequence to abort.
Tracing the route to 2001:1b08:1c:3:3:1::

  1   2001:1B08:1C:6:1:1:: 0 msec    0 msec    0 msec
  2   2001:1B08:1C:3:3:1:: 1 msec    0 msec    1 msec
NapoleanRouter#
```

This is the screenshot of traceroute from Napolean router to Toledo PC and Port Clinton PC

```
NapoleanRouter#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
       ND - ND Default, NDp - ND Prefix, DCE - Destination, NDr - Redirect
       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
S   2001:1B08:1C:1::/64 [1/0]
     via 2001:1B08:1C:4:1:1::
C   2001:1B08:1C:2::/64 [0/0]
     via GigabitEthernet0/0/0, directly connected
L   2001:1B08:1C:2:1:1::/128 [0/0]
     via GigabitEthernet0/0/0, receive
S   2001:1B08:1C:3::/64 [1/0]
     via 2001:1B08:1C:6:1:1::
C   2001:1B08:1C:4::/64 [0/0]
     via GigabitEthernet0/0/1, directly connected
L   2001:1B08:1C:4:1:2::/128 [0/0]
     via GigabitEthernet0/0/1, receive
C   2001:1B08:1C:6::/64 [0/0]
     via GigabitEthernet0/0/2, directly connected
L   2001:1B08:1C:6:1:2::/128 [0/0]
     via GigabitEthernet0/0/2, receive
L   FF00::/8 [0/0]
     via Null0, receive
NapoleanRouter#
```

This is the screenshot of the route table from Napolean router



This is the screenshot of ping from Napolean PC to Toledo and Port Clinton PC

Question 4 - RIP

Toledo

```
!
interface GigabitEthernet0/0/0
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:1:1:1::/64
 ipv6 rip process1 enable
 ipv6 enable
!
interface GigabitEthernet0/0/1
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:4:1:1::/64
 ipv6 rip process1 enable
 ipv6 enable
!
interface GigabitEthernet0/0/2
 media-type sfp
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:5:1:1::/64
 ipv6 rip process1 enable
 ipv6 enable
!
interface Vlan1
 no ip address
 shutdown
!
ipv6 router rip process1
!
ip classless
!
ip flow-export version 9
!
!
!
!
!
```

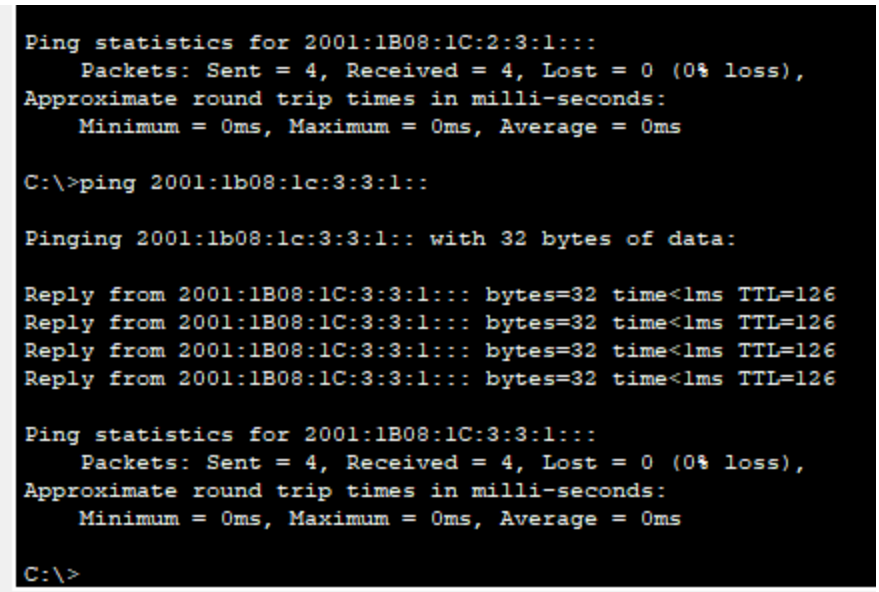
This is the run-config of Toledo router

