MSR路由器MPLS L3VPN跨域方案A功能的配置

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MSR路由器

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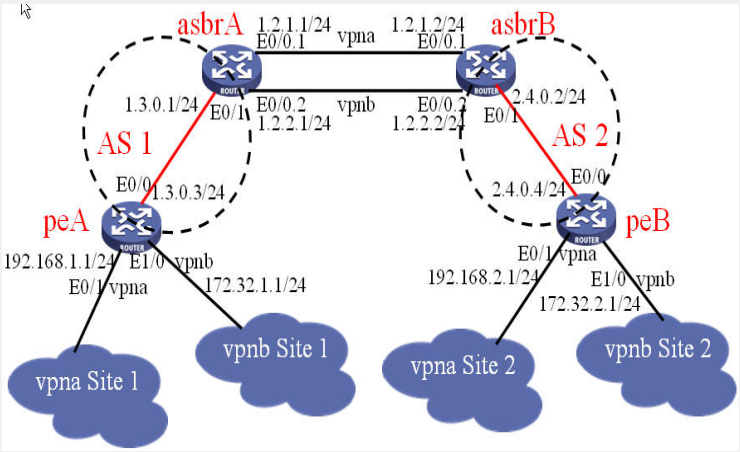
关键词：MSR;MPLS;L3VPN;跨域;OptionA

一、组网需求：

peA和asbrA在AS1，peB和asbrB在AS2；peA和peB都下挂着vpna和vpnb的站点，peA下挂vpna和vpnb站点1，peB下挂vpna和vpnb站点2。

设备清单：MSR路由器4台

二、组网图：



三、配置步骤：

peA配置：

```
#
 router id 3.3.3.3
#
ip vpn-instance vpna
 route-distinguisher 3:1
 vpn-target 1:1 export-extcommunity
 vpn-target 1:1 import-extcommunity
#
ip vpn-instance vpnb
 route-distinguisher 3:2
 vpn-target 2:2 export-extcommunity
 vpn-target 2:2 import-extcommunity
#
mpls lsr-id 3.3.3.3
#
mpls
#
mpls ldp
#
interface Ethernet0/0
 port link-mode route
 ip address 1.3.0.3 255.255.255.0
 mpls
 mpls ldp
#
interface Ethernet0/1
 port link-mode route
 ip binding vpn-instance vpna
 ip address 192.168.1.1 255.255.255.0
```

```
#
interface Ethernet1/0
 port link-mode route
 ip binding vpn-instance vpnb
 ip address 172.32.1.1 255.255.255.0
#
interface LoopBack0
 ip address 3.3.3.3 255.255.255.255
#
bgp 1
 undo synchronization
 peer 1.1.1.1 as-number 1
 peer 1.1.1.1 connect-interface LoopBack0
 #
 ipv4-family vpnv4
  peer 1.1.1.1 enable
 #
 ipv4-family vpn-instance vpna
  import-route direct
 #
 ipv4-family vpn-instance vpnb
  import-route direct
#
ospf 1
 area 0.0.0.0
  network 3.3.3.3 0.0.0.0
  network 1.3.0.0 0.0.0.255
#
```

asbrA配置：

```
router id 1.1.1.1
#
ip vpn-instance vpna
 route-distinguisher 1:1
 vpn-target 1:1 export-extcommunity
 vpn-target 1:1 import-extcommunity
#
ip vpn-instance vpnb
 route-distinguisher 1:2
 vpn-target 2:2 export-extcommunity
 vpn-target 2:2 import-extcommunity
#
mpls lsr-id 1.1.1.1
#
mpls
#
mpls ldp
#
interface Ethernet0/0.1         //asbr间用子接口区分不同vpn流量
 vlan-type dot1q vid 1
 ip binding vpn-instance vpna
 ip address 1.2.1.1 255.255.255.0
#
interface Ethernet0/0.2         //asbr间用子接口区分不同vpn流量
 vlan-type dot1q vid 2
 ip binding vpn-instance vpnb
 ip address 1.2.2.1 255.255.255.0
#
interface Ethernet0/1
 port link-mode route
 ip address 1.3.0.1 255.255.255.0
 mpls
 mpls ldp
#
interface LoopBack0
```

```
 ip address 1.1.1.1 255.255.255.255
#
bgp 1
 undo synchronization
 peer 3.3.3.3 as-number 1          //asbr和pe间是标准L3VPN配置
 peer 3.3.3.3 connect-interface LoopBack0
 #
 ipv4-family vpnv4
  peer 3.3.3.3 enable
 #
 ipv4-family vpn-instance vpna     //asbr间使用PE-CE模式传vpna路由
  peer 1.2.1.2 as-number 2
 #
 ipv4-family vpn-instance vpnb     //asbr间使用PE-CE模式传vpna路由
  peer 1.2.2.2 as-number 2
#
ospf 1
 area 0.0.0.0
  network 1.1.1.1 0.0.0.0
  network 1.3.0.0 0.0.0.255
#
```

