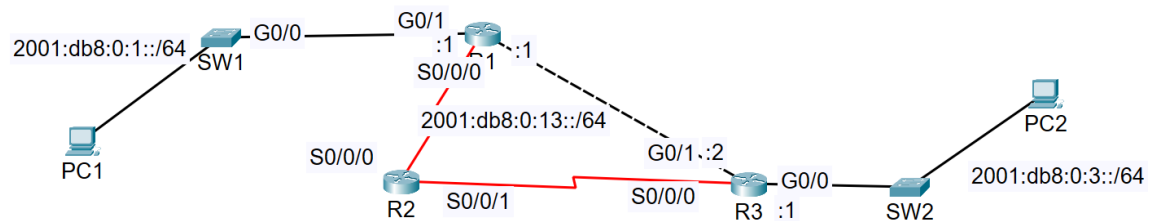


Network Topology:



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: 20A:41FF:FE4D:1BBC

R2 CLI (Link-Local Address):

```
Serial0/0/0 [up/up]
FE80::20B:BEFF:FED7:4901
Serial0/0/1 [up/up]
FE80::20B:BEFF:FED7:4901
```

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:FED7:4901 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:FED7:4901 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:

```
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:

```
PC2
Physical | Config | Desktop | Programming | Attributes |
Command Prompt X
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:\>|
```