

了解安全防火墙SD-WAN部署中的路由控制并对其进行故障排除

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简介

本文档介绍在安全防火墙上使用思科SD-WAN的基于路由的VPN在BGP中的路由控制。

先决条件

要求

Cisco 建议您了解以下主题：

- IKEv2
- 基于路由的VPN
- 虚拟隧道接口(VTI)
- IPsec
- 调试输出中显示“BGP
- BGP属性，如社区标签和路由反射器

- 安全防火墙上的SD-WAN功能

使用的组件

本文档中的信息基于：

- 思科安全防火墙威胁防御7.7.10
- 思科安全防火墙管理中心7.7.10

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。如果您的网络处于活动状态，请确保您了解所有命令的潜在影响。

功能信息

随着针对站点到站点、基于路由的VPN的新SD-WAN部署为重叠启用BGP，思科专注于关键BGP属性，以实施无环和安全重叠路由，从而确保底层网络和重叠网络在整个拓扑中保持分离。此部署还确保无需手动干预即可调整相关属性。

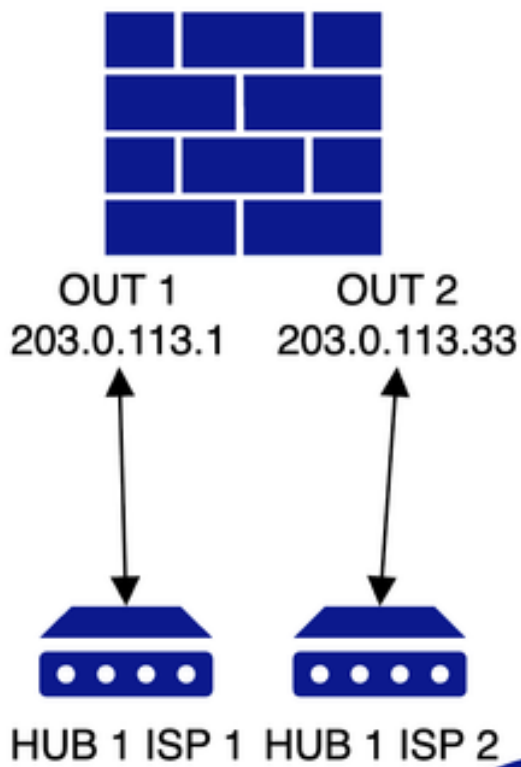
部署方案

选择在中心点和分支点之间同时包含iBGP和eBGP连接的拓扑。此方法可最大程度地查看作为SD-WAN解决方案一部分在思科安全防火墙上实施的路由控制。

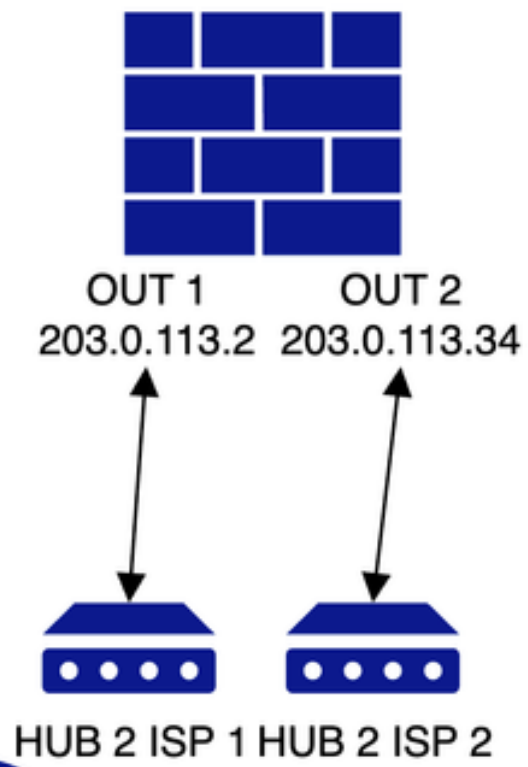
双ISP的双中心辐射型

底层拓扑

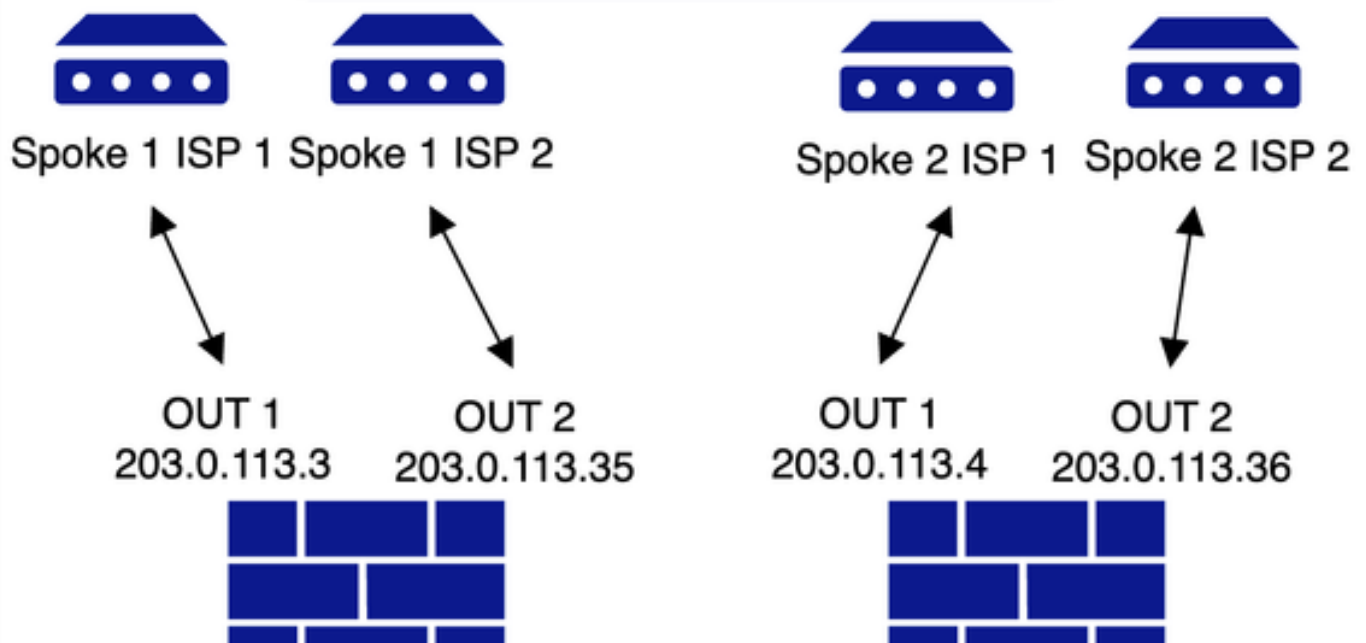
AS65500



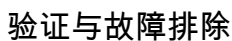
AS65510



Internet



CLI部分中的所有配置均通过SD-WAN配置向导进行应用。不会单独对BGP配置或任何路由映射配置进行更改或修改。



所有设备的通用配置

<#root>

```
firepower# show running-config community-list
```

```
community-list standard FMC_VPN_COMMUNITY_101010 permit 101010
```

<<<<<<<<

```
community-list standard FMC_VPN_COMMUNITY_202020 permit 202020
```

<<<<<<<<<<<

请注意，每个拓扑有一对入站和出站路由映射，尽管两个拓扑的配置相同，但每个拓扑的命名约定是唯一的。在我们的方案中，FMC_VPN_RMAP_COMMUNITY_IN_858939614和FMC_VPN_RMAP_COMMUNITY_OUT_858939614用于拓扑1，而FMC_VPN_RMAP_COMMUNITY_IN_85894200和FMC_VPN_Rmap_COMMUNITY_OUT_858942200用于拓扑2。

<#root>

firepower# show running-config route-map

Topology 1