```
ToledoRouter#show ipv6 route
IPv6 Routing Table - 10 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
       ND - ND Default, NDp - ND Prefix, DCE - Destination, NDr - Redirect
       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   2001:1B08:1C:1::/64 [0/0]
     via GigabitEthernet0/0/0, directly connected
L   2001:1B08:1C:1:1:1::/128 [0/0]
     via GigabitEthernet0/0/0, receive
R   2001:1B08:1C:2::/64 [120/2]
     via FE80::206:2AFF:FE8B:EA02, GigabitEthernet0/0/1
R   2001:1B08:1C:3::/64 [120/2]
     via FE80::240:BFF:FED7:E502, GigabitEthernet0/0/2
C   2001:1B08:1C:4::/64 [0/0]
     via GigabitEthernet0/0/1, directly connected
L   2001:1B08:1C:4:1:1::/128 [0/0]
     via GigabitEthernet0/0/1, receive
C   2001:1B08:1C:5::/64 [0/0]
     via GigabitEthernet0/0/2, directly connected
L   2001:1B08:1C:5:1:1::/128 [0/0]
     via GigabitEthernet0/0/2, receive
R   2001:1B08:1C:6::/64 [120/2]
     via FE80::206:2AFF:FE8B:EA02, GigabitEthernet0/0/1
     via FE80::240:BFF:FED7:E502, GigabitEthernet0/0/2
L   FF00::/8 [0/0]
     via Null0, receive
ToledoRouter#
```

This is the route table

```
ToledoRouter#ping 2001:1b08:1c:2:3:1::

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:1b08:1c:2:3:1::, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/0 ms

ToledoRouter#ping 2001:1b08:1c:3:3:1::

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:1b08:1c:3:3:1::, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/1/5 ms

ToledoRouter#
```

This is pinging from Toledo router to Napolean and Port Clinton PC



This is pinging from Toledo PC to Napolean and Port Clinton PC

Napolean

```
!
interface GigabitEthernet0/0/0
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:2:1:1::/64
 ipv6 rip processl enable
 ipv6 enable
!
interface GigabitEthernet0/0/1
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:4:1:2::/64
 ipv6 rip processl enable
 ipv6 enable
!
interface GigabitEthernet0/0/2
 media-type sfp
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:6:1:2::/64
 ipv6 rip processl enable
 ipv6 enable
!
interface Vlan1
 no ip address
 shutdown
!
ipv6 router rip processl
!
ip classless
!
ip flow-export version 9
!
!
```

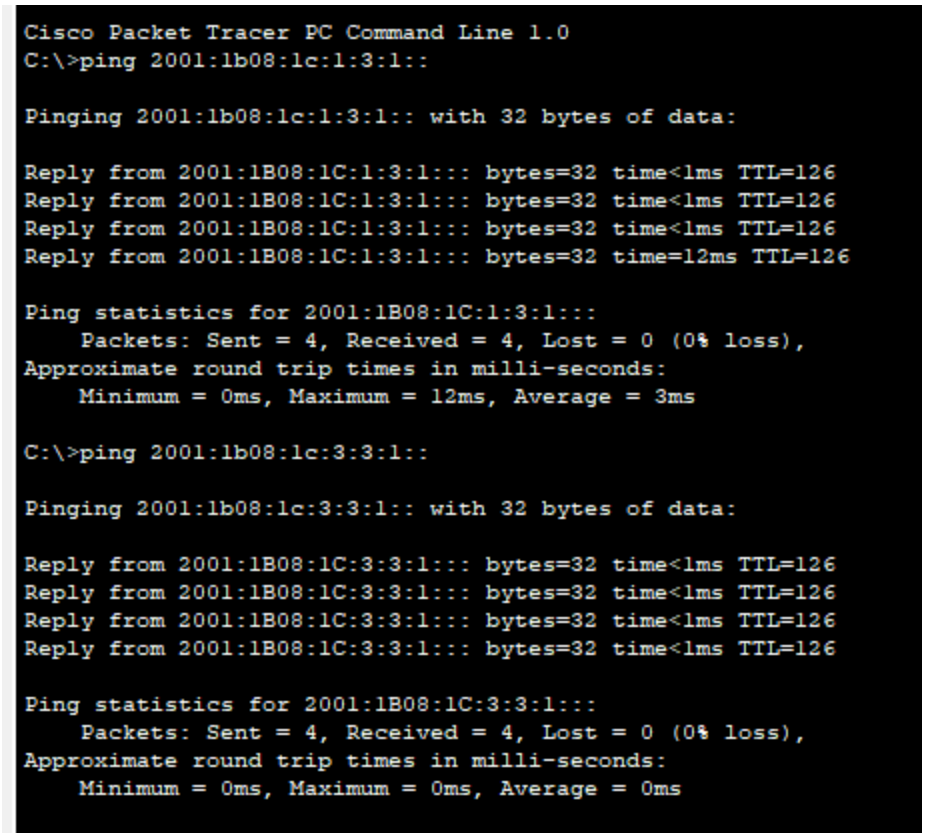
This is run-config of Napolean router

