

在BGP中重分布OSPFv3路由配置示例

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简介

本文档提供了将开放最短路径优先第3版(OSPFv3)路由重分发到IPv6的多协议BGP的示例。OSPFv3在OSPF第2版上展开，以支持IPv6路由前缀和较大的IPv6地址。多协议 BGP 是一种增强型 BGP，可以为多个网络层协议地址系列（如 IPv6 地址系列）及 IP 多播路由传送路由信息。

先决条件

先决条件

尝试进行此配置之前，请确保满足以下要求：

- [OSPFv3的示例配置](#)
- [用于 IPv6 的多协议 BGP 配置示例](#)
- [重新分配路由协议](#)

硬件与软件版本

本文档不限于特定的软件和硬件版本。

本文档中的配置基于Cisco 3700系列路由器和Cisco IOS®^{软件}版本12.4(15)T1。

规则

有关文档规则的详细信息，请参阅 [Cisco 技术提示规则](#)。

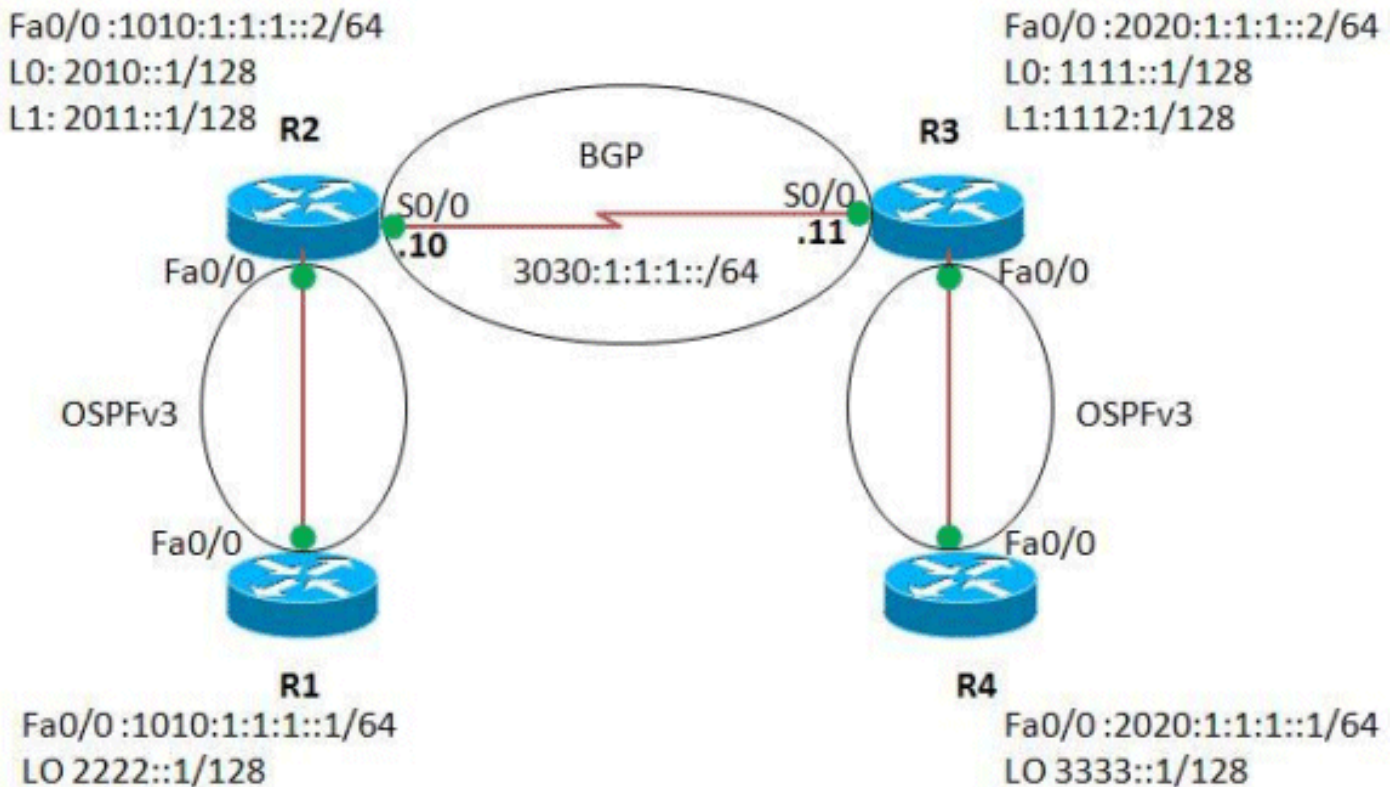
配置

在本例中，路由器R2和R3通过串行接口连接，并配置了多协议BGP。路由器R2和R3使用OSPFv3与本地路由器R1和R4通信。在路由器中创建环回地址以生成网络。同时运行BGP和OSPFv3的路由器R2和R3使用redistribute命令将OSPFv3路由重分发到BGP。所有路由器都配置了IPv6地址。

