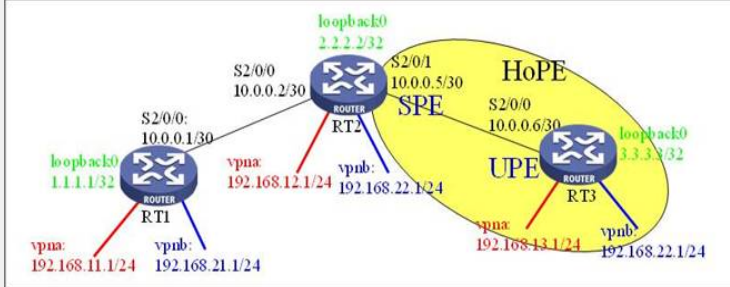# Typical HoPE Configuration

杨超 2007-09-18 发表

Typical HoPE Configuration

[Requirements]

RT2 is the SPE, and RT3 is the UPE. The SPE only needs to advertise one default route to the UPE.

[Networking diagram]

[Configuration script]

Configuration script (RT1)

```
#
 sysname RT1
#
 router id 1.1.1.1
#
 mpls lsr-id 1.1.1.1
#
radius scheme system
#
mpls
#
 mpls ldp
#
ip vpn-instance vpna
 route-distinguisher 100:1
 vpn-target 100:1 export-extcommunity
 vpn-target 100:1 import-extcommunity
#
ip vpn-instance vpnb
 route-distinguisher 200:1
 vpn-target 200:1 export-extcommunity
 vpn-target 200:1 import-extcommunity
#
domain system
#
interface Serial2/0/0
 link-protocol ppp
 ip address 10.0.0.1 255.255.255.252
 mpls
 mpls ldp enable
#
interface NULL0
#
interface LoopBack0
 ip address 1.1.1.1 255.255.255.255
#
interface LoopBack11
 ip binding vpn-instance vpna
 ip address 192.168.11.1 255.255.255.0
#
interface LoopBack21
 ip binding vpn-instance vpnb
 ip address 192.168.21.1 255.255.255.0
#
bgp 100
 undo synchronization
 group inter internal
 peer 2.2.2.2 group inter
 peer 2.2.2.2 connect-interface LoopBack0
 #
 ipv4-family vpn-instance vpna
  import-route direct
  undo synchronization
 #
 ipv4-family vpn-instance vpnb
  import-route direct
  undo synchronization
 #
 ipv4-family vpnv4
  peer inter enable
  peer 2.2.2.2 group inter
#
ospf 1
 area 0.0.0.0
  network 1.1.1.1 0.0.0.0
  network 10.0.0.0 0.0.0.3
#
return
```

Configuration script (RT2)

```
#
sysname RT2
#
router id 2.2.2.2
#
mpls lsr-id 2.2.2.2
#
radius scheme system
#
mpls
#
mpls ldp
#
ip vpn-instance vpna
route-distinguisher 100:1
vpn-target 100:1 export-extcommunity
vpn-target 100:1 import-extcommunity
#
ip vpn-instance vpnb
route-distinguisher 200:1
vpn-target 200:1 export-extcommunity
#
domain system
#
interface Serial2/0/0
link-protocol ppp
ip address 10.0.0.2 255.255.255.252
mpls
mpls ldp enable
#
interface Serial2/0/1
link-protocol ppp
ip address 10.0.0.5 255.255.255.252
mpls
mpls ldp enable
#
interface NULL0
#
interface LoopBack0
ip address 2.2.2.2 255.255.255.255
#
interface LoopBack12
ip binding vpn-instance vpna
ip address 192.168.12.1 255.255.255.0
#
interface LoopBack22
ip binding vpn-instance vpnb
ip address 192.168.22.1 255.255.255.0
#
bgp 100
undo synchronization
group inter internal
peer 1.1.1.1 group inter
peer 1.1.1.1 connect-interface LoopBack0
peer 3.3.3.3 group inter
peer 3.3.3.3 connect-interface LoopBack0
#
ipv4-family vpn-instance vpna
import-route direct
undo synchronization
#
ipv4-family vpn-instance vpnb
import-route direct
undo synchronization
#
ipv4-family vpnv4
peer inter enable
peer 1.1.1.1 group inter
peer 3.3.3.3 group inter
peer 3.3.3.3 upe                     /Configure 3.3.3.3 as the UPE of HoPE/
peer 3.3.3.3 default-route-advertise vpn-instance vpna
/Advertise the default route to vpna of the UPE/
peer 3.3.3.3 default-route-advertise vpn-instance vpnb
/ Advertise the default route to vpnb of the UPE/
#
ospf 1
area 0.0.0.0
network 2.2.2.2 0.0.0.0
network 10.0.0.0 0.0.0.3
network 10.0.0.4 0.0.0.3
#
return
```

Configuration script (RT3)

```
#
 sysname RT3
#
 router id 3.3.3.3
#
 mpls lsr-id 3.3.3.3
#
radius scheme system
#
 mpls
#
 mpls ldp
#
ip vpn-instance vpna
 route-distinguisher 100:1
 vpn-target 100:1 export-extcommunity
 vpn-target 100:1 import-extcommunity
#
ip vpn-instance vpnb
 route-distinguisher 200:1
 vpn-target 200:1 export-extcommunity
 vpn-target 200:1 import-extcommunity
#
domain system
#
interface Serial2/0/0
 link-protocol ppp
 ip address 10.0.0.6 255.255.255.252
 mpls
 mpls ldp enable
#
interface NULL0
#
interface LoopBack0
 ip address 3.3.3.3 255.255.255.255
#
interface LoopBack13
 ip binding vpn-instance vpna
 ip address 192.168.13.1 255.255.255.0
#
interface LoopBack23
 ip binding vpn-instance vpnb
 ip address 192.168.23.1 255.255.255.0
#
bgp 100
 undo synchronization
 group inter internal
 peer 2.2.2.2 group inter
 peer 2.2.2.2 connect-interface LoopBack0
#
 ipv4-family vpn-instance vpna
  import-route direct
  undo synchronization
#
 ipv4-family vpn-instance vpnb
  import-route direct
  undo synchronization
#
 ipv4-family vpnv4
  peer inter enable
  peer 2.2.2.2 group inter
#
ospf 1
 area 0.0.0.0
  network 3.3.3.3 0.0.0.0
  network 10.0.0.4 0.0.0.3
#
return
```

[Verification]

Private route table of vpna on RT3:

disp ip routing vpn vpna

 vpna   Route Information

 Routing Table: vpna   Route-Distinguisher: 100:1

Destination/Mask	Protocol	Pre	Cost	Nexthop	Interface
0.0.0.0/0	BGP	256	0	2.2.2.2	InLoopBack0
192.168.13.0/24	DIRECT	0	0	192.168.13.1	LoopBack13
192.168.13.1/32	DIRECT	0	0	127.0.0.1	InLoopBack0

There is only one default route advertised by RT2.

[Tip]

1. The configuration of HoPE is similar to that of MPLS except the SPE part (in red).

```
  peer 3.3.3.3 upe       /Configure 3.3.3.3 as the UPE of HoPE/
peer 3.3.3.3 default-route-advertise vpn-instance vpna        /Advertise the de
fault route to vpna of the UPE/
peer 3.3.3.3 default-route-advertise vpn-instance vpnb        /Advertise the de
fault route to vpnb of the UPE/
```

2. The configuration on the UPE is completely the same as the common MPLS configuration.
3. The SPE is featured by large-capacity route table, powerful forwarding performance, but limited interface resources; the route capacity and forwarding performance of the UPE are inferior to those of the SPE, but it is of strong access capability.