CCNP ENARSI

Incident 02

OSPFv3 Area Mismatch

Student troubleshooting workbook | Shared dual-stack OSPF network

One IPv6 OSPF transit adjacency disappeared and IPv6 route diversity fell. IPv4 OSPF and IPv4 branch service must remain normal.

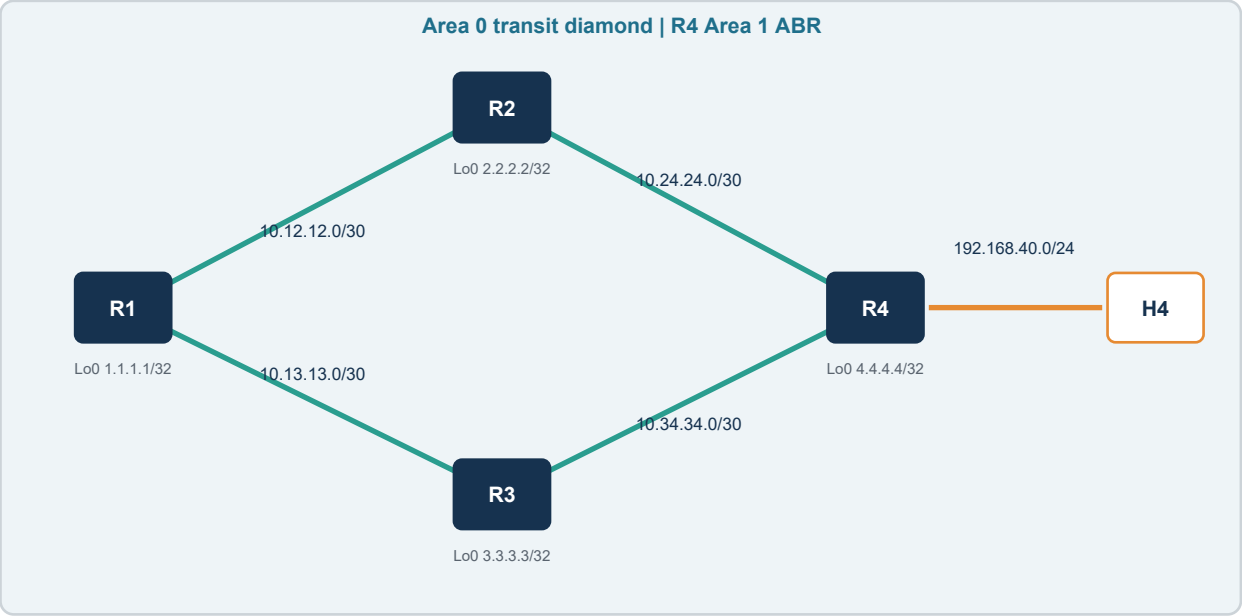
CLI annotations: GREEN - expected healthy result; YELLOW - warning or interpretation required; RED - fault or failed requirement. Colors are workbook annotations, not native CLI colors. Variable timers and ages may differ. Yellow/red items include a one-line reason.

1. Ticket and business impact

One IPv6 OSPF transit adjacency disappeared and IPv6 route diversity fell. IPv4 OSPF and IPv4 branch service must remain normal.

2. Approved healthy network

The healthy reference has two Area 0 paths per address family, two FULL neighbors on each router, R4 Area 1 advertisements and successful H4 reachability from R1. Compare the observed state with the master workbook before making changes.



Connection and address plan

Link	IPv4 endpoints	IPv6 endpoints
R1 e0/0 - R2 e0/0	10.12.12.1/30 | 10.12.12.2/30	2001:DB8:12::1/64 | 2001:DB8:12::2/64
R2 e0/1 - R4 e0/0	10.24.24.1/30 | 10.24.24.2/30	2001:DB8:24::1/64 | 2001:DB8:24::2/64
R1 e0/1 - R3 e0/0	10.13.13.1/30 | 10.13.13.2/30	2001:DB8:13::1/64 | 2001:DB8:13::2/64
R3 e0/1 - R4 e0/1	10.34.34.1/30 | 10.34.34.2/30	2001:DB8:34::1/64 | 2001:DB8:34::2/64
R4 e0/2 - H4 e0/0	192.168.40.1/24 | .10/24	2001:DB8:40::1/64 | ::10/64

Router Loopback0: Rn uses n.n.n.n/32 and 2001:DB8:n::n/128. R4 is Area 0/1 ABR. H4 has static default routes to R4.

3. Incident starting file and rules

Open only Lab 08 OSPF Production Troubleshooting Challenge-incident-02.unl. This file is a separate copy of the healthy network with one injected change. Do not use the healthy save-config file as the broken ticket. Preserve

unrelated services and restrict edits to the fault you can prove.

4. Initial symptoms: actual CLI 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/  -        00:00:38    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. Investigation workspace

Record the first failed or degraded service, the exact command and output, the last known healthy observation, and a hypothesis. Then compare OSPFv2 and OSPFv3 neighbor states, the Area 1 routes and the unchanged local gateway. Do not repair until the evidence identifies a specific configuration boundary.

Questions: Which address family is affected? Is an adjacency missing, a prefix withdrawn or just one equal-cost next hop absent? Which routes and client probes remain healthy? What is the smallest change that restores the approved state?

6. Service boundary and success criteria

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

Services that must remain healthy: All IPv4 adjacencies and IPv4 client traffic; R1-R2-R4 IPv6 path and IPv6 client reachability.

7. Final regression checklist

After repair require: both OSPFv2 and OSPFv3 FULL neighbor matrices; two installed branch next hops in each address family; H4 local gateway responses; successful R1-to-H4 and H4-to-R1 IPv4/IPv6 pings; no new route loss or configuration change outside this ticket. Record the evidence and only then save.

Use the matching Solution Guide only after your investigation and proposed repair are complete.