

Routing
Switching
Tigers
Forum



IPv6

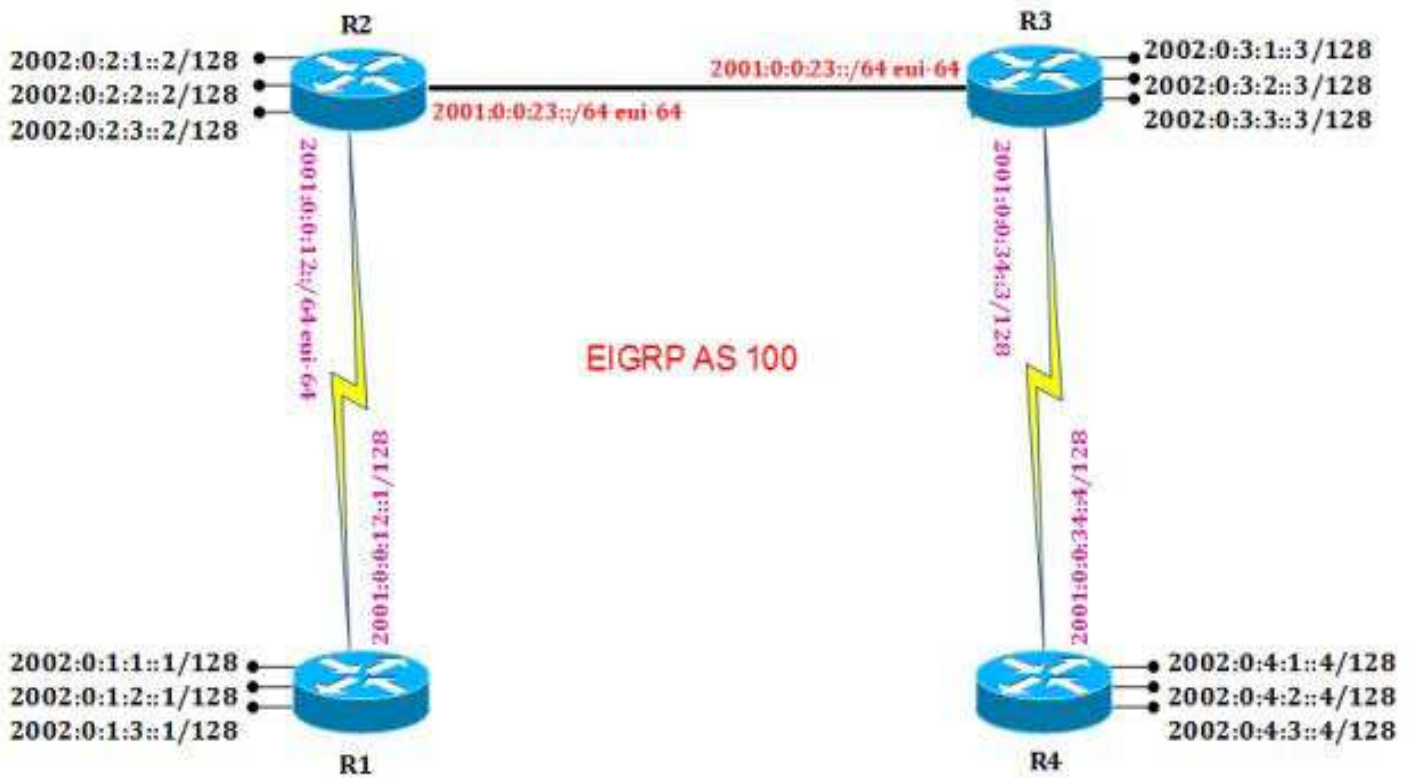


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IPv6-EIGRP

Disclaimer

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W

R1 Router Config:

```
!  
ipv6 unicast-routing  
ipv6 cef  
!  
interface Loopback0  
no ip address  
ipv6 address 2002:0:1:1::1/128  
ipv6 eigrp 100  
!  
interface Loopback1  
no ip address  
ipv6 address 2002:0:1:2::1/128  
ipv6 eigrp 100  
!  
interface Loopback2  
no ip address  
ipv6 address 2002:0:1:3::1/128  
ipv6 eigrp 100  
!  
interface Serial1/0  
no ip address  
ipv6 address 2001:0:0:12::1/128  
ipv6 eigrp 100  
no fair-queue  
serial restart-delay 0  
!  
ipv6 router eigrp 100  
eigrp router-id 1.1.1.1  
!
```

