

IPv6 BGP路由反射器配置示例

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簡介

本檔案將提供使用IPv6的範例組態，以協助您瞭解邊界閘道通訊協定(BGP)中的路由反射器(RR)功能。預設情況下，從iBGP對等體接收的路由不會傳送到另一個iBGP對等體，除非AS內的所有BGP路由器之間形成全網狀配置。這會導致可擴充性問題。使用BGP路由反射器可獲得更高級別的可擴充性。

配置路由反射器允許路由器向其他iBGP揚聲器通告或反射iBGP獲知的路由。當使用[neighbor route-reflector-client](#)命令配置路由器時，路由器稱為路由反射器，命令點所在的鄰居是該RR的客戶端。

必要條件

需求

嘗試此組態之前，請確保符合以下要求：

- 瞭解BGP路由協定及其操作
- 瞭解IPv6編址方案

採用元件

本文件所述內容不限於特定軟體和硬體版本。

本檔案中的組態是根據搭載Cisco IOS[®]軟體版本12.4(15)T1的Cisco 3700系列路由器。

慣例

如需文件慣例的詳細資訊，請參閱[思科技術提示慣例](#)。

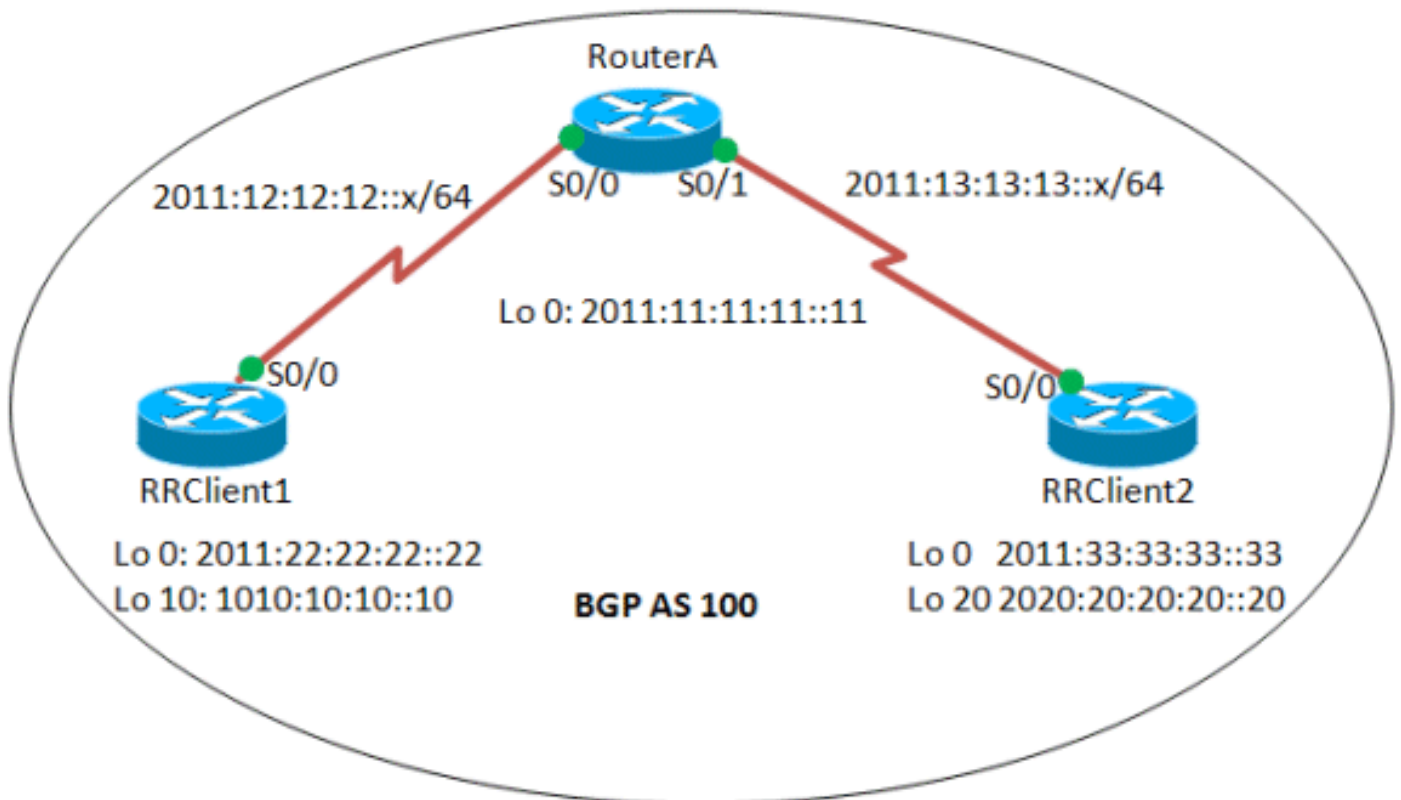
設定

在本範例中，路由器A設定為RR，而路由器RRClient1和RRClient2是路由器A的客戶端。所有路由器都配置為AS 100，但路由器沒有全網狀配置。相反，它使用BGP RR功能來彼此通訊。