Inbound

route-map

FMC_VPN_RMAP_COMMUNITY_IN_8589939614

permit 10
match community FMC_VPN_COMMUNITY_101010 exact-match

set community 202020

route-map

FMC_VPN_RMAP_COMMUNITY_IN_8589939614

permit 20
match community FMC_VPN_COMMUNITY_202020 exact-match

Outbound

route-map

FMC_VPN_RMAP_COMMUNITY_OUT_8589939614

permit 10
match community FMC_VPN_COMMUNITY_101010 exact-match
set metric 1

route-map

FMC_VPN_RMAP_COMMUNITY_OUT_8589939614

permit 20
match community FMC_VPN_COMMUNITY_202020 exact-match
set metric 100

route-map

FMC_VPN_RMAP_COMMUNITY_OUT_8589939614

deny 100

Topology 2

Inbound

route-map

FMC_VPN_RMAP_COMMUNITY_IN_8589942200

permit 10
match community FMC_VPN_COMMUNITY_101010 exact-match

set community 202020

route-map

FMC_VPN_RMAP_COMMUNITY_IN_8589942200

permit 20
match community FMC_VPN_COMMUNITY_202020 exact-match

Outbound

route-map

FMC_VPN_RMAP_COMMUNITY_OUT_8589942200

```
permit 10
match community FMC_VPN_COMMUNITY_101010 exact-match
set metric 1
```

route-map

FMC_VPN_RMAP_COMMUNITY_OUT_8589942200

```
permit 20
match community FMC_VPN_COMMUNITY_202020 exact-match
set metric 100
```

route-map

FMC_VPN_RMAP_COMMUNITY_OUT_8589942200

```
deny 100
```

Common Across All The Hubs & Spokes Wherever Redistribution Of Inside Network Is Present

route-map

FMC_VPN_CONNECTED_DIST_RMAP_101010

```
permit 10
match interface inside
set community 101010
```