asbrB配置：

```
#
 router id 2.2.2.2
#
ip vpn-instance vpna
 route-distinguisher 2:1
 vpn-target 1:1 export-extcommunity
 vpn-target 1:1 import-extcommunity
#
ip vpn-instance vpnb
 route-distinguisher 2:2
 vpn-target 2:2 export-extcommunity
 vpn-target 2:2 import-extcommunity
#
mpls lsr-id 2.2.2.2
#
mpls
#
mpls ldp
#
interface Ethernet0/0.1         //asbr间用子接口区分不同vpn流量
 vlan-type dot1q vid 1
 ip binding vpn-instance vpna
 ip address 1.2.1.2 255.255.255.0
#
interface Ethernet0/0.2         //asbr间用子接口区分不同vpn流量
 vlan-type dot1q vid 2
 ip binding vpn-instance vpnb
 ip address 1.2.2.2 255.255.255.0
#
interface Ethernet0/1
 port link-mode route
 ip address 2.4.0.2 255.255.255.0
 mpls
 mpls ldp
#
interface LoopBack0
 ip address 2.2.2.2 255.255.255.255
#
bgp 2
 undo synchronization
 peer 4.4.4.4 as-number 2          //asbr和pe间是标准L3VPN配置
 peer 4.4.4.4 connect-interface LoopBack0
```

```
 #
 ipv4-family vpnv4
  peer 4.4.4.4 enable
 #
 ipv4-family vpn-instance vpna     //asbr间使用PE-CE模式传vpna路由
  peer 1.2.1.1 as-number 1
 #
 ipv4-family vpn-instance vpnb     //asbr间使用PE-CE模式传vpnb路由
  peer 1.2.2.1 as-number 1
#
ospf 1
 area 0.0.0.0
  network 2.2.2.2 0.0.0.0
  network 2.4.0.0 0.0.0.255
#
```

peB配置：

```
router id 4.4.4.4
#
ip vpn-instance vpna
 route-distinguisher 4:1
 vpn-target 1:1 export-extcommunity
 vpn-target 1:1 import-extcommunity
#
ip vpn-instance vpnb
 route-distinguisher 4:2
 vpn-target 2:2 export-extcommunity
 vpn-target 2:2 import-extcommunity
#
mpls lsr-id 4.4.4.4
#
mpls
#
mpls ldp
#
interface Ethernet0/0
 port link-mode route
 ip address 2.4.0.4 255.255.255.0
 mpls
 mpls ldp
#
interface Ethernet0/1
 port link-mode route
 ip binding vpn-instance vpna
 ip address 192.168.2.1 255.255.255.0
#
interface Ethernet1/0
 port link-mode route
 ip binding vpn-instance vpnb
 ip address 172.32.2.1 255.255.255.0
#
interface LoopBack0
 ip address 4.4.4.4 255.255.255.255
#
bgp 2
 undo synchronization
 peer 2.2.2.2 as-number 2
 peer 2.2.2.2 connect-interface LoopBack0
 #
 ipv4-family vpnv4
  peer 2.2.2.2 enable
 #
 ipv4-family vpn-instance vpna
  import-route direct
 #
```

```
 ipv4-family vpn-instance vpnb
  import-route direct
#
ospf 1
 area 0.0.0.0
  network 4.4.4.4 0.0.0.0
  network 2.4.0.0 0.0.0.255
#
```

四、配置关键点：

1. asbr间需要用不同链路隔离不同vpn流量，可以使用不同物理链路或逻辑链路如子接口或E1/T1通道；
2. asbr间互相把对方认为CE，所以要配置在bgp的vpn实例视图下配置。