

MP-EBGP配置示例

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简介

本文档介绍如何在Cisco IOS路由器中配置多协议扩展边界网关协议(MP-EBGP)。MP-BGP是一种扩展BGP，允许BGP为多个网络层协议IPv6、VPNv4等传输路由信息。MP-BGP允许您使用不同于组播路由拓扑的单播路由拓扑，这有助于控制网络和资源。

先决条件

要求

本文档没有任何特定的要求。

使用的组件

本文档不限于特定的软件和硬件版本。

本文档中的配置基于运行Cisco IOS®软件版本12.4(15)T 13的Cisco 3700系列路由器。

规则

有关文档规则的详细信息，请参阅 [Cisco 技术提示规则](#)。

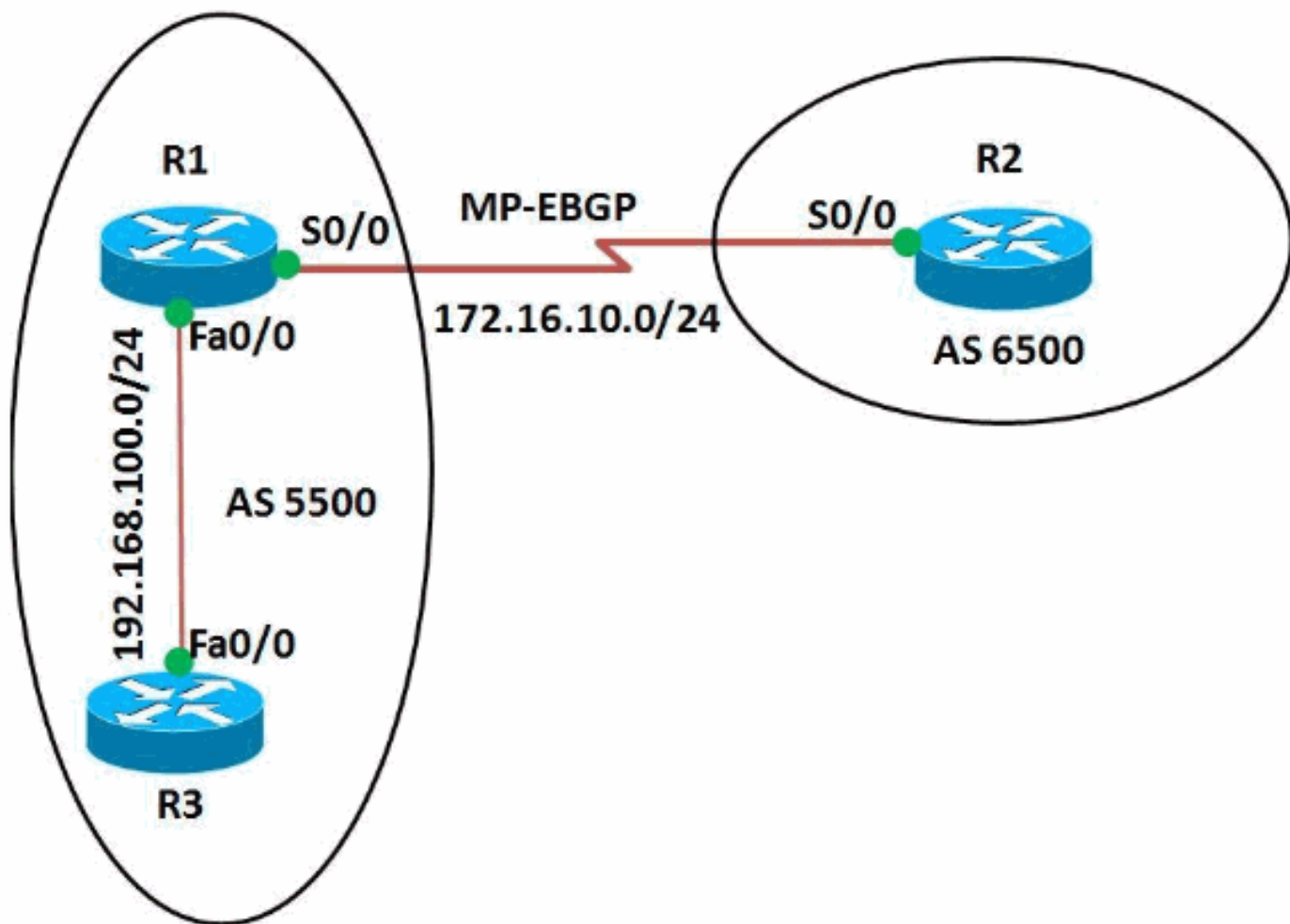
配置

在本例中，R1和R3路由器配置为位于AS 5500中，形成iBGP。R2路由器配置为AS 6500。R1和R2路由器使用MP-EBGP相互通信。所有路由器都配置了环回地址。

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R1上的配置

```
R1#show run
Building configuration...
!
version 12.4
!
hostname R1
!
ip cef
!
!
```

```

interface Loopback0
 ip address 10.10.10.10 255.255.255.0
!
interface FastEthernet0/0
 ip address 192.168.100.10 255.255.255.0
 duplex auto
 speed auto
!
interface Serial0/0
 ip address 172.16.10.1 255.255.255.0
 mpls ip
 clock rate 2000000
!
router bgp 5500
 no synchronization
 bgp router-id 10.10.10.10
 bgp log-neighbor-changes
 network 192.168.100.0
 redistribute connected
 neighbor 172.16.10.2 remote-as 6500
 neighbor 172.16.10.2 soft-reconfiguration inbound
 neighbor 192.168.100.11 remote-as 5500
 no auto-summary
!
 address-family vpnv4
  neighbor 172.16.10.2 activate
  neighbor 172.16.10.2 send-community both
 !--- Sends the community attribute to a BGP neighbor.
 exit-address-family !! end

```

路由器R2上的配置

```

R2#show run
Building configuration...
!
version 12.4
!
hostname R2
!
ip cef
!
ip vrf WAN
 rd 2020:1
 route-target export 2020:1
 route-target import 2020:1
!
!
interface Loopback0
 ip vrf forwarding WAN
 !--- Associates a VRF instance with an interface or
 subinterface. ip address 20.20.20.20 255.255.255.255 !
interface Serial0/0 ip vrf forwarding WAN ip address