```
NapoleanRouter#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
       ND - ND Default, NDp - ND Prefix, DCE - Destination, NDr - Redirect
       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   2001:1B08:1C:1::/64 [120/2]
     via FE80::20A:41FF:FE14:B202, GigabitEthernet0/0/1
C   2001:1B08:1C:2::/64 [0/0]
     via GigabitEthernet0/0/0, directly connected
L   2001:1B08:1C:2:1:1::/128 [0/0]
     via GigabitEthernet0/0/0, receive
C   2001:1B08:1C:4::/64 [0/0]
     via GigabitEthernet0/0/1, directly connected
L   2001:1B08:1C:4:1:2::/128 [0/0]
     via GigabitEthernet0/0/1, receive
R   2001:1B08:1C:5::/64 [120/2]
     via FE80::20A:41FF:FE14:B202, GigabitEthernet0/0/1
C   2001:1B08:1C:6::/64 [0/0]
     via GigabitEthernet0/0/2, directly connected
L   2001:1B08:1C:6:1:2::/128 [0/0]
     via GigabitEthernet0/0/2, receive
L   FF00::/8 [0/0]
     via Null0, receive
```

This is the route table of Napolean router

```
NapoleanRouter#ping 2001:1b08:1c:1:3:1::

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:1b08:1c:1:3:1::, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/0 ms

NapoleanRouter#ping 2001:1b08:1c:3:3:1::

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:1b08:1c:3:3:1::, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/0 ms

NapoleanRouter#
```

This is the ping from Napolean router to Toledo and Port Clinton PC



This is the ping from Napolean PC to Toledo and Port Clinton PC

Port Clinton

```
!
interface GigabitEthernet0/0/0
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:3:1:1::/64
 ipv6 rip processl enable
 ipv6 enable
!
interface GigabitEthernet0/0/1
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:5:1:2::/64
 ipv6 rip processl enable
 ipv6 enable
!
interface GigabitEthernet0/0/2
 media-type sfp
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:6:1:1::/64
 ipv6 rip processl enable
 ipv6 enable
!
interface Vlanl
 no ip address
 shutdown
!
ipv6 router rip processl
!
ip classless
!
ip flow-export version 9
!
```

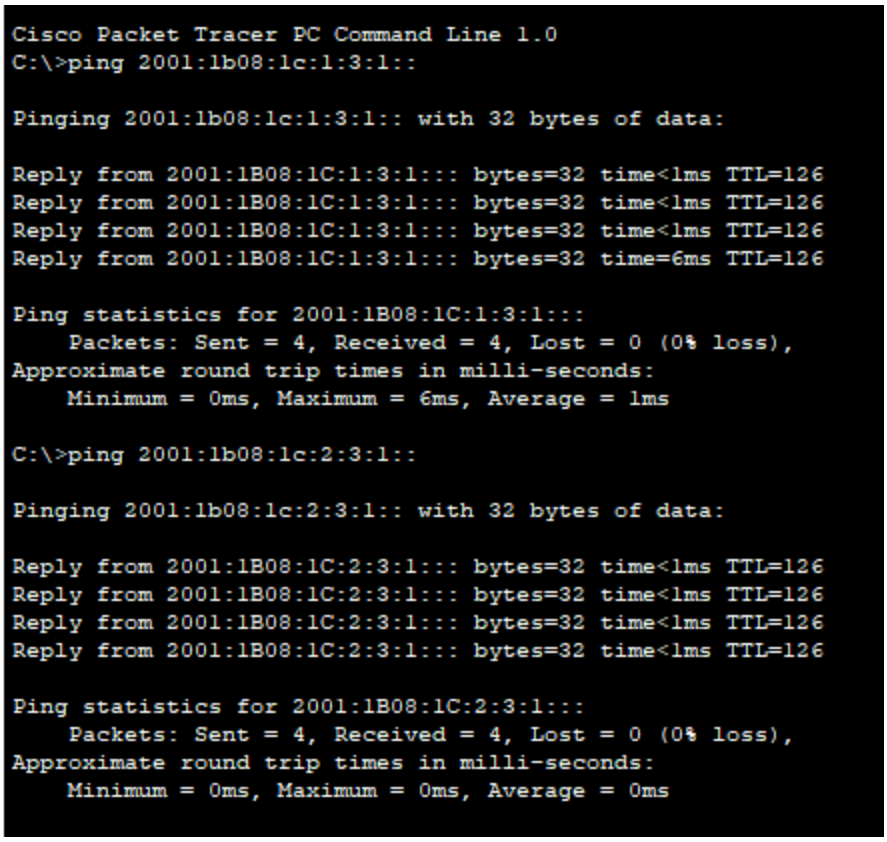
This is the run-config of Port Clinton router