R4 Router Config:

```
!  
ipv6 unicast-routing  
ipv6 cef  
!  
interface Loopback0  
no ip address  
ipv6 address 2002:0:4:1::4/128  
ipv6 eigrp 100  
!  
interface Loopback1  
no ip address  
ipv6 address 2002:0:4:2::4/128  
ipv6 eigrp 100  
!  
interface Loopback2  
no ip address  
ipv6 address 2002:0:4:3::4/128  
ipv6 eigrp 100  
!  
interface Serial1/0  
no ip address  
ipv6 address 2001:0:0:34::4/128  
ipv6 eigrp 100  
serial restart-delay 0  
clock rate 64000  
!  
ipv6 router eigrp 100  
eigrp router-id 4.4.4.4  
!
```

R2 Router Config:

```
!  
ipv6 unicast-routing  
ipv6 cef  
!  
interface Loopback0  
no ip address  
ipv6 address 2002:0:2:1::2/128
```

R3 Router Config:

```
!  
ipv6 unicast-routing  
ipv6 cef  
!  
interface Loopback0  
no ip address  
ipv6 address 2002:0:3:1::3/128
```

```

ipv6 eigrp 100
!
interface Loopback1
no ip address
ipv6 address 2002:0:2:2::2/128
ipv6 eigrp 100
!
interface Loopback2
no ip address
ipv6 address 2002:0:2:3::2/128
ipv6 eigrp 100
!
interface Serial1/0
no ip address
ipv6 address 2001:0:0:12::/64 eui-64
ipv6 eigrp 100
no fair-queue
serial restart-delay 0
clock rate 64000
!
interface FastEthernet2/0
no ip address
duplex full
speed 100
ipv6 address 2001:0:0:23::/64 eui-64
ipv6 eigrp 100
!
ipv6 router eigrp 100
eigrp router-id 2.2.2.2
!

```

```

ipv6 eigrp 100
!
interface Loopback1
no ip address
ipv6 address 2002:0:3:2::3/128
ipv6 eigrp 100
!
interface Loopback2
no ip address
ipv6 address 2002:0:3:3::3/128
ipv6 eigrp 100
!
interface Serial1/0
no ip address
ipv6 address 2001:0:0:34::/64 eui-64
ipv6 eigrp 100
no fair-queue
serial restart-delay 0
clock rate 64000
!
interface FastEthernet2/0
no ip address
duplex full
speed 100
ipv6 address 2001:0:0:23::/64 eui-64
ipv6 eigrp 100
!
ipv6 router eigrp 100
eigrp router-id 3.3.3.3
!

```

Note: When EIGRP used in IPv6 Topology in which routers do not have any IPv4 address, router-id need to be provided for EIGRP process. Verification:

R1#sh ipv6 eigrp 100 neighbors

EIGRP-IPv6 Neighbors for AS(100)

H	Address Seq	Interface	Hold	Uptime (sec)	SRTT (ms)	RTO	Q Cnt
0	Link-local address: FE80::C802:8FF:FE5F:0	Se1/0	11	00:16:14	21	200	0 9

(H shows the number of attempts in which neighbor has been made)

(Address is the address of interface on which neighborship has been formed)

(Interface shows the physical interface on which address is configured)

(Link Local address has not been configured manually. It is assigned to interface automatically where FE80::/64 mask with EUI-64 has been used. Since this is a serial interface it does not have any Layer 2 address (MAC address) hence MAC of Interface FastEthernet 0/0 has been used.) Note: EIGRP uses Link Local address for neighborship formation but do not advertise it anywhere.

R2#sh ipv6 eigrp 100 neighbors

EIGRP-IPv6 Neighbors for AS(100)

H	Address Seq	Interface	Hold	Uptime	SRTT	RTO	Q	
	Num			(sec)	(ms)		Cnt	
1	Link-local address: FE80::C803:8FF:FE5F:38	Fa2/0	12	00:16:11	15	200	0	7
0	Link-local address: FE80::C801:8FF:FE5F:0	Se1/0	12	00:16:51	25	200	0	5

R3#sh ipv6 eigrp 100 neighbors

EIGRP-IPv6 Neighbors for AS(100)