拓扑中设备间的BGP配置如下所示：

Spoke1和2 (使用HUB1的IBGP和使用HUB2的EBGP)

<#root>

firepower# show running-config router bgp

```
router bgp 65500
bgp log-neighbor-changes
address-family ipv4 unicast
neighbor 198.51.100.1 remote-as 65500
```

<<<< tunnel from spokes to HUB 1 via ISP1

```
neighbor 198.51.100.1 activate
neighbor 198.51.100.1 send-community
neighbor 198.51.100.1 route-map FMC_VPN_RMAP_COMMUNITY_IN_8589939614 in
neighbor 198.51.100.1 route-map FMC_VPN_RMAP_COMMUNITY_OUT_8589939614 out
neighbor 198.51.100.2 remote-as 65510
```

<<<< tunnel from spokes to HUB 2 via ISP1

```
neighbor 198.51.100.2 ebgp-multihop 2
neighbor 198.51.100.2 activate
```

```
neighbor 198.51.100.2 send-community
neighbor 198.51.100.2 route-map FMC_VPN_RMAP_COMMUNITY_IN_8589939614 in
neighbor 198.51.100.2 route-map FMC_VPN_RMAP_COMMUNITY_OUT_8589939614 out
neighbor 198.51.100.3 remote-as 65500
```

<<<< tunnel from spokes to HUB 1 via ISP2

```
neighbor 198.51.100.3 activate
neighbor 198.51.100.3 send-community
neighbor 198.51.100.3 route-map FMC_VPN_RMAP_COMMUNITY_IN_8589942200 in
neighbor 198.51.100.3 route-map FMC_VPN_RMAP_COMMUNITY_OUT_8589942200 out
neighbor 198.51.100.4 remote-as 65510
```

<<<< tunnel from spokes to HUB 2 via ISP2

```
neighbor 198.51.100.4 ebgp-multihop 2
neighbor 198.51.100.4 activate
neighbor 198.51.100.4 send-community
neighbor 198.51.100.4 route-map FMC_VPN_RMAP_COMMUNITY_IN_8589942200 in
neighbor 198.51.100.4 route-map FMC_VPN_RMAP_COMMUNITY_OUT_8589942200 out
redistribute connected route-map FMC_VPN_CONNECTED_DIST_RMAP_101010
```

<<<<< route-map to redistribute inside network into BGP

```
maximum-paths 8
maximum-paths ibgp 8
no auto-summary
no synchronization
exit-address-family
```

HUB1 (与辐射点的IBGP对等)

<#root>

firepower# show running-config router bgp

```
router bgp 65500
bgp log-neighbor-changes
address-family ipv4 unicast
neighbor 198.51.100.10 remote-as 65500
```

<<<< tunnel from HUB 1 to Spoke 1 via ISP 1

```
neighbor 198.51.100.10 activate
neighbor 198.51.100.10 send-community
neighbor 198.51.100.10 route-reflector-client
neighbor 198.51.100.10 next-hop-self
neighbor 198.51.100.10 route-map FMC_VPN_RMAP_COMMUNITY_IN_8589939614 in
neighbor 198.51.100.10 route-map FMC_VPN_RMAP_COMMUNITY_OUT_8589939614 out
neighbor 198.51.100.11 remote-as 65500
```

<<<< tunnel from HUB 1 to Spoke 2 via ISP 1

```
neighbor 198.51.100.11 activate
neighbor 198.51.100.11 send-community
```

```
neighbor 198.51.100.11 route-reflector-client
neighbor 198.51.100.11 next-hop-self
neighbor 198.51.100.11 route-map FMC_VPN_RMAP_COMMUNITY_IN_8589939614 in
neighbor 198.51.100.11 route-map FMC_VPN_RMAP_COMMUNITY_OUT_8589939614 out
neighbor 198.51.100.70 remote-as 65500
```

<<<< tunnel from HUB 1 to Spoke 1 via ISP 2

```
neighbor 198.51.100.70 activate
neighbor 198.51.100.70 send-community
neighbor 198.51.100.70 route-reflector-client
neighbor 198.51.100.70 next-hop-self
neighbor 198.51.100.70 route-map FMC_VPN_RMAP_COMMUNITY_IN_8589942200 in
neighbor 198.51.100.70 route-map FMC_VPN_RMAP_COMMUNITY_OUT_8589942200 out
neighbor 198.51.100.71 remote-as 65500
```

