Troubleshooting Duplicate Router IDs with OSPF

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Related Information

Introduction

This document describes how a router that runs Open Shortest Path First (OSPF) selects a router ID, in what packets this value is sent, and how to troubleshoot router log messages that report duplicate IDs.

Prerequisites

Requirements

Cisco recommends that you have knowledge of these topics:

- IP routing protocols
- OSPF routing protocols

Components Used

The information in this document is based on the Cisco IOS® Software Release 12.2.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Related Products

This configuration can also be used with these hardware and software versions:

- All routers, such as the 2500 and 2600 series
- Layer 3 switches

Conventions

Refer to Cisco Technical Tips Conventions for more information on document conventions.

Router ID

By default, when the OSPF process initializes, it selects the highest IP address on a router as the router ID for the OSPF process. The router ID uniquely identifies a router within an OSPF domain.

As explained in Configuring OSPF, OSPF uses the largest IP address configured on the interfaces as its router ID. If the interface associated with this IP address is ever brought down, or if the address is removed, the OSPF process must recalculate a new router ID and resend all its routing information out its interfaces.

If a loopback interface is configured with an IP address, the Cisco IOS software uses this IP address as its router ID, even if other interfaces have larger IP addresses. Greater stability in the routing table is achieved, because loopback interfaces never go down.

OSPF automatically prefers a loopback interface over any other kind, and it chooses the highest IP address among all loopback interfaces. If there are no loopback interfaces present, the highest IP address in the router is chosen. The OSPF cannot be directed to use any particular interface. Once the router ID is elected, it does not change unless the OSPF process restarts or the router is reloaded.

Note: If there is not an interface with a valid IP address in an up/up state when it starts, OSPF reports `can't allocate router-id` error messages to the log.

These commands are used in order to view the router ID.

- **show ip ospf**
- **show ip ospf interface**

```
R2-AGS#show ip ospf interface e0
     Ethernet0 is up, line protocol is up
       Internet Address 1.1.1.2 255.255.255.0, Area 0
       Process ID 1, Router ID 5.5.5.5, Network Type BROADCAST, Cost: 10
       Transmit Delay is 1 sec, State BDR, Priority 1
       Designated Router (ID) 6.6.6.6, Interface address 1.1.1.1
       Backup Designated router (ID) 5.5.5.5, Interface address 1.1.1.2
       Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
         Hello due in 0:00:07
       Neighbor Count is 1, Adjacent neighbor count is 1
         Adjacent with neighbor 6.6.6.6  (Designated Router)
```

The default behavior of the selection of the highest IP address on a router as the router ID can be changed with the use of the **router-id** OSPF command introduced in Cisco IOS Software Release 12.0(1)T. Refer to Cisco bug ID CSCdi38380 (registered customers only) for more information. With the OSPF **router-id** command, the router ID of the OSPF process is the one manually selected. In this example, the router ID for the OSPF process is 10.10.10.10.

```
!
router ospf 100
 router-id 10.10.10.10
```

The **show ip ospf database** command can also be used as in this example in order to check the router ID:

```
Router#show ip ospf database
OSPF Router with ID (10.10.10.10) (Process ID 100)
```

Value Transmission

Before the resolution of the duplicate router IDs with OSPF can be explained, you need to understand the five OSPF packet types. These are the packet types:

- Hello
- Database Description (DD)
- Link State Request
- Link State Update
- Link State Acknowledgment

All OSPF packets begin with a standard 24−octet header. Note that the header includes a Router ID field, which indicates the unique ID of the route originating the OSPF packet.

Version | Type | Packet Length
Router ID
Area ID
Checksum | AuType
Authentication
Authentication
Packet Data

Typically, OSPF packets carry Link−State Advertisements (LSAs), which describe all of the links or interfaces of the router, and the state of the links. While all LSAs start with the same header, these three fields identifies a single LSA:

- Type
- Link State ID
- Advertising Router

OSPF uses Link State Update packets to flood LSAs and send LSAs in response to Link State Requests. An OSPF neighbor is responsible for reencapsulating the appropriate LSAs in new Update packets for further flooding in order to propagate OSPF LSAs beyond the network on which they were originated. Thus, a duplicate router ID can be detected by, and propagated by multiple routers.

