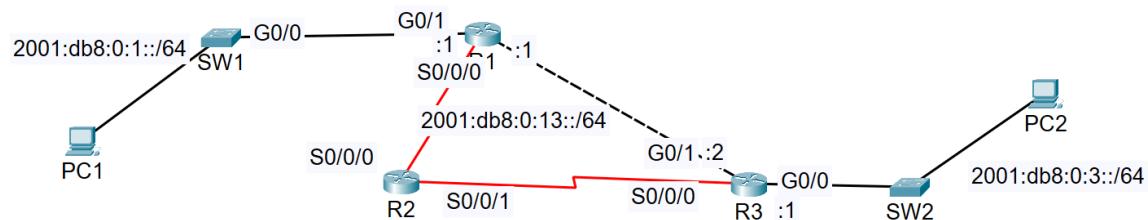


Network Topology:



R1 CLI:

```
R1>en
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#ipv6 unicast-routing
R1(config)#do sh ipv6 int br
GigabitEthernet0/0      [up/up]
  FE80::202:4AFF:FE23:E201
  2001:DB8:0:1::1
GigabitEthernet0/1      [up/up]
  FE80::202:4AFF:FE23:E202
  2001:DB8:0:13::1
GigabitEthernet0/2      [administratively down/down]
  unassigned
Serial0/0/0             [up/up]
  FE80::202:4AFF:FE23:E201
Serial0/0/1             [administratively down/down]
  unassigned
Vlan1                  [administratively down/down]
  unassigned
R1(config) #
```

R3 CLI:

```
R3>en
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#ipv6 unicast-routing
R3(config)#do sh ipv6 int br
GigabitEthernet0/0      [up/up]
  FE80::290:2BFF:FECC:A101
  2001:DB8:0:3::1
GigabitEthernet0/1      [up/up]
  FE80::290:2BFF:FECC:A102
  2001:DB8:0:13::2
GigabitEthernet0/2      [administratively down/down]
  unassigned
Serial0/0/0             [up/up]
  FE80::290:2BFF:FECC:A101
Serial0/0/1             [administratively down/down]
  unassigned
Vlan1                  [administratively down/down]
  unassigned
R3(config) #
```

PC1: (connected to R1)

Default Gateway	2001:DB8:0:1::1
DNS Server	

• Static	
IPv6 Address	2001:DB8:0:1::2 /64
Link Local Address:	20A:41FF:FE4D:1BBC

PC2: (connected to R3)

• Static	
Default Gateway	2001:DB8:0:3::1
DNS Server	
• Static	
IPv6 Address	2001:DB8:0:3::2 /64
Link Local Address:	0::240:BFF:FE69:9B18

R2 CLI (Link-Local Address):

```
-----  
Serial0/0/0 [up/up]  
  FE80::20B:BEFF:FE7:4901  
Serial0/0/1 [up/up]  
  FE80::20B:BEFF:FE7:4901
```

R1 CLI (route configuration):

```
R1(config)#ipv6 route 2001:db8:0:3::/64 g0/1 2001:db8:0:13::2  
R1(config)#do sh ipv6 route  
IPv6 Routing Table - 6 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:DB8:0:1::/64 [0/0]  
    via GigabitEthernet0/0, directly connected  
L  2001:DB8:0:1::1/128 [0/0]  
    via GigabitEthernet0/0, receive  
S  2001:DB8:0:3::/64 [1/0]  
    via 2001:DB8:0:13::2, GigabitEthernet0/1  
C  2001:DB8:0:13::/64 [0/0]  
    via GigabitEthernet0/1, directly connected  
L  2001:DB8:0:13::1/128 [0/0]  
    via GigabitEthernet0/1, receive  
L  FF00::/8 [0/0]  
    via Null0, receive  
R1(config)#ipv6 route 2001:db8:0:3::/64 s0/0/0 FE80::20B:BEFF:FE7:4901 10  
R1(config)#do sh ipv6 route  
IPv6 Routing Table - 6 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:DB8:0:1::/64 [0/0]  
    via GigabitEthernet0/0, directly connected  
L  2001:DB8:0:1::1/128 [0/0]  
    via GigabitEthernet0/0, receive  
S  2001:DB8:0:3::/64 [1/0]  
    via 2001:DB8:0:13::2, GigabitEthernet0/1  
C  2001:DB8:0:13::/64 [0/0]  
    via GigabitEthernet0/1, directly connected  
L  2001:DB8:0:13::1/128 [0/0]  
    via GigabitEthernet0/1, receive  
L  FF00::/8 [0/0]  
    via Null0, receive  
R1(config)#do sh run | include ipv6 route  
ipv6 route 2001:DB8:0:3::/64 GigabitEthernet0/1 2001:DB8:0:13::2  
ipv6 route 2001:DB8:0:3::/64 Serial0/0/0 FE80::20B:BEFF:FE7:4901 10  
R1(config)#[
```

