

MPLS VPN over ATM : 在客户站点使用BGP或RIP

目录

[简介](#)

[先决条件](#)

[硬件与软件版本](#)

[规则](#)

[背景信息](#)

[说明](#)

[配置步骤](#)

[网络图](#)

[配置程序第I部分](#)

[配置程序第II部分](#)

[配置](#)

[显示命令](#)

[路由特定的命令](#)

[MPLS 标签](#)

[地址 重叠](#)

[调试输出示例](#)

[相关信息](#)

简介

当边界网关协议(BGP)或路由信息协议(RIP)是存在客户站点时，本文提供多协议标签交换(MPLS) VPN over ATM的配置示例。

虚拟专用网络(VPN)功能，当使用与MPLS，允许几个站点透明地通过服务提供商网络互联。一个服务提供商网络可以支持多个不同的 IP VPN。其中每一个 VPN 均向其用户显示为与所有其他网络分离的专用网络。在一个 VPN 内，每个站点都可以向该 VPN 的其他任何站点发送 IP 数据包。

每个 VPN 均与一个或多个 VPN 路由或转发实例 (VRF) 相关联。VRF包括使用此转发表的IP路由表、派生的Cisco express forwarding (CEF)表和套接口。

路由器针对每个 VRF 维护一个单独的路由和 CEF 表。这不允许VPN的外部将发送的信息，但是允许用于几个VPN的相同子网，不用重复IP地址问题。

使用BGP的路由器分配与BGP扩展属性的VPN路由工艺路线信息。

关于更新传播的更多信息通过VPN，请参阅这些链路：

- [VPN路由目标属性](#)。

- [VPN路由信息的BGP分配。](#)
- [MPLS转发。](#)

先决条件

硬件与软件版本

这些字母代表使用的不同种类的路由器和交换机：

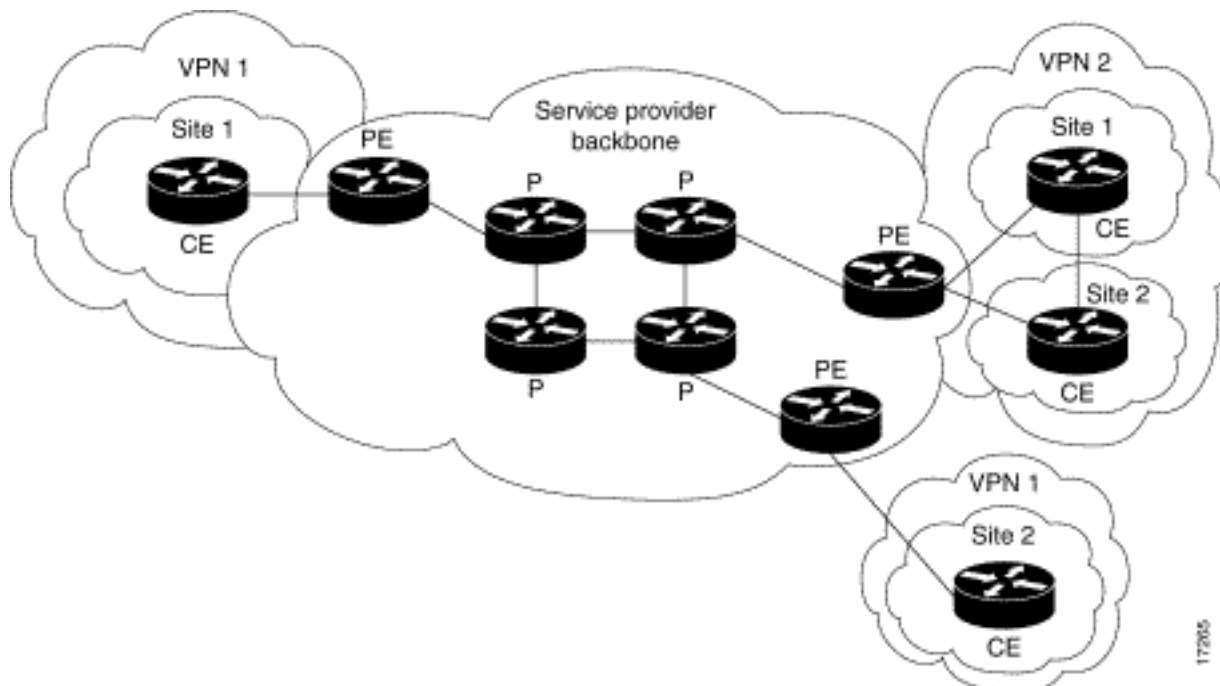
- **P**：供应商核心路由器
- **PE**：供应商边缘路由器
- **CE**：用户边缘路由器
- **C**：客户路由器

我们开发并且测试了与这些软件和硬件版本的配置：

- **PE路由器**：软件：Cisco IOS软件版本12.1(3)T。版本12.0(5)T包括MPLS VPN。Hardware:从3600系列的任何Cisco路由器或高，例如Cisco 3660或7206。
- **CE路由器**：请使用能交换与其PE路由器的路由信息的所有路由器。
- **P路由器和切换**：MPLS VPN集成功能仅驻留在MPLS网络边缘，因此请使用所有支持MPLS的交换机。在配置示例中，MPLS网云被组成8540 MSR和LightStream1010。如果使用LightStream1010，我们建议您使用软件版本WA4.8d或更加高。您在ATM核心网络能也使用其他ATM交换机，例如Cisco BPX 8650或MGX8850。