<<<< tunnel from HUB 1 to Spoke 2 via ISP 2

```
neighbor 198.51.100.71 activate
neighbor 198.51.100.71 send-community
neighbor 198.51.100.71 route-reflector-client
neighbor 198.51.100.71 next-hop-self
neighbor 198.51.100.71 route-map FMC_VPN_RMAP_COMMUNITY_IN_8589942200 in
neighbor 198.51.100.71 route-map FMC_VPN_RMAP_COMMUNITY_OUT_8589942200 out
no auto-summary
no synchronization
exit-address-family
```

HUB2 (与辐条的EBGP对等)

<#root>

firepower# show running-config router bgp

```
router bgp 65510
bgp log-neighbor-changes
address-family ipv4 unicast
neighbor 198.51.100.40 remote-as 65500
```

<<<< tunnel from HUB 2 to Spoke 1 via ISP 1

```
neighbor 198.51.100.40 ebgp-multihop 2
neighbor 198.51.100.40 activate
neighbor 198.51.100.40 send-community
neighbor 198.51.100.40 next-hop-self
neighbor 198.51.100.40 as-override
neighbor 198.51.100.40 route-map FMC_VPN_RMAP_COMMUNITY_IN_8589939614 in
neighbor 198.51.100.40 route-map FMC_VPN_RMAP_COMMUNITY_OUT_8589939614 out
neighbor 198.51.100.41 remote-as 65500
```

<<<< tunnel from HUB 2 to Spoke 2 via ISP 1

```
neighbor 198.51.100.41 ebgp-multihop 2
neighbor 198.51.100.41 activate
neighbor 198.51.100.41 send-community
```

```
neighbor 198.51.100.41 next-hop-self
neighbor 198.51.100.41 as-override
neighbor 198.51.100.41 route-map FMC_VPN_RMAP_COMMUNITY_IN_8589939614 in
neighbor 198.51.100.41 route-map FMC_VPN_RMAP_COMMUNITY_OUT_8589939614 out
neighbor 198.51.100.100 remote-as 65500
```

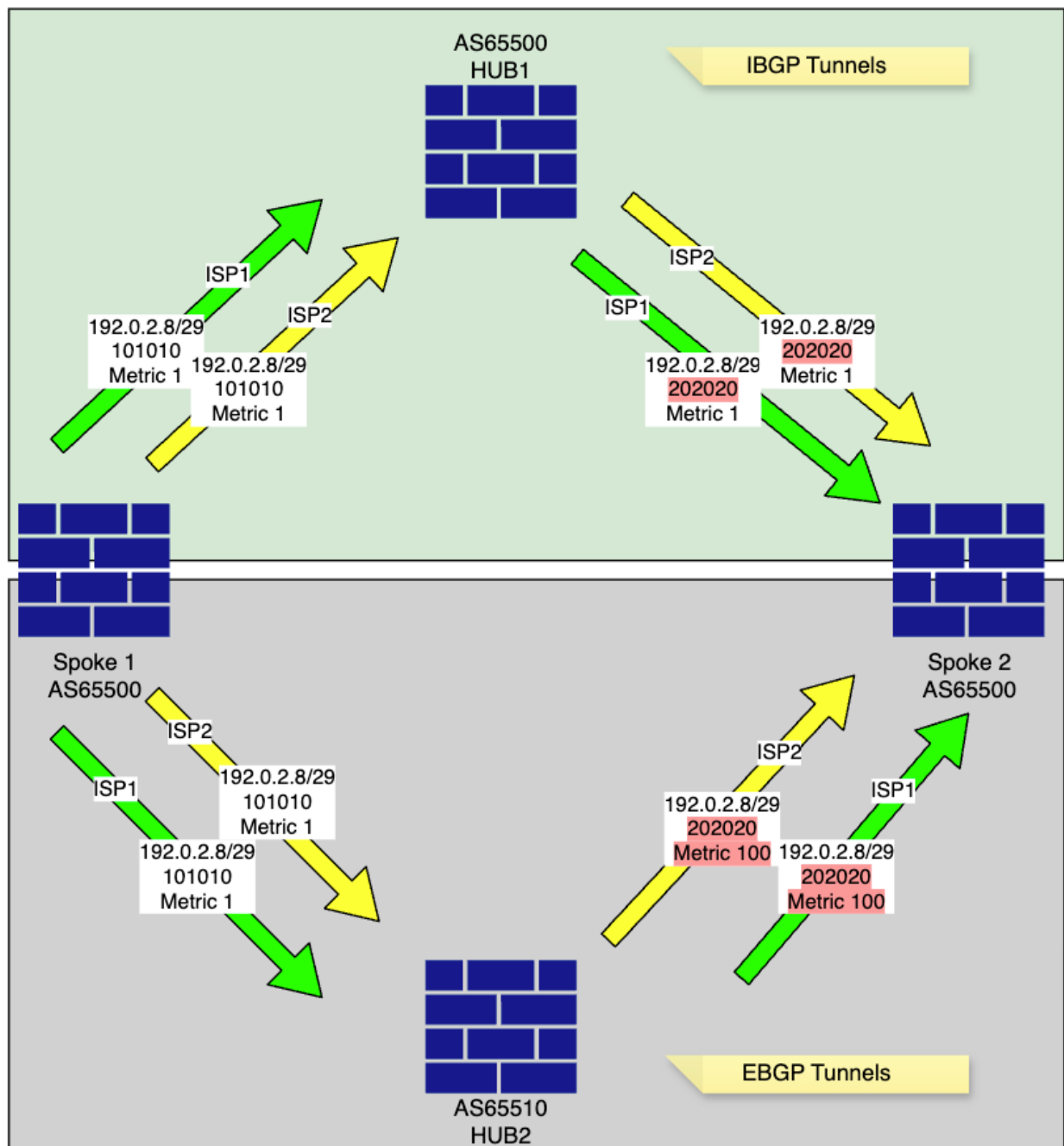
<<<< tunnel from HUB 2 to Spoke 1 via ISP 2

```
neighbor 198.51.100.100 ebgp-multihop 2
neighbor 198.51.100.100 activate
neighbor 198.51.100.100 send-community
neighbor 198.51.100.100 next-hop-self
neighbor 198.51.100.100 as-override
neighbor 198.51.100.100 route-map FMC_VPN_RMAP_COMMUNITY_IN_8589942200 in
neighbor 198.51.100.100 route-map FMC_VPN_RMAP_COMMUNITY_OUT_8589942200 out
neighbor 198.51.100.101 remote-as 65500
```