```
PortClintonRouter#show ipv6 route
IPv6 Routing Table - 10 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
       ND - ND Default, NDp - ND Prefix, DCE - Destination, NDr - Redirect
       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   2001:1B08:1C:1::/64 [120/2]
     via FE80::20A:41FF:FE14:B203, GigabitEthernet0/0/1
R   2001:1B08:1C:2::/64 [120/2]
     via FE80::206:2AFF:FE8B:EA03, GigabitEthernet0/0/2
C   2001:1B08:1C:3::/64 [0/0]
     via GigabitEthernet0/0/0, directly connected
L   2001:1B08:1C:3:1:1::/128 [0/0]
     via GigabitEthernet0/0/0, receive
R   2001:1B08:1C:4::/64 [120/2]
     via FE80::20A:41FF:FE14:B203, GigabitEthernet0/0/1
     via FE80::206:2AFF:FE8B:EA03, GigabitEthernet0/0/2
C   2001:1B08:1C:5::/64 [0/0]
     via GigabitEthernet0/0/1, directly connected
L   2001:1B08:1C:5:1:2::/128 [0/0]
     via GigabitEthernet0/0/1, receive
C   2001:1B08:1C:6::/64 [0/0]
     via GigabitEthernet0/0/2, directly connected
L   2001:1B08:1C:6:1:1::/128 [0/0]
     via GigabitEthernet0/0/2, receive
L   FF00::/8 [0/0]
     via Null0, receive
```

This is the route table

```
PortClintonRouter#ping 2001:1b08:1c:1:3:1::

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:1b08:1c:1:3:1::, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/2/7 ms

PortClintonRouter#ping 2001:1b08:1c:2:3:1::

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:1b08:1c:2:3:1::, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/0 ms

PortClintonRouter#
```

This is ping from Port Clinton router to Toledo and Napolean PC



This is ping from Port Clinton PC to Toledo and Napolean PC

Question 5 – OSPF

Toledo

```
!
interface GigabitEthernet0/0/0
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:1:1:1::/64
 ipv6 enable
 ipv6 ospf 1 area 0
!
interface GigabitEthernet0/0/1
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:4:1:1::/64
 ipv6 enable
 ipv6 ospf 1 area 0
!
interface GigabitEthernet0/0/2
 media-type sfp
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:5:1:1::/64
 ipv6 enable
 ipv6 ospf 1 area 0
!
interface Vlan1
 no ip address
 shutdown
!
ipv6 router ospf 1
 router-id 1.1.1.1
 log-adjacency-changes
!
ip classless
!
ip flow-export version 9
!
!
!
!
!
```

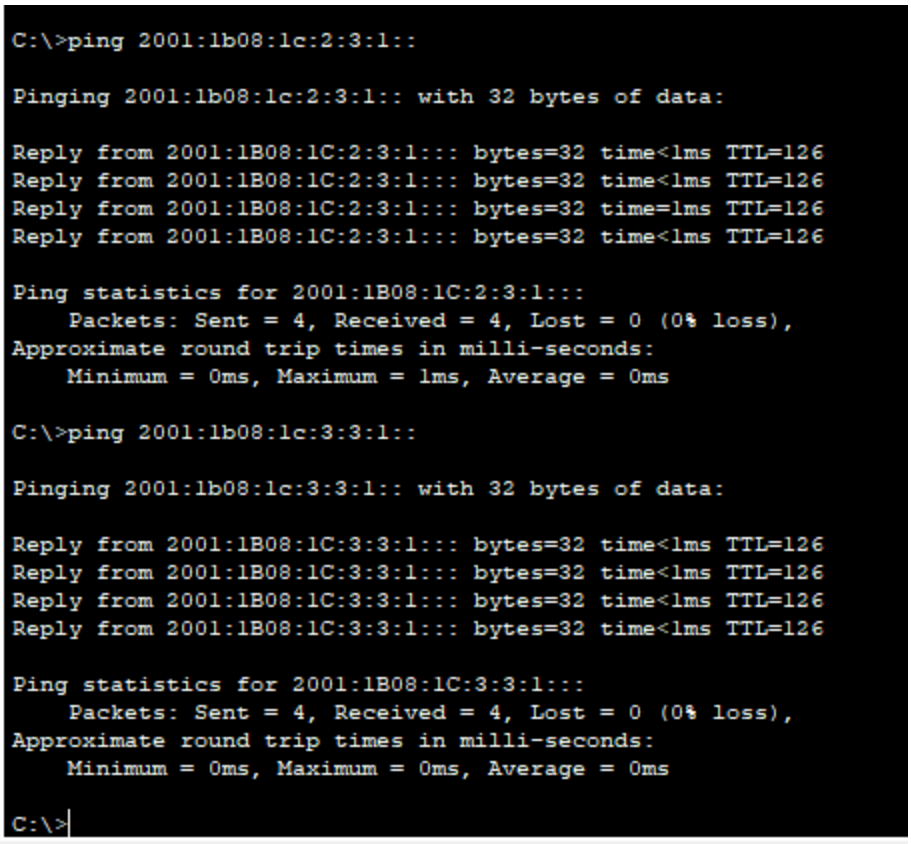
This is the run-config of Toledo router