H	Address Seq	Interface	Hold	Uptime	SRTT	RTO	Q	
	Num			(sec)	(ms)		Cnt	
1	Link-local address: FE80::C800:8FF:FE5F:0	Se1/0	10	00:16:20	24	200	0	3
0	Link-local address: FE80::C802:8FF:FE5F:38	Fa2/0	14	00:16:59	50	300	0	8

R4#sh ipv6 eigrp 100 neighbors

EIGRP-IPv6 Neighbors for AS(100)

H	Address Seq	Interface	Hold	Uptime	SRTT	RTO	Q	
	Num			(sec)	(ms)		Cnt	
0	Link-local address: FE80::C803:8FF:FE5F:0	Se1/0	13	00:16:44	22	200	0	6

R1#sh ipv6 eigrp 100 int

EIGRP-IPv6 Interfaces for AS(100)

Xmit Queue	Mean	Pacing Time	Multicast	Pending
------------	------	-------------	-----------	---------

Interface	Peers	Un/Reliable	SRTT	Un/Reliable	Flow Timer	Routes
Lo0	0	0/0	0	0/1	0	0
Lo1	0	0/0	0	0/1	0	0
Lo2	0	0/0	0	0/1	0	0
Se1/0	1	0/0	29	0/15	143	0

(Interfaces on which EIGRP IPv6 for AS 100 has been enabled)

(Peers is the number of neighbors for EIGRP AS 100 for IPv6)

R2#sh ipv6 eigrp int

EIGRP-IPv6 Interfaces for AS(100)

Interface	Peers	Un/Reliable	SRTT	Un/Reliable	Flow Timer	Routes
Se1/0	1	0/0	21	0/15	107	0
Fa2/0	1	0/0	51	0/1	224	0
Lo0	0	0/0	0	0/1	0	0
Lo1	0	0/0	0	0/1	0	0
Lo2	0	0/0	0	0/1	0	0

R3#sh ipv6 eigrp int

EIGRP-IPv6 Interfaces for AS(100)

Interface	Peers	Un/Reliable	SRTT	Un/Reliable	Flow Timer	Routes
Se1/0	1	0/0	32	0/15	159	0
Fa2/0	1	0/0	1584	0/1	7904	0
Lo0	0	0/0	0	0/1	0	0
Lo1	0	0/0	0	0/1	0	0
Lo2	0	0/0	0	0/1	0	0

R4#sh ipv6 eigrp 100 int

EIGRP-IPv6 Interfaces for AS(100)

Interface	Peers	Un/Reliable	SRTT	Un/Reliable	Flow Timer	Routes
Se1/0	1	0/0	24	0/15	123	0
Lo0	0	0/0	0	0/1	0	0
Lo1	0	0/0	0	0/1	0	0
Lo2	0	0/0	0	0/1	0	0

