LAB13: OSPF – IPv6

Disclaimer

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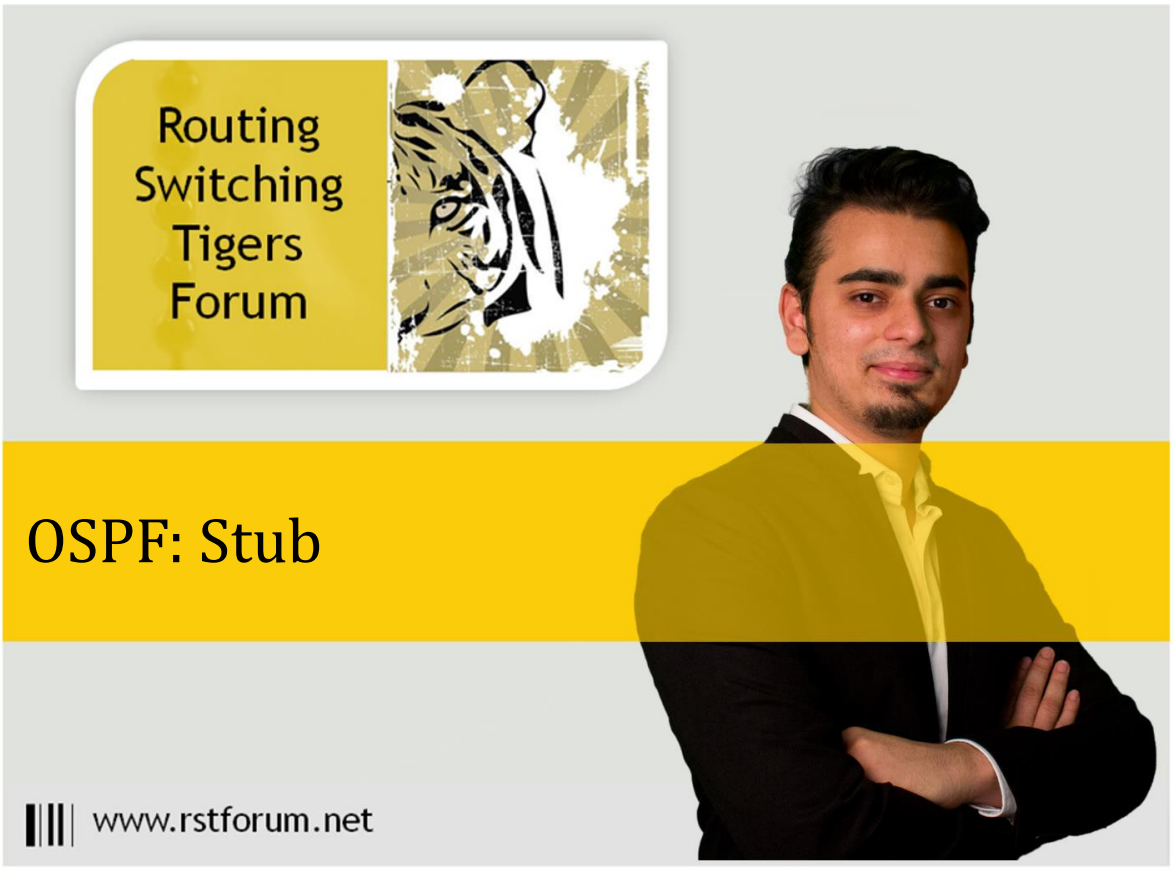
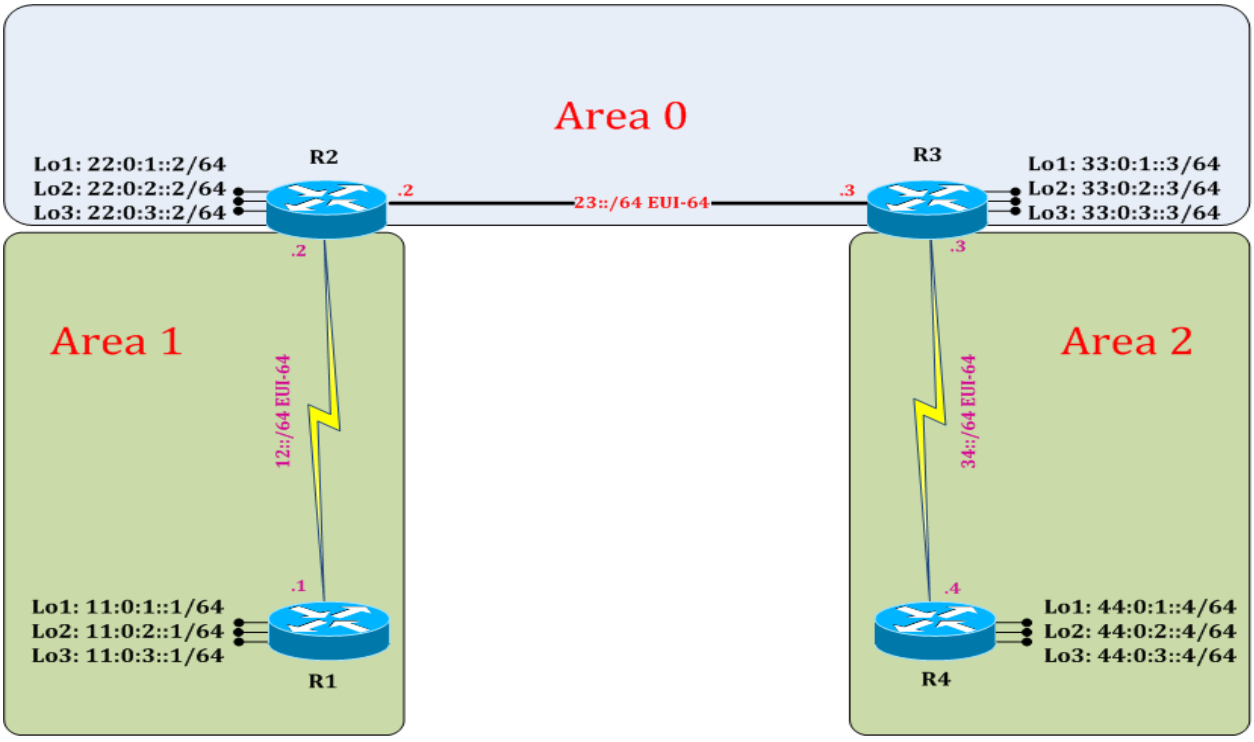


