MSR路由器MPLS Carrier’s Carrier扩展功能配置

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MSR路由器

MPLS Carrier’s Carrier扩展功能的配置

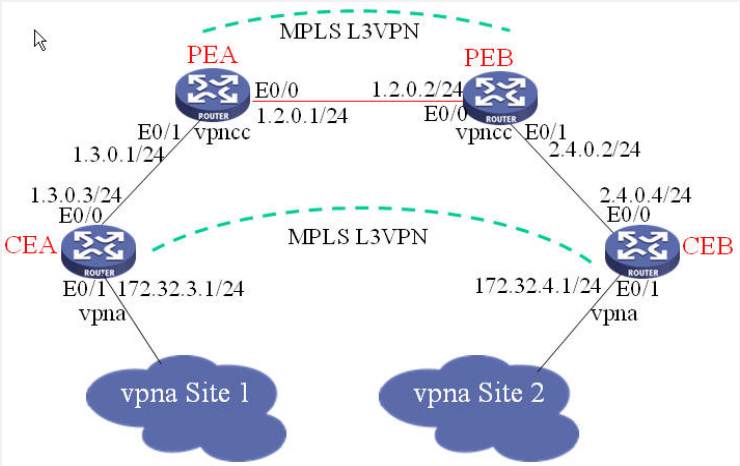
关键词：MSR;MPLS;L3VPN;OSPF多实例;LDP多实例

一、组网需求:

PEA和PEB为1级运营商的PE，分别连接2级运营商的出口CEA和CEB。CEA和CEB则继续往下提供vpna站点1站点2的L3VPN接入

设备清单：MSR路由器4台

二、组网图:



三、配置步骤:

适用设备和版本：MSR、Version 5.20, Beta 1105后所有版本。

CEA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
#
mpls lsr-id 3.3.3.3
#
mpls
 lsp-trigger all                //接受非主机路由标签
#
mpls ldp
#
interface Ethernet0/0
 port link-mode route
 description connects to peA
 ip address 1.3.0.3 255.255.255.0
mpls
 mpls ldp
#
interface Ethernet0/1
 port link-mode route
description connects to vpna site1
 ip binding vpn-instance vpna
 ip address 172.32.3.1 255.255.255.0
#
interface LoopBack0
```

```
 description router id
 ip address 3.3.3.3 255.255.255.255
#
bgp 2
 undo synchronization
 peer 4.4.4.4 as-number 2
 peer 4.4.4.4 connect-interface LoopBack0
 #
 ipv4-family vpnv4
  peer 4.4.4.4 enable
 #
 ipv4-family vpn-instance vpna
  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
#
```

PEA配置

```
#
router id 1.1.1.1
#
ip vpn-instance vpncc
 route-distinguisher 1:1
 vpn-target 1:1 export-extcommunity
 vpn-target 1:1 import-extcommunity
#
mpls lsr-id 1.1.1.1
#
mpls
#
mpls ldp
#
mpls ldp vpn-instance vpncc            //MPLS LDP多实例
 lsr-id 1.0.0.1                        //指定多实例lsr-id
#
interface Ethernet0/0
 port link-mode route
 description connects to peB
 ip address 1.2.0.1 255.255.255.0
 mpls
 mpls ldp
#
interface Ethernet0/1
 port link-mode route
 description connects to ceA
 ip binding vpn-instance vpncc
 ip address 1.3.0.1 255.255.255.0
 mpls
 mpls ldp
#
interface LoopBack0
 description router id
 ip address 1.1.1.1 255.255.255.255
#
interface LoopBack1
 description router id for vpncc
 ip binding vpn-instance vpncc
 ip address 1.0.0.1 255.255.255.255
#
bgp 1
 undo synchronization
 peer 2.2.2.2 as-number 1
```

```
 peer 2.2.2.2 connect-interface LoopBack0
 #
 ipv4-family vpnv4
  peer 2.2.2.2 enable
 #
 ipv4-family vpn-instance vpncc
  import-route ospf 2
#
ospf 1
 area 0.0.0.0
  network 1.1.1.1 0.0.0.0
  network 1.2.0.0 0.0.0.255
#
ospf 2 router-id 1.0.0.1 vpn-instance vpncc
 import-route bgp
 area 0.0.0.0
  network 1.0.0.1 0.0.0.0
  network 1.3.0.0 0.0.0.255
#
```

PEB配置

```
#
router id 2.2.2.2
#
ip vpn-instance vpncc
 route-distinguisher 2:1
 vpn-target 1:1 export-extcommunity
 vpn-target 1:1 import-extcommunity
#
mpls lsr-id 2.2.2.2
#
mpls
#
mpls ldp
#
mpls ldp vpn-instance vpncc            //MPLS LDP多实例
 lsr-id 2.1.1.1                        //指定多实例lsr-id
#
interface Ethernet0/0
 port link-mode route
 description connects to peA
 ip address 1.2.0.2 255.255.255.0
 mpls
 mpls ldp
#
interface Ethernet0/1
 port link-mode route
 description connects to ceB
 ip binding vpn-instance vpncc
 ip address 2.4.0.2 255.255.255.0
 mpls
 mpls ldp
#
interface LoopBack0
 description router id
 ip address 2.2.2.2 255.255.255.255
#
interface LoopBack1
 description router id for vpncc
 ip binding vpn-instance vpncc
 ip address 2.1.1.1 255.255.255.255
#
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 vpncc
  import-route ospf 2
#
ospf 1
 area 0.0.0.0
  network 2.2.2.2 0.0.0.0
  network 1.2.0.0 0.0.0.255
#
ospf 2 router-id 2.1.1.1 vpn-instance vpncc
 import-route bgp
 area 0.0.0.0
  network 2.4.0.0 0.0.0.255
  network 2.1.1.1 0.0.0.0
#
```

CEB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
#
mpls lsr-id 4.4.4.4
#
mpls
 lsp-trigger all                 //接受非主机路由标签
#
mpls ldp
#
interface LoopBack0
 ip address 4.4.4.4 255.255.255.255
#
interface Ethernet0/0
 port link-mode route
 description connnects to peB
 ip address 2.4.0.4 255.255.255.0
 mpls
 mpls ldp
#
interface Ethernet0/1
 port link-mode route
 description connects to vpna site2
 ip binding vpn-instance vpna
 ip address 172.32.4.1 255.255.255.0
#
bgp 2
 undo synchronization
 peer 3.3.3.3 as-number 2
 peer 3.3.3.3 connect-interface LoopBack0
 #
 ipv4-family vpnv4
  peer 3.3.3.3 enable
 #
 ipv4-family vpn-instance vpna
  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. CE上需要启动MPLS和LDP，并与PE建立LDP会话；
2. CE之间建立MP-IBGP连接，交换vpna路由；
3. PE上需要在基本CC基础上多运行MPLS LDP多实例。