註：使用[Command Lookup Tool](#)(僅限註冊客戶)可以查詢有關本文檔中使用的命令的詳細資訊。

網路圖表

本檔案會使用以下網路設定：



配置示例

本檔案會使用以下設定：

- [路由器A](#)
- [RRClient1](#)
- [RRClient2](#)

路由器A

```
hostname Router-A
!
ip cef
!
ipv6 unicast-routing
!
interface Loopback0
 no ip address
 ipv6 address 2011:11:11:11::11/128
```

```

ipv6 ospf 10 area 0
!
interface Serial0/0
no ip address
ipv6 address 2011:12:12:12::1/64
ipv6 ospf 10 area 0
clock rate 2000000
!
interface Serial0/1
no ip address
ipv6 address 2011:13:13:13::1/64
ipv6 ospf 10 area 0
clock rate 2000000
!
router bgp 100
bgp router-id 1.1.1.1
no bgp default ipv4-unicast
bgp log-neighbor-changes
neighbor 2011:22:22:22::22 remote-as 100
neighbor 2011:22:22:22::22 update-source Loopback0
neighbor 2011:33:33:33::33 remote-as 100
neighbor 2011:33:33:33::33 update-source Loopback0
!
address-family ipv6
neighbor 2011:22:22:22::22 activate
neighbor 2011:22:22:22::22 route-reflector-client
!--- Configures the router RRClient1 as route reflector
client! neighbor 2011:33:33:33::33 activate neighbor
2011:33:33:33::33 route-reflector-client !--- Configures
the router RRClient2 as route reflector client! exit-
address-family ! ip forward-protocol nd ! ipv6 router
ospf 10 router-id 1.1.1.1 !--- Router ID of the route
reflector router A! log-adjacency-changes ! end

```

RRClient1

```

hostname RR-Client1
!
ip cef
!
ipv6 unicast-routing
!
interface Loopback0
no ip address
ipv6 address 2011:22:22:22::22/128
ipv6 ospf 10 area 0
!
interface Loopback10
no ip address
ipv6 address 1010:10:10:10::10/128
!
interface Serial0/0
no ip address
ipv6 address 2011:12:12:12::2/64
ipv6 ospf 10 area 0
clock rate 2000000
!
router bgp 100
bgp router-id 2.2.2.2
!--- Router ID of the RRClient1 no bgp default ipv4-
unicast bgp log-neighbor-changes neighbor
2011:11:11:11::11 remote-as 100 neighbor
2011:11:11:11::11 update-source Loopback0 ! address-

```

```
family ipv6 neighbor 2011:11:11:11::11 activate network
1010:10:10:10::10/128 exit-address-family ! ! ip
forward-protocol nd ! ipv6 router ospf 10 router-id
2.2.2.2 log-adjacency-changes ! ! end
```

RRClient2

```
hostname RR-Client2
!
ip cef
!
no ip domain lookup
ipv6 unicast-routing
!
!
interface Loopback0
  no ip address
  ipv6 address 2011:33:33:33::33/128
  ipv6 ospf 10 area 0
!
interface Loopback20
  no ip address
  ipv6 address 2020:20:20:20::20/128
!
interface Serial0/0
  no ip address
  ipv6 address 2011:13:13:13::2/64
  ipv6 ospf 10 area 0
  clock rate 2000000
!
router bgp 100
  bgp router-id 3.3.3.3
  !--- Router ID of the RRClient2 no bgp default ipv4-
unicast bgp log-neighbor-changes neighbor
2011:11:11:11::11 remote-as 100 neighbor
2011:11:11:11::11 update-source Loopback0 ! address-
family ipv6 neighbor 2011:11:11:11::11 activate network
2020:20:20:20::20/128 exit-address-family ! ip forward-
protocol nd ! ipv6 router ospf 10 router-id 3.3.3.3 log-
adjacency-changes ! end
```

