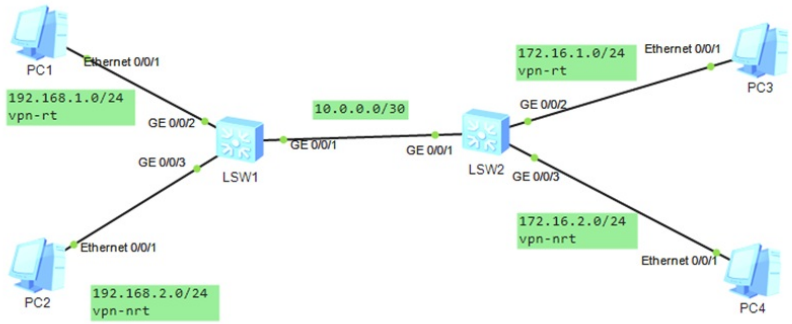
【MVS】华为交换机多VPN实例ISIS典型组网配置案例

网络相关 韦家宁 1天前 发表

组网及说明



本案例采用ENSP模拟器的华为交换机部署多VPN实例ISIS典型案例，为了实现业务的相互隔离，拟采用多VPN实例的方式来满足需求，全网采用多VPN实例ISIS实现互通。

配置步骤

1、按照网络拓扑图配置IP地址。

2、配置多VPN实例ISIS。

配置关键点

LSW1：

```
<Huawei>u t m
Info: Current terminal monitor is off.
<Huawei>u t d
Info: Current terminal debugging is off.
<Huawei>system
Enter system view, return user view with Ctrl+Z.
[Huawei]sysname LSW1
[LSW1]vlan 10
[LSW1-vlan10]quit
[LSW1]vlan 20
[LSW1-vlan20]quit
[LSW1]vlan 100
[LSW1-vlan100]quit
[LSW1]vlan 200
[LSW1-vlan200]quit
[LSW1]int gi 0/0/2
[LSW1-GigabitEthernet0/0/2]po li acc
[LSW1-GigabitEthernet0/0/2]po de vlan 10
[LSW1-GigabitEthernet0/0/2]quit
[LSW1]int gi 0/0/3
[LSW1-GigabitEthernet0/0/3]po li acc
[LSW1-GigabitEthernet0/0/3]po de vlan 20
[LSW1-GigabitEthernet0/0/3]quit
[LSW1]int gi 0/0/1
[LSW1-GigabitEthernet0/0/1]po li tr
[LSW1-GigabitEthernet0/0/1]undo po tr all vlan 1
[LSW1-GigabitEthernet0/0/1]po tr all vlan 100 200
[LSW1-GigabitEthernet0/0/1]quit
```

配置多VPN实例相关部署

```
[LSW1]ip vpn-instance vpn-rt
[LSW1-vpn-instance-vpn-rt]route-distinguisher 100:1
[LSW1-vpn-instance-vpn-rt-af-ipv4]vpn-target 100:1 both
[LSW1-vpn-instance-vpn-rt-af-ipv4]quit
[LSW1-vpn-instance-vpn-rt]quit
```

```
[LSW1]ip vpn-instance vpn-nrt
[LSW1-vpn-instance-vpn-nrt]route-distinguisher 200:1
[LSW1-vpn-instance-vpn-nrt-af-ipv4]vpn-target 200:1 both
[LSW1-vpn-instance-vpn-nrt-af-ipv4]quit
[LSW1-vpn-instance-vpn-nrt]quit

[LSW1]isis 1 vpn-instance vpn-rt
[LSW1-isis-1]is-level level-1-2
[LSW1-isis-1]network-entity 10.0000.0000.0001.00
[LSW1-isis-1]quit
[LSW1]isis 2 vpn-instance vpn-nrt
[LSW1-isis-2]is-level level-1-2
[LSW1-isis-2]network-entity 10.0000.0000.0001.00
[LSW1-isis-2]quit


[LSW1]int vlan 10
[LSW1-Vlanif10]ip binding vpn-instance vpn-rt
[LSW1-Vlanif10]ip address 192.168.1.1 24
[LSW1-Vlanif10]isis enable 1
[LSW1-Vlanif10]quit
[LSW1]int vlan 20
[LSW1-Vlanif20]ip binding vpn-instance vpn-nrt
[LSW1-Vlanif20]ip address 192.168.2.1 24
[LSW1-Vlanif20]isis enable 2
[LSW1-Vlanif20]quit
[LSW1]int vlan 100
[LSW1-Vlanif100]ip binding vpn-instance vpn-rt
[LSW1-Vlanif100]ip address 10.0.0.1 30
[LSW1-Vlanif100]isis enable 1
[LSW1-Vlanif100]quit
[LSW1]int vlan 200
[LSW1-Vlanif200]ip binding vpn-instance vpn-nrt
[LSW1-Vlanif200]ip address 10.0.0.1 30
[LSW1-Vlanif200]isis enable 2
[LSW1-Vlanif200]quit



LSW2：
<Huawei>u t m
Info: Current terminal monitor is off.
<Huawei>u t d
Info: Current terminal debugging is off.
<Huawei>system
Enter system view, return user view with Ctrl+Z.
[Huawei]sysname LSW2
[LSW2]vlan 100
[LSW2-vlan100]quit
[LSW2]vlan 200
[LSW2-vlan200]quit
[LSW2]vlan 10
[LSW2-vlan10]quit
[LSW2]vlan 20
[LSW2-vlan20]quit
[LSW2]int gi 0/0/2
[LSW2-GigabitEthernet0/0/2]po li acc
[LSW2-GigabitEthernet0/0/2]po de vlan 10
[LSW2-GigabitEthernet0/0/2]quit
[LSW2]int gi 0/0/3
[LSW2-GigabitEthernet0/0/3]po li acc
[LSW2-GigabitEthernet0/0/3]po de vlan 20
[LSW2-GigabitEthernet0/0/3]quit
[LSW2]int gi 0/0/1
```

