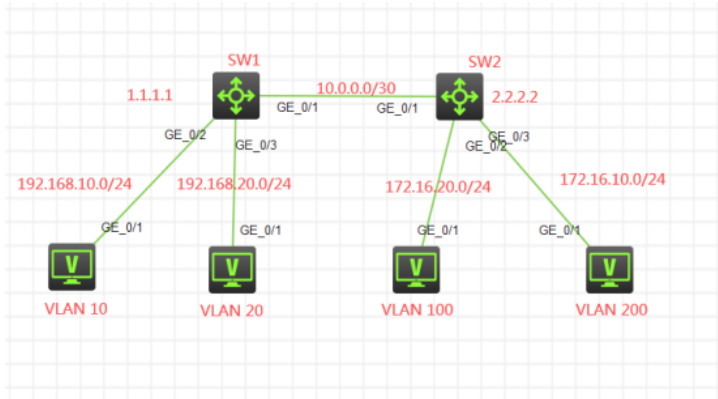


# 知 S5820 多vpn-instance实例之静态路由典型组网配置案例

静态路由 MCE H3C模拟器 韦家宁 2020-04-01 发表

## 组网及说明



### 组网说明:

本案例采用H3C HCL模拟器来模拟多vpn-instance实例静态路由典型组网配置，为了实现不同VLAN之间通过不同的vpn实例进行隔离，因此采用多vpn实例捆绑到相应的VLAN。VLAN 400与用于在SW1、SW2的vpn-rt互联使用，VLAN 500用于SW1、SW2的vpn-nrt互联使用。由于VLAN 400与VLAN 500绑定到了不同的VPN实例，因此可以共同使用10.0.0.0/30作为互联地址。业务地址、互联地址、Loopback地址如拓扑图所示。其中VLAN 10、VLAN 100属于vpn-rt中，VLAN 20、VLAN 200属于vpn-nrt实例中，另外SW1与SW2之间的互联采用trunk，互联的VLAN使用VLAN 400（绑定到vpn-rt）和VLAN 500（绑定到vpn-nrt），全网采用多VPN实例静态路由互联互通，不通VPN实例的业务地址不能互通。

vpn-rt规划如下:

RD:100:1

RT:100:1

vpn-nrt规划如下:

RD:200:1

RT:200:1

## 配置步骤

- 1、分别在SW1和SW2创建VPN实例
- 2、根据组网说明将各业务地址、互联地址、loopback绑定到vpn实例
- 3、使用多VPN实例静态路由实现互通
- 4、SW1与SW2之间的互联采用trunk，仅允许互联的VLAN互通。

## 配置关键点

SW1:

sys

[H3C]sysname SW1

#创建vpn-rt实例，并配置RD值和RT值

[SW1]ip vpn-instance vpn-rt

[SW1-vpn-instance-vpn-rt]route-distinguisher 100:1

[SW1-vpn-instance-vpn-rt]vpn-target 100:1

[SW1-vpn-instance-vpn-rt]quit

#创建vpn-nrt实例，并配置RD值和RT值

[SW1]ip vpn-instance vpn-nrt

[SW1-vpn-instance-vpn-nrt]route-distinguisher 200:1

[SW1-vpn-instance-vpn-nrt]vpn-target 200:1

[SW1-vpn-instance-vpn-nrt]quit

[SW1]int LoopBack 0

[SW1-LoopBack0]ip binding vpn-instance vpn-rt //将Loopback0绑定到vpn-rt

Some configurations on the interface are removed.