Complete these steps in order to determine if there is a duplicate router ID:

1. Execute the **show ip ospf database router x.x.x.x** command on the router that should have this ID. This command displays the contents of a router LSA (Type 1), which advertises a router and all of its directly connected interfaces. Understand the interface list of the router and the assigned IP addresses.
2. Execute the **show ip ospf database router x.x.x.x** command a few times on the router that reports the duplicate. The Shortest Path First (SPF) algorithm can run as frequently as once every 10 seconds.

If you capture these commands, you should be able to catch information that changes. This example is an output of the **show ip ospf database router** command.

```
r2.2.2.2#show ip ospf database router 1.1.1.1

      OSPF Router with ID (2.2.2.2) (Process ID 2)


          Router Link States (Area 0)
```

```
LS age: 279
Options: (No TOS-capability, DC)
LS Type: Router Links
Link State ID: 1.1.1.1

!--- For router links, the Link State ID is always the same as the
!--- advertising router (next line).

Advertising Router: 1.1.1.1

!--- This is the router ID of the router which created
!--- this LSA.

LS Seq Number: 8000001A
Checksum: 0xA6FA
Length: 48
Number of Links: 2

Link connected to: another Router (point-to-point)

!--- This line shows that this router (1.1.1.1) is a neighbor
!--- with 2.2.2.2.

(Link ID) Neighboring Router ID: 2.2.2.2
(Link Data) Router Interface address: 0.0.0.12

!--- In case of an unnumbered link, use the Management Information
!--- Base (MIB) II IfIndex value, which usually starts with 0.

Number of TOS metrics: 0
 TOS 0 Metrics: 64

!--- This is the OSPF cost of the link that connects the two routers.


Link connected to: a Stub Network

!--- This entry represents the Ethernet segment 4.0.0.0/8.

(Link ID) Network/subnet number: 4.0.0.0
(Link Data) Network Mask: 255.0.0.0
Number of TOS metrics: 0
TOS 0 Metrics: 10

!--- This is the OSPF cost of the Ethernet segment.
```

Known Issue

When two routers use the same router ID in an OSPF domain, routing possibly does not work correctly. Cisco bug IDs CSCdr61598 (registered customers only) and CSCdu08678 (registered customers only) enhance the detection and reporting mechanisms of duplicate router IDs. Access the Bug Toolkit (registered customers only) in order to view additional information about these Cisco bug IDs. There are two duplicate router ID types:

1. Area duplicate router ID

```
%OSPF-4-DUP_RTRID1: Detected router with duplicate
                router ID 100.0.0.2 in area 0
```

Explanation OSPF detected a router that has the same router ID in the area.

Recommended Action The OSPF router ID should be unique. Make sure all routers in the area have unique router ID.

2. Type 4 LSA

```
%OSPF-4-DUP_RTRID2: Detected router with duplicate
                router ID 100.0.0.2 in Type-4 LSA advertised by 100.0.0.1
```

Explanation OSPF detected a router that has the same router ID in the other area. This router is advertised in Type−4 LSA.

Recommended Action The OSPF router ID should be unique. Make sure all Autonomous System Border Routers (ASBRs) in remote areas have a unique router ID.

When a router acts as both an Area Border Router (ABR) and an ASBR in an OSPF domain, false reports of duplicate router IDs can occur, as shown in this example log message.

```
OSPF-4-DUP_RTRID_AS Detected router with duplicate
router ID 10.97.10.2 in Type-4 LSA advertised by 10.97.20.2
```

Cisco bug ID CSCdu71404 (registered customers only) resolves this problem of OSPF domain−wide detection.

