CCNP ENARSI

Solution Guide Incident 04

IPv6 Area 1 Prefix Withdrawal

Instructor and post-investigation reference

Confirmed cause: R4 Area 1 LAN was removed from OSPFv3, so its inter-area prefix advertisement disappeared.

CLI annotations: GREEN - expected healthy result; YELLOW - warning or interpretation required; RED - fault or failed requirement. Colors are workbook annotations, not native CLI colors. Variable timers and ages may differ. Yellow/red items include a one-line reason.

1. Healthy baseline and isolation

The Incident UNL was derived from the exact healthy save-config startup; its derivation manifest identifies the changed node. The healthy complete-state UNL was independently cold-booted and passed full regression before Incident testing. Each Incident runtime was cleared independently.

2. Exact fault injection

Changed node: R4. The following command sequence creates this incident from the healthy reference. The delivered Incident UNL already contains the resulting startup state.

R4

```
enable
conf t
interface Ethernet0/2
no ipv6 ospf 30 area 1
end
```

3. Intended blast radius

R4 stops advertising 2001:DB8:40::/64 to Area 0; remote IPv6 client tests fail.

Unrelated services required to stay healthy: Local H4-to-R4 IPv6 gateway; all OSPFv3 transits; all IPv4 neighbor and client paths.

4. Reproduced symptom: actual CLI

Actual CLI output - R1

```
R1# show ip ospf neighbor
Neighbor ID     Pri   State           Dead Time   Address         Interface
3.3.3.3           0   FULL/  -        00:00:39    10.13.13.2      Ethernet0/1
2.2.2.2           0   FULL/  -        00:00:38    10.12.12.2      Ethernet0/0
```

Actual CLI output - R1

```
R1# show ipv6 ospf neighbor
            OSPFv3 Router with ID (1.1.1.1) (Process ID 30)
Neighbor ID     Pri   State           Dead Time   Interface ID    Interface
3.3.3.3           0   FULL/  -        00:00:39    1               Ethernet0/1
2.2.2.2           0   FULL/  -        00:00:39    1               Ethernet0/0
```

Actual CLI output - R1

```
R1# show ip route 192.168.40.0
Routing entry for 192.168.40.0/24
  Known via "ospf 10", distance 110, metric 30, type inter area
  Last update from 10.12.12.2 on Ethernet0/0, 00:03:16 ago
  Routing Descriptor Blocks:
  * 10.13.13.2, from 4.4.4.4, 00:03:21 ago, via Ethernet0/1
      Route metric is 30, traffic share count is 1
    10.12.12.2, from 4.4.4.4, 00:03:16 ago, via Ethernet0/0
      Route metric is 30, traffic share count is 1
```

Actual CLI output - R1

```
R1# show ipv6 route 2001:DB8:40::/64
IPv6 Routing Table - default - 11 entries
Codes: C - Connected, L - Local, S - Static, U - Per-user Static route
       B - BGP, R - RIP, H - NHRP, HG - NHRP registered
       Hg - NHRP registration summary, HE - NHRP External, I1 - ISIS L1
       I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary, D - EIGRP
       EX - EIGRP external, ND - ND Default, NDp - ND Prefix, DCE - Destination
       NDr - Redirect, RL - RPL, O - OSPF Intra, OI - OSPF Inter
       OE1 - OSPF ext 1, OE2 - OSPF ext 2, ON1 - OSPF NSSA ext 1
       ON2 - OSPF NSSA ext 2, la - LISP alt, lr - LISP site-registrations
       ld - LISP dyn-eid, lA - LISP away, le - LISP extranet-policy
       lp - LISP publications, ls - LISP destinations-summary, a - Application
       m - OMP
% Route not found
```

ERROR - This incident has lost the required remote prefix or forwarding result; locate the missing control-plane evidence before editing.

Actual CLI output - R1

```
R1# ping 192.168.40.10 source Loopback0
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.40.10, timeout is 2 seconds:
Packet sent with a source address of 1.1.1.1
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/2 ms
```

Actual CLI output - R1

```
R1# ping 2001:DB8:40::10 source Loopback0
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:DB8:40::10, timeout is 2 seconds:
Packet sent with a source address of 2001:DB8:1::1
.....
Success rate is 0 percent (0/5)
```

ERROR - This incident has lost the required remote prefix or forwarding result; locate the missing control-plane evidence before editing.

5. Diagnostic workflow and reasoning

Compare the failing family with the other family and with the approved two-path route. Then inspect the affected interface or OSPF process on the changed node. The following commands were run on the broken instance in this order.

R1

```
enable
terminal length 0
show ipv6 route 2001:DB8:40::/64
show ipv6 ospf database
```

Actual CLI output - R1

```
R1# show ipv6 route 2001:DB8:40::/64
IPv6 Routing Table - default - 11 entries
Codes: C - Connected, L - Local, S - Static, U - Per-user Static route
       B - BGP, R - RIP, H - NHRP, HG - NHRP registered
       Hg - NHRP registration summary, HE - NHRP External, I1 - ISIS L1
       I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary, D - EIGRP
       EX - EIGRP external, ND - ND Default, NDp - ND Prefix, DCE - Destination
       NDr - Redirect, RL - RPL, O - OSPF Intra, OI - OSPF Inter
       OE1 - OSPF ext 1, OE2 - OSPF ext 2, ON1 - OSPF NSSA ext 1
       ON2 - OSPF NSSA ext 2, la - LISP alt, lr - LISP site-registrations
       ld - LISP dyn-eid, lA - LISP away, le - LISP extranet-policy
       lp - LISP publications, ls - LISP destinations-summary, a - Application
       m - OMP
% Route not found
```

ERROR - This incident has lost the required remote prefix or forwarding result; locate the missing control-plane evidence before editing.