规则

此图表显示说明这些规则的典型配置：



有关文档规则的详细信息，请参阅 [Cisco 技术提示规则](#)。

背景信息

说明

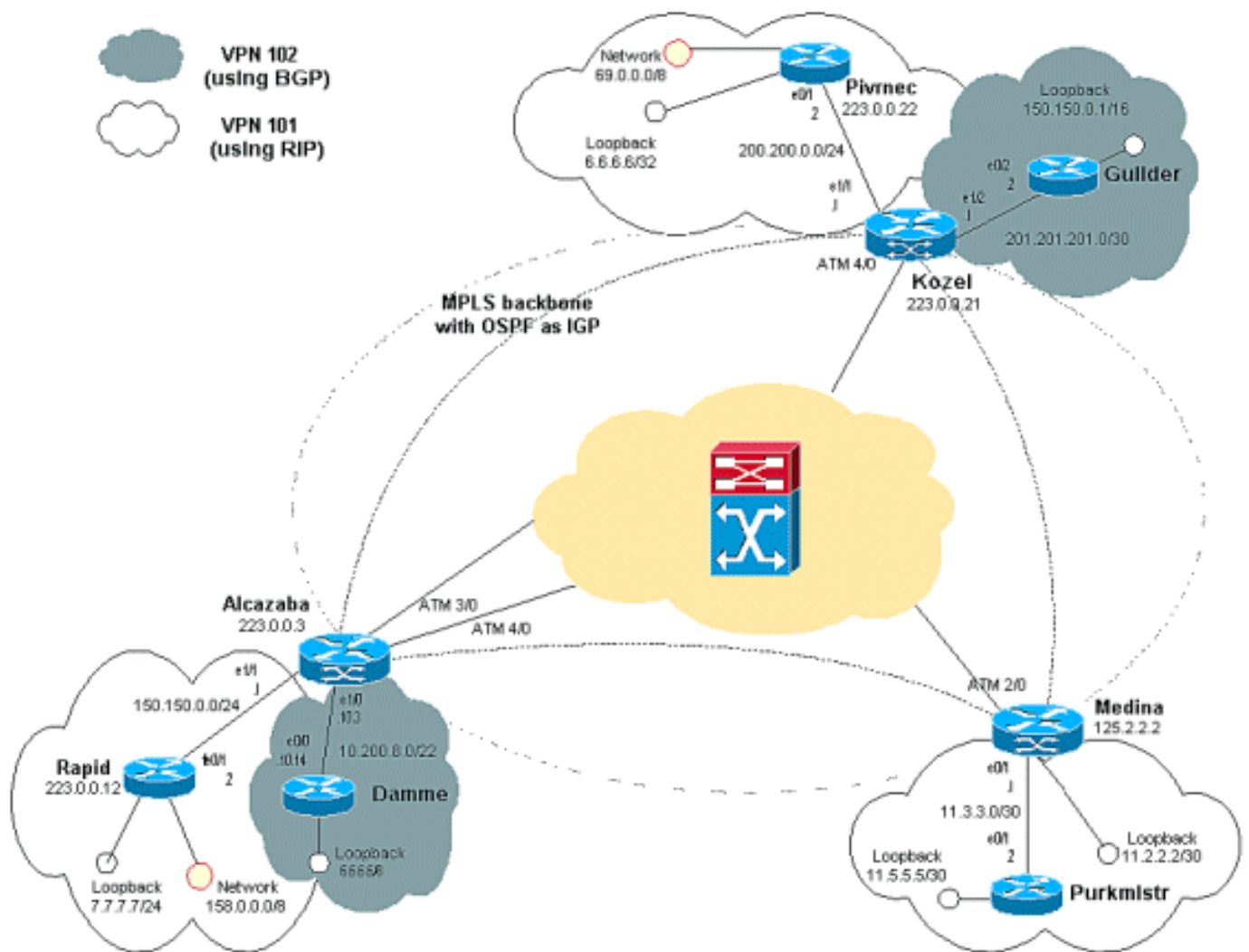
我们设置与开放最短路径优先(OSPF) area 0的一个标准MPLS ATM骨干网作为内部网关路由协议(IGP)。我们配置两个不同的VPN用此骨干网。第一这些使用RIP作为其用户边缘对运营商边缘(CE-PE)路由协议，并且其他使用BGP作为其PE-CE路由协议。

我们配置多种环回和静态路由在CE路由器模拟其他路由器和网络出现。

配置步骤

注意：使用BGP作为在PE路由器之间的VPN IGP是必须的。这是因为使用BGP扩展属性是传输VPN的路由信息的唯一方法在PE路由器之间。

网络图



配置程序第I部分

Cisco IOS文档([MPLS虚拟专用网络](#))也描述此配置程序。

确保IP CEF启用。如果使用一个Cisco 7500路由器，请保证ip cef distributed启用。在观点扫描器，一旦MPLS设置，请遵从这些步骤：

1. 创建用ip vrf <VPN routing/forwarding instance name>命令连接的每个VPN的一个VRF : 指定用于该 VPN 的正确路由区分符。这用于扩大IP地址，以便您能识别属于的VPN。

```
rd <VPN route distinguisher>
```