[LSW2-GigabitEthernet0/0/1]po li tr
[LSW2-GigabitEthernet0/0/1]undo po tr all vlan 1
[LSW2-GigabitEthernet0/0/1]po tr all vlan 100 200
[LSW2-GigabitEthernet0/0/1]quit

多VPN实例相关配置
[LSW2]ip vpn-instance vpn-rt
[LSW2-vpn-instance-vpn-rt]route-distinguisher 100:1
[LSW2-vpn-instance-vpn-rt-af-ipv4]vpn-target 100:1 both
[LSW2-vpn-instance-vpn-rt-af-ipv4]quit
[LSW2-vpn-instance-vpn-rt]quit

[LSW2]ip vpn-instance vpn-nrt
[LSW2-vpn-instance-vpn-nrt]route-distinguisher 200:1
[LSW2-vpn-instance-vpn-nrt-af-ipv4]vpn-target 200:1 both
[LSW2-vpn-instance-vpn-nrt-af-ipv4]quit
[LSW2-vpn-instance-vpn-nrt]quit

[LSW2]isis 1 vpn-instance vpn-rt
[LSW2-isis-1]is-level level-1-2
[LSW2-isis-1]network-entity 10.0000.0000.0002.00
[LSW2-isis-1]quit

[LSW2]isis 2 vpn-instance vpn-nrt
[LSW2-isis-2]is-level level-1-2
[LSW2-isis-2]network-entity 10.0000.0000.0002.00
[LSW2-isis-2]quit

[LSW2]int vlan 10
[LSW2-Vlanif10]ip binding vpn-instance vpn-rt
[LSW2-Vlanif10]ip address 172.16.1.1 24
[LSW2-Vlanif10]isis enable 1
[LSW2-Vlanif10]quit
[LSW2]int vlan 20
[LSW2-Vlanif20]ip binding vpn-instance vpn-nrt
[LSW2-Vlanif20]ip address 172.16.2.1 24
[LSW2-Vlanif20]isis enable 2
[LSW2-Vlanif20]quit
[LSW2]int vlan 100
[LSW2-Vlanif100]ip binding vpn-instance vpn-rt
[LSW2-Vlanif100]ip address 10.0.0.2 30
[LSW2-Vlanif100]isis enable 1
[LSW2-Vlanif100]quit
[LSW2]int vlan 200
[LSW2-Vlanif200]ip binding vpn-instance vpn-nrt
[LSW2-Vlanif200]ip address 10.0.0.2 30
[LSW2-Vlanif200]isis enable 2
[LSW2-Vlanif200]quit