- If a router receives a Type 4 LSA and the Link State ID equals the router ID and the router is not an ABR, then a valid router ID duplication in the remote area occurs, and the error message should be logged.
- If the router is not an ABR, it can receive a Type 4 LSA which tells it about itself from the other ABR. This condition does not represent a duplicate router ID problem, and the error message should not be logged.

A Type 4 LSA is also known as an ASBR Summary LSA. Issue the **show ip ospf database asbr−summary** command in order to observe these LSAs, as shown in this example.

The ABR creates (Type 4) ASBR Summary LSAs in order to advertise reachability of an ASBR into other areas.

```
r2.2.2.2#show ip ospf database asbr-summary 1.1.1.1

           OSPF Router with ID (2.2.2.2) (Process ID 2)

                    Summary ASB Link States (Area 0)

      LS age: 266
      Options: (No TOS-capability, DC)
      LS Type: Summary Links(AS Boundary Router)
      Link State ID: 1.1.1.1 (AS Boundary Router address)

!--- ABR (Router 2.2.2.2) advertises that it knows how
!--- to reach the ASBR (Router 1.1.1.1).

      Advertising Router: 2.2.2.2
      LS Seq Number: 80000001
      Checksum: 0x935C
      Length: 28
      Network Mask: /0
            TOS: 0  Metric: 64

!--- This is the cost of ABR to reach the ASBR.
```

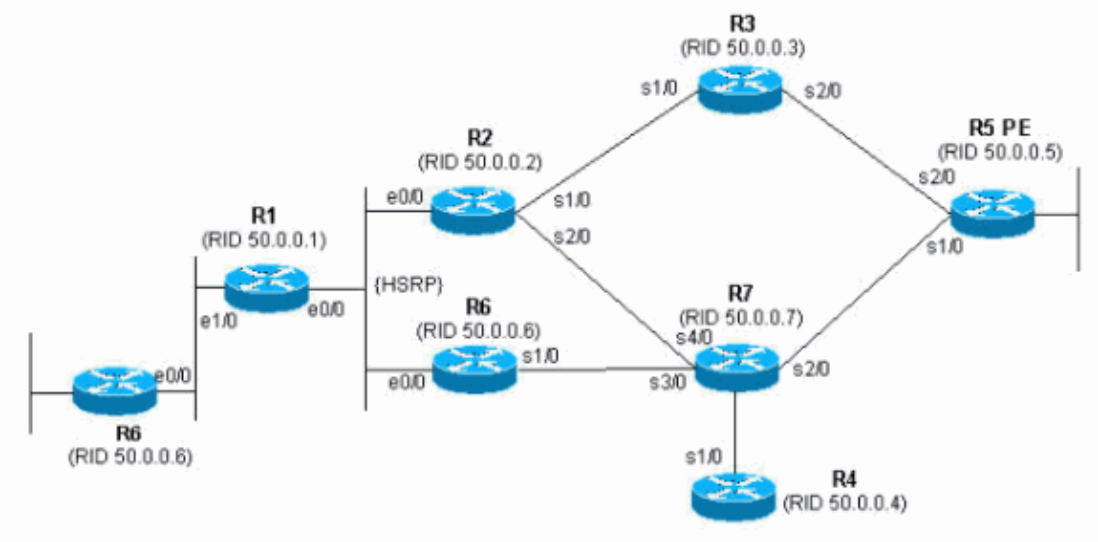
If the LSA is a Type 4, the Link State ID is the router ID of the ASBR that is advertised. Refer to How OSPF Propagates External Routes into Multiple Areas for more information.

Troubleshooting

The troubleshooting was done with a Cisco IOS software release released before the Cisco bug ID CSCdr61598 (registered customers only) and Cisco bug ID CSCdu08678 (registered customers only) integration.

Single Area Network

This image is a representation of the single area network described in these steps.