R3 CLI (route configuration):

```
R3(config)#ipv6 route 2001:db8:0:1::/64 g0/1 2001:db8:0:13::1
R3(config)#do sh ipv6 route
IPv6 Routing Table - 6 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:DB8:0:1::/64 [1/0]
    via 2001:DB8:0:13::1, GigabitEthernet0/1
C   2001:DB8:0:3::/64 [0/0]
    via GigabitEthernet0/0, directly connected
L   2001:DB8:0:3::1/128 [0/0]
    via GigabitEthernet0/0, receive
C   2001:DB8:0:13::/64 [0/0]
    via GigabitEthernet0/1, directly connected
L   2001:DB8:0:13::2/128 [0/0]
    via GigabitEthernet0/1, receive
L   FF00::/8 [0/0]
    via Null0, receive
R3(config)#ipv6 route 2001:db8:0:1::/64 s0/0/0 FE80::20B:BEFF:FED7:4901 10
R3(config)#do sh run | include ipv6 route
ipv6 route 2001:DB8:0:1::/64 GigabitEthernet0/1 2001:DB8:0:13::1
ipv6 route 2001:DB8:0:1::/64 Serial0/0/0 FE80::20B:BEFF:FED7:4901 10
R3(config)#+
```

R2 CLI (static routing using link-local addresses):

```
R2>en
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#ipv6 route 2001:db8:0:3::/64 s0/0/1 FE80::290:2BFF:FECC:A101
R2(config)#ipv6 route 2001:db8:0:1::/64 s0/0/0 FE80::202:4AFF:FE23:E201
R2(config)#do sh ipv6 route
IPv6 Routing Table - 3 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:DB8:0:1::/64 [1/0]
    via FE80::202:4AFF:FE23:E201, Serial0/0/0
S   2001:DB8:0:3::/64 [1/0]
    via FE80::290:2BFF:FECC:A101, Serial0/0/1
L   FF00::/8 [0/0]
    via Null0, receive
R2(config)#+
```