设置BGP扩展属性的导入和出口属性。这些用于过滤导入和出口进程。

```
route-target [export|import|both] <target VPN extended community>
```

2. 配置各自的接口的转发细节用此命令：

```
ip vrf forwarding <table name>
```

注意： 在您执行此后，请切记设置IP地址。

3. 从属于您使用，您必须当前执行一个或很多这些的PE-CE路由协议：配置静态路由：

```
ip route vrf vrf-name prefix mask [next-hop-address] [interface {interface-number}]
```

配置RIP用此命令：

```
address-family ipv4 vrf <VPN routing/forwarding instance name>
```

一旦完成了这部分，请输入正常RIP配置命令。**注意：** 这只适用于当前VRF的转发接口。**注意：** 您必须重新分配正确BGP到RIP。当您执行此时，请切记也指定使用的量度。宣称BGP邻居信息。配置OSPF用新ios命令：

```
router ospf <process ID> vrf <VPN routing/forwarding instance name>.
```

注意： 这只适用于当前VRF的转发接口。**注意：** 您必须重新分配正确BGP到OSPF。当您执行此时，请切记也指定使用的量度。**注意：** 一旦归因于OSPF程序VRF，此进程编号总是使用此特定VRF。即使您在命令行不指定它,这也将应用。

配置程序第II部分

配置在PE路由器之间的BGP。有几个方式配置BGP;一种方式将使用路由反射器或联盟方法。使用的方法这里-直接邻居配置-最简单和最不可扩展。

1. 声明不同的邻居。
2. 进入每个VPN的地址-family ipv4 vrf <VPN routing/forwarding instance name>现在此PE路由器。执行一个或很多这些步骤，如所需要：重新分配静态路由信息。重新分配RIP路由信息。重新分配OSPF路由信息。激活在接近度的BGP与CE路由器。
3. 输入地址家族vpngv4模式，并且执行这些中的一个：激活邻居。指定必须使用扩展团体。这是强制性的。

配置

在Alcalzaba配置中，线路特定对VPN 101在粗体显示，那些特定对VPN 102以斜体字，并且那些特定对两个在粗体和斜体字显示。

Alcalzaba

```
!  
ip vrf vrf101  
  rd 1:101  
  route-target export 1:101  
  route-target import 1:101  
!  
ip vrf vrf102  
  rd 1:102  
  route-target export 1:102  
  route-target import 1:102  
!  
ip cef  
!  
interface Loopback0  
  ip address 223.0.0.3 255.255.255.255  
!  
interface Ethernet1/0 ip vrf forwarding vrf102 ip  
address 10.200.10.3 255.255.252.0 ! interface  
Ethernet1/1  
  ip vrf forwarding vrf101  
  ip address 150.150.0.1 255.255.255.0  
!  
interface ATM3/0  
  no ip address  
  no ip mroute-cache  
  no atm ilmi-keepalive  
  pvc qsaal 0/5 qsaal  
  pvc ilmi 0/16 ilmi  
  !  
!  
interface ATM3/0.1 tag-switching  
  ip address 10.0.0.17 255.255.255.252  
  tag-switching atm vpi 2-4  
  tag-switching ip  
!  
interface ATM4/0  
  no ip address  
  no atm ilmi-keepalive  
!  
interface ATM4/0.1 tag-switching  
  ip address 10.0.0.13 255.255.255.252  
  tag-switching atm vpi 2-4  
  tag-switching ip  
!  
router ospf 1  
  network 10.0.0.0 0.0.0.255 area 0  
  network 223.0.0.3 0.0.0.0 area 0  
!  
router rip  
  version 2  
  !  
  address-family ipv4 vrf vrf101  
  version 2  
  redistribute bgp 1 metric 0  
  network 150.150.0.0  
  no auto-summary  
  exit-address-family  
!  
router bgp 1  
  no synchronization  
  neighbor 125.2.2.2 remote-as 1  
  neighbor 125.2.2.2 update-source Loopback0
```

```

neighbor 223.0.0.21 remote-as 1
neighbor 223.0.0.21 update-source Loopback0

no auto-summary
!
address-family ipv4 vrf vrf102 redistribute connected
neighbor 10.200.10.14 remote-as 158 neighbor
10.200.10.14 activate no auto-summary no synchronization
exit-address-family ! address-family ipv4 vrf vrf101
redistribute rip
no auto-summary
no synchronization
exit-address-family
!
address-family vpv4
neighbor 125.2.2.2 activate
neighbor 125.2.2.2 send-community extended

neighbor 223.0.0.21 activate neighbor 223.0.0.21 send-
community extended
no auto-summary
exit-address-family
!

