CCNP ENARSI

Solution Guide Incident 02

OSPFv3 Area Mismatch

Instructor and post-investigation reference

Confirmed cause: R3 Ethernet0/1 was activated in OSPFv3 Area 1 while its R4 peer remained in Area 0.

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: R3. The following command sequence creates this incident from the healthy reference. The delivered Incident UNL already contains the resulting startup state.

R3

```
enable
conf t
interface Ethernet0/1
no ipv6 ospf 30 area 0
ipv6 ospf 30 area 1
end
```

3. Intended blast radius

R3-R4 IPv6 OSPF adjacency and one IPv6 next hop to the branch; alternate IPv6 path remains.

Unrelated services required to stay healthy: All IPv4 adjacencies and IPv4 client traffic; R1-R2-R4 IPv6 path and IPv6 client reachability.

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/  -        00:00:31    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 10.13.13.2 on Ethernet0/1, 00:03:17 ago
  Routing Descriptor Blocks:
    10.13.13.2, from 4.4.4.4, 00:03:17 ago, via Ethernet0/1
      Route metric is 30, traffic share count is 1
  * 10.12.12.2, from 4.4.4.4, 00:03:21 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 1/1, share count 0
  Routing paths:
    FE80::A8BB:CCFF:FE00:2000, Ethernet0/0
      Route metric is 30, traffic share count is 1
      From FE80::A8BB:CCFF:FE00:2000
      Last updated 00:03:23 ago
```

WARNING - Only one installed path remains where the approved baseline requires two; service may still answer through the survivor.

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 = 3/3/4 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 = 3/4/8 ms
```

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.

R3

```
enable
terminal length 0
show ipv6 ospf neighbor
show ipv6 ospf interface Ethernet0/1
show running-config | section interface Ethernet0/1
```

Actual CLI output - R3

```
R3# show ipv6 ospf neighbor
            OSPFv3 Router with ID (3.3.3.3) (Process ID 30)
Neighbor ID     Pri   State           Dead Time   Interface ID    Interface
1.1.1.1           0   FULL/  -        00:00:35    2               Ethernet0/0
```

Actual CLI output - R3

```
R3# show ipv6 ospf interface Ethernet0/1
Ethernet0/1 is up, line protocol is up
  Link Local Address FE80::A8BB:CCFF:FE00:3010, Interface ID 2 (snmp-if-index)
  Area 1, Process ID 30, Instance ID 0, Router ID 3.3.3.3
  Network Type POINT_TO_POINT, Cost: 10
  Transmit Delay is 1 sec, State POINT_TO_POINT
  Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
    Hello due in 00:00:07
  Graceful restart helper support enabled
  Index 1/1/3, flood queue length 0
  Next 0x0(0)/0x0(0)/0x0(0)
  Last flood scan length is 0, maximum is 0
  Last flood scan time is 0 msec, maximum is 0 msec
  Neighbor Count is 0, Adjacent neighbor count is 0
  Suppress hello for 0 neighbor(s)
```

Actual CLI output - R3

```
R3# show running-config | section interface Ethernet0/1
interface Ethernet0/1
 description TO_R4
 ip address 10.34.34.1 255.255.255.252
 ip ospf network point-to-point
 ip ospf 10 area 0
 ip ospf cost 10
 ipv6 address 2001:DB8:34::1/64
 ipv6 ospf 30 area 1
 ipv6 ospf network point-to-point
 no passive-interface Ethernet0/1
 no passive-interface Ethernet0/1
```

Confirmed cause: R3 Ethernet0/1 was activated in OSPFv3 Area 1 while its R4 peer remained in Area 0.

6. Minimal corrective action

Change only the identified setting on R3. Allow OSPF to converge before checking route installation.

R3

```
enable
conf t
interface Ethernet0/1
no ipv6 ospf 30 area 1
ipv6 ospf 30 area 0
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/  -        00:00:39    10.13.13.2      Ethernet0/1
2.2.2.2           0   FULL/  -        00:00:37    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/  -        00:00:38    1               Ethernet0/1
2.2.2.2           0   FULL/  -        00:00:31    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 = 1/1/1 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 10.13.13.2 on Ethernet0/1, 00:04:15 ago
  Routing Descriptor Blocks:
    10.13.13.2, from 4.4.4.4, 00:04:15 ago, via Ethernet0/1
      Route metric is 30, traffic share count is 1
  * 10.12.12.2, from 4.4.4.4, 00:04:19 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:FE00:2000, Ethernet0/0
      Route metric is 30, traffic share count is 1
      From FE80::A8BB:CCFF:FE00:2000
      Last updated 00:04:21 ago
    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
```

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 = 1/1/1 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.