```
ToledoRouter#show ipv6 route
IPv6 Routing Table - 10 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
       ND - ND Default, NDp - ND Prefix, DCE - Destination, NDr - Redirect
       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   2001:1B08:1C:1::/64 [0/0]
     via GigabitEthernet0/0/0, directly connected
L   2001:1B08:1C:1:1:1::/128 [0/0]
     via GigabitEthernet0/0/0, receive
O   2001:1B08:1C:2::/64 [110/2]
     via FE80::206:2AFF:FE8B:EA02, GigabitEthernet0/0/1
O   2001:1B08:1C:3::/64 [110/2]
     via FE80::240:BFF:FED7:E502, GigabitEthernet0/0/2
C   2001:1B08:1C:4::/64 [0/0]
     via GigabitEthernet0/0/1, directly connected
L   2001:1B08:1C:4:1:1::/128 [0/0]
     via GigabitEthernet0/0/1, receive
C   2001:1B08:1C:5::/64 [0/0]
     via GigabitEthernet0/0/2, directly connected
L   2001:1B08:1C:5:1:1::/128 [0/0]
     via GigabitEthernet0/0/2, receive
O   2001:1B08:1C:6::/64 [110/2]
     via FE80::206:2AFF:FE8B:EA02, GigabitEthernet0/0/1
L   FF00::/8 [0/0]
     via Null0, receive
ToledoRouter#
```

This is the ipv6 route table of Toledo router

```
ToledoRouter#tracerout 2001:1b08:1c:2:3:1::
Type escape sequence to abort.
Tracing the route to 2001:1b08:1c:2:3:1::

  1   2001:1B08:1C:4:1:2:: 0 msec    0 msec    0 msec
  2   2001:1B08:1C:2:3:1:: 0 msec    0 msec    1 msec
ToledoRouter#traceroute 2001:1b08:1c:3:3:1::
Type escape sequence to abort.
Tracing the route to 2001:1b08:1c:3:3:1::

  1   2001:1B08:1C:5:1:2:: 0 msec    0 msec    0 msec
  2   2001:1B08:1C:3:3:1:: 0 msec    1 msec    0 msec
ToledoRouter#
```

This is the traceroute command from Toledo router to Napolean and Port Clinton PC



This ping from Toledo PC to Napolean and Port Clinton PC.

Napolean

```
!
interface GigabitEthernet0/0/0
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:2:1:1::/64
 ipv6 enable
 ipv6 ospf 1 area 0
!
interface GigabitEthernet0/0/1
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:4:1:2::/64
 ipv6 enable
 ipv6 ospf 1 area 0
!
interface GigabitEthernet0/0/2
 media-type sfp
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:6:1:2::/64
 ipv6 enable
 ipv6 ospf 1 area 0
!
interface Vlan1
 no ip address
 shutdown
!
ipv6 router ospf 1
 router-id 2.2.2.2
 log-adjacency-changes
!
ip classless
!
ip flow-export version 9
!
!
```

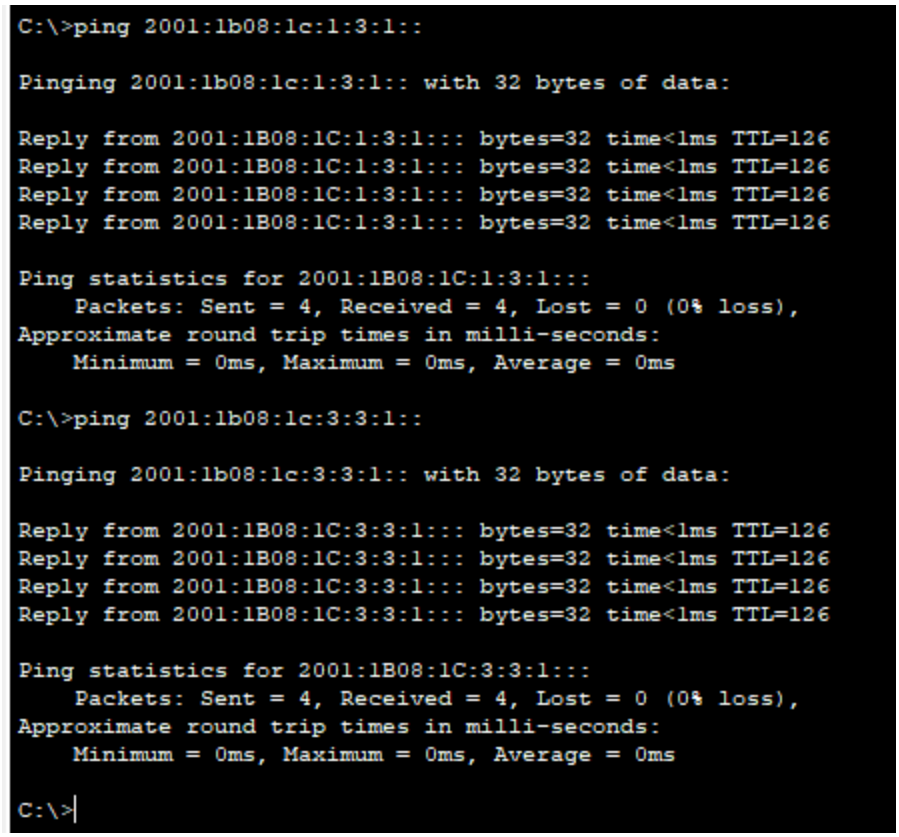
This is the run-config of Napolean router

