了解转发地址的选择在OSPF的

目录

简介

本文描述用于转发地址的选择的概念外部LSA的(林克状态广告)由ASBR (自治系统边界路由器)在OSPF (首先开放最短路径)域。

先决条件

要求

本文档的读者应掌握以下这些主题的相关知识：

- 基本IP路由。
- OSPF 路由协议概念和术语。

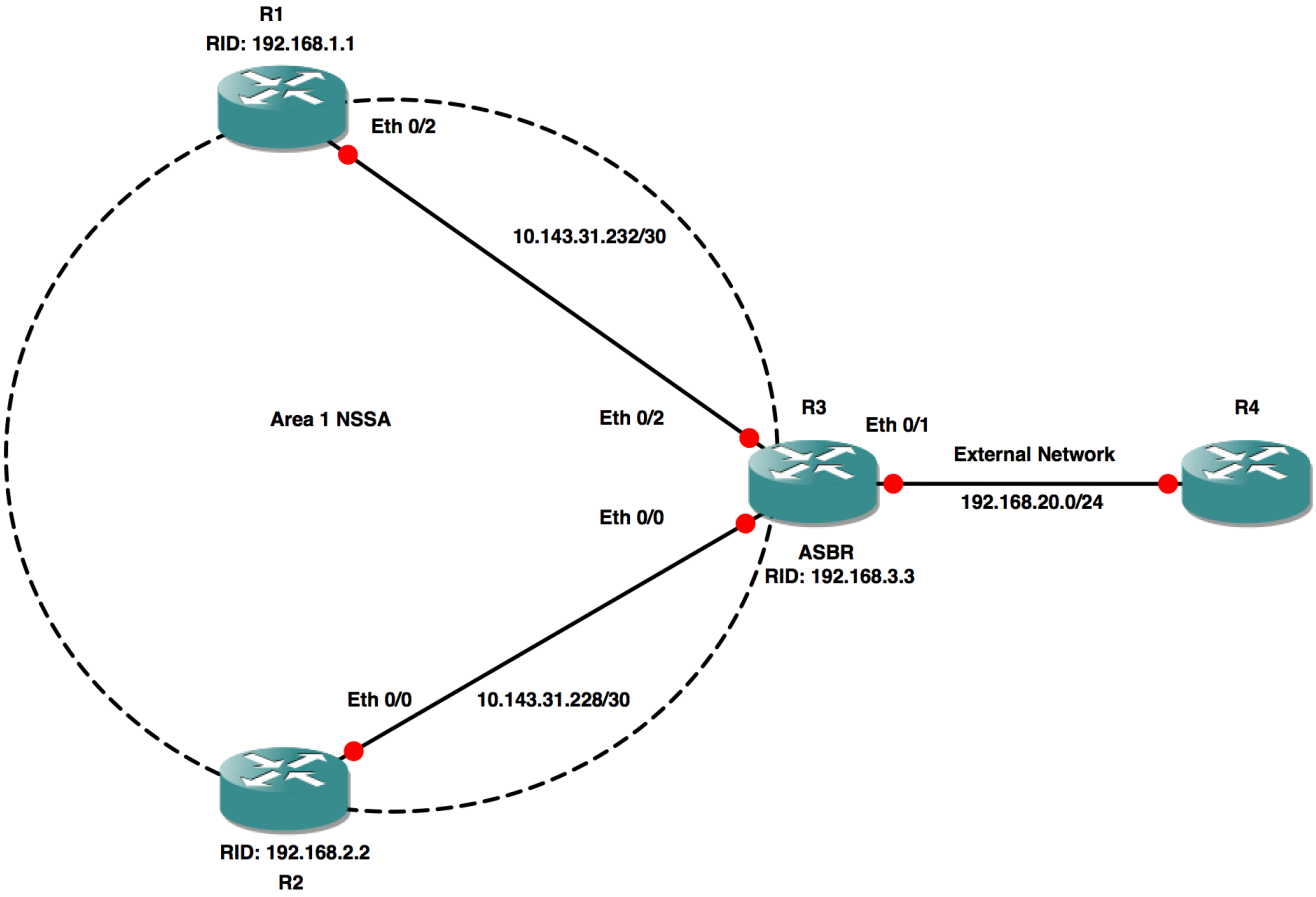
使用的组件

本文档不限于特定的软件和硬件版本。

本文档中的信息都是基于特定实验室环境中的设备编写的。本文档中使用的所有设备最初均采用原始（默认）配置。如果您使用的是真实网络，请确保您已经了解所有命令的潜在影响。