1. Issue the **show proc cpu | include OSPF** command. This allows you to see the OSPF processes that utilize the CPU.

```
r4#show proc cpu | include OSPF
   3        4704       473       9945  1.38%  0.81%  0.68%   0 OSPF Hello
  71        9956      1012       9837  1.47%  1.62%  1.41%   0 OSPF Router
```

   As seen in the previous example, there is high CPU for OSPF. This shows that there must be something wrong with either the link stability or a duplicate router−id.
2. Issue the **show ip ospf statistics** command. This allows you to see if the SPF algorithm is run more than ordinary.

```
r4#show ip ospf statistics
  Area 0: SPF algorithm executed 46 times

  SPF calculation time
Delta T   Intra D−Intra Summ    D−Summ  Ext     D−Ext   Total   Reason
00:01:36   0    0       0       0       0       0       0       N,
00:01:26   0    0       0       0       0       0       0       R, N,
00:01:16   0    0       0       0       0       0       0       R, N,
00:01:06   0    0       0       0       0       0       0       R, N,
00:00:56   0    0       0       0       0       0       0       R, N,
00:00:46   0    0       0       0       0       0       0       R, N,
00:00:36   0    0       0       0       0       0       0       R, N, kmbgvc
00:00:26   0    0       0       0       0       0       0       R, N,
00:00:16   0    0       0       0       0       0       0       R, N,
00:00:06   0    0       0       0       0       0       0       R, N,
```

The **show ip ospf statistics** command shows that recalculation of SPF is done every 10 seconds, as seen in the previous example. It is triggered by the router and network LSA. There is a problem in the same area as the current router.

3. Issue the **show ip ospf database** command.

```
r4#show ip ospf database

            OSPF Router with ID (50.0.0.4) (Process ID 1)

                Router Link States (Area 0)

Link ID         ADV Router      Age         Seq#       Checksum Link count
50.0.0.1        50.0.0.1        681         0x80000002 0x7E9D   3
50.0.0.2        50.0.0.2        674         0x80000004 0x2414   5
50.0.0.4        50.0.0.4        705         0x80000003 0x83D    4
50.0.0.5        50.0.0.5        706         0x80000003 0x5C24   6
50.0.0.6        50.0.0.6        16          0x80000095 0xAF63   6
50.0.0.7        50.0.0.7        577         0x80000005 0x86D5   8

                Net Link States (Area 0)

Link ID         ADV Router      Age         Seq#       Checksum
192.168.2.6     50.0.0.6        6           0x8000007A 0xABC7
```

The **show ip ospf database command** shows that one LSA is newer (age 16) and its sequence number is much higher then the other LSAs in the same OSPF database. You need to figure out which router sent this LSA. Since it is in the same area, the advertising router id is known (50.0.0.6). It is more probable that this router ID is duplicated. You need to find out which other router has the same router−id.