```
NapoleanRouter#show ipv6 route
IPv6 Routing Table - 10 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
       ND - ND Default, NDp - ND Prefix, DCE - Destination, NDr - Redirect
       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
O   2001:1B08:1C:1::/64 [110/2]
     via FE80::20A:41FF:FE14:B202, GigabitEthernet0/0/1
C   2001:1B08:1C:2::/64 [0/0]
     via GigabitEthernet0/0/0, directly connected
L   2001:1B08:1C:2:1:1::/128 [0/0]
     via GigabitEthernet0/0/0, receive
O   2001:1B08:1C:3::/64 [110/2]
     via FE80::240:BFF:FED7:E503, GigabitEthernet0/0/2
C   2001:1B08:1C:4::/64 [0/0]
     via GigabitEthernet0/0/1, directly connected
L   2001:1B08:1C:4:1:2::/128 [0/0]
     via GigabitEthernet0/0/1, receive
O   2001:1B08:1C:5::/64 [110/2]
     via FE80::20A:41FF:FE14:B202, GigabitEthernet0/0/1
     via FE80::240:BFF:FED7:E503, GigabitEthernet0/0/2
C   2001:1B08:1C:6::/64 [0/0]
     via GigabitEthernet0/0/2, directly connected
L   2001:1B08:1C:6:1:2::/128 [0/0]
     via GigabitEthernet0/0/2, receive
L   FF00::/8 [0/0]
     via Null0, receive
NapoleanRouter#
```

This is the route table

```
NapoleanRouter#traceroute 2001:1b08:1c:1:3:1::
Type escape sequence to abort.
Tracing the route to 2001:1b08:1c:1:3:1::

  1   2001:1B08:1C:4:1:1:: 0 msec    0 msec    0 msec
  2   2001:1B08:1C:1:3:1:: 0 msec    0 msec    1 msec
NapoleanRouter#traceroute 2001:1b08:1c:3:3:1::
Type escape sequence to abort.
Tracing the route to 2001:1b08:1c:3:3:1::

  1   2001:1B08:1C:6:1:1:: 0 msec    0 msec    1 msec
  2   2001:1B08:1C:3:3:1:: 1 msec    0 msec    1 msec
NapoleanRouter#
```

This is traceroute command to Toledo and Port Clinton PC



This is ping to Toledo and Port Clinton PC

Port Clinton