验证

跟随的镜像将使用作为拓扑示例本文的其余。



R3重新分配网络192.168.20.0/24到OSPF NSSA (非末节区域)使用route-map。您能使用再分布路由所有方法到OSPF域。

R3的相关configurtion ：

```
router ospf 1
 router-id 192.168.3.3
 area 1 nssa
 redistribute connected metric-type 1 subnets route-map CONN
 network 10.143.31.0 0.0.0.255 area 1


route-map CONN, permit, sequence 10
  Match clauses:
    interface Ethernet0/1
  Set clauses:
  Policy routing matches: 0 packets, 0 bytes

interface Ethernet0/1
 ip address 192.168.20.1 255.255.255.0
```

OSPF

```
R1#sh ip ospf neighbor

Neighbor ID     Pri   State           Dead Time   Address         Interface
192.168.3.3       0   FULL/  -        00:00:38    10.143.31.234   Ethernet0/2

R2#sh ip ospf neighbor

Neighbor ID     Pri   State           Dead Time   Address         Interface
```

```
192.168.3.3       0   FULL/  -        00:00:36    10.143.31.230   Ethernet0/0

R3#sh ip ospf neighbor

Neighbor ID     Pri   State           Dead Time   Address         Interface
192.168.1.1       0   FULL/  -        00:00:34    10.143.31.233   Ethernet0/2
192.168.2.2       0   FULL/  -        00:00:30    10.143.31.229   Ethernet0/0
```

如果查看外部路由"192.168.20.0"的量度在R1和R2的，您发现看到与量度30在R1和在R2的一量度40。有差异，即使他们在一个相同的方式连接对R3。

```
R1#sh ip route 192.168.20.0
Routing entry for 192.168.20.0/24
  Known via "ospf 1", distance 110, metric 30, type NSSA extern 1
  Last update from 10.143.31.234 on Ethernet0/2, 00:00:31 ago
  Routing Descriptor Blocks:
  * 10.143.31.234, from 192.168.3.3, 00:00:31 ago, via Ethernet0/2
      Route metric is 30, traffic share count is 1


R2#sh ip route 192.168.20.0
Routing entry for 192.168.20.0/24
  Known via "ospf 1", distance 110, metric 40, type NSSA extern 1
  Last update from 10.143.31.230 on Ethernet0/0, 00:00:26 ago
  Routing Descriptor Blocks:
  * 10.143.31.230, from 192.168.3.3, 00:00:26 ago, via Ethernet0/0
      Route metric is 40, traffic share count is 1
```

此前缀的LSA信息在R1和R2 ：

```
R1#sh ip ospf database nssa-external

            OSPF Router with ID (192.168.1.1) (Process ID 1)

        Type-7 AS External Link States (Area 1)

  Routing Bit Set on this LSA in topology Base with MTID 0
  LS age: 334
  Options: (No TOS-capability, Type 7/5 translation, DC, Upward)
  LS Type: AS External Link
  Link State ID: 192.168.20.0 (External Network Number )
  Advertising Router: 192.168.3.3
  LS Seq Number: 80000003
  Checksum: 0xA0E3
  Length: 36
  Network Mask: /24
    Metric Type: 1 (Comparable directly to link state metric)
    MTID: 0
    Metric: 20
    Forward Address: 10.143.31.234
    External Route Tag: 0

R2#sh ip ospf database nssa-external

            OSPF Router with ID (192.168.2.2) (Process ID 1)

        Type-7 AS External Link States (Area 1)
```

```
  Routing Bit Set on this LSA in topology Base with MTID 0
  LS age: 352
  Options: (No TOS-capability, Type 7/5 translation, DC, Upward)
  LS Type: AS External Link
  Link State ID: 192.168.20.0 (External Network Number )
  Advertising Router: 192.168.3.3
  LS Seq Number: 80000003
  Checksum: 0xA0E3
  Length: 36
  Network Mask: /24
    Metric Type: 1 (Comparable directly to link state metric)
    MTID: 0
    Metric: 20
    Forward Address: 10.143.31.234
    External Route Tag: 0
```