4. This example shows several instances of the **show ip ospf database** command.

```
r4#show ip ospf database router adv−router 50.0.0.6

            OSPF Router with ID (50.0.0.4) (Process ID 1)

                Router Link States (Area 0)

  LS age: 11
  Options: (No TOS−capability, DC)
  LS Type: Router Links
  Link State ID: 50.0.0.6
  Advertising Router: 50.0.0.6
  LS Seq Number: 800000C0
  Checksum: 0x6498
  Length: 72
  Number of Links: 4

    Link connected to: a Transit Network
     (Link ID) Designated Router address: 192.168.2.6
     (Link Data) Router Interface address: 192.168.2.6
      Number of TOS metrics: 0
       TOS 0 Metrics: 10

    Link connected to: another Router (point−to−point)
     (Link ID) Neighboring Router ID: 50.0.0.7
     (Link Data) Router Interface address: 192.168.0.21
      Number of TOS metrics: 0
       TOS 0 Metrics: 64

    Link connected to: a Stub Network
     (Link ID) Network/subnet number: 192.168.0.20
     (Link Data) Network Mask: 255.255.255.252
      Number of TOS metrics: 0
```

```
       TOS 0 Metrics: 64

    Link connected to: a Stub Network
     (Link ID) Network/subnet number: 50.0.0.6
     (Link Data) Network Mask: 255.255.255.255
      Number of TOS metrics: 0
       TOS 0 Metrics: 1

r4#show ip ospf database router adv-router 50.0.0.6

            OSPF Router with ID (50.0.0.4) (Process ID 1)

                Router Link States (Area 0)

  LS age: 7
  Options: (No TOS-capability, DC)
  LS Type: Router Links
  Link State ID: 50.0.0.6
  Advertising Router: 50.0.0.6
  LS Seq Number: 800000C7

!--- The sequence number has increased.

Checksum: 0x4B95
Length: 96
Number of Links: 6

!--- The number of links has increased although the network has been stable.


Link connected to: a Stub Network
     (Link ID) Network/subnet number: 192.168.3.0
     (Link Data) Network Mask: 255.255.255.0
      Number of TOS metrics: 0
       TOS 0 Metrics: 10

    Link connected to: another Router (point-to-point)
     (Link ID) Neighboring Router ID: 50.0.0.5
     (Link Data) Router Interface address: 192.168.0.9
      Number of TOS metrics: 0
       TOS 0 Metrics: 64

    Link connected to: a Stub Network
     (Link ID) Network/subnet number: 192.168.0.8
     (Link Data) Network Mask: 255.255.255.252
      Number of TOS metrics: 0
       TOS 0 Metrics: 64

    Link connected to: another Router (point-to-point)
     (Link ID) Neighboring Router ID: 50.0.0.2
     (Link Data) Router Interface address: 192.168.0.2
      Number of TOS metrics: 0
       TOS 0 Metrics: 64

    Link connected to: a Stub Network
     (Link ID) Network/subnet number: 192.168.0.0
     (Link Data) Network Mask: 255.255.255.252
      Number of TOS metrics: 0
       TOS 0 Metrics: 64

    Link connected to: a Stub Network
     (Link ID) Network/subnet number: 50.0.0.6
     (Link Data) Network Mask: 255.255.255.255
      Number of TOS metrics: 0
       TOS 0 Metrics: 1
```

5. If you know your network, you can find which router advertises those links. The first previous output shows that the LSAs are sent by a router with OSPF neighbors 50.0.0.7, whereas the second output shows neighbors 50.0.0.5 and 50.0.0.6. Issue the **show ip ospf** command in order to find those routers and access them in order to verify their OSPF router−id. In this example setup, they are R6 and R3.

```
3>show ip ospf
 Routing Process "ospf 1" with ID 50.0.0.6
 Supports only single TOS(TOS0) routes
 Supports opaque LSA

r6#show ip ospf
 Routing Process "ospf 1" with ID 50.0.0.6
 Supports only single TOS(TOS0) routes
 Supports opaque LSA
```

6. Issue the **show run | beg router ospf** command in order to check the configuration that starts at the OSPF configuration.

```
R6#show run | include router ospf
router ospf 1
 router−id 50.0.0.6
 log−adjacency−changes
 network 50.0.0.0 0.0.0.255 area 0
 network 192.168.0.0 0.0.0.255 area 0
 network 192.168.2.0 0.0.0.255 area 0

r3#show run | begin router ospf
router ospf 1
 log−adjacency−changes
 network 50.0.0.0 0.0.0.255 area 0
 network 192.168.0.0 0.0.0.255 area 0
 network 192.168.3.0 0.0.0.255 area 0
```

   In the previous example, the **router−id** command was removed and the OSPF process was not restarted. The same problem can also result from a loopback interface that is removed and configured somewhere else.

7. Issue the **clear ip ospf 1 process** command and the **show ip ospf** command in order to clear the process.

```
r3#clear ip ospf 1 process
Reset OSPF process? [no]: y

r3#show ip ospf
 Routing Process "ospf 1" with ID 50.0.0.6
 Supports only single TOS(TOS0) routes
 Supports opaque LSA
```

   As shown in the previous example, the wrong IP address still appears.