```
!
interface GigabitEthernet0/0/0
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:3:1:1::/64
 ipv6 enable
 ipv6 ospf 1 area 0
!
interface GigabitEthernet0/0/1
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:5:1:2::/64
 ipv6 enable
 ipv6 ospf 1 area 0
!
interface GigabitEthernet0/0/2
 media-type sfp
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:6:1:1::/64
 ipv6 enable
 ipv6 ospf 1 area 0
!
interface Vlan1
 no ip address
 shutdown
!
ipv6 router ospf 1
 router-id 3.3.3.3
 log-adjacency-changes
!
ip classless
!
ip flow-export version 9
!
!
'
```

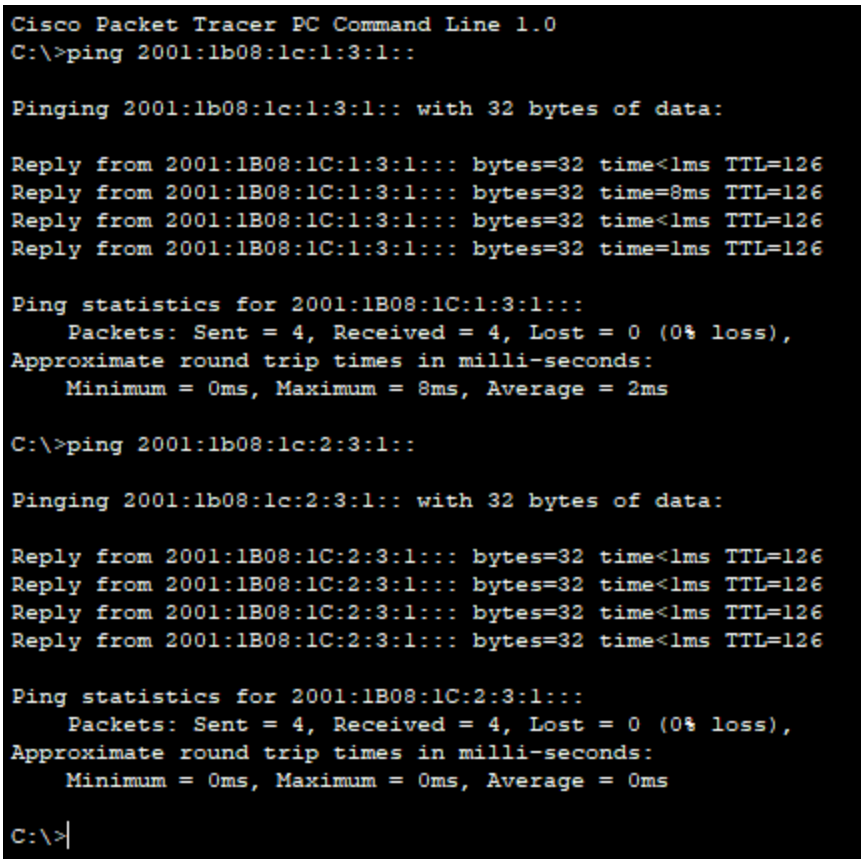
This is the run-config of Port Clinton router

```
PortClintonRouter#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
       ND - ND Default, NDp - ND Prefix, DCE - Destination, NDr - Redirect
       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
O   2001:1B08:1C:1::/64 [110/2]
     via FE80::20A:41FF:FE14:B203, GigabitEthernet0/0/1
O   2001:1B08:1C:2::/64 [110/2]
     via FE80::206:2AFF:FE8B:EA03, GigabitEthernet0/0/2
C   2001:1B08:1C:3::/64 [0/0]
     via GigabitEthernet0/0/0, directly connected
L   2001:1B08:1C:3:1:1::/128 [0/0]
     via GigabitEthernet0/0/0, receive
C   2001:1B08:1C:5::/64 [0/0]
     via GigabitEthernet0/0/1, directly connected
L   2001:1B08:1C:5:1:2::/128 [0/0]
     via GigabitEthernet0/0/1, receive
C   2001:1B08:1C:6::/64 [0/0]
     via GigabitEthernet0/0/2, directly connected
L   2001:1B08:1C:6:1:1::/128 [0/0]
     via GigabitEthernet0/0/2, receive
L   FF00::/8 [0/0]
     via Null0, receive
PortClintonRouter#
PortClintonRouter#
```

This is the route table

```
PortClintonRouter>en
PortClintonRouter#traceroute 2001:1b08:1c:1:3:1::
Type escape sequence to abort.
Tracing the route to 2001:1b08:1c:1:3:1::

  1   2001:1B08:1C:5:1:1:: 0 msec    0 msec    0 msec
  2   2001:1B08:1C:1:3:1:: 0 msec    0 msec    1 msec
PortClintonRouter#traceroute 2001:1b08:1c:2:3:1::
Type escape sequence to abort.
Tracing the route to 2001:1b08:1c:2:3:1::

  1   2001:1B08:1C:6:1:2:: 0 msec    0 msec    0 msec
  2   2001:1B08:1C:2:3:1:: 1 msec    0 msec    0 msec
PortClintonRouter#
```

This is traceroute to Toledo and Napolean PC



This is ping to Toledo and Napolean PC

Question 6 – Ipv6 Extended ACL

I only used created the extended ACL on Toledo site to block the ping from Napolean and Port Clinton.