您能看到Type-7 LSA转发地址是同样在R1和R2。并且此转发地址属于建立接口R3和R1之间。此转发地址为R1直接地连接，但是对于R2通过R3是可及的。这意味着转发地址是一额外跳次离开为R2。

万一，如果R3选择链路的IP地址R3和R2之间的，因为转发地址相似的情况在R1然后将被看到。

使用以下规则，转发地址在ASBR选择：

1. 如果有在区域配置的环回那么环回的IP地址选择作为转发地址。
2. 如果第一个情况那么没有符合得第一个接口的IP地址在OSPF接口列表的选择作为转发地址。您能看到通过使用“show ip ospf interface的OSPF接口列表简化”命令。在附加对OSPF的上面的接口将是最后一个接口。

```
R3#sh ip ospf interface brief
Interface    PID   Area            IP Address/Mask    Cost  State Nbrs F/C
Et0/2        1     1               10.143.31.234/30   10    P2P   1/1
Et0/0        1     1               10.143.31.230/30   10    P2P   1/1
```

Et0/2显示在“show ip ospf interface顶部简化”，并且这是原因为什么其IP地址选择作为转发地址。

更改Et0/0的配置对默认配置的将做它从OSPF分开。添加配置再将附加它回到OSPF。 在此Et0/0将是列出的在“show ip ospf interface顶部后请简化”输出。

```
R3#sh ip ospf interface brief
Interface    PID   Area            IP Address/Mask    Cost  State Nbrs F/C
Et0/2        1     1               10.143.31.234/30   10    P2P   1/1
Et0/0        1     1               10.143.31.230/30   10    P2P   1/1

R3#sh ip ospf interface brief
Interface    PID   Area            IP Address/Mask    Cost  State Nbrs F/C
Et0/0        1     1               10.143.31.230/30   10    P2P   1/1
Et0/2        1     1               10.143.31.234/30   10    P2P   1/1
```

此更改将导致转发地址的重新计算对在Et0/0配置的那的IP地址。

```
R1#sh ip ospf database nssa-external

            OSPF Router with ID (192.168.1.1) (Process ID 1)
```

```
        Type-7 AS External Link States (Area 1)

  Routing Bit Set on this LSA in topology Base with MTID 0
  LS age: 284
  Options: (No TOS-capability, Type 7/5 translation, DC, Upward)
  LS Type: AS External Link
  Link State ID: 192.168.20.0 (External Network Number )
  Advertising Router: 192.168.3.3
  LS Seq Number: 80000004
  Checksum: 0x6621
  Length: 36
  Network Mask: /24
    Metric Type: 1 (Comparable directly to link state metric)
    MTID: 0
    Metric: 20
    Forward Address: 10.143.31.230
    External Route Tag: 0

R2#sh ip ospf database nssa-external

            OSPF Router with ID (192.168.2.2) (Process ID 1)

        Type-7 AS External Link States (Area 1)

  Routing Bit Set on this LSA in topology Base with MTID 0
  LS age: 303
  Options: (No TOS-capability, Type 7/5 translation, DC, Upward)
  LS Type: AS External Link
  Link State ID: 192.168.20.0 (External Network Number )
  Advertising Router: 192.168.3.3
  LS Seq Number: 80000004
  Checksum: 0x6621
  Length: 36
  Network Mask: /24
    Metric Type: 1 (Comparable directly to link state metric)
    MTID: 0
    Metric: 20
    Forward Address: 10.143.31.230
    External Route Tag: 0
```