<<<< tunnel from HUB 2 to Spoke 2 via ISP 2

```
neighbor 198.51.100.101 ebgp-multihop 2
neighbor 198.51.100.101 activate
neighbor 198.51.100.101 send-community
neighbor 198.51.100.101 next-hop-self
neighbor 198.51.100.101 as-override
neighbor 198.51.100.101 route-map FMC_VPN_RMAP_COMMUNITY_IN_8589942200 in
neighbor 198.51.100.101 route-map FMC_VPN_RMAP_COMMUNITY_OUT_8589942200 out
no auto-summary
no synchronization
exit-address-family
```

路由拓扑



- 分支使用其特定社区标记101010将其内部网络192.0.2.8/29通告到BGP，如route-map FMC_VPN_CONNECTED_DIST_RMAP_1010中所配置。

分支1

<#root>

Spoke1# show bgp community 101010 exact-match <<<< to verify the exact network redistributed into BGP

BGP table version is 4, local router ID is 203.0.113.35
 Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
 r RIB-failure, S Stale, m multipath
 Origin codes: i - IGP, e - EGP, ? - incomplete

Network	Next Hop	Metric	LocPrf	Weight	Path
*> 192.0.2.8/29	0.0.0.0	0		32768	?

<<<<<<<<< local inside network

- 辐条会修改其内部网络[192.0.2.8/29](#)的度量值，并将其通告到集线器，如路由映射 FMC_VPN_RMAP_COMMUNITY_OUT_858939614 和 FMC_VPN_RMAP_COMMUNITY_OUT_85894200 中所配置。

<#root>

route-map

FMC_VPN_RMAP_COMMUNITY_OUT_8589942200

```
permit 10
match community FMC_VPN_COMMUNITY_101010 exact-match
set metric 1
```

route-map

FMC_VPN_RMAP_COMMUNITY_OUT_8589942200

```
permit 20
match community FMC_VPN_COMMUNITY_202020 exact-match
set metric 100
```

route-map

FMC_VPN_RMAP_COMMUNITY_OUT_8589942200

```
deny 100
```

- HUB1 使用社区标记 101010 获知分支 1 网络[192.0.2.8/29](#)，并将社区标记更改为 202020，同时按照配置的路由映射中的定义保留度量，然后将其转发到其他分支。

集线器 1

<#root>

Route-Map for ISP1 DVTI

Inbound

route-map

FMC_VPN_RMAP_COMMUNITY_IN_8589939614

```
permit 10
match community FMC_VPN_COMMUNITY_101010 exact-match
set community 202020
```

route-map

FMC_VPN_RMAP_COMMUNITY_IN_8589939614

```
permit 20
match community FMC_VPN_COMMUNITY_202020 exact-match
```

Outbound

```
route-map
```

FMC_VPN_RMAP_COMMUNITY_OUT_8589939614

```
permit 10
match community FMC_VPN_COMMUNITY_101010 exact-match
set metric 1
set ip next-hop 198.51.100.1
```

<<<<<<<<< only next-hop is changed in ISP2 tunnel route-map with ISP2 DVTI IP

```
route-map
```