8. Issue the **show ip int brie** command in order to check the interface.

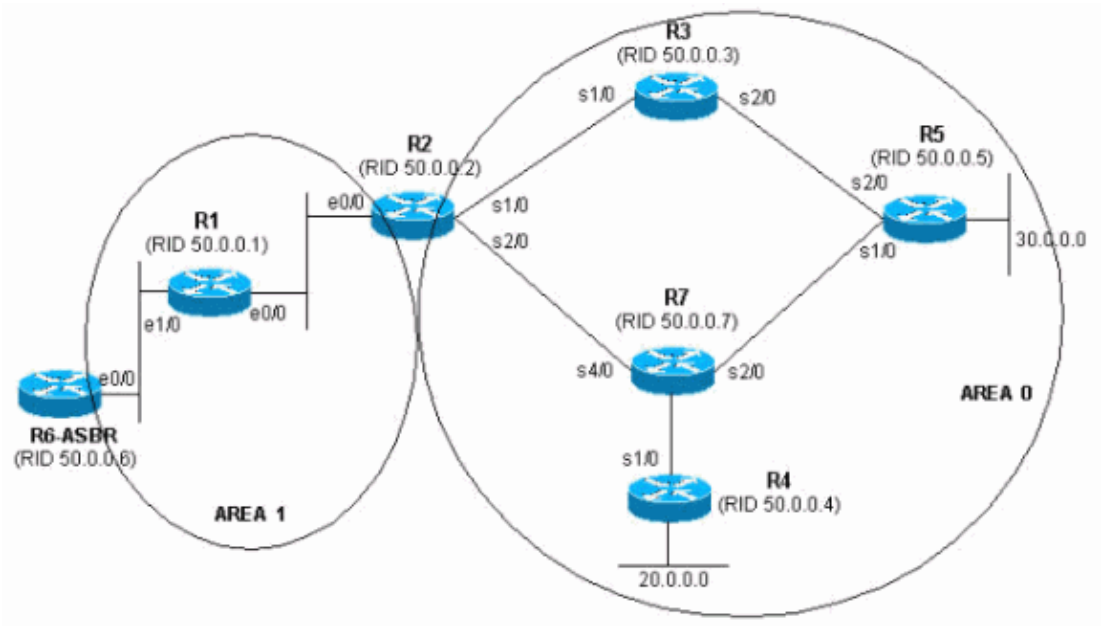
```
r3#show ip int brie
Interface                  IP−Address      OK? Method Status                Protocol
Ethernet0/0                192.168.3.1     YES NVRAM  up                    up
Serial1/0                  192.168.0.2     YES NVRAM  up                    up
Serial2/0                  192.168.0.9     YES NVRAM  up                    up
Loopback0                  unassigned      YES NVRAM  up                    up
Loopback1                  50.0.0.6        YES NVRAM  up                    up


!−−− The highest Loopback IP address
```

In order to correct the problem, make sure that either the highest loopback configured on the router is unique in your OSPF network, or configure statically the router−id with the **router−id <ip address>** command under the OSPF router configuration mode.

Multiple Areas with ASBR

The symptoms of these problems are that the external route, which is learned through the redistribution from static into OSPF process by R6, ASBR router flaps from the routing table on all routers within OSPF Area 0. The external route is 120.0.0.0/16 and the problem is noticed on Router 5 in Area 0. Start to troubleshoot from there.