R1#sh ipv6 route

IPv6 Routing Table – default – 18 entries

Codes: C - Connected, L - Local, S - Static, U - Per-user Static route

B - BGP, HA - Home Agent, MR - Mobile Router, R - RIP

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

D - EIGRP, EX - EIGRP external, ND - Neighbor Discovery

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 2001:0:0:12::/64 [90/2681856]
  via FE80::C802:8FF:FE5F:0, Serial1/0
LC 2001:0:0:12::1/128 [0/0]
  via Serial1/0, receive (A different mask has been used on the connected
  interfaces so for the same network entry is made twice by EIGRP)
D 2001:0:0:23::/64 [90/2172416]
  via FE80::C802:8FF:FE5F:0, Serial1/0 (Same mask has been used on connected
  interfaces, so only a single entry for the network made by EIGRP)
D 2001:0:0:34::3/128 [90/2684416]
  via FE80::C802:8FF:FE5F:0, Serial1/0
D 2001:0:0:34::4/128 [90/3196416]
  via FE80::C802:8FF:FE5F:0, Serial1/0 (Same mask but /128 i.e. host specific
  is used so different entries for same network is made by EIGRP)
LC 2002:0:1:1::1/128 [0/0]
  via Loopback0, receive
LC 2002:0:1:2::1/128 [0/0]
  via Loopback1, receive (L-represents local to router. Entries are made for
  /128 connected addresses)
LC 2002:0:1:3::1/128 [0/0]
  via Loopback2, receive (C-means the connected network to the interface network)
D 2002:0:2:1::2/128 [90/2297856]
  via FE80::C802:8FF:FE5F:0, Serial1/0 (D-the routes are learnt by EIGRP process)
D 2002:0:2:2::2/128 [90/2297856]
  via FE80::C802:8FF:FE5F:0, Serial1/0
D 2002:0:2:3::2/128 [90/2297856]
  via FE80::C802:8FF:FE5F:0, Serial1/0
D 2002:0:3:1::3/128 [90/2300416]
  via FE80::C802:8FF:FE5F:0, Serial1/0
D 2002:0:3:2::3/128 [90/2300416]
  via FE80::C802:8FF:FE5F:0, Serial1/0
D 2002:0:3:3::3/128 [90/2300416]
  via FE80::C802:8FF:FE5F:0, Serial1/0
D 2002:0:4:1::4/128 [90/2812416]
  via FE80::C802:8FF:FE5F:0, Serial1/0
D 2002:0:4:2::4/128 [90/2812416]
  via FE80::C802:8FF:FE5F:0, Serial1/0
D 2002:0:4:3::4/128 [90/2812416]
  via FE80::C802:8FF:FE5F:0, Serial1/0
L FF00::/8 [0/0]
  via Null0, receive
```

R2#sh ipv6 route

IPv6 Routing Table – default – 20 entries

Codes: C - Connected, L - Local, S - Static, U - Per-user Static route

B - BGP, HA - Home Agent, MR - Mobile Router, R - RIP

```
I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary
D - EIGRP, EX - EIGRP external, ND - Neighbor Discovery
O - OSPF Intra, OI - OSPF Inter, OE1 - OSPF ext 1, OE2 - OSPF ext 2
ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2

C 2001:0:0:12::/64 [0/0]
  via Serial1/0, directly connected
D 2001:0:0:12::1/128 [90/2681856]
  via FE80::C801:8FF:FE5F:0, Serial1/0
L 2001::12:C802:8FF:FE5F:0/128 [0/0]
  via Serial1/0, receive
C 2001:0:0:23::/64 [0/0]
  via FastEthernet2/0, directly connected
L 2001::23:C802:8FF:FE5F:38/128 [0/0]
  via FastEthernet2/0, receive
D 2001:0:0:34::3/128 [90/2172416]
  via FE80::C803:8FF:FE5F:38, FastEthernet2/0
D 2001:0:0:34::4/128 [90/2684416]
  via FE80::C803:8FF:FE5F:38, FastEthernet2/0
D 2002:0:1:1::1/128 [90/2297856]
  via FE80::C801:8FF:FE5F:0, Serial1/0
D 2002:0:1:2::1/128 [90/2297856]
  via FE80::C801:8FF:FE5F:0, Serial1/0
D 2002:0:1:3::1/128 [90/2297856]
  via FE80::C801:8FF:FE5F:0, Serial1/0
LC 2002:0:2:1::2/128 [0/0]
  via Loopback0, receive
LC 2002:0:2:2::2/128 [0/0]
  via Loopback1, receive
LC 2002:0:2:3::2/128 [0/0]
  via Loopback2, receive
D 2002:0:3:1::3/128 [90/156160]
  via FE80::C803:8FF:FE5F:38, FastEthernet2/0
D 2002:0:3:2::3/128 [90/156160]
  via FE80::C803:8FF:FE5F:38, FastEthernet2/0
```