```

Kozel

```

!
ip vrf vrf101
rd 1:101
route-target export 1:101
route-target import 1:101
!
ip vrf vrf102
rd 1:102
route-target export 1:102
route-target import 1:102
!
ip cef
!
interface Loopback0
ip address 223.0.0.3 255.255.255.255
!
interface Ethernet1/0 ip vrf forwarding vrf102 ip
address 10.200.10.3 255.255.252.0 ! interface
Ethernet1/1
ip vrf forwarding vrf101
ip address 150.150.0.1 255.255.255.0
!
interface ATM3/0
no ip address
no ip mroute-cache
no atm ilmi-keepalive
pvc qsaal 0/5 qsaal
pvc ilmi 0/16 ilmi
!
!
interface ATM3/0.1 tag-switching
ip address 10.0.0.17 255.255.255.252
tag-switching atm vpi 2-4
tag-switching ip

```

```

!
interface ATM4/0
  no ip address
  no atm ilmi-keepalive
!
interface ATM4/0.1 tag-switching
  ip address 10.0.0.13 255.255.255.252
  tag-switching atm vpi 2-4
  tag-switching ip
!
router ospf 1
  network 10.0.0.0 0.0.0.255 area 0
  network 223.0.0.3 0.0.0.0 area 0
!
router rip
  version 2
  !
  address-family ipv4 vrf vrf101
  version 2
  redistribute bgp 1 metric 0
  network 150.150.0.0
  no auto-summary
  exit-address-family
!
router bgp 1
  no synchronization
  neighbor 125.2.2.2 remote-as 1
  neighbor 125.2.2.2 update-source Loopback0

  neighbor 223.0.0.21 remote-as 1
  neighbor 223.0.0.21 update-source Loopback0

  no auto-summary
  !
  address-family ipv4 vrf vrf102 redistribute connected
  neighbor 10.200.10.14 remote-as 158 neighbor
  10.200.10.14 activate no auto-summary no synchronization
  exit-address-family ! address-family ipv4 vrf vrf101
  redistribute rip
  no auto-summary
  no synchronization
  exit-address-family
  !
  address-family vpnv4
  neighbor 125.2.2.2 activate
  neighbor 125.2.2.2 send-community extended

  neighbor 223.0.0.21 activate neighbor 223.0.0.21 send-
community extended
  no auto-summary
  exit-address-family
!

```

Medina

```

!
ip vrf vrf101
  rd 1:101
  route-target export 1:101
  route-target import 1:101
!

```

```
ip vrf vrf102
  rd 1:102
  route-target export 1:102
  route-target import 1:102
!
ip cef
!
interface Loopback0
  ip address 223.0.0.3 255.255.255.255
!
interface Ethernet1/0 ip vrf forwarding vrf102 ip
address 10.200.10.3 255.255.252.0 ! interface
Ethernet1/1
  ip vrf forwarding vrf101
  ip address 150.150.0.1 255.255.255.0
!
interface ATM3/0
  no ip address
  no ip mroute-cache
  no atm ilmi-keepalive
  pvc qsaal 0/5 qsaal
  pvc ilmi 0/16 ilmi
!
!
interface ATM3/0.1 tag-switching
  ip address 10.0.0.17 255.255.255.252
  tag-switching atm vpi 2-4
  tag-switching ip
!
interface ATM4/0
  no ip address
  no atm ilmi-keepalive
!
interface ATM4/0.1 tag-switching
  ip address 10.0.0.13 255.255.255.252
  tag-switching atm vpi 2-4
  tag-switching ip
!
router ospf 1
  network 10.0.0.0 0.0.0.255 area 0
  network 223.0.0.3 0.0.0.0 area 0
!
router rip
  version 2
  !
  address-family ipv4 vrf vrf101
  version 2
  redistribute bgp 1 metric 0
  network 150.150.0.0
  no auto-summary
  exit-address-family
!
router bgp 1
  no synchronization
  neighbor 125.2.2.2 remote-as 1
  neighbor 125.2.2.2 update-source Loopback0

neighbor 223.0.0.21 remote-as 1
  neighbor 223.0.0.21 update-source Loopback0

  no auto-summary
  !
  address-family ipv4 vrf vrf102 redistribute connected
  neighbor 10.200.10.14 remote-as 158 neighbor
```



```

10.200.10.14 activate no auto-summary no synchronization
exit-address-family ! address-family ipv4 vrf vrf101
  redistribute rip
  no auto-summary
  no synchronization
  exit-address-family
!
address-family vpv4
  neighbor 125.2.2.2 activate
  neighbor 125.2.2.2 send-community extended

neighbor 223.0.0.21 activate neighbor 223.0.0.21 send-
community extended
no auto-summary
exit-address-family
!