FMC_VPN_RMAP_COMMUNITY_OUT_8589939614

```
permit 20
match community FMC_VPN_COMMUNITY_202020 exact-match
set metric 100
set ip next-hop 198.51.100.1
```

<<<<<<<<< only next-hop is changed in ISP2 tunnel route-map with ISP2 DVTI IP

```
route-map
```

FMC_VPN_RMAP_COMMUNITY_OUT_8589939614

```
deny 100
```

Route-Map for ISP2 DVTI

Inbound

```
route-map
```

FMC_VPN_RMAP_COMMUNITY_IN_8589942200

```
permit 10
match community FMC_VPN_COMMUNITY_101010 exact-match
set community 202020
```

```
route-map
```

FMC_VPN_RMAP_COMMUNITY_IN_8589942200

```
permit 20
match community FMC_VPN_COMMUNITY_202020 exact-match
```

Outbound

```
route-map
```

FMC_VPN_RMAP_COMMUNITY_OUT_8589942200

```
permit 10
match community FMC_VPN_COMMUNITY_101010 exact-match
set metric 1
set ip next-hop 198.51.100.3
```

<<<<<<<<< only next-hop is changed in ISP2 tunnel route-map with ISP2 DVTI IP

```
route-map
```

```
FMC_VPN_RMAP_COMMUNITY_OUT_8589942200
```

```
permit 20
match community FMC_VPN_COMMUNITY_202020 exact-match
set metric 100
set ip next-hop 198.51.100.3
```

```
<<<<<<<< only next-hop is changed in ISP2 tunnel route-map with ISP2 DVTI IP
```

```
route-map
```

```
FMC_VPN_RMAP_COMMUNITY_OUT_8589942200
```

```
deny 100
```

```
<#root>
```

```
HUB1# show bgp community 202020 exact-match <<<< this will confirm if received prefixes have community t
```

```
BGP table version is 5, local router ID is 198.51.100.3
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
               r RIB-failure, S Stale, m multipath
Origin codes: i - IGP, e - EGP, ? - incomplete
```

Network	Next Hop	Metric	LocPrf	Weight	Path
* i192.0.2.8/29	198.51.100.70	1	100	0	?
*>i	198.51.100.10	1	100	0	?
* i192.0.2.16/29	198.51.100.71	1	100	0	?
*>i	198.51.100.11	1	100	0	?

```
<#root>
```

```
HUB1# show bgp 192.0.2.8 <<<< this will display available paths in BGP for the network
```

```
BGP routing table entry for 192.0.2.8/29, version 4
Paths: (2 available, best #2, table default)
  Advertised to update-groups:
    1          2
  Local, (Received from a RR-client)
    198.51.100.70 from 198.51.100.70 (203.0.113.35)
```

```
<<<<< spoke 1 ISP 2 tunnel to HUB 1
```

```
  Origin incomplete, metric 1, localpref 100, valid, internal
  Community: 202020
  Local, (Received from a RR-client)
    198.51.100.10 from 198.51.100.10 (203.0.113.35)
```

```
<<<<< spoke 1 ISP 1 tunnel to HUB 1
```

Origin incomplete, metric 1, localpref 100, valid, internal, best
Community: 202020

<<<< community updated as per the route-map configured on spoke side

<#root>

HUB1# show route 192.0.2.8

Routing entry for 192.0.2.8 255.255.255.248
Known via "bgp 65500", distance 200, metric 1, type internal
Last update from 198.51.100.10 0:09:18 ago
Routing Descriptor Blocks:

* 198.51.100.10, from 198.51.100.10, 0:09:18 ago

Route metric is 1, traffic share count is 1
AS Hops 0
MPLS label: no label string provided

<#root>

HUB1# show bgp ipv4 unicast neighbors 198.51.100.10 routes <<<<< to check specific prefixes learnt via

BGP table version is 5, local router ID is 198.51.100.3
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
r RIB-failure, S Stale, m multipath
Origin codes: i - IGP, e - EGP, ? - incomplete

Network	Next Hop	Metric	LocPrf	Weight	Path
*>i192.0.2.8/29	198.51.100.10	1	100	0	?

<<< preferred route

Total number of prefixes 1

<#root>

HUB1# show bgp ipv4 unicast neighbors 198.51.100.70 routes <<<<< to check specific prefixes learnt via

BGP table version is 5, local router ID is 198.51.100.3
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
r RIB-failure, S Stale, m multipath
Origin codes: i - IGP, e - EGP, ? - incomplete

Network	Next Hop	Metric	LocPrf	Weight	Path
* i192.0.2.8/29	198.51.100.70	1	100	0	?