[SW1-LoopBack0]ip address 1.1.1.1 32

[SW1-LoopBack0]quit

[SW1]int LoopBack 1

[SW1-LoopBack1]ip binding vpn-instance vpn-nrt //将Loopback1绑定到vpn-nrt

Some configurations on the interface are removed.

```
[SW1-LoopBack1]ip address 1.1.1.1 32
```

```
[SW1-LoopBack1]quit
```

```
[SW1]vlan 10
```

```
[SW1-vlan10]quit
```

```
[SW1]vlan 20
```

```
[SW1-vlan20]quit
```

```
[SW1]vlan 400
```

```
[SW1-vlan400]quit
```

```
[SW1]vlan 500
```

```
[SW1-vlan500]quit
```

```
[SW1]int vlan 10
```

```
[SW1-Vlan-interface10]ip binding vpn-instance vpn-rt //将VLAN 10绑定到vpn-rt
```

```
Some configurations on the interface are removed.
```

```
[SW1-Vlan-interface10]ip address 192.168.10.1 24
```

```
[SW1-Vlan-interface10]quit
```

```
[SW1]int vlan 20
```

```
[SW1-Vlan-interface20]ip binding vpn-instance vpn-nrt //将VLAN 20绑定到vpn-nrt
```

```
Some configurations on the interface are removed.
```

```
[SW1-Vlan-interface20]ip address 192.168.20.1 24
```

```
[SW1-Vlan-interface20]quit
```

```
[SW1]int vlan 400
```

```
[SW1-Vlan-interface400]ip binding vpn-instance vpn-rt //将VLAN400绑定到vpn-rt
```

```
Some configurations on the interface are removed.
```

```
[SW1-Vlan-interface400]description
```

```
[SW1-Vlan-interface400]ip address 10.0.0.1 30
```

```
[SW1-Vlan-interface400]quit
```

```
[SW1]int vlan 500
```

```
[SW1-Vlan-interface500]ip binding vpn-instance vpn-nrt //将VLAN 500绑定到vpn-nrt
```

```
Some configurations on the interface are removed.
```

```
[SW1-Vlan-interface500]description
```

```
[SW1-Vlan-interface500]ip address 10.0.0.1 30
```

```
[SW1-Vlan-interface500]quit
```

```
[SW1]
```

```
[SW1]int gi 1/0/2
```

```
[SW1-GigabitEthernet1/0/2]port link-type access
```

```
[SW1-GigabitEthernet1/0/2]port access vlan 10
```

```
[SW1-GigabitEthernet1/0/2]quit
```

```
[SW1]int gi 1/0/3
```

```
[SW1-GigabitEthernet1/0/3]port link-type access
```

```
[SW1-GigabitEthernet1/0/3]port access vlan 20
```

```
[SW1-GigabitEthernet1/0/3]quit
```

```
[SW1]
```

```
[SW1]int gi 1/0/1
```

```
[SW1-GigabitEthernet1/0/1]description
```

```
[SW1-GigabitEthernet1/0/1]port link-type trunk
```

```
[SW1-GigabitEthernet1/0/1]undo port trunk permit vlan 1
```

```
[SW1-GigabitEthernet1/0/1]port trunk permit vlan 400 500
```

```
[SW1-GigabitEthernet1/0/1]quit
```

配置静态路由指向，并绑定到相应的VPN实例中

```
[SW1]ip route-static vpn-instance vpn-rt 2.2.2.2 255.255.255.255 10.0.0.2
```

```
[SW1]ip route-static vpn-instance vpn-rt 172.16.20.0 255.255.255.0 10.0.0.2
```

```
[SW1]ip route-static vpn-instance vpn-nrt 2.2.2.2 255.255.255.255 10.0.0.2
```

```
[SW1]ip route-static vpn-instance vpn-nrt 172.16.10.0 255.255.255.0 10.0.0.2
```