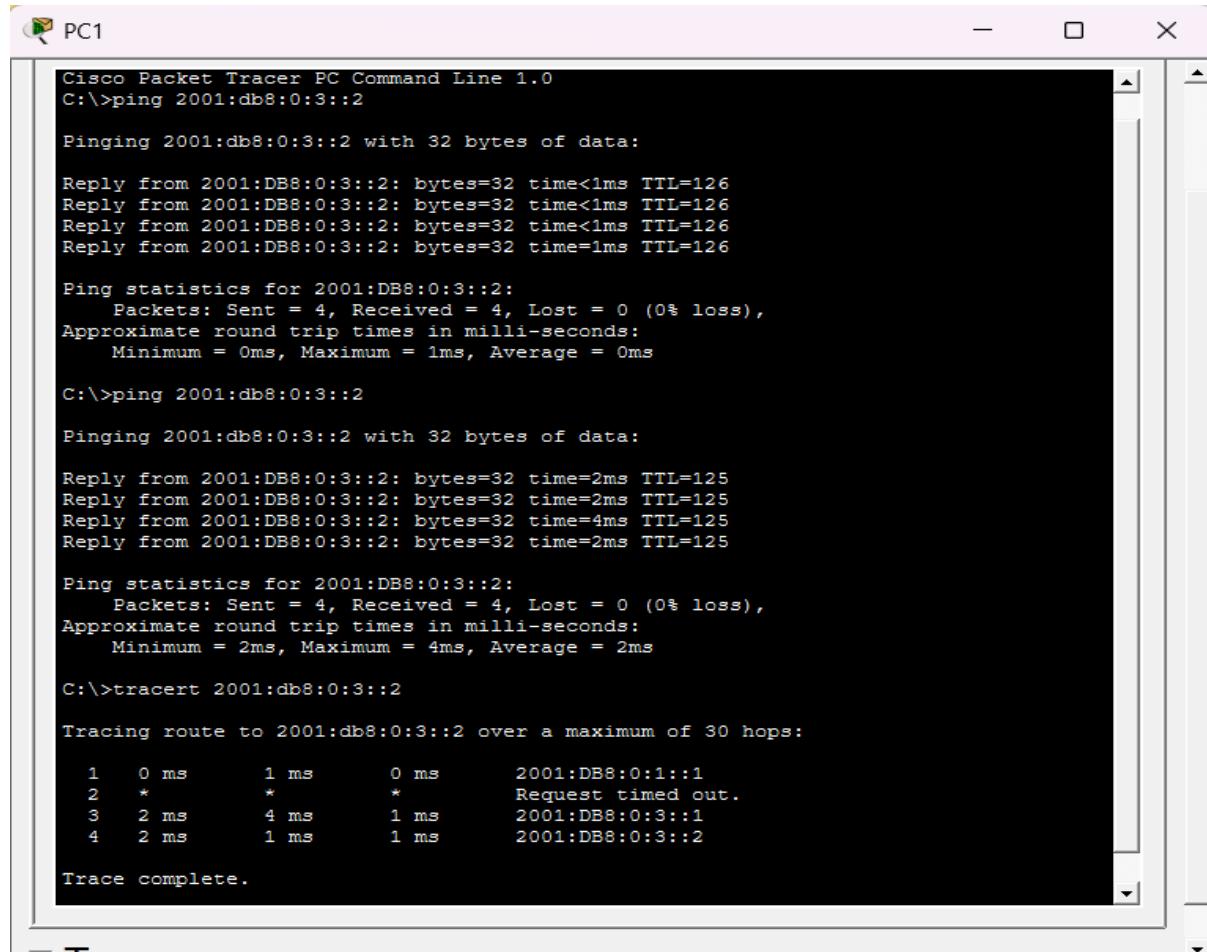
R3 interface g0/1 is shut down:

```
R3(config)#int g0/1
R3(config-if)#shutdown

R3(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to administratively down

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

PC1:



Cisco Packet Tracer PC Command Line 1.0
C:\>ping 2001:db8:0:3::2

Pinging 2001:db8:0:3::2 with 32 bytes of data:

Reply from 2001:DB8:0:3::2: bytes=32 time<1ms TTL=126
Reply from 2001:DB8:0:3::2: bytes=32 time<1ms TTL=126
Reply from 2001:DB8:0:3::2: bytes=32 time<1ms TTL=126
Reply from 2001:DB8:0:3::2: bytes=32 time=1ms TTL=126

Ping statistics for 2001:DB8:0:3::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:db8:0:3::2

Pinging 2001:db8:0:3::2 with 32 bytes of data:

Reply from 2001:DB8:0:3::2: bytes=32 time=2ms TTL=125
Reply from 2001:DB8:0:3::2: bytes=32 time=2ms TTL=125
Reply from 2001:DB8:0:3::2: bytes=32 time=4ms TTL=125
Reply from 2001:DB8:0:3::2: bytes=32 time=2ms TTL=125

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