```

迅速

```

!
ip vrf vrf101
  rd 1:101
  route-target export 1:101
  route-target import 1:101
!
ip vrf vrf102
  rd 1:102
  route-target export 1:102
  route-target import 1:102
!
ip cef
!
interface Loopback0
  ip address 223.0.0.3 255.255.255.255
!
interface Ethernet1/0 ip vrf forwarding vrf102 ip
address 10.200.10.3 255.255.252.0 ! interface
Ethernet1/1
  ip vrf forwarding vrf101
  ip address 150.150.0.1 255.255.255.0
!
interface ATM3/0
  no ip address
  no ip mroute-cache
  no atm ilmi-keepalive
  pvc qsaal 0/5 qsaal
  pvc ilmi 0/16 ilmi
!
!
interface ATM3/0.1 tag-switching
  ip address 10.0.0.17 255.255.255.252
  tag-switching atm vpi 2-4
  tag-switching ip
!
interface ATM4/0
  no ip address
  no atm ilmi-keepalive
!
interface ATM4/0.1 tag-switching
  ip address 10.0.0.13 255.255.255.252
  tag-switching atm vpi 2-4

```

```

tag-switching ip
!
router ospf 1
 network 10.0.0.0 0.0.0.255 area 0
 network 223.0.0.3 0.0.0.0 area 0
!
router rip
 version 2
!
address-family ipv4 vrf vrf101
version 2
redistribute bgp 1 metric 0
network 150.150.0.0
no auto-summary
exit-address-family
!
router bgp 1
 no synchronization
neighbor 125.2.2.2 remote-as 1
neighbor 125.2.2.2 update-source Loopback0

neighbor 223.0.0.21 remote-as 1
neighbor 223.0.0.21 update-source Loopback0

 no auto-summary
!
address-family ipv4 vrf vrf102 redistribute connected
neighbor 10.200.10.14 remote-as 158 neighbor
10.200.10.14 activate no auto-summary no synchronization
exit-address-family ! address-family ipv4 vrf vrf101
redistribute rip
no auto-summary
no synchronization
exit-address-family
!
 address-family vpnv4
neighbor 125.2.2.2 activate
neighbor 125.2.2.2 send-community extended

neighbor 223.0.0.21 activate neighbor 223.0.0.21 send-
community extended
 no auto-summary
 exit-address-family
!

```

Damme

```

!
ip vrf vrf101
 rd 1:101
 route-target export 1:101
 route-target import 1:101
!
ip vrf vrf102
 rd 1:102
 route-target export 1:102
 route-target import 1:102
!
ip cef
!
interface Loopback0

```

```

ip address 223.0.0.3 255.255.255.255
!
interface Ethernet1/0 ip vrf forwarding vrf102 ip
address 10.200.10.3 255.255.252.0 ! interface
Ethernet1/1
  ip vrf forwarding vrf101
  ip address 150.150.0.1 255.255.255.0
!
interface ATM3/0
  no ip address
  no ip mroute-cache
  no atm ilmi-keepalive
  pvc qsaal 0/5 qsaal
  pvc ilmi 0/16 ilmi
!
!
interface ATM3/0.1 tag-switching
  ip address 10.0.0.17 255.255.255.252
  tag-switching atm vpi 2-4
  tag-switching ip
!
interface ATM4/0
  no ip address
  no atm ilmi-keepalive
!
interface ATM4/0.1 tag-switching
  ip address 10.0.0.13 255.255.255.252
  tag-switching atm vpi 2-4
  tag-switching ip
!
router ospf 1
  network 10.0.0.0 0.0.0.255 area 0
  network 223.0.0.3 0.0.0.0 area 0
!
router rip
  version 2
  !
  address-family ipv4 vrf vrf101
  version 2
  redistribute bgp 1 metric 0
  network 150.150.0.0
  no auto-summary
  exit-address-family
!
router bgp 1
  no synchronization
  neighbor 125.2.2.2 remote-as 1
  neighbor 125.2.2.2 update-source Loopback0

  neighbor 223.0.0.21 remote-as 1
  neighbor 223.0.0.21 update-source Loopback0

  no auto-summary
  !
  address-family ipv4 vrf vrf102 redistribute connected
  neighbor 10.200.10.14 remote-as 158 neighbor
  10.200.10.14 activate no auto-summary no synchronization
  exit-address-family ! address-family ipv4 vrf vrf101
  redistribute rip
  no auto-summary
  no synchronization
  exit-address-family
  !
  address-family vpnv4

```

```
neighbor 125.2.2.2 activate
neighbor 125.2.2.2 send-community extended

neighbor 223.0.0.21 activate neighbor 223.0.0.21 send-
community extended
no auto-summary
exit-address-family
!
```