Actual CLI output - R1

```
R1# show ipv6 ospf database
```

R4

```
enable
terminal length 0
show ipv6 ospf interface brief
show running-config | section interface Ethernet0/2
```

Actual CLI output - R4

```
R4# show ipv6 ospf interface brief
Interface    PID   Area            Intf ID    Cost  State Nbrs F/C
Lo0          30    0               8          1     LOOP  0/0
Et0/1        30    0               3          10    P2P   1/1
Et0/0        30    0               2          10    P2P   1/1
```

Actual CLI output - R4

```
R4# show running-config | section interface Ethernet0/2
interface Ethernet0/2
 description AREA_1_CLIENT_LAN
 ip address 192.168.40.1 255.255.255.0
 ip ospf 10 area 1
 ipv6 address 2001:DB8:40::1/64
```

Confirmed cause: R4 Area 1 LAN was removed from OSPFv3, so its inter-area prefix advertisement disappeared.

6. Minimal corrective action

Change only the identified setting on R4. Allow OSPF to converge before checking route installation.

R4

```
enable
conf t
interface Ethernet0/2
ipv6 ospf 30 area 1
end
```

7. Restoration and complete regression

The matching live repair was applied to the broken instance. Both address families and every router adjacency were then rechecked; the next excerpts show the decisive restored evidence.

Actual CLI output - R1

```
R1# show ip ospf neighbor
Neighbor ID     Pri   State           Dead Time   Address         Interface
3.3.3.3           0   FULL/  -        00:00:37    10.13.13.2      Ethernet0/1
2.2.2.2           0   FULL/  -        00:00:36    10.12.12.2      Ethernet0/0
```

Actual CLI output - R1

```
R1# show ipv6 ospf neighbor
            OSPFv3 Router with ID (1.1.1.1) (Process ID 30)
Neighbor ID     Pri   State           Dead Time   Interface ID    Interface
3.3.3.3           0   FULL/  -        00:00:37    1               Ethernet0/1
2.2.2.2           0   FULL/  -        00:00:38    1               Ethernet0/0
```

Actual CLI output - R1

```
R1# ping 192.168.40.10 source Loopback0
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.40.10, timeout is 2 seconds:
Packet sent with a source address of 1.1.1.1
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/2 ms
```

Actual CLI output - R1

```
R1# ping 2001:DB8:40::10 source Loopback0
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:DB8:40::10, timeout is 2 seconds:
Packet sent with a source address of 2001:DB8:1::1
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 2/2/2 ms
```

Actual CLI output - R1

```
R1# show ip route 192.168.40.0
Routing entry for 192.168.40.0/24
  Known via "ospf 10", distance 110, metric 30, type inter area
  Last update from 10.12.12.2 on Ethernet0/0, 00:04:34 ago
  Routing Descriptor Blocks:
  * 10.13.13.2, from 4.4.4.4, 00:04:39 ago, via Ethernet0/1
      Route metric is 30, traffic share count is 1
    10.12.12.2, from 4.4.4.4, 00:04:34 ago, via Ethernet0/0
      Route metric is 30, traffic share count is 1
```

Actual CLI output - R1

```
R1# show ipv6 route 2001:DB8:40::/64
Routing entry for 2001:DB8:40::/64
  Known via "ospf 30", distance 110, metric 30, type inter area
  Route count is 2/2, share count 0
  Routing paths:
    FE80::A8BB:CCFF:FE00:3000, Ethernet0/1
      Route metric is 30, traffic share count is 1
      From FE80::A8BB:CCFF:FE00:3000
      Last updated 00:00:55 ago
    FE80::A8BB:CCFF:FE00:2000, Ethernet0/0
      Route metric is 30, traffic share count is 1
      From FE80::A8BB:CCFF:FE00:2000
      Last updated 00:00:55 ago
```

Actual CLI output - H4

```
H4# ping 192.168.40.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.40.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/1 ms
```

Actual CLI output - H4

```
H4# ping 2001:DB8:40::1 source Ethernet0/0
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:DB8:40::1, timeout is 2 seconds:
Packet sent with a source address of 2001:DB8:40::10
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/2 ms
```

Actual CLI output - H4

```
H4# ping 1.1.1.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 1.1.1.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/2 ms
```

Actual CLI output - H4

```
H4# ping 2001:DB8:1::1 source Ethernet0/0
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:DB8:1::1, timeout is 2 seconds:
Packet sent with a source address of 2001:DB8:40::10
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/2 ms
```

8. Save and handoff

All five nodes were saved only after full regression. The damaged Incident file remains a separate starting state; opening another ticket requires a fresh isolated boot from its own UNL. The release report contains the complete node-by-node console records and hashes.

Reference: Cisco 300-410 ENARSI v1.1 blueprint.