MSR路由器MPLS L3VPN TE功能配置

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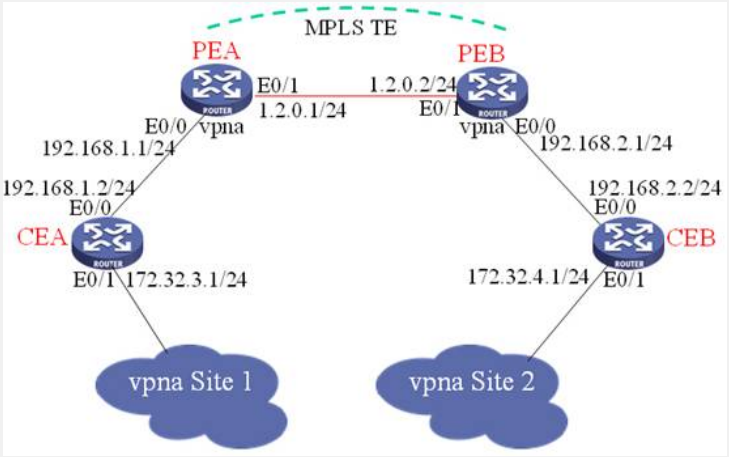
关键词：MSR;MPLS;L3VPN;TE

一、**组网需求**：
PEA和PEB为运营商的MPLS L3VPN接入PE，分别连接vpna的2个站点出口CEA和CEB，要求vpna站点间的流量走TE隧道
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。

PEA配置

```
#
 router id 1.1.1.1
#
ip vpn-instance vpna
 route-distinguisher 1:1
 //绑定隧道策略
 tnl-policy tp0
 vpn-target 1:1 export-extcommunity
 vpn-target 1:1 import-extcommunity
#
mpls lsr-id 1.1.1.1
#
mpls
 mpls te
 mpls te cspf
#
mpls ldp
#
//隧道策略
tunnel-policy  tp0
 //隧道策略选择cr-lsp
 tunnel select-seq  cr-lsp load-balance-number 1
#
interface LoopBack0
 ip address 1.1.1.1 255.255.255.255
#
interface Ethernet0/0
 port link-mode route
 description connects to CEA
 ip binding vpn-instance vpna
 ip address 192.168.1.1 255.255.255.0
#
interface Ethernet0/1
 port link-mode route
 description connects to PEB
 ip address 1.2.0.1 255.255.255.0
 mpls
 mpls te
 mpls te max-link-bandwidth 100
 mpls te max-reservable-bandwidth 50
 mpls ldp
#
interface Tunnel0
 ip address 1.2.1.1 255.255.255.252
 tunnel-protocol mpls te
 destination 2.2.2.2
 mpls te signal-protocol crldp
 mpls te record-route label
 mpls te bandwidth bc0 10
 mpls te commit
#
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 vpna
  peer 192.168.1.2 as-number 3
  import-route direct
#
ospf 1
 opaque-capability enable
 area 0.0.0.0
  network 1.1.1.1 0.0.0.0
  network 1.2.0.0 0.0.0.255
  mpls-te enable
#
```

PEB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
#
mpls lsr-id 2.2.2.2
#
mpls
 mpls te
 mpls te cspf
#
mpls ldp
#
interface LoopBack0
 ip address 2.2.2.2 255.255.255.255
#
interface Ethernet0/0
 port link-mode route
 description connects to CEB
 ip binding vpn-instance vpna
 ip address 192.168.2.1 255.255.255.0
#
interface GigabitEthernet0/1
 port link-mode route
 description connects to RTB
 ip address 1.2.0.2 255.255.255.0
 mpls
 mpls te
 mpls te max-link-bandwidth 100
 mpls te max-reservable-bandwidth 50
 mpls ldp
#
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
  peer 192.168.2.2 as-number 2
  import-route direct
#
ospf 1
 opaque-capability enable
 area 0.0.0.0
  network 2.2.2.2 0.0.0.0
  network 1.2.0.0 0.0.0.255
  mpls-te enable
#
```

CEA配置

```
#
 router id 3.3.3.3
#
interface Ethernet0/0
 port link-mode route
 description connects to PEA
 ip address 192.168.1.2 255.255.255.0
#
interface Ethernet0/1
 port link-mode route
 ip address 172.32.3.1 255.255.255.0
#
interface LoopBack0
 ip address 3.3.3.3 255.255.255.255
#
bgp 3
 network 3.3.3.3 255.255.255.255
 network 172.32.3.0 255.255.255.0
 undo synchronization
 peer 192.168.1.1 as-number 1
#
```

CEB配置

```
#
 router id 4.4.4.4
#
interface Ethernet0/0
 port link-mode route
 description connects to PEB
 ip address 192.168.2.2 255.255.255.0
#
interface Ethernet0/1
 port link-mode route
 ip address 172.32.4.1 255.255.255.0
#
interface LoopBack0
 ip address 4.4.4.4 255.255.255.255
#
bgp 2
 network 4.4.4.4 255.255.255.255
 network 172.32.4.0 255.255.255.0
 undo synchronization
 peer 192.168.2.1 as-number 1
#
```

四、**配置关键点**:

1) PEA上要定义TE Tunnel和定义隧道策略，并将隧道策略绑定到VPN实例中。