1. Issue the **show ip route** command a few times consecutively in order to see the symptom.

```
r5#show ip route 120.0.0.0
Routing entry for 120.0.0.0/16, 1 known subnets

O E2    120.0.0.0 [110/20] via 192.168.0.9, 00:00:03, Serial2/0

r5#show ip route 120.0.0.0
% Network not in table
r5#
```

2. Take a look at the OSPF database in order to check whether the LSA is received. If you issue the **show ip ospf database** command several times in a row, you notice that the LSA is received by two routers, 50.0.0.6 and 50.0.0.7. If you look at the age of the second entry, if present, you notice that its value changes dramatically.

```
r5#show ip ospf database | begin Type-5
                Type-5 AS External Link States

Link ID         ADV Router      Age         Seq#       Checksum Tag
120.0.0.0       50.0.0.6        2598        0x80000001 0xE10E   0
120.0.0.0       50.0.0.7        13          0x80000105 0xD019   0
r5#show ip ospf database | begin Type-5
                Type-5 AS External Link States

Link ID         ADV Router      Age         Seq#       Checksum Tag
120.0.0.0       50.0.0.6        2599        0x80000001 0xE10E   0
120.0.0.0       50.0.0.7        14          0x80000105 0xD019   0
r5#show ip ospf database | begin Type-5
```

```
                Type-5 AS External Link States

Link ID         ADV Router      Age         Seq#       Checksum Tag
120.0.0.0       50.0.0.6        2600        0x80000001 0xE10E   0
120.0.0.0       50.0.0.7        3601        0x80000106 0x6F6    0
r5#show ip ospf database | begin Type-5
                Type-5 AS External Link States

Link ID         ADV Router      Age         Seq#       Checksum Tag
120.0.0.0       50.0.0.6        2602        0x80000001 0xE10E   0
r5#show ip ospf database | begin Type-5
                Type-5 AS External Link States

Link ID         ADV Router      Age         Seq#       Checksum Tag
120.0.0.0       50.0.0.6        2603        0x80000001 0xE10E   0
r5#
```

3. You also notice strange behavior if you look at the sequence number for the LSAs that are received from 50.0.07, which is the advertising router. Review what other LSAs are received from 50.0.0.7. If you issue the **show ip ospf database adv-router 50.0.0.7** command several times in a row, the entries vary quickly, as shown in this example.

```
r5#show ip ospf database adv-router 50.0.0.7

            OSPF Router with ID (50.0.0.5) (Process ID 1)

                Router Link States (Area 0)

Link ID         ADV Router      Age         Seq#       Checksum Link count
50.0.0.7        50.0.0.7        307         0x8000000D 0xDF45   6

                Type-5 AS External Link States

Link ID         ADV Router      Age         Seq#       Checksum Tag
120.0.0.0       50.0.0.7        9           0x8000011B 0xA42F   0



r5#show ip ospf database network adv-router 50.0.0.7

            OSPF Router with ID (50.0.0.5) (Process ID 1)
r5#show ip ospf database network adv-router 50.0.0.7

            OSPF Router with ID (50.0.0.5) (Process ID 1)
```

This last output does not show anything. Either the route is flapping or there is a problem of another kind, most probably a duplicate router ID within the OSPF domain.

4. Issue the **show ip ospf database** command in order to view the external LSAs advertised by 50.0.0.7.

```
r5#show ip ospf database external adv-router 50.0.0.7

            OSPF Router with ID (50.0.0.5) (Process ID 1)

                Type-5 AS External Link States

  Delete flag is set for this LSA
  LS age: MAXAGE(3600)
  Options: (No TOS-capability, DC)
  LS Type: AS External Link
  Link State ID: 120.0.0.0 (External Network Number )
  Advertising Router: 50.0.0.7
  LS Seq Number: 80000136
  Checksum: 0xA527
  Length: 36
  Network Mask: /16
```

```
        Metric Type: 2 (Larger than any link state path)
        TOS: 0
        Metric: 16777215
        Forward Address: 0.0.0.0
        External Route Tag: 0

r5#show ip ospf database  external adv-router 50.0.0.7

            OSPF Router with ID (50.0.0.5) (Process ID 1)
r5#
```