Pivrtec

```
!
ip vrf vrf101
  rd 1:101
  route-target export 1:101
  route-target import 1:101
!
ip vrf vrf102
  rd 1:102
  route-target export 1:102
  route-target import 1:102
!
ip cef
!
interface Loopback0
  ip address 223.0.0.3 255.255.255.255
!
interface Ethernet1/0 ip vrf forwarding vrf102 ip
address 10.200.10.3 255.255.252.0 ! interface
Ethernet1/1
  ip vrf forwarding vrf101
  ip address 150.150.0.1 255.255.255.0
!
interface ATM3/0
  no ip address
  no ip mroute-cache
  no atm ilmi-keepalive
  pvc qsaal 0/5 qsaal
  pvc ilmi 0/16 ilmi
!
!
interface ATM3/0.1 tag-switching
  ip address 10.0.0.17 255.255.255.252
  tag-switching atm vpi 2-4
  tag-switching ip
!
interface ATM4/0
  no ip address
  no atm ilmi-keepalive
!
interface ATM4/0.1 tag-switching
  ip address 10.0.0.13 255.255.255.252
  tag-switching atm vpi 2-4
  tag-switching ip
!
router ospf 1
  network 10.0.0.0 0.0.0.255 area 0
  network 223.0.0.3 0.0.0.0 area 0
!
router rip
  version 2
```

```

!
address-family ipv4 vrf vrf101
version 2
redistribute bgp 1 metric 0
network 150.150.0.0
no auto-summary
exit-address-family
!
router bgp 1
no synchronization
neighbor 125.2.2.2 remote-as 1
neighbor 125.2.2.2 update-source Loopback0

neighbor 223.0.0.21 remote-as 1
neighbor 223.0.0.21 update-source Loopback0

no auto-summary
!
address-family ipv4 vrf vrf102 redistribute connected
neighbor 10.200.10.14 remote-as 158 neighbor
10.200.10.14 activate no auto-summary no synchronization
exit-address-family ! address-family ipv4 vrf vrf101
redistribute rip
no auto-summary
no synchronization
exit-address-family
!
address-family vpnv4
neighbor 125.2.2.2 activate
neighbor 125.2.2.2 send-community extended

neighbor 223.0.0.21 activate neighbor 223.0.0.21 send-
community extended
no auto-summary
exit-address-family
!

```

Guilder

```

!
ip vrf vrf101
rd 1:101
route-target export 1:101
route-target import 1:101
!
ip vrf vrf102
rd 1:102
route-target export 1:102
route-target import 1:102
!
ip cef
!
interface Loopback0
ip address 223.0.0.3 255.255.255.255
!
interface Ethernet1/0 ip vrf forwarding vrf102 ip
address 10.200.10.3 255.255.252.0 ! interface
Ethernet1/1
ip vrf forwarding vrf101
ip address 150.150.0.1 255.255.255.0
!

```

```
interface ATM3/0
  no ip address
  no ip mroute-cache
  no atm ilmi-keepalive
  pvc qsaal 0/5 qsaal
  pvc ilmi 0/16 ilmi
  !
!
interface ATM3/0.1 tag-switching
  ip address 10.0.0.17 255.255.255.252
  tag-switching atm vpi 2-4
  tag-switching ip
!
interface ATM4/0
  no ip address
  no atm ilmi-keepalive
!
interface ATM4/0.1 tag-switching
  ip address 10.0.0.13 255.255.255.252
  tag-switching atm vpi 2-4
  tag-switching ip
!
router ospf 1
  network 10.0.0.0 0.0.0.255 area 0
  network 223.0.0.3 0.0.0.0 area 0
!
router rip
  version 2
  !
  address-family ipv4 vrf vrf101
  version 2
  redistribute bgp 1 metric 0
  network 150.150.0.0
  no auto-summary
  exit-address-family
!
router bgp 1
  no synchronization
  neighbor 125.2.2.2 remote-as 1
  neighbor 125.2.2.2 update-source Loopback0

  neighbor 223.0.0.21 remote-as 1
  neighbor 223.0.0.21 update-source Loopback0

  no auto-summary
  !
  address-family ipv4 vrf vrf102 redistribute connected
  neighbor 10.200.10.14 remote-as 158 neighbor
  10.200.10.14 activate no auto-summary no synchronization
  exit-address-family ! address-family ipv4 vrf vrf101
  redistribute rip
  no auto-summary
  no synchronization
  exit-address-family
  !
  address-family vpv4
  neighbor 125.2.2.2 activate
  neighbor 125.2.2.2 send-community extended

  neighbor 223.0.0.21 activate neighbor 223.0.0.21 send-
  community extended
  no auto-summary
  exit-address-family
!
```

Purkmister

```
!  
ip vrf vrf101  
  rd 1:101  
  route-target export 1:101  
  route-target import 1:101  
!  
ip vrf vrf102  
  rd 1:102  
  route-target export 1:102  
  route-target import 1:102  
!  
ip cef  
!  
interface Loopback0  
  ip address 223.0.0.3 255.255.255.255  
!  
interface Ethernet1/0 ip vrf forwarding vrf102 ip  
address 10.200.10.3 255.255.252.0 ! interface  
Ethernet1/1  
  ip vrf forwarding vrf101  
  ip address 150.150.0.1 255.255.255.0  
!  
interface ATM3/0  
  no ip address  
  no ip mroute-cache  
  no atm ilmi-keepalive  
  pvc qsaal 0/5 qsaal  
  pvc ilmi 0/16 ilmi  
  !  
!  
interface ATM3/0.1 tag-switching  
  ip address 10.0.0.17 255.255.255.252  
  tag-switching atm vpi 2-4  
  tag-switching ip  
!  
interface ATM4/0  
  no ip address  
  no atm ilmi-keepalive  
!  
interface ATM4/0.1 tag-switching  
  ip address 10.0.0.13 255.255.255.252  
  tag-switching atm vpi 2-4  
  tag-switching ip  
!  
router ospf 1  
  network 10.0.0.0 0.0.0.255 area 0  
  network 223.0.0.3 0.0.0.0 area 0  
!  
router rip  
  version 2  
  !  
  address-family ipv4 vrf vrf101  
  version 2  
  redistribute bgp 1 metric 0  
  network 150.150.0.0  
  no auto-summary  
  exit-address-family  
!
```

```

router bgp 1
  no synchronization
  neighbor 125.2.2.2 remote-as 1
  neighbor 125.2.2.2 update-source Loopback0

  neighbor 223.0.0.21 remote-as 1
  neighbor 223.0.0.21 update-source Loopback0

  no auto-summary
  !
  address-family ipv4 vrf vrf102 redistribute connected
  neighbor 10.200.10.14 remote-as 158 neighbor
  10.200.10.14 activate no auto-summary no synchronization
  exit-address-family !  address-family ipv4 vrf vrf101
  redistribute rip
  no auto-summary
  no synchronization
  exit-address-family
  !
  address-family vpnv4
  neighbor 125.2.2.2 activate
  neighbor 125.2.2.2 send-community extended

  neighbor 223.0.0.21 activate neighbor 223.0.0.21 send-
  community extended
  no auto-summary
  exit-address-family
  !