“show ip route”输出当前显示到达的量度在R1的外部路由是40和在R2是30。这是更加早期的输出的反向。

```
R1#sh ip route 192.168.20.0
Routing entry for 192.168.20.0/24
  Known via "ospf 1", distance 110, metric 40, type NSSA extern 1
  Last update from 10.143.31.234 on Ethernet0/2, 00:06:14 ago
  Routing Descriptor Blocks:
  * 10.143.31.234, from 192.168.3.3, 00:06:14 ago, via Ethernet0/2
      Route metric is 40, traffic share count is 1

R2#sh ip route 192.168.20.0
Routing entry for 192.168.20.0/24
  Known via "ospf 1", distance 110, metric 30, type NSSA extern 1
  Last update from 10.143.31.230 on Ethernet0/0, 00:06:29 ago
  Routing Descriptor Blocks:
  * 10.143.31.230, from 192.168.3.3, 00:06:29 ago, via Ethernet0/0
      Route metric is 30, traffic share count is 1
```

此更改可以是无法预测的，并且导致网络收敛，因此有环回IP地址作为转发地址是可行的。

```
R1#sh ip route 192.168.20.0
Routing entry for 192.168.20.0/24
  Known via "ospf 1", distance 110, metric 40, type NSSA extern 1
  Last update from 10.143.31.234 on Ethernet0/2, 00:06:14 ago
  Routing Descriptor Blocks:
  * 10.143.31.234, from 192.168.3.3, 00:06:14 ago, via Ethernet0/2
      Route metric is 40, traffic share count is 1

R2#sh ip route 192.168.20.0
Routing entry for 192.168.20.0/24
  Known via "ospf 1", distance 110, metric 30, type NSSA extern 1
  Last update from 10.143.31.230 on Ethernet0/0, 00:06:29 ago
  Routing Descriptor Blocks:
  * 10.143.31.230, from 192.168.3.3, 00:06:29 ago, via Ethernet0/0
      Route metric is 30, traffic share count is 1
```

这也导致在R1和R2的相等的量度：

```
R1#sh ip ospf database nssa-external

            OSPF Router with ID (192.168.1.1) (Process ID 1)

        Type-7 AS External Link States (Area 1)

  Routing Bit Set on this LSA in topology Base with MTID 0
  LS age: 1
  Options: (No TOS-capability, Type 7/5 translation, DC, Upward)
  LS Type: AS External Link
  Link State ID: 192.168.20.0 (External Network Number )
  Advertising Router: 192.168.3.3
  LS Seq Number: 80000005
  Checksum: 0x872F
  Length: 36
  Network Mask: /24
    Metric Type: 1 (Comparable directly to link state metric)
    MTID: 0
    Metric: 20
    Forward Address: 192.168.3.3
    External Route Tag: 0

R1#sh ip route 192.168.20.0
Routing entry for 192.168.20.0/24
  Known via "ospf 1", distance 110, metric 31, type NSSA extern 1
  Last update from 10.143.31.234 on Ethernet0/2, 00:01:27 ago
  Routing Descriptor Blocks:
  * 10.143.31.234, from 192.168.3.3, 00:01:27 ago, via Ethernet0/2
      Route metric is 31, traffic share count is 1



R2#sh ip ospf database nssa-external

            OSPF Router with ID (192.168.2.2) (Process ID 1)

        Type-7 AS External Link States (Area 1)

  Routing Bit Set on this LSA in topology Base with MTID 0
  LS age: 6
  Options: (No TOS-capability, Type 7/5 translation, DC, Upward)
  LS Type: AS External Link
  Link State ID: 192.168.20.0 (External Network Number )
  Advertising Router: 192.168.3.3
```

```
  LS Seq Number: 80000005
  Checksum: 0x872F
  Length: 36
  Network Mask: /24
    Metric Type: 1 (Comparable directly to link state metric)
    MTID: 0
    Metric: 20
    Forward Address: 192.168.3.3
    External Route Tag: 0

R2#sh ip route 192.168.20.0
Routing entry for 192.168.20.0/24
  Known via "ospf 1", distance 110, metric 31, type NSSA extern 1
  Last update from 10.143.31.230 on Ethernet0/0, 00:01:57 ago
  Routing Descriptor Blocks:
  * 10.143.31.230, from 192.168.3.3, 00:01:57 ago, via Ethernet0/0
      Route metric is 31, traffic share count is 1
```

Note:关于外部LSA的更多信息非零转发地址的参考的[与OSPF转发地址有关的常见路由问题]。