5. Look at the SPF calculation reasons in order to verify this. X means that SPF runs every 10 seconds because of an External LSA (type 5) flap and indeed, you see that SPF runs.

```
r5#show ip ospf statistic
  Area 0: SPF algorithm executed 2 times

  SPF calculation time
Delta T   Intra D-Intra Summ    D-Summ  Ext     D-Ext   Total   Reason
00:47:23   0    0       0       0       0       0       0       X
00:46:33   0    0       0       0       0       0       0       X
00:33:21   0    0       0       0       0       0       0       X
00:32:05   0    0       0       0       0       0       0       X
00:10:13   0    0       0       0       0       0       0       R, SN, X
00:10:03   0    0       0       0       0       0       0       R, SN, X
00:09:53   0    0       0       0       0       0       0       R,
00:09:43   0    0       0       0       0       0       0       R, SN, X
00:09:33   0    0       0       0       0       0       0       X
00:09:23   0    0       0       0       0       0       0       X
```

6. It is known that the problem is outside the current area. Turn your focus on the ABR. Telnet to the ABR Router 2 in order to have more visibility on other areas than OSPF area 0. Issue the **show ip ospf border-routers** and **show ip ospf database network adv-router** commands.

```
r2#show ip ospf border-routers

OSPF Process 1 internal Routing Table

Codes: i - Intra-area route, I - Inter-area route

i 50.0.0.7 [20] via 192.168.2.1, Ethernet0/0, ASBR, Area 1, SPF 25



r2#show ip ospf database network adv-router 50.0.0.7

            OSPF Router with ID (50.0.0.2) (Process ID 1)

                Net Link States (Area 1)

  Routing Bit Set on this LSA
  LS age: 701
  Options: (No TOS-capability, DC)
  LS Type: Network Links
  Link State ID: 192.168.1.2 (address of Designated Router)
  Advertising Router: 50.0.0.7
  LS Seq Number: 80000001
  Checksum: 0xBC6B
  Length: 32
  Network Mask: /24
        Attached Router: 50.0.0.7
        Attached Router: 50.0.0.1
```

7. The faulty router is on the same LAN as 50.0.0.1. It must be Router 6. Issue the **show ip ospf** command.

```
r6#show ip ospf
```

```
Routing Process "ospf 1" with ID 50.0.0.7
Supports only single TOS(TOS0) routes
Supports opaque LSA
It is an autonomous system boundary router.
```

8. Once the faulty router is found, refer to the Single Area Network section of this document to correct the problem.

Error Message: %OSPF−4−FLOOD_WAR: Process 60500 flushes LSA ID 10.x.x.0 type−5 adv−rtr 10.40.x.x in area 10.40.0.0

The `%OSPF−4−FLOOD_WAR: Process 60500 flushes LSA ID 10.35.70.4 type−5 adv−rtr 10.40.0.105 in area 10.40.0.0` error message is received.

This error message states that the router originates or flushes LSA at a high rate. A typical scenario in a network may be where one router in the network originates LSA and the second router flushes that LSA. A detailed description of this error message is provided here:

- `Process 60500` − The OSPF process that reports the error. In this example, the process ID is **60500**.
- `re−originates` or `flushes` (keyword) − Indicates if the router originates LSA or flushes. In this error message, the router **flushes** LSA.
- `LSA ID 10.35.70.4` − Link state ID for which a flood war is detected. In this example, it is **10.35.70.4**.
- `type −5` − LSA type. This example has a **Type 5** LSA.

  Note: A flood war has a different root cause for every LSA.
- `adv−rtr` − Router which originates LSA (that is, **10.40.0.105**).
- `Area` − Area to which the LSA belongs. In this example, the LSA belongs to **10.40.0.0**.

Solution

Note the **Type** specifics of this error; in this example, type−5. This designation means there are duplicate router IDs on two routers located in the different areas. As a result, it is necessary to change the router ID on one of the routers.

Related Information

- **How to Configure OSPF**
- **OSPF Database Explanation Guide**
- **OSPF Neighbor Problems Explained**
- **What Does the show ip ospf interface Command Reveal?**
- **Open Shortest Path First (OSPF) Support Page**
- **Technical Support & Documentation − Cisco Systems**

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