```

[显示命令](#)

[路由特定的命令](#)

[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。

- **show ip rip database vrf**
- **show ip bgp vpnv4 vrf**
- **show ip route vrf**
- **show ip route**

在PE路由器， PE-CE路由选择法(例如RIP、BGP或者静态)和PE-PE BGP更新指示使用特定VRF的路由表。您能显示特定的VRF RIP信息：

```

Alcazaba#show ip rip database vrf vrf101
0.0.0.0/0 auto-summary
0.0.0.0/0
[2] via 150.150.0.2, 00:00:12, Ethernet1/1
6.0.0.0/8 auto-summary
6.6.6.6/32 redistributed
[1] via 223.0.0.21,
7.0.0.0/8 auto-summary
7.7.7.0/24
[1] via 150.150.0.2, 00:00:12, Ethernet1/1
10.0.0.0/8 auto-summary
10.0.0.0/8 redistributed

```



```

[1] via 125.2.2.2,
10.0.0.0/16
[1] via 150.150.0.2, 00:00:12, Ethernet1/1
10.200.8.0/22
[1] via 150.150.0.2, 00:00:12, Ethernet1/1
11.0.0.0/8 auto-summary
11.0.0.4/30 redistributed
[1] via 125.2.2.2,
11.1.1.0/30 redistributed
[1] via 125.2.2.2,
11.3.3.0/30 redistributed
[1] via 125.2.2.2,
11.5.5.4/30 redistributed
[1] via 125.2.2.2,
69.0.0.0/8 auto-summary
69.0.0.0/8 redistributed
[1] via 223.0.0.21,
150.150.0.0/16 auto-summary
150.150.0.0/24 directly connected, Ethernet1/1
158.0.0.0/8
[1] via 150.150.0.2, 00:00:17, Ethernet1/1
200.200.0.0/24 auto-summary
200.200.0.0/24 redistributed
[1] via 223.0.0.21,

```

您能也显示一特定的VRF BGP信息用**show ip bgp vpnv4 vrf**命令。从内部BGP (IBGP)的PE-PE结果是由i表示的。

```
Alcazaba#show ip bgp vpnv4 vrf vrf101
```

```

BGP table version is 46, local router ID is 223.0.0.3
Status codes: s suppressed, d damped, h history, * valid, best, i - internal
Origin codes: i - IGP, e - EGP, ? - incomplete

```

```

Network Next Hop Metric LocPrf Weight Path
Route Distinguisher: 1:101 (default for vrf vrf101)
*i6.6.6.6/32 223.0.0.21 1 100 0 ?
* 7.7.7.0/24 150.150.0.2 1 32768 ?
* 10.0.0.0/16 150.150.0.2 1 32768 ?
* 10.200.8.0/22 150.150.0.2 1 32768 ?
*i11.2.2.0/30 125.2.2.2 0 100 0 ?
*i11.3.3.0/30 125.2.2.2 0 100 0 ?
*i11.5.5.4/30 125.2.2.2 1 100 0 ?
*i69.0.0.0 223.0.0.21 1 100 0 ?
* 150.150.0.0/24 0.0.0.0 0 32768 ?
* 158.0.0.0/8 150.150.0.2 1 32768 ?
*i200.200.0.0 223.0.0.21 0 100 0 ?

```

```
Kozel#show ip bgp vpnv4 vrf vrf102
```

```

BGP table version is 48, local router ID is 223.0.0.21
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal
Origin codes: i - IGP, e - EGP, ? - incomplete

```

```

Network Next Hop Metric LocPrf Weight Path
Route Distinguisher: 1:102 (default for vrf vrf102)
* i6.0.0.0 223.0.0.3 0 100 0 158 i
*>i 223.0.0.3 0 100 0 158 i
*> 7.7.0.0/16 201.201.201.2 0 0 69 ?
* 10.200.8.0/22 201.201.201.2 0 0 69 ?
* i 223.0.0.3 0 100 0 ?
*>i 223.0.0.3 0 100 0 ?
*> 102.102.0.0/16 201.201.201.2 0 0 69 ?
*> 150.150.0.0 201.201.201.2 0 0 69 i
* 201.201.201.0/30 201.201.201.2 0 0 69 i

```

*> 0.0.0.0 0 32768 ?