Total number of prefixes 1

- HUB2还使用社区标记101010获取分支1网络[192.0.2.8/29](#)，并将社区标记更改为202020，并

将度量更新为100，然后将其转发到其他分支，如配置的路由映射中所指定。此指标更改由于eBGP对等而生效。这是因为MED(Multi-Exit Discriminator)是一个可选的非传递BGP属性，用于通过建议一个首选入口点进入AS来影响入站流量。MED通常不会在同一AS内的iBGP对等体之间传播，而是通告给不同自治系统中的外部BGP(eBGP)对等体。

集线器2

<#root>

HUB2# show bgp community 202020 exact-match <<<< this will confirm if received prefixes have community

BGP table version is 5, local router ID is 198.51.100.4
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
r RIB-failure, S Stale, m multipath
Origin codes: i - IGP, e - EGP, ? - incomplete

Network	Next Hop	Metric	LocPrf	Weight	Path
* 192.0.2.8/29	198.51.100.1				

100

0 65500 ?

<<<<< advertised back by spoke 2 ISP1 to HUB2 previously learnt via HUB1 iBGP

* 198.51.100.1

100

0 65500 ?

<<<<< advertised back by spoke 2 ISP2 to HUB2 previously learnt via HUB1 iBGP

* 198.51.100.100 1 0 65500 ?

<<<<< advertised by spoke 2 ISP tunnel

*> 198.51.100.40 1 0 65500 ?

<<<<< advertised and preferred by spoke 1 ISP 1 tunnel

* 192.0.2.16/29	198.51.100.1	100	0	65500 ?
*	198.51.100.1	100	0	65500 ?
*	198.51.100.101	1	0	65500 ?
*>	198.51.100.41	1	0	65500 ?

<#root>

HUB2# show bgp 192.0.2.8 <<<< this will display available paths in BGP for the network

BGP routing table entry for 192.0.2.8/29, version 4
Paths: (4 available, best #4, table default)
Advertised to update-groups:
1 2
65500

```

198.51.100.1 (inaccessible) from 198.51.100.41 (203.0.113.36)
<<<<< advertised back by spoke 2 ISP1 to HUB2 previously learnt via HUB1 iBGP

Origin incomplete, metric 100, localpref 100, valid, external
Community:

202020

65500
198.51.100.1 (inaccessible) from 198.51.100.101 (203.0.113.36)
<<<<< advertised back by spoke 2 ISP2 to HUB2 previously learnt via HUB1 iBGP

Origin incomplete, metric 100, localpref 100, valid, external
Community:

202020

65500
198.51.100.100 from 198.51.100.100 (203.0.113.35)
<<<<< advertised by spoke 1 ISP 2 tunnel

Origin incomplete, metric 1, localpref 100, valid, external
Community:

202020

65500
198.51.100.40 from 198.51.100.40 (203.0.113.35)
<<<<< advertised and preferred by spoke 1 ISP 1 tunnel

Origin incomplete, metric 1, localpref 100, valid, external, best
Community:

202020

```

```

<#root>

```

```

HUB2# show bgp ipv4 unicast neighbors 198.51.100.40 routes <<<<< to check specific prefixes learnt via

```

```

BGP table version is 5, local router ID is 198.51.100.4
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
               r RIB-failure, S Stale, m multipath
Origin codes: i - IGP, e - EGP, ? - incomplete

```

Network	Next Hop	Metric	LocPrf	Weight	Path
*> 192.0.2.8/29	198.51.100.40	1		0	65500 ?

```

<<<< preferred

```

* 192.0.2.16/29	198.51.100.1	100		0	65500 ?
-----------------	--------------	-----	--	---	---------

```

Total number of prefixes 2

```

```

<#root>

```

HUB2# show bgp ipv4 unicast neighbors 198.51.100.41 routes <<<<< to check specific prefixes learnt via

BGP table version is 5, local router ID is 198.51.100.4
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
r RIB-failure, S Stale, m multipath
Origin codes: i - IGP, e - EGP, ? - incomplete

Network	Next Hop	Metric	LocPrf	Weight	Path
* 192.0.2.8/29	198.51.100.1	100		0	65500 ?

<<<<<

*> 192.0.2.16/29	198.51.100.41	1		0	65500 ?
------------------	---------------	---	--	---	---------

Total number of prefixes 2

<#root>

HUB2# show bgp ipv4 unicast neighbors 198.51.100.100 routes <<<<< to check specific prefixes learnt via

BGP table version is 5, local router ID is 198.51.100.4
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
r RIB-failure, S Stale, m multipath
Origin codes: i - IGP, e - EGP, ? - incomplete

Network	Next Hop	Metric	LocPrf	Weight	Path
* 192.0.2.8/29	198.51.100.100	1		0	65500 ?