SW2:

```
sys
```

```
[H3C]sysname SW2
```

```
[SW2]ip vpn-instance vpn-rt
```

```
[SW2-vpn-instance-vpn-rt]route-distinguisher 100:1
```

```

[SW2-vpn-instance-vpn-rt]vpn-target 100:1
[SW2-vpn-instance-vpn-rt]quit
[SW2]ip vpn-instance vpn-nrt
[SW2-vpn-instance-vpn-nrt]route-distinguisher 200:1
[SW2-vpn-instance-vpn-nrt]vpn-target 200:1
[SW2-vpn-instance-vpn-nrt]quit
[SW2]int LoopBack 0
[SW2-LoopBack0]ip binding vpn-instance vpn-rt
Some configurations on the interface are removed.
[SW2-LoopBack0]ip address 2.2.2.2 32
[SW2-LoopBack0]quit
[SW2]int LoopBack 1
[SW2-LoopBack1]ip binding vpn-instance vpn-nrt
Some configurations on the interface are removed.
[SW2-LoopBack1]ip address 2.2.2.2 32
[SW2-LoopBack1]quit
[SW2]vlan 100
[SW2-vlan100]quit
[SW2]vlan 200
[SW2-vlan200]quit
[SW2]vlan 400
[SW2-vlan400]quit
[SW2]vlan 500
[SW2-vlan500]quit
[SW2]int vlan 100
[SW2-Vlan-interface100]ip binding vpn-instance vpn-rt
Some configurations on the interface are removed.
[SW2-Vlan-interface100]ip address 172.16.20.1 24
[SW2-Vlan-interface100]quit
[SW2]int vlan 200
[SW2-Vlan-interface200]ip binding vpn-instance vpn-nrt
Some configurations on the interface are removed.
[SW2-Vlan-interface200]ip address 172.16.10.1 24
[SW2-Vlan-interface200]quit
[SW2]int vlan 400
[SW2-Vlan-interface400]ip binding vpn-instance vpn-rt
Some configurations on the interface are removed.
[SW2-Vlan-interface400]description
[SW2-Vlan-interface400]ip address 10.0.0.2 30
[SW2-Vlan-interface400]quit
[SW2]int vlan 500
[SW2-Vlan-interface500]ip binding vpn-instance vpn-nrt
Some configurations on the interface are removed.
[SW2-Vlan-interface500]description
[SW2-Vlan-interface500]ip address 10.0.0.2 30
[SW2-Vlan-interface500]quit
[SW2]int gi 1/0/2
[SW2-GigabitEthernet1/0/2]port link-type access
[SW2-GigabitEthernet1/0/2]port access vlan 100
[SW2-GigabitEthernet1/0/2]quit
[SW2]int gi 1/0/3
[SW2-GigabitEthernet1/0/3]port link-type access
[SW2-GigabitEthernet1/0/3]port access vlan 200
[SW2-GigabitEthernet1/0/3]quit
[SW2]int gi 1/0/1
[SW2-GigabitEthernet1/0/1]description
[SW2-GigabitEthernet1/0/1]port link-type trunk
[SW2-GigabitEthernet1/0/1]undo port trunk permit vlan 1
[SW2-GigabitEthernet1/0/1]port trunk permit vlan 400 500
[SW2-GigabitEthernet1/0/1]quit

```

配置静态路由，并绑定到VPN实例中

```

[SW2]ip route-static vpn-instance vpn-rt 1.1.1.1 255.255.255.255 10.0.0.1
[SW2]ip route-static vpn-instance vpn-rt 192.168.10.0 255.255.255.0 10.0.0.1

```

```
[SW2]ip route-static vpn-instance vpn-nrt 1.1.1.1 255.255.255.0 10.0.0.1
```

```
[SW2]ip route-static vpn-instance vpn-nrt 192.168.20.0 255.255.255.0 10.0.0.1
```

查看各VPN路由表确认VPN路由已学习到

```
[SW1]dis ip routing-table vpn-instance vpn-rt
```

Destinations : 19    Routes : 19

Destination/Mask	Proto	Pre	Cost	NextHop	Interface
0.0.0.0/32	Direct	0	0	127.0.0.1	InLoop0
1.1.1.1/32	Direct	0	0	127.0.0.1	InLoop0
2.2.2.2/32	Static	60	0	10.0.0.2	Vlan400
10.0.0.0/30	Direct	0	0	10.0.0.1	Vlan400
10.0.0.0/32	Direct	0	0	10.0.0.1	Vlan400
10.0.0.1/32	Direct	0	0	127.0.0.1	InLoop0
10.0.0.3/32	Direct	0	0	10.0.0.1	Vlan400
127.0.0.0/8	Direct	0	0	127.0.0.1	InLoop0
127.0.0.0/32	Direct	0	0	127.0.0.1	InLoop0
127.0.0.1/32	Direct	0	0	127.0.0.1	InLoop0
127.255.255.255/32	Direct	0	0	127.0.0.1	InLoop0
172.16.20.0/24	Static	60	0	10.0.0.2	Vlan400
192.168.10.0/24	Direct	0	0	192.168.10.1	Vlan10
192.168.10.0/32	Direct	0	0	192.168.10.1	Vlan10
192.168.10.1/32	Direct	0	0	127.0.0.1	InLoop0
192.168.10.255/32	Direct	0	0	192.168.10.1	Vlan10
224.0.0.0/4	Direct	0	0	0.0.0.0	NULL0
224.0.0.0/24	Direct	0	0	0.0.0.0	NULL0
255.255.255.255/32	Direct	0	0	127.0.0.1	InLoop0

```
[SW1]
```

```
[SW1]dis ip routing-table vpn-instance vpn-nrt
```