注意：使用[命令查找工具](#)(仅限注册客户)可查找有关本文档中使用的命令的详细信息。

网络图

本文档使用以下网络设置：



配置

本文档使用以下配置：

- [路由器 R1](#)
- [路由器 R2](#)
- [路由器 R3](#)
- [路由器R4](#)

路由器 R1

```
!  
version 12.4  
!
```

```

hostname R1
!
ip cef
!
ipv6 unicast-routing
!--- Enables the forwarding of IPv6 packets. ! interface
Loopback0 no ip address ipv6 address 2222::1/128 ipv6
ospf 1 area 0 !--- Enables OSPFv3 on the interface and
associates !--- the interface loopback0 to area 0. !
interface FastEthernet0/0 no ip address duplex auto
speed auto ipv6 address 1010:1:1:1::1/64 ipv6 ospf 1
area 0 !--- Associates the Interface Fa0/0 to area 0. !
ipv6 router ospf 1 router-id 1.1.1.1 !--- Router R1 uses
1.1.1.1 as router ID. log-adjacency-changes ! end

```

路由器 R2

```

!
version 12.4
!
hostname R2
!
ip cef
!
ipv6 unicast-routing
!
interface Loopback0
no ip address
ipv6 address 2010::1/128
ipv6 ospf 1 area 1
!
interface Loopback1
no ip address
ipv6 address 2011::1/128
ipv6 ospf 1 area 1
!
interface Loopback99
no ip address
ipv6 address 5050:55:55:55::55/128
!
interface FastEthernet0/0
no ip address
duplex auto
speed auto
ipv6 address 1010:1:1:1::2/64
ipv6 ospf 1 area 0
!
interface Serial0/0
no ip address
ipv6 address 3030:1:1:1::10/64
clock rate 2000000
!
router bgp 65000
bgp router-id 1.1.1.1
no bgp default ipv4-unicast
!--- Without configuring "no bgp default ipv4-unicast"
only !--- IPv4 will be advertised. bgp log-neighbor-
changes neighbor 3030:1:1:1::11 remote-as 65000 neighbor
3030:1:1:1::11 update-source Serial0/0 ! address-family
ipv6 neighbor 3030:1:1:1::11 activate network
5050:55:55:55::55/128 redistribute connected
redistribute ospf 1 match internal external 1 external 2
!--- This redistributes all OSPF routes into BGP. no

```

```
synchronization exit-address-family ! ipv6 router ospf 1
router-id 2.2.2.2 log-adjacency-changes ! end
```

路由器 R3

```
!
version 12.4
!
hostname R3
!
ip cef
!
ipv6 unicast-routing
!
interface Loopback0
  no ip address
  ipv6 address 1111::1/128
  ipv6 ospf 1 area 1
!
interface Loopback1
  no ip address
  ipv6 address 1112::1/128
  ipv6 ospf 1 area 1
!
interface Loopback99
  no ip address
  ipv6 address 6060:66:66:66::66/128
!
interface FastEthernet0/0
  no ip address
  duplex auto
  speed auto
  ipv6 address 2020:1:1:1::2/64
  ipv6 ospf 1 area 0
!
interface Serial0/0
  no ip address
  ipv6 address 3030:1:1:1::11/64
  clock rate 2000000
!
router bgp 65000
  bgp router-id 2.2.2.2
  no bgp default ipv4-unicast
  bgp log-neighbor-changes
  neighbor 3030:1:1:1::10 remote-as 65000
  neighbor 3030:1:1:1::10 update-source Serial0/0
!
  address-family ipv6
    neighbor 3030:1:1:1::10 activate
    network 6060:66:66:66::66/128
    redistribute connected
    redistribute ospf 1 match internal external 1 external
  2
  no synchronization
  exit-address-family
!
ipv6 router ospf 1
  router-id 3.3.3.3
  log-adjacency-changes
!
end
```