使用dis isis peer vpn-instance vpn-rt和dis isis peer vpn-instance vpn-nrt命令分别查看LSW1和LSW2的isis邻居建立的情况，已完成建立。

```
[LSW1]dis isis peer vpn-instance vpn-rt

                    Peer information for ISIS(vpn-rt-1)

  System Id     Interface          Circuit Id       State HoldTime Type     PRI
------------------------------------------------------------------------------
0000.0000.0002  Vlanif100          0000.0000.0002.02 Up   9s       L1(L1L2) 64
0000.0000.0002  Vlanif100          0000.0000.0002.02 Up   9s       L2(L1L2) 64

Total Peer(s): 2
[LSW1]
```

```
[LSW1]dis isis peer vpn-instance vpn-nrt

                    Peer information for ISIS(vpn-nrt-2)

  System Id     Interface          Circuit Id       State HoldTime Type      PRI
--------------------------------------------------------------------------------
0000.0000.0002  Vlanif200          0000.0000.0002.02 Up   9s       L1(L1L2) 64
0000.0000.0002  Vlanif200          0000.0000.0002.02 Up   7s       L2(L1L2) 64

Total Peer(s): 2
[LSW1]
```

```
[LSW2]dis isis peer vpn-instance vpn-rt

                    Peer information for ISIS(vpn-rt-1)

  System Id     Interface          Circuit Id       State HoldTime Type      PRI
--------------------------------------------------------------------------------
0000.0000.0001  Vlanif100          0000.0000.0002.02 Up   29s      L1(L1L2) 64
0000.0000.0001  Vlanif100          0000.0000.0002.02 Up   27s      L2(L1L2) 64

Total Peer(s): 2
[LSW2]
```

```
[LSW2]dis isis peer vpn-instance vpn-nrt

                    Peer information for ISIS(vpn-nrt-2)

  System Id     Interface          Circuit Id       State HoldTime Type      PRI
--------------------------------------------------------------------------------
0000.0000.0001  Vlanif200          0000.0000.0002.02 Up   23s      L1(L1L2) 64
0000.0000.0001  Vlanif200          0000.0000.0002.02 Up   29s      L2(L1L2) 64

Total Peer(s): 2
[LSW2]
```

分别查看LSW1和LSW2的路由表，携带vpn实例的参数，已能学习到对端传递过来相应VPN实例的路由。

```
[LSW1]dis ip routing-table vpn-instance vpn-rt
Route Flags: R - relay, D - download to fib
------------------------------------------------------------------------------
Routing Tables: vpn-rt
         Destinations : 5        Routes : 5

Destination/Mask    Proto   Pre  Cost      Flags NextHop         Interface

       10.0.0.0/30  Direct  0    0           D   10.0.0.1        Vlanif100
       10.0.0.1/32  Direct  0    0           D   127.0.0.1       Vlanif100
     172.16.1.0/24  ISIS-L1 15   20          D   10.0.0.2        Vlanif100
    192.168.1.0/24  Direct  0    0           D   192.168.1.1     Vlanif10
    192.168.1.1/32  Direct  0    0           D   127.0.0.1       Vlanif10

[LSW1]
```

```
[LSW1]dis ip routing-table vpn-instance vpn-nrt
Route Flags: R - relay, D - download to fib
------------------------------------------------------------------------------
Routing Tables: vpn-nrt
         Destinations : 5        Routes : 5

Destination/Mask    Proto   Pre  Cost      Flags NextHop         Interface

       10.0.0.0/30  Direct  0    0           D   10.0.0.1        Vlanif200
       10.0.0.1/32  Direct  0    0           D   127.0.0.1       Vlanif200
     172.16.2.0/24  ISIS-L1 15   20          D   10.0.0.2        Vlanif200
    192.168.2.0/24  Direct  0    0           D   192.168.2.1     Vlanif20
    192.168.2.1/32  Direct  0    0           D   127.0.0.1       Vlanif20

[LSW1]
```

```
[LSW2]dis ip routing-table vpn-instance vpn-rt
Route Flags: R - relay, D - download to fib
------------------------------------------------------------------------------
Routing Tables: vpn-rt
         Destinations : 5        Routes : 5

Destination/Mask    Proto   Pre  Cost      Flags NextHop         Interface

       10.0.0.0/30  Direct  0    0           D   10.0.0.2        Vlanif100
       10.0.0.2/32  Direct  0    0           D   127.0.0.1       Vlanif100
     172.16.1.0/24  Direct  0    0           D   172.16.1.1      Vlanif10
     172.16.1.1/32  Direct  0    0           D   127.0.0.1       Vlanif10
    192.168.1.0/24  ISIS-L1 15   20          D   10.0.0.1        Vlanif100

[LSW2]
```

```
[LSW2]dis ip routing-table vpn-instance vpn-nrt
Route Flags: R - relay, D - download to fib
------------------------------------------------------------------------------
Routing Tables: vpn-nrt
         Destinations : 5        Routes : 5

Destination/Mask    Proto   Pre  Cost      Flags NextHop         Interface

       10.0.0.0/30  Direct  0    0           D   10.0.0.2        Vlanif200
       10.0.0.2/32  Direct  0    0           D   127.0.0.1       Vlanif200
     172.16.2.0/24  Direct  0    0           D   172.16.2.1      Vlanif20
     172.16.2.1/32  Direct  0    0           D   127.0.0.1       Vlanif20
    192.168.2.0/24  ISIS-L1 15   20          D   10.0.0.1        Vlanif200

[LSW2]
```