您能检查全球路由表在PE和CE路由器的VRF。这些配比。对于PE路由器，您必须指定VRF用**show ip route vrf**命令。

Alcazaba#**show ip route vrf vrf101**

```
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route
Gateway of last resort is not set
B 69.0.0.0/8 [200/1] via 223.0.0.21, 00:11:03
B 200.200.0.0/24 [200/0] via 223.0.0.21, 00:11:03
  6.0.0.0/32 is subnetted, 1 subnets
B 6.6.6.6 [200/1] via 223.0.0.21, 00:11:03
  7.0.0.0/24 is subnetted, 1 subnets
R 7.7.7.0 [120/1] via 150.150.0.2, 00:00:05, Ethernet1/1
  10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
R 10.0.0.0/16 [120/1] via 150.150.0.2, 00:00:05, Ethernet1/1
R 10.200.8.0/22 [120/1] via 150.150.0.2, 00:00:05, Ethernet1/1
  11.0.0.0/30 is subnetted, 3 subnets
B 11.3.3.0 [200/0] via 125.2.2.2, 00:07:05
B 11.2.2.0 [200/0] via 125.2.2.2, 00:07:05
B 11.5.5.4 [200/1] via 125.2.2.2, 00:07:05
  150.150.0.0/24 is subnetted, 1 subnets
C 150.150.0.0 is directly connected, Ethernet1/1
R 158.0.0.0/8 [120/1] via 150.150.0.2, 00:00:06, Ethernet1/1
```

对于Pivrrec，这是标准路由表，因此请使用**show ip route**命令：

Pivrrec#**show ip route**

```
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route Gateway of last resort is not set S 69.0.0.0/8 is
directly connected, Null0
  223.0.0.0/32 is subnetted, 1 subnets
C 223.0.0.22 is directly connected, Loopback0
C 200.200.0.0/24 is directly connected, FastEthernet0/1
  6.0.0.0/32 is subnetted, 1 subnets
C 6.6.6.6 is directly connected, Loopback1
  7.0.0.0/24 is subnetted, 1 subnets
R 7.7.7.0 [120/1] via 200.200.0.1, 00:00:23, FastEthernet0/1
  10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
R 10.0.0.0/16 [120/1] via 200.200.0.1, 00:00:23, FastEthernet0/1
R 10.200.8.0/22 [120/1] via 200.200.0.1, 00:00:24, FastEthernet0/1
  11.0.0.0/30 is subnetted, 3 subnets
R 11.3.3.0 [120/1] via 200.200.0.1, 00:00:24, FastEthernet0/1
R 11.2.2.0 [120/1] via 200.200.0.1, 00:00:25, FastEthernet0/1
R 11.5.5.4 [120/1] via 200.200.0.1, 00:00:25, FastEthernet0/1
  150.150.0.0/24 is subnetted, 1 subnets
R 150.150.0.0 [120/1] via 200.200.0.1, 00:00:25, FastEthernet0/1
R 158.0.0.0/8 [120/1] via 200.200.0.1, 00:00:25, FastEthernet0/1
```

[MPLS 标签](#)

检查用于所有特定路由的标签栈：

```
Alcazaba#show tag-switching forwarding-table vrf vrf101 11.5.5.5 detail
Local Outgoing Prefix Bytes tag Outgoing Next Hop
tag tag or VC or Tunnel Id switched interface
None 2/91 11.5.5.4/30 0 AT4/0.1 point2point
MAC/Encaps=4/12, MTU=4466, Tag Stack{2/91(vcd=69) 37}
00458847 0004500000025000
```

您能也使用正常命令查看标记分配和VPI/VCI关系此处。

[地址 重叠](#)

同一个地址可以用于不同的VPN，不用干扰与其他。在本例中，6.6.6.6地址连接两次，对在VPN 101的Pivrnec和对在VPN 102的Damme。我们能用在 一个站点的在另一个站点的ping和debug ip icmp检查此。

```
Guilder#ping 6.6.6.6
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 6.6.6.6, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 4/4/4 ms
```

```
Damme#debug ip icmp
ICMP packet debugging is on
6d22h: ICMP: echo reply sent, src 6.6.6.6, dst 201.201.201.2
6d22h: ICMP: echo reply sent, src 6.6.6.6, dst 201.201.201.2
6d22h: ICMP: echo reply sent, src 6.6.6.6, dst 201.201.201.2
6d22h: ICMP: echo reply sent, src 6.6.6.6, dst 201.201.201.2
6d22h: ICMP: echo reply sent, src 6.6.6.6, dst 201.201.201.2
```

[调试输出示例](#)

使用相同的配置的输出示例:可用的[在这里](#)。

[相关信息](#)

- [更多ATM上的MPLS信息](#)
- [更多ATM的信息](#)
- [技术支持和文档 - Cisco Systems](#)