路由器 R4

```
!  
version 12.4  
!  
hostname R4  
!  
ip cef  
!  
ipv6 unicast-routing  
!  
interface Loopback0  
no ip address  
ipv6 address 3333::1/128  
ipv6 ospf 1 area 0  
!  
interface FastEthernet0/0  
no ip address  
duplex auto  
speed auto  
ipv6 address 2020:1:1:1::1/64  
ipv6 ospf 1 area 0  
!  
ipv6 router ospf 1  
router-id 5.5.5.5  
log-adjacency-changes  
!  
end
```

验证

使用本部分可确认配置能否正常运行。

[命令输出解释程序 \(仅限注册用户 \) \(OIT\) 支持某些 show 命令。](#) 使用 OIT 可查看对 show 命令输出的分析。

以下show命令用于检验配置：

- [show ipv6 route ospf](#)
- [show ipv6 route bgp](#)

检验OSPFv3配置

要检验OSPFv3是否配置正确，请在路由器R1和R4中使用show ipv6 route ospf命令。

show ipv6 route ospf

在路由器 R1 中

```
R1#show ipv6 route ospf  
IPv6 Routing Table - 6 entries  
Codes: C - Connected, L - Local, S - Static, R - RIP, B  
- BGP  
        U - Per-user Static route, M - MIPv6  
        I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea,  
IS - ISIS summary  
        O - OSPF intra, OI - OSPF inter, OE1 - OSPF ext  
1, OE2 - OSPF ext 2  
        ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2
```

```

D - EIGRP, EX - EIGRP external
OI 2010::1/128 [110/10]
  via FE80::C001:16FF:FEDC:0, FastEthernet0/0
OI 2011::1/128 [110/10]
  via FE80::C001:16FF:FEDC:0, FastEthernet0/0

在路由器R4中

R4#show ipv6 route ospf
IPv6 Routing Table - 6 entries
Codes: C - Connected, L - Local, S - Static, R - RIP, B
- BGP
      U - Per-user Static route, M - MIPv6
      I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea,
IS - ISIS summary
      O - OSPF intra, OI - OSPF inter, OE1 - OSPF ext
1, OE2 - OSPF ext 2
      ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2
      D - EIGRP, EX - EIGRP external
OI 1111::1/128 [110/10]
  via FE80::C002:16FF:FEDC:0, FastEthernet0/0
OI 1112::1/128 [110/10]
  via FE80::C002:16FF:FEDC:0, FastEthernet0/0

```

检验BGP配置

要验证OSPFv3路由是否重分发到BGP，请在路由器R2和R3中使用[show ipv6 route bgp](#)命令。

```

show ipv6 route bgp

在路由器 R2 中
R2#show ipv6 route bgp
IPv6 Routing Table - 14 entries
Codes: C - Connected, L - Local, S - Static, R - RIP, B
- BGP
      U - Per-user Static route, M - MIPv6
      I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea,
IS - ISIS summary
      O - OSPF intra, OI - OSPF inter, OE1 - OSPF ext
1, OE2 - OSPF ext 2
      ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2
      D - EIGRP, EX - EIGRP external
B 1111::1/128 [200/0]
  via 3030:1:1:1::11
B 1112::1/128 [200/0]
  via 3030:1:1:1::11
B 2020:1:1:1::/64 [200/0]
  via 3030:1:1:1::11
B 3333::1/128 [200/10]
  via 3030:1:1:1::11
!--- The above routes are OSPFv3 routes !--- that are
redistributed in to BGP. B 6060:66:66:66::66/128 [200/0]
via 3030:1:1:1::11

在路由器 R3 中
R3#show ipv6 route bgp
IPv6 Routing Table - 14 entries
Codes: C - Connected, L - Local, S - Static, R - RIP, B
- BGP
      U - Per-user Static route, M - MIPv6
      I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea,
IS - ISIS summary

```

```
O - OSPF intra, OI - OSPF inter, OE1 - OSPF ext
1, OE2 - OSPF ext 2
ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2
D - EIGRP, EX - EIGRP external
B 1010:1:1:1::/64 [200/0]
   via 3030:1:1:1::10
B 2010::1/128 [200/0]
   via 3030:1:1:1::10
B 2011::1/128 [200/0]
   via 3030:1:1:1::10
B 2222::1/128 [200/10]
   via 3030:1:1:1::10
!--- The above routes are OSPFv3 routes !--- that are
redistributed in to BGP. B 5050:55:55:55::55/128 [200/0]
via 3030:1:1:1::10
```

[相关信息](#)

- [IPv6 支持页面](#)
- [OSPF 支持页](#)
- [BGP 支持页](#)
- [技术支持和文档 - Cisco Systems](#)