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1. Verification of the issue

1. Users on R2 LAN (using source interface **Lo0**) cannot connect to server **SRV1**

- **Pinging from R2 to the SRV1 failed, meaning R2 LAN cannot reach SRV1**

```
R2#ping 10.1.100.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.1.100.1, timeout is 2 seconds:

Oct 30 13:19:21.906: %OSPFv3-4-AREA_MISMATCH: OSPFv3-2-IPv6 Received
abitEthernet0/0/0, area 0.0.0.22, packet area 0.0.0.2.....
Success rate is 0 percent (0/5)
```

2. Troubleshooting method used

- We will be using a mix of follow-the-path and top-down. Starting from R2 LAN and trace towards SRV1.
- Once basic connectivity is confirmed focus on ospf neighbors, area types, routing table contents.

3. Steps taken to find the issue(s)

1. Area Mismatch

```
Oct 30 13:19:12.592: %OSPFv3-4-AREA_MISMATCH: OSPFv3-2-IPv6 Received packet with incorrect area from FE80::1,
abitEthernet0/0/0, area 0.0.0.22, packet area 0.0.0.2
R2#ping 10.1.100.1
```

- Clear message that there is a mismatch

```
R2#show ospfv3 int bri
Interface    PID   Area            AF          Cost  State Nbrs F/C
Lo0          2     22              ipv6        1     P2P   0/0
Gi0/0/0      2     22              ipv6        1     DR    0/0
R2#
```

```
R1#show ospfv3 int br
Interface    PID   Area            AF          Cost  State Nbrs F/C
Lo0          2     0               ipv6        1     P2P   0/0
Gi0/0/1      2     0               ipv6        1     BDR   1/1
Gi0/0/0      2     2               ipv6        1     DR    0/0
R1#
```

- Shows R2 with an area of 22, and R2 with an area of 2

```
R1#show ip ospf neighbor

Neighbor ID     Pri   State           Dead Time   Address         Interface
1.1.1.1           1   FULL/DR         00:00:35    10.1.2.1        GigabitEthernet0/0/1
R1#
```

```
R2#show ip ospf neighbor
R2#
```

- No full adjacencies created as there are no neighbors on R2

2. Area Stub

```
R1#show run | section router ospf
router ospfv3 2
 !
 address-family ipv6 unicast
  passive-interface Loopback0
  router-id 11.0.0.11
  area 2 stub
 exit-address-family
router ospf 1
 router-id 1.0.0.1
 area 2 stub
 passive-interface default
 no passive-interface GigabitEthernet0/0/0
 no passive-interface GigabitEthernet0/0/1
 no passive-interface Serial0/1/0
 no passive-interface Serial0/1/1
 network 10.1.1.0 0.0.0.3 area 2
 network 10.1.2.0 0.0.0.3 area 0
 network 10.1.201.1 0.0.0.0 area 0
R1#
```

```
R2#show run | section router ospf
router ospfv3 2
 !
 address-family ipv6 unicast
  passive-interface Loopback0
  router-id 22.0.0.22
 exit-address-family
router ospf 1
 router-id 2.0.0.2
 passive-interface default
 no passive-interface GigabitEthernet0/0/0
 network 10.1.1.0 0.0.0.3 area 2
 network 10.1.202.1 0.0.0.0 area 0
 network 10.1.202.0 0.0.0.3 area 2
router ospf 2
ipv6 router ospf 1
R2#
```

- Area 2 on R2 is not configured as stub
- Area 2 is supposed to be totally stubby on R1, and r2 participates in the totally stubby

```
R2#show ip route ospf
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, m - OMP
       n - NAT, Ni - NAT inside, No - NAT outside, Nd - NAT DIA
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       H - NHRP, G - NHRP registered, g - NHRP registration summary
       o - ODR, P - periodic downloaded static route, l - LISP
       a - application route
       + - replicated route, % - next hop override, p - overrides from PfR

Gateway of last resort is not set

R2#
```

- Still no OSPF routes visible cause of the stub problem

4. Description of the issue

1. **Area mismatch**
    - Currently as Area 22 rather than the correct area 2
    - R1 uses area 2 = mismatch
    - OSPF needs matching areas on both ends
    - Since there's a mismatch there will be no adjacency and R2 will not learn any OSPF routes, in turn R2 LAN cannot reach SRV1
2. **Incorrect area 2 stub config on R2**
    - R2 was not configured with area 2 stub
    - All routers have in that area must agree on the same area type
    - If there are mismatches it will prevent neighbors from forming

3. **Area 2 is not operating as a totally stubby area with R1**
    - Area 2 stub no-summary is not configured
    - As a result R2 might get external router or non depending on the state

5. Commands entered to fix the issue

1. **Area Mismatch**

Commands entered: On R2

```
router ospf 1
 router-id 2.0.0.2
 passive-interface default
 no passive-interface GigabitEthernet0/0/0
 no network 10.1.1.0 0.0.0.3 area 22
 network 10.1.1.0 0.0.0.3 area 2
 no network 10.1.202.1 0.0.0.0 area 22
 network 10.1.202.1 0.0.0.0 area 2
```

router ospf 2

Int g0/0/0
Ip ospf 1 area 2
Ipv6 ospf 1 area 2

Int Lo0
Ip ospf 1 area 2
Ipv6 ospf 1 area 2

2. **Area Stub**

Commands entered: On R2

Router ospf 1
area 2 stub

Commands entered: On R1

Router ospf 1
area 2 stub no-summary

6. Verification the issue is resolved

1. Area Mismatch

```
R2#show ospfv3 int bri
Interface    PID   Area            AF         Cost  State Nbrs F/C
Lo0          1     2               ipv6       1     P2P   0/0
Gi0/0/0      1     2               ipv6       1     DR    0/0
R2#
```

2. Area Stub

```
R1#show run | sec router ospf
router ospfv3 2
 !
 address-family ipv6 unicast
  passive-interface Loopback0
  router-id 11.0.0.11
  area 2 stub
 exit-address-family
router ospf 1
 router-id 1.0.0.1
 area 2 stub no-summary
 passive-interface default
 network 10.1.1.0 0.0.0.3 area 2
 network 10.1.2.0 0.0.0.3 area 0
 network 10.1.201.1 0.0.0.0 area 0
R1#
```

```
R2#show run | sec router ospf
router ospfv3 2
 !
 address-family ipv6 unicast
  passive-interface Loopback0
  router-id 22.0.0.22
 exit-address-family
router ospf 1
 router-id 2.0.0.2
 area 2 stub
 passive-interface default
 no passive-interface GigabitEthernet0/0/0
 network 10.1.1.0 0.0.0.3 area 2
 network 10.1.202.1 0.0.0.0 area 0
 network 10.1.202.0 0.0.0.3 area 2
router ospf 2
ipv6 router ospf 1
R2#
```

3. Changing to a totally stubby area

```
R1#show ospfv3 neighbor

          OSPFv3 2 address-family ipv6 (router-id 11.0.0.11)

Neighbor ID     Pri   State           Dead Time   Interface ID    Interface
11.11.11.11       1   FULL/DR         00:00:32    19              GigabitEthernet0/0/1
R1#
```