LAB 13: Diagram

Note: This Lab was developed on Cisco IOS Version15.2(4) M1 ADVENTERPRISEK9-M.



LAB 13: IPv6 OSPF Stub:

Task 1: Configure IPv6 OSPF Stub

Step 1 In the configuration mode of router configure loopbacks with network address in sequence & redistribute these connected network in IPv6 OSPF process

R1:
interface loopback 101
ipv6 address 100:0:1::2/64
interface loopback 102
ipv6 address 100:0:2::2/64
interface loopback 103
ipv6 address 100:0:3::2/64
exit

R1:
ipv6 router ospf 1
redistribute connected metric-type 1
exit

R2#show ipv6 route
! (Shows router's routing table and IPv6 routes entries)

IPv6 Routing Table - default - 17 entries
Codes: C - Connected, L - Local, S - Static, U - Per-user Static route
B - BGP, HA - Home Agent, MR - Mobile Router, R - RIP
H - NHRP, I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea
IS - ISIS summary, D - EIGRP, EX - EIGRP external, NM - NEMO
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, l - LISP
O 11:0:1::1/128 [110/64]
via FE80::A8BB:CCFF:FE00:100, Serial2/0
O 11:0:2::1/128 [110/64]
via FE80::A8BB:CCFF:FE00:100, Serial2/0
O 11:0:3::1/128 [110/64]
via FE80::A8BB:CCFF:FE00:100, Serial2/0
C 12::/64 [0/0]
via Serial2/0, directly connected
L 12::A8BB:CCFF:FE00:200/128 [0/0]
via Serial2/0, receive
C 22:0:1::/64 [0/0]
via Loopback1, directly connected
L 22:0:1::2/128 [0/0]
via Loopback1, receive
C 22:0:2::/64 [0/0]
via Loopback2, directly connected

```
L   22:0:2::2/128 [0/0]
     via Loopback2, receive
C   22:0:3::/64 [0/0]
     via Loopback3, directly connected
L   22:0:3::2/128 [0/0]
     via Loopback3, receive
C   23::/64 [0/0]
     via Ethernet0/0, directly connected
L   23::A8BB:CCFF:FE00:200/128 [0/0]
     via Ethernet0/0, receive
OE1 100:0:1::/64 [110/84]
     via FE80::A8BB:CCFF:FE00:100, Serial2/0
OE1 100:0:2::/64 [110/84]
     via FE80::A8BB:CCFF:FE00:100, Serial2/0
OE1 100:0:3::/64 [110/84]
     via FE80::A8BB:CCFF:FE00:100, Serial2/0
L   FF00::/8 [0/0]
     via Null0, receive
```