172.16.10.2 255.255.255.0 mpls ip clock rate 2000000 !
router bgp 6500 no synchronization bgp router-id
20.20.20.20 bgp log-neighbor-changes neighbor
172.16.10.1 remote-as 5500 no auto-summary !! address-
family vpnv4 neighbor 172.16.10.1 activate neighbor
172.16.10.1 send-community both exit-address-family !
address-family ipv4 vrf WAN redistribute connected
redistribute static neighbor 172.16.10.1 remote-as 5500
neighbor 172.16.10.1 activate no synchronization exit-
address-family !!! end

```

路由器R3上的配置

```
R3#show run
Building configuration...
!
version 12.4
!
hostname R3
!
ip cef
!
!
!
interface Loopback0
 ip address 11.11.11.11 255.255.255.255
!
interface FastEthernet0/0
 ip address 192.168.100.11 255.255.255.0
 duplex auto
 speed auto
!
router bgp 5500
 no synchronization
 bgp router-id 11.11.11.11
 bgp log-neighbor-changes
 neighbor 192.168.100.10 remote-as 5500
 no auto-summary
!
end
```

验证

要显示(BGP)路由表中的条目，请使用[show ip bgp](#)命令。

show ip bgp

在路由器 R1 中

```
R1#show ip bgp 172.16.10.2
BGP routing table entry for 172.16.10.2/32, version 14
Paths: (1 available, best #1, table Default-IP-Routing-Table)
  Advertised to update-groups:
    1 2
  Local
    0.0.0.0 from 0.0.0.0 (10.10.10.10)
      Origin incomplete, metric 0, localpref 100, weight
32768, valid, sourced, best
!--- Displays the routing table entries for the host
172.16.10.2 R1#sh ip bgp 192.168.100.11 BGP routing
table entry for 192.168.100.0/24, version 4 Paths: (1
available, best #1, table Default-IP-Routing-Table)
Advertised to update-groups: 1 2 Local 0.0.0.0 from
0.0.0.0 (10.10.10.10) Origin IGP, metric 0, localpref
100, weight 32768, valid, sourced, local, best !---
Displays the entries for the host 192.168.100.11
```