```
D 2002:0:3:3::3/128 [90/156160]
    via FE80::C803:8FF:FE5F:38, FastEthernet2/0
D 2002:0:4:1::4/128 [90/2300416]
    via FE80::C803:8FF:FE5F:38, FastEthernet2/0
D 2002:0:4:2::4/128 [90/2300416]
    via FE80::C803:8FF:FE5F:38, FastEthernet2/0
D 2002:0:4:3::4/128 [90/2300416]
    via FE80::C803:8FF:FE5F:38, FastEthernet2/0
L FF00::/8 [0/0]
    via Null0, receive
```

R3#sh ipv6 route

IPv6 Routing Table – default – 19 entries

Codes: C - Connected, L - Local, S - Static, U - Per-user Static route

B - BGP, HA - Home Agent, MR - Mobile Router, R - RIP

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

D - EIGRP, EX - EIGRP external, ND - Neighbor Discovery

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 2001:0:0:12::/64 [90/2172416]
    via FE80::C802:8FF:FE5F:38, FastEthernet2/0
D 2001:0:0:12::1/128 [90/2684416]
    via FE80::C802:8FF:FE5F:38, FastEthernet2/0
C 2001:0:0:23::/64 [0/0]
    via FastEthernet2/0, directly connected
L 2001::23:C803:8FF:FE5F:38/128 [0/0]
    via FastEthernet2/0, receive
LC 2001:0:0:34::3/128 [0/0]
    via Serial1/0, receive
D 2001:0:0:34::4/128 [90/2681856]
    via FE80::C800:8FF:FE5F:0, Serial1/0
D 2002:0:1:1::1/128 [90/2300416]
    via FE80::C802:8FF:FE5F:38, FastEthernet2/0
D 2002:0:1:2::1/128 [90/2300416]
    via FE80::C802:8FF:FE5F:38, FastEthernet2/0
```

```

D    2002:0:1:3::1/128 [90/2300416]
    via FE80::C802:8FF:FE5F:38, FastEthernet2/0
D    2002:0:2:1::2/128 [90/156160]
    via FE80::C802:8FF:FE5F:38, FastEthernet2/0
D    2002:0:2:2::2/128 [90/156160]
    via FE80::C802:8FF:FE5F:38, FastEthernet2/0
D    2002:0:2:3::2/128 [90/156160]
    via FE80::C802:8FF:FE5F:38, FastEthernet2/0
LC   2002:0:3:1::3/128 [0/0]
    via Loopback0, receive
LC   2002:0:3:2::3/128 [0/0]
    via Loopback1, receive
LC   2002:0:3:3::3/128 [0/0]
    via Loopback2, receive
D    2002:0:4:1::4/128 [90/2297856]
    via FE80::C800:8FF:FE5F:0, Serial1/0
D    2002:0:4:2::4/128 [90/2297856]
    via FE80::C800:8FF:FE5F:0, Serial1/0
D    2002:0:4:3::4/128 [90/2297856]
    via FE80::C800:8FF:FE5F:0, Serial1/0
L    FF00::/8 [0/0]
    via Null0, receive

```

R4#sh ipv6 route

IPv6 Routing Table - default - 18 entries

Codes: C - Connected, L - Local, S - Static, U - Per-user Static route

B - BGP, HA - Home Agent, MR - Mobile Router, R - RIP

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

D - EIGRP, EX - EIGRP external, ND - Neighbor Discovery

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    2001:0:0:12::/64 [90/2684416]
    via FE80::C803:8FF:FE5F:0, Serial1/0
D    2001:0:0:12::1/128 [90/3196416]
    via FE80::C803:8FF:FE5F:0, Serial1/0

```

```
D 2001:0:0:23::/64 [90/2172416]
    via FE80::C803:8FF:FE5F:0, Serial1/0
D 2001:0:0:34::3/128 [90/2681856]
    via FE80::C803:8FF:FE5F:0, Serial1/0
LC 2001:0:0:34::4/128 [0/0]
    via Serial1/0, receive
D 2002:0:1:1::1/128 [90/2812416]
    via FE80::C803:8FF:FE5F:0, Serial1/0
D 2002:0:1:2::1/128 [90/2812416]
    via FE80::C803:8FF:FE5F:0, Serial1/0
D 2002:0:1:3::1/128 [90/2812416]
    via FE80::C803:8FF:FE5F:0, Serial1/0
D 2002:0:2:1::2/128 [90/2300416]
    via FE80::C803:8FF:FE5F:0, Serial1/0
D 2002:0:2:2::2/128 [90/2300416]
    via FE80::C803:8FF:FE5F:0, Serial1/0
D 2002:0:2:3::2/128 [90/2300416]
    via FE80::C803:8FF:FE5F:0, Serial1/0
D 2002:0:3:1::3/128 [90/2297856]
    via FE80::C803:8FF:FE5F:0, Serial1/0
D 2002:0:3:2::3/128 [90/2297856]
    via FE80::C803:8FF:FE5F:0, Serial1/0
D 2002:0:3:3::3/128 [90/2297856]
    via FE80::C803:8FF:FE5F:0, Serial1/0
LC 2002:0:4:1::4/128 [0/0]
    via Loopback0, receive
LC 2002:0:4:2::4/128 [0/0]
    via Loopback1, receive
LC 2002:0:4:3::4/128 [0/0]
    via Loopback2, receive
L FF00::/8 [0/0]
    via Null0, receive
```