Step 2 Configure IPv6 OSPF Stub

R3:

```
ipv6 router ospf 1
area 2 stub
exit
```

R4:

```
ipv6 router ospf 1
area 2 stub
exit
```

Task 2: Verification:

Step 1 Verify routes on neighbor router routing table

```
R1#show ipv6 route
! (Shows router's routing table and IPv6 routes entries)

IPv6 Routing Table - default - 21 entries
Codes: C - Connected, L - Local, S - Static, U - Per-user Static route
       B - BGP, HA - Home Agent, MR - Mobile Router, R - RIP
       H - NHRP, I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea
       IS - ISIS summary, D - EIGRP, EX - EIGRP external, NM - NEMO
       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, l - LISP
OI  ::/0 [110/65]
     via FE80::A8BB:CCFF:FE00:300, Serial2/0
OI  11:0:1::1/128 [110/138]
```

```
    via FE80::A8BB:CCFF:FE00:300, Serial2/0
OI  11:0:2::1/128 [110/138]
    via FE80::A8BB:CCFF:FE00:300, Serial2/0
OI  11:0:3::1/128 [110/138]
    via FE80::A8BB:CCFF:FE00:300, Serial2/0
OI  12::/64 [110/138]
    via FE80::A8BB:CCFF:FE00:300, Serial2/0
OI  22:0:1::2/128 [110/74]
    via FE80::A8BB:CCFF:FE00:300, Serial2/0
OI  22:0:2::2/128 [110/74]
    via FE80::A8BB:CCFF:FE00:300, Serial2/0
OI  22:0:3::2/128 [110/74]
    via FE80::A8BB:CCFF:FE00:300, Serial2/0
OI  23::/64 [110/74]
    via FE80::A8BB:CCFF:FE00:300, Serial2/0
OI  33:0:1::3/128 [110/64]
    via FE80::A8BB:CCFF:FE00:300, Serial2/0
OI  33:0:2::3/128 [110/64]
    via FE80::A8BB:CCFF:FE00:300, Serial2/0
OI  33:0:3::3/128 [110/64]
    via FE80::A8BB:CCFF:FE00:300, Serial2/0
C   34::/64 [0/0]
    via Serial2/0, directly connected
L   34::A8BB:CCFF:FE00:400/128 [0/0]
    via Serial2/0, receive
C   44:0:1::/64 [0/0]
    via Loopback1, directly connected
L   44:0:1::4/128 [0/0]
    via Loopback1, receive
C   44:0:2::/64 [0/0]
    via Loopback2, directly connected
L   44:0:2::4/128 [0/0]
    via Loopback2, receive
C   44:0:3::/64 [0/0]
    via Loopback3, directly connected
L   44:0:3::4/128 [0/0]
    via Loopback3, receive
L   FF00::/8 [0/0]
    via Null0, receive
```

(Stub area is area in which external routes LSA 5 does not propagate, instead it automatically creates default route ::/0 towards ABR.)

```
R4#traceroute 100:0:1::2

Type escape sequence to abort.
Tracing the route to 100:0:1::2

  1 34::A8BB:CCFF:FE00:300 10 msec 10 msec 10 msec
  2 23::A8BB:CCFF:FE00:200 10 msec 11 msec 10 msec
  3 12::A8BB:CCFF:FE00:100 20 msec 20 msec 17 msec
```