Destinations : 19    Routes : 19

Destination/Mask	Proto	Pre	Cost	NextHop	Interface
0.0.0.0/32	Direct	0	0	127.0.0.1	InLoop0
1.1.1.1/32	Direct	0	0	127.0.0.1	InLoop0
2.2.2.2/32	Static	60	0	10.0.0.2	Vlan500
10.0.0.0/30	Direct	0	0	10.0.0.1	Vlan500
10.0.0.0/32	Direct	0	0	10.0.0.1	Vlan500
10.0.0.1/32	Direct	0	0	127.0.0.1	InLoop0
10.0.0.3/32	Direct	0	0	10.0.0.1	Vlan500
127.0.0.0/8	Direct	0	0	127.0.0.1	InLoop0
127.0.0.0/32	Direct	0	0	127.0.0.1	InLoop0
127.0.0.1/32	Direct	0	0	127.0.0.1	InLoop0
127.255.255.255/32	Direct	0	0	127.0.0.1	InLoop0
172.16.10.0/24	Static	60	0	10.0.0.2	Vlan500
192.168.20.0/24	Direct	0	0	192.168.20.1	Vlan20
192.168.20.0/32	Direct	0	0	192.168.20.1	Vlan20
192.168.20.1/32	Direct	0	0	127.0.0.1	InLoop0
192.168.20.255/32	Direct	0	0	192.168.20.1	Vlan20
224.0.0.0/4	Direct	0	0	0.0.0.0	NULL0
224.0.0.0/24	Direct	0	0	0.0.0.0	NULL0
255.255.255.255/32	Direct	0	0	127.0.0.1	InLoop0

```
[SW1]
```

```
[SW2]dis ip routing-table vpn-instance vpn-rt
```

Destinations : 19    Routes : 19

Destination/Mask	Proto	Pre	Cost	NextHop	Interface
0.0.0.0/32	Direct	0	0	127.0.0.1	InLoop0
1.1.1.1/32	Static	60	0	10.0.0.1	Vlan400
2.2.2.2/32	Direct	0	0	127.0.0.1	InLoop0

```

10.0.0.0/30   Direct 0 0    10.0.0.2   Vlan400
10.0.0.0/32   Direct 0 0    10.0.0.2   Vlan400
10.0.0.2/32   Direct 0 0    127.0.0.1   InLoop0
10.0.0.3/32   Direct 0 0    10.0.0.2   Vlan400
127.0.0.0/8   Direct 0 0    127.0.0.1   InLoop0
127.0.0.0/32   Direct 0 0    127.0.0.1   InLoop0
127.0.0.1/32   Direct 0 0    127.0.0.1   InLoop0
127.255.255.255/32 Direct 0 0    127.0.0.1   InLoop0
172.16.20.0/24 Direct 0 0    172.16.20.1 Vlan100
172.16.20.0/32 Direct 0 0    172.16.20.1 Vlan100
172.16.20.1/32 Direct 0 0    127.0.0.1   InLoop0
172.16.20.255/32 Direct 0 0    172.16.20.1 Vlan100
192.168.10.0/24 Static 60 0    10.0.0.1    Vlan400
224.0.0.0/4   Direct 0 0    0.0.0.0    NULL0
224.0.0.0/24   Direct 0 0    0.0.0.0    NULL0
255.255.255.255/32 Direct 0 0    127.0.0.1   InLoop0
[SW2]