PC分别填写IP地址，相同VPN实例的业务能PING通，不同VPN实例的业务不能互通。

PC1

基础配置 | 命令行 | 组播 | UDP发包工具 | 串口

```
Welcome to use PC Simulator!

PC>ping 172.16.1.2

Ping 172.16.1.2: 32 data bytes, Press Ctrl_C to break
From 172.16.1.2: bytes=32 seq=1 ttl=126 time=125 ms
From 172.16.1.2: bytes=32 seq=2 ttl=126 time=79 ms
From 172.16.1.2: bytes=32 seq=3 ttl=126 time=78 ms
From 172.16.1.2: bytes=32 seq=4 ttl=126 time=63 ms
From 172.16.1.2: bytes=32 seq=5 ttl=126 time=79 ms

--- 172.16.1.2 ping statistics ---
  5 packet(s) transmitted
  5 packet(s) received
  0.00% packet loss
  round-trip min/avg/max = 63/84/125 ms

PC>ping 172.16.2.2

Ping 172.16.2.2: 32 data bytes, Press Ctrl_C to break
Request timeout!
Request timeout!
Request timeout!
Request timeout!
Request timeout!

--- 172.16.2.2 ping statistics ---
  5 packet(s) transmitted
  0 packet(s) received
  100.00% packet loss
```

PC2

基础配置 | 命令行 | 组播 | UDP发包工具 | 串口

```
Welcome to use PC Simulator!

PC>ping 172.16.2.2

Ping 172.16.2.2: 32 data bytes, Press Ctrl_C to break
From 172.16.2.2: bytes=32 seq=1 ttl=126 time=110 ms
From 172.16.2.2: bytes=32 seq=2 ttl=126 time=79 ms
From 172.16.2.2: bytes=32 seq=3 ttl=126 time=78 ms
From 172.16.2.2: bytes=32 seq=4 ttl=126 time=110 ms
From 172.16.2.2: bytes=32 seq=5 ttl=126 time=63 ms

--- 172.16.2.2 ping statistics ---
  5 packet(s) transmitted
  5 packet(s) received
  0.00% packet loss
  round-trip min/avg/max = 63/88/110 ms

PC>ping 172.16.1.2

Ping 172.16.1.2: 32 data bytes, Press Ctrl_C to break
Request timeout!
Request timeout!
Request timeout!
Request timeout!
Request timeout!

--- 172.16.1.2 ping statistics ---
  5 packet(s) transmitted
  0 packet(s) received
  100.00% packet loss
```

PC3

基础配置 | 命令行 | 组播 | UDP发包工具 | 串口

```
Welcome to use PC Simulator!

PC>ping 192.168.1.2

Ping 192.168.1.2: 32 data bytes, Press Ctrl_C to break
From 192.168.1.2: bytes=32 seq=1 ttl=126 time=62 ms
From 192.168.1.2: bytes=32 seq=2 ttl=126 time=78 ms
From 192.168.1.2: bytes=32 seq=3 ttl=126 time=78 ms
From 192.168.1.2: bytes=32 seq=4 ttl=126 time=94 ms
From 192.168.1.2: bytes=32 seq=5 ttl=126 time=94 ms

--- 192.168.1.2 ping statistics ---
  5 packet(s) transmitted
  5 packet(s) received
  0.00% packet loss
  round-trip min/avg/max = 62/81/94 ms

PC>ping 192.168.2.2

Ping 192.168.2.2: 32 data bytes, Press Ctrl_C to break
Request timeout!
Request timeout!
Request timeout!
Request timeout!
Request timeout!

--- 192.168.2.2 ping statistics ---
  5 packet(s) transmitted
  0 packet(s) received
  100.00% packet loss
```

PC4

基础配置 | 命令行 | 组播 | UDP发包工具 | 串口

```
Welcome to use PC Simulator!

PC>ping 192.168.2.2

Ping 192.168.2.2: 32 data bytes, Press Ctrl_C to break
From 192.168.2.2: bytes=32 seq=1 ttl=126 time=93 ms
From 192.168.2.2: bytes=32 seq=2 ttl=126 time=78 ms
From 192.168.2.2: bytes=32 seq=3 ttl=126 time=63 ms
Request timeout!
From 192.168.2.2: bytes=32 seq=5 ttl=126 time=94 ms

--- 192.168.2.2 ping statistics ---
  5 packet(s) transmitted
  4 packet(s) received
  20.00% packet loss
  round-trip min/avg/max = 63/82/94 ms

PC>ping 192.168.1.2

Ping 192.168.1.2: 32 data bytes, Press Ctrl_C to break
Request timeout!
Request timeout!
Request timeout!
Request timeout!
Request timeout!

--- 192.168.1.2 ping statistics ---
  5 packet(s) transmitted
  0 packet(s) received
  100.00% packet loss
```

至此，华为交换机多VPN实例ISIS典型组网配置案例已完成！