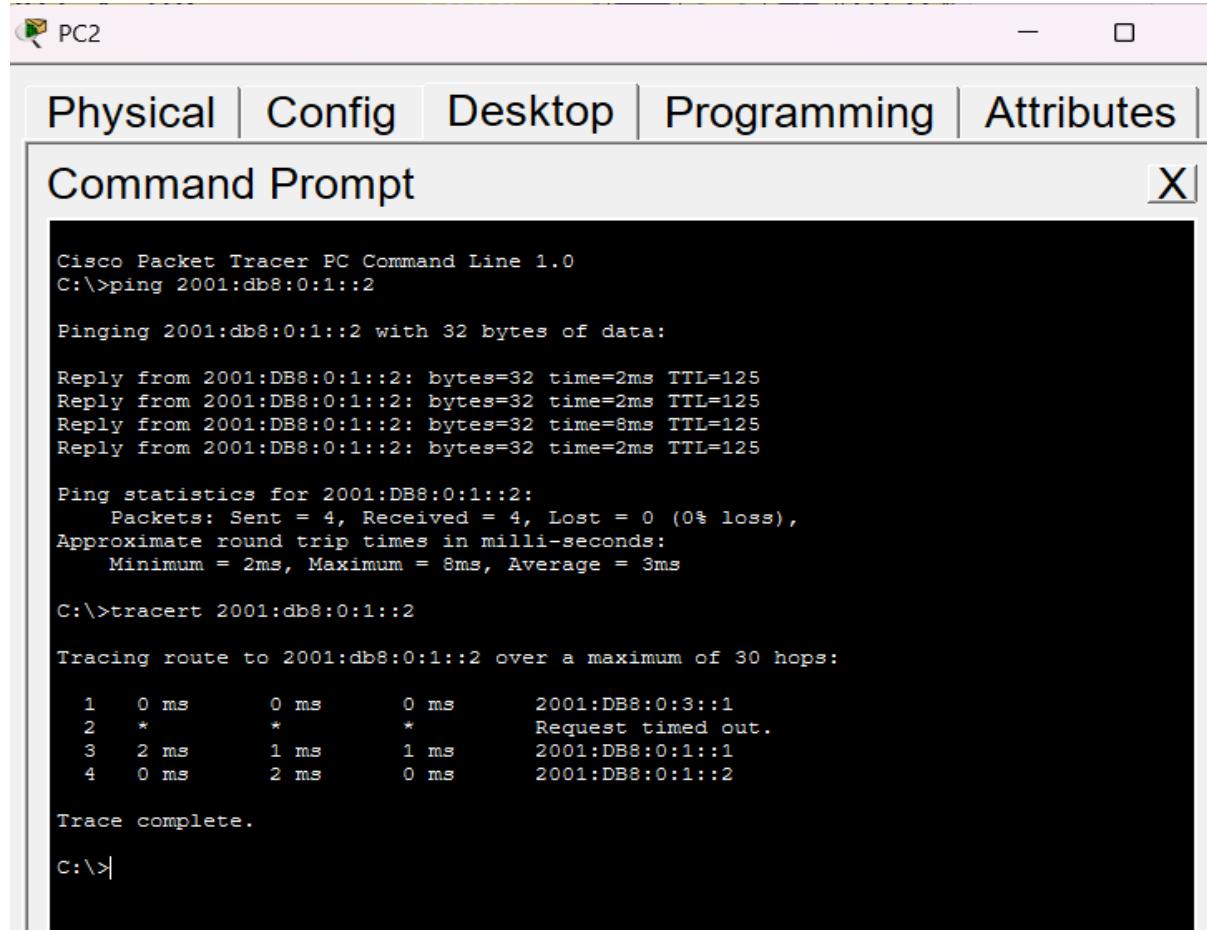
C:\>tracert 2001:db8:0:3::2

Tracing route to 2001:db8:0:3::2 over a maximum of 30 hops:

1	0 ms	1 ms	0 ms	2001:DB8:0:1::1
2	*	*	*	Request timed out.
3	2 ms	4 ms	1 ms	2001:DB8:0:3::1
4	2 ms	1 ms	1 ms	2001:DB8:0:3::2

Trace complete.

PC2:



Physical | Config | Desktop | Programming | Attributes | X

Command Prompt

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 2001:db8:0:1::2

Pinging 2001:db8:0:1::2 with 32 bytes of data:

Reply from 2001:DB8:0:1::2: bytes=32 time=2ms TTL=125
Reply from 2001:DB8:0:1::2: bytes=32 time=2ms TTL=125
Reply from 2001:DB8:0:1::2: bytes=32 time=8ms TTL=125
Reply from 2001:DB8:0:1::2: bytes=32 time=2ms TTL=125

Ping statistics for 2001:DB8:0:1::2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 2ms, Maximum = 8ms, Average = 3ms

C:\>tracert 2001:db8:0:1::2

Tracing route to 2001:db8:0:1::2 over a maximum of 30 hops:

1	0 ms	0 ms	0 ms	2001:DB8:0:3::1
2	*	*	*	Request timed out.
3	2 ms	1 ms	1 ms	2001:DB8:0:1::1
4	0 ms	2 ms	0 ms	2001:DB8:0:1::2

Trace complete.
C:\>