驗證

使用本節內容，確認您的組態是否正常運作。

[輸出直譯器工具](#)(僅供已註冊客戶使用)(OIT)支援某些show命令。使用OIT檢視show命令輸出的分析

。

以下show命令用於驗證設定：

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

在RR客戶端中：

```
show ipv6 route bgp
```

在RRClient1中

```
RRClient1#sh ipv6 route bgp
```

```

IPv6 Routing Table - 9 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 2020:20:20:20::20/128 [200/0]
via 2011:33:33:33::33
!--- The iBGP route from RRClient2 is reflected
RRClient1#ping 2011:33:33:33::33
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2011:33:33:33::33,
timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip
min/avg/max = 16/24/32 ms
!--- Ping to the RRClient2 from RRClient1 is successful
在RRClient2中

RRClient2#sh ipv6 route bgp
IPv6 Routing Table - 9 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 1010:10:10:10::10/128 [200/0]
via 2011:22:22:22::22
!--- The iBGP route from RRClient1 is reflected
RRClient2#ping 1010:10:10:10::10
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 1010:10:10:10::10,
timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip
min/avg/max = 40/50/76 ms
!--- Ping to the RRClient1 from RRClient2 is successful

```

在路由器A中：

```

show bgp ipv6 unicast IPv6 prefix

RouterA#sh bgp ipv6 unicast 1010:10:10:10::10/128
BGP routing table entry for 1010:10:10:10::10/128,
version 3
Paths: (1 available, best #1, table Global-IPv6-Table)
  Advertised to update-groups:
    1
Local, (Received from a RR-client)
!--- Indicates that the route was received from a route-
reflector client router RRClient1 2011:22:22:22::22
(metric 64) from 2011:22:22:22::22 (2.2.2.2) Origin IGP,

```

```
metric 0, localpref 100, valid, internal, best

RouterA#show bgp ipv6 unicast 2020:20:20:20::20/128
BGP routing table entry for 2020:20:20:20::20/128,
version 2
Paths: (1 available, best #1, table Global-IPv6-Table)
  Advertised to update-groups:
    1
  Local, (Received from a RR-client)
  !--- Indicates that the route was received from a route-
  reflector client router RRClient2 2011:33:33:33::33
  (metric 64) from 2011:33:33:33::33 (3.3.3.3) Origin IGP,
  metric 0, localpref 100, valid, internal, best
```

在RR客戶端中：

每當iBGP路由被反射（即傳播到另一個iBGP對等體）時，實現路由反射器的路由器（在本例中是路由器A）會附加2個非傳遞屬性：

- **建立者ID**:這是非傳遞的可選BGP屬性。反射的iBGP路由將具有從其接收該路由的iBGP對等體的路由器ID作為其**發起者ID**。在我們的示例中，從RRClient 2發出的路由2020:20:20::20/128由路由器A(RR)反射到RRClient1。因此，此路由將具有RRClient2的路由器ID(路由器ID:3.3.3.3)作為建立者ID。
- **Cluster-ID**:這是非傳遞的可選BGP屬性。如果未配置cluster-id值，則反映的iBGP路由將將RR的路由器ID作為**Cluster-ID**。在我們的示例中，路由2020:20:20:20::20/128沒有配置集群ID，因此沒有配置路由器ID(路由器ID :路由器A(RR)的1.1.1)將是Cluster-ID。

```
show bgp ipv6 unicast ipv6-prefix

在RRClient1中

show bgp ipv6 unicast 2020:20:20:20::20/128
BGP routing table entry for 2020:20:20:20::20/128,
version 3
Paths: (1 available, best #1, table Global-IPv6-Table)
  Not advertised to any peer
  Local
    2011:33:33:33::33 (metric 128) from
2011:11:11:11::11 (1.1.1.1)
    Origin IGP, metric 0, localpref 100, valid,
internal, best
    Originator: 3.3.3.3, Cluster list: 1.1.1.1
  !--- Originator ID 3.3.3.3 is the router id of the
  RRClient2 from which the route is received! !---
  Similarly, Cluster ID 1.1.1.1 is the router ID of the
  router reflector Router A!

在RRClient2中

show bgp ipv6 unicast 1010:10:10:10::10/128
BGP routing table entry for 1010:10:10:10::10/128,
version 3
Paths: (1 available, best #1, table Global-IPv6-Table)
  Not advertised to any peer
  Local
    2011:22:22:22::22 (metric 128) from
2011:11:11:11::11 (1.1.1.1)
    Origin IGP, metric 0, localpref 100, valid,
internal, best
    Originator: 2.2.2.2, Cluster list: 1.1.1.1
  !--- Originator ID 2.2.2.2 is the router ID of the
```

RRClient1 from which the route is received! !---
Similarly, Cluster ID 1.1.1.1 is the router ID of the
router reflector Router A!

相關資訊

- [BGP 支援頁面](#)
- [IP第6版支援頁面](#)
- [BGP 個案研究](#)
- [技術支援與文件 - Cisco Systems](#)