<<<<<

* 192.0.2.16/29	198.51.100.1	100		0	65500 ?
-----------------	--------------	-----	--	---	---------

Total number of prefixes 2

<#root>

HUB2# show bgp ipv4 unicast neighbors 198.51.100.101 routes <<<<< to check specific prefixes learnt via

BGP table version is 5, local router ID is 198.51.100.4
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
r RIB-failure, S Stale, m multipath
Origin codes: i - IGP, e - EGP, ? - incomplete

Network	Next Hop	Metric	LocPrf	Weight	Path
* 192.0.2.8/29	198.51.100.1	100		0	65500 ?

<<<<<

* 192.0.2.16/29	198.51.100.101	1		0	65500 ?
-----------------	----------------	---	--	---	---------

Total number of prefixes 2

- 分支2从HUB1 ISP1和HUB1 ISP2隧道接收分支1网络[192.0.2.8/29](#)，度量为1，同时从HUB2

ISP1和HUB2 ISP2隧道接收同一网络，且其下一跳更新为HUB1。

分支2

<#root>

Spoke2# show bgp community 202020 exact-match <<<< this will confirm if received prefixes have community

BGP table version is 8, local router ID is 203.0.113.36
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
r RIB-failure, S Stale, m multipath
Origin codes: i - IGP, e - EGP, ? - incomplete

Network	Next Hop	Metric	LocPrf	Weight	Path
*mi192.0.2.8/29	198.51.100.3	1	100	0	?
*					

>

i	198.51.100.1	1	100	0	?
---	--------------	---	-----	---	---

<<<< HUB1 ISP1 route preferred

*	198.51.100.2	100		0	65510	65510	?
*	198.51.100.4	100		0	65510	65510	?
* 192.0.2.16/29	198.51.100.4	100		0	65510	65510	?
*	198.51.100.2	100		0	65510	65510	?

<#root>

route-map

FMC_VPN_RMAP_COMMUNITY_IN_8589939614

permit 10
match community FMC_VPN_COMMUNITY_101010 exact-match

set community 202020

route-map

FMC_VPN_RMAP_COMMUNITY_IN_8589956263

permit 20
match community FMC_VPN_COMMUNITY_202020 exact-match

- 分支2还会使用更新的度量将从HUB1获知的网络通告回HUB2（如配置的出站路由映射所定义）。

<#root>

route-map

FMC_VPN_RMAP_COMMUNITY_OUT_8589939614

```
permit 10
match community FMC_VPN_COMMUNITY_101010 exact-match
set metric 1
```

route-map

FMC_VPN_RMAP_COMMUNITY_OUT_8589939614

```
permit 20
match community FMC_VPN_COMMUNITY_202020 exact-match
set metric 100
```

<<<<<

route-map

FMC_VPN_RMAP_COMMUNITY_OUT_8589939614

```
deny 100
```

<#root>

Spoke2# show bgp ipv4 unicast neighbors 198.51.100.2 advertised-routes <<<<< to check specific prefixes

BGP table version is 8, local router ID is 203.0.113.36

Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
r RIB-failure, S Stale, m multipath

Origin codes: i - IGP, e - EGP, ? - incomplete

Network	Next Hop	Metric	LocPrf	Weight	Path
*>i192.0.2.8/29	198.51.100.1	1	100	0	?

<<<<<<<

*> 192.0.2.16/29	0.0.0.0	0		32768	?
------------------	---------	---	--	-------	---

Total number of prefixes 2

<#root>

Spoke2# show bgp ipv4 unicast neighbors 198.51.100.4 advertised-routes <<<<< to check specific prefixes

BGP table version is 8, local router ID is 203.0.113.36

Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
r RIB-failure, S Stale, m multipath

Origin codes: i - IGP, e - EGP, ? - incomplete

Network	Next Hop	Metric	LocPrf	Weight	Path
*>i192.0.2.8/29	198.51.100.1	1	100	0	?

<<<<<<<

*> 192.0.2.16/29	0.0.0.0	0		32768	?
------------------	---------	---	--	-------	---

Total number of prefixes 2

结论

本文档旨在介绍后端路由部署，重点介绍在BGP内实施的路由控制，以确保应急和冗余。

总之，分支2和拓扑中的任何其他分支在将其网络通告到BGP域时都使用相同的方法。在这种情况下，最重要的路由控制是社区列表过滤，它确保仅将此拓扑中的网络通告给其他对等体，防止意外的网络传播。

此外，[MED Multi-exit Discriminator](#)属性用于影响eBGP对等体的路由选择，确保通过配置为主HUB的iBGP对等体获知的路由优先于通过eBGP从辅助HUB获知的前缀。

通过进行拓扑调整（例如为辅助HUB配置iBGP），可以消除在将同一网络通告到其他分支之前对翻转社区标记的MED操作和入站路由映射的需要。

相关信息

- 如需更多帮助，请联系TAC。需要有效的支持合同：思科[全球支持联系人](#)。
- 您还可以访问[Cisco VPN社区](#)，了解更多见解和趋势讨论。

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