```
.
!
interface GigabitEthernet0/0/0
 no ip address
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:1:1:1::/64
 ipv6 enable
 ipv6 ospf 1 area 0
!
interface GigabitEthernet0/0/1
 no ip address
 ipv6 traffic-filter extAcl out
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:4:1:1::/64
 ipv6 enable
 ipv6 ospf 1 area 0
!
interface GigabitEthernet0/0/2
 media-type sfp
 no ip address
 ipv6 traffic-filter extAcl out
 duplex auto
 speed auto
 ipv6 address 2001:1B08:1C:5:1:1::/64
 ipv6 enable
 ipv6 ospf 1 area 0
!
interface Vlan1
 no ip address
 shutdown
!
ipv6 router ospf 1
 router-id 1.1.1.1
 log-adjacency-changes
!
ip classless
!
ip flow-export version 9
!
!
ipv6 access-list extAcl
 deny icmp any any
 permit ipv6 any any
!
```

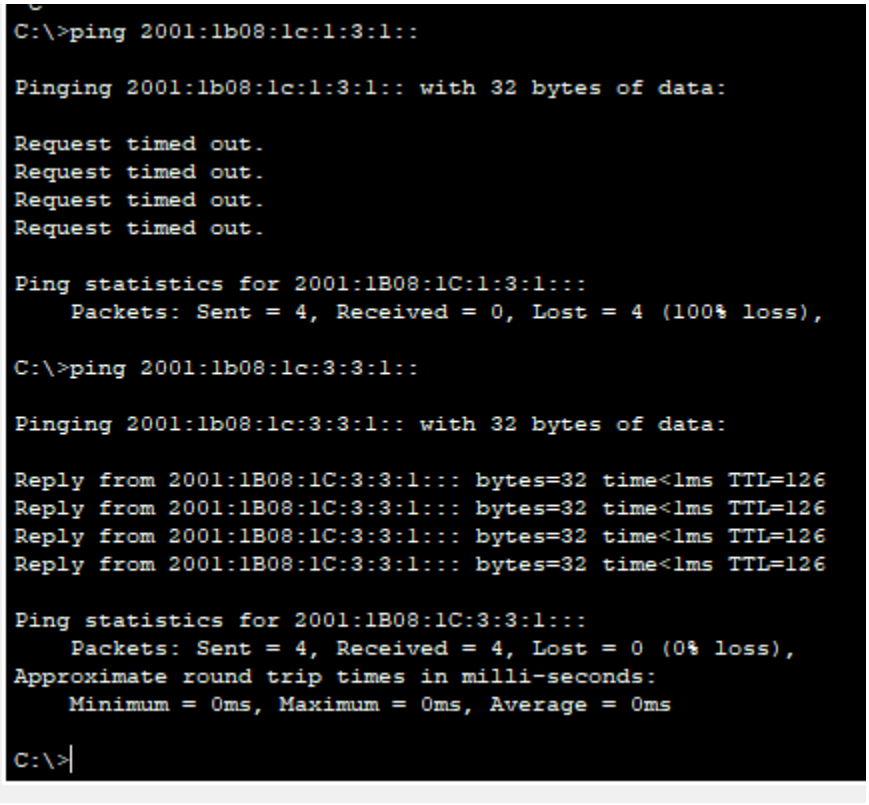
This is the run-config of Toledo router

```
C:\>ping 2001:1b08:1c:3:3:1::

Pinging 2001:1b08:1c:3:3:1:: with 32 bytes of data:

Reply from 2001:1B08:1C:1:1:1::: Destination host unreachable.
Reply from 2001:1B08:1C:1:1:1::: Destination host unreachable.
Reply from 2001:1B08:1C:1:1:1::: Destination host unreachable.
Reply from 2001:1B08:1C:1:1:1::: Destination host unreachable.

Ping statistics for 2001:1B08:1C:3:3:1:::
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 2001:1b08:1c:2:3:1::

Pinging 2001:1b08:1c:2:3:1:: with 32 bytes of data:

Reply from 2001:1B08:1C:1:1:1::: Destination host unreachable.
Reply from 2001:1B08:1C:1:1:1::: Destination host unreachable.
Reply from 2001:1B08:1C:1:1:1::: Destination host unreachable.
Reply from 2001:1B08:1C:1:1:1::: Destination host unreachable.

Ping statistics for 2001:1B08:1C:2:3:1:::
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

This is ping from Toledo PC to Napolean and Port Clinton PC

```
C:\>ping 2001:1b08:1c:1:3:1::

Pinging 2001:1b08:1c:1:3:1:: with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 2001:1B08:1C:1:3:1:::
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 2001:1b08:1c:2:3:1::

Pinging 2001:1b08:1c:2:3:1:: with 32 bytes of data:

Reply from 2001:1B08:1C:2:3:1::: bytes=32 time<1ms TTL=126
Reply from 2001:1B08:1C:2:3:1::: bytes=32 time<1ms TTL=126
Reply from 2001:1B08:1C:2:3:1::: bytes=32 time<1ms TTL=126
Reply from 2001:1B08:1C:2:3:1::: bytes=32 time<1ms TTL=126

Ping statistics for 2001:1B08:1C:2:3:1:::
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

This is ping from Port Clinton PC to Toledo and Napolean PC. It is not able to ping Toledo PC but able to ping Napolean PC



This is ping from Napolean PC to Toledo and Port Clinton PC. It is not able to ping Toledo PC but able to ping Port Clinton PC.