在路由器 R3 中

```
R3#sh ip bgp 192.168.100.10
BGP routing table entry for 192.168.100.0/24, version 4
Paths: (1 available, best #1, table Default-IP-Routing-Table, RIB-failure(17))
  Not advertised to any peer
  Local
```

```
192.168.100.10 from 192.168.100.10 (10.10.10.10)
Origin IGP, metric 0, localpref 100, valid,
internal, best
!--- Displays the entries for the host 192.168.100.10
```

在路由器R2中，使用[show ip bgp vpnv4](#)命令显示(BGP)表中的(VPNv4)地址信息。

show ip bgp vpnv4

在路由器 R2 中

```
R2#sh ip bgp vpnv4 vrf WAN
BGP table version is 24, local router ID is 20.20.20.20
Status codes: s suppressed, d damped, h history, *
valid, > best, I - internal,
                r RIB-failure, S Stale
Origin codes: I - IGP, e - EGP, ? - incomplete

   Network          Next Hop          Metric LocPrf
Weight Path
Route Distinguisher: 2020:1 (default for vrf WAN)
*> 10.10.10.0/24    172.16.10.1          0
0 5500 ?
*> 20.20.20.20/32  0.0.0.0              0
32768 ?
* 172.16.10.0/24   172.16.10.1          0
0 5500 ?
*>                  0.0.0.0              0
32768 ?
r> 172.16.10.2/32  172.16.10.1          0
0 5500 ?
*> 192.168.100.0   172.16.10.1          0
0 5500 I
!--- Displays prefixes associated with the (VRF)
instance WAN.

R2#show ip bgp vpnv4 vrf WAN 172.16.10.1
BGP routing table entry for 2020:1:172.16.10.0/24,
version 7
Paths: (2 available, best #2, table WAN)
  Advertised to update-groups:
    1
  5500
    172.16.10.1 from 172.16.10.1 (10.10.10.10)
      Origin incomplete, metric 0, localpref 100, valid,
      external
      Extended Community: RT:2020:1
      mpls labels in/out 18/nolabel
  Local
    0.0.0.0 from 0.0.0.0 (20.20.20.20)
      Origin incomplete, metric 0, localpref 100, weight
      32768, valid, sourced, best
      Extended Community: RT:2020:1
      mpls labels in/out 18/aggregate(WAN)
!--- Displays prefixes associated with neighbor
172.16.10.1
```

在R1和R2路由器之间建立MP-EBGP。使用ping命令检验从R1到R2的可达性，反之亦然。

ping

在路由器 R1 中

```
R1#ping 172.16.10.2
```

```
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.10.2, timeout
is 2 seconds:
!!!!!!
Success rate is 100 percent (5/5), round-trip
min/avg/max = 12/64/208 ms

R1#ping 192.168.100.11

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.100.11,
timeout is 2 seconds:
!!!!!!
Success rate is 100 percent (5/5), round-trip
min/avg/max = 12/41/96 ms
!--- Router R1 can successfully ping the routers R2 and
R3.
在路由器 R2 中
R2#ping vrf WAN 172.16.10.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.10.1, timeout
is 2 seconds:
!!!!!!
Success rate is 100 percent (5/5), round-trip
min/avg/max = 4/32/96 ms

R2#ping vrf WAN 192.168.100.11

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.100.11,
timeout is 2 seconds:
!!!!!!
Success rate is 100 percent (5/5), round-trip
min/avg/max = 32/73/204 ms

!--- Router R2 can successfully reach router R1 and R3.
```

相关信息

- [边界网关协议 \(BGP\)](#)
- [IP 多播命令的多协议 BGP 扩展](#)
- [技术支持和文档 - Cisco Systems](#)