```

[SW2]dis ip routing-table vpn-instance vpn-nrt

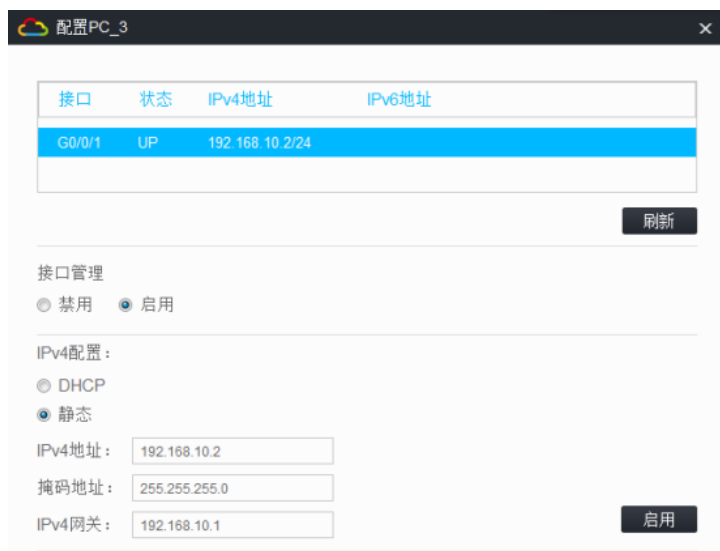
Destinations : 19    Routes : 19

```

Destination/Mask Proto Pre Cost   NextHop   Interface
0.0.0.0/32      Direct 0 0     127.0.0.1 InLoop0
1.1.1.0/24      Static 60 0     10.0.0.1  Vlan500
2.2.2.2/32      Direct 0 0     127.0.0.1 InLoop0
10.0.0.0/30     Direct 0 0     10.0.0.2  Vlan500
10.0.0.0/32     Direct 0 0     10.0.0.2  Vlan500
10.0.0.2/32     Direct 0 0     127.0.0.1 InLoop0
10.0.0.3/32     Direct 0 0     10.0.0.2  Vlan500
127.0.0.0/8     Direct 0 0     127.0.0.1 InLoop0
127.0.0.0/32    Direct 0 0     127.0.0.1 InLoop0
127.0.0.1/32    Direct 0 0     127.0.0.1 InLoop0
127.255.255.255/32 Direct 0 0    127.0.0.1 InLoop0
172.16.10.0/24  Direct 0 0     172.16.10.1 Vlan200
172.16.10.0/32  Direct 0 0     172.16.10.1 Vlan200
172.16.10.1/32  Direct 0 0     127.0.0.1   InLoop0
172.16.10.255/32 Direct 0 0    172.16.10.1 Vlan200
192.168.20.0/24 Static 60 0     10.0.0.1    Vlan500
224.0.0.0/4     Direct 0 0     0.0.0.0    NULL0
224.0.0.0/24    Direct 0 0     0.0.0.0    NULL0
255.255.255.255/32 Direct 0 0    127.0.0.1   InLoop0
[SW2]

```

PC填写相应的IP地址，同VPN实例的能PING通，不同VPN实例的不能PING通



配置PC\_5

接口	状态	IPv4地址	IPv6地址
G0/0/1	UP	192.168.20.2/24	

刷新

接口管理  
 禁用  启用

IPv4配置：  
 DHCP  
 静态

IPv4地址：  
掩码地址：  
IPv4网关：

启用

配置PC\_6

接口	状态	IPv4地址	IPv6地址
G0/0/1	UP	172.16.20.2/24	

刷新

接口管理  
 禁用  启用

IPv4配置：  
 DHCP  
 静态

IPv4地址：  
掩码地址：  
IPv4网关：

启用

配置PC\_4

接口	状态	IPv4地址	IPv6地址
G0/0/1	UP	172.16.10.2/24	

刷新

接口管理  
 禁用  启用

IPv4配置：  
 DHCP  
 静态

IPv4地址：  
掩码地址：  
IPv4网关：

启用

同VPN实例能互通，不同VPN实例不能PING通

```
h3c_20udke
S5820V2-54Q3-GE_1 S5820V2-54Q3-GE_2 PC_3 PC_6 PC_4
<H3C>
<H3C>ping 192.168.10.2
Ping 192.168.10.2 (192.168.10.2): 56 data bytes, press CTRL_C to break
Request time out
Request time out
Request time out
Request time out
Request time out
Request time out
Request time out
Request time out
--- Ping statistics for 192.168.10.2 ---
5 packet(s) transmitted, 0 packet(s) received, 100.0% packet loss
<H3C>#dec 22 16:28:24:165 2019 H3C PING/6/PING_STATISTICS: Ping statistics for 192.168.10.2: 5 packet(s) transmitted, 0 packet(s) received, 100.0% packet loss.

<H3C>ping 192.168.20.2
Ping 192.168.20.2 (192.168.20.2): 56 data bytes, press CTRL_C to break
56 bytes from 192.168.20.2: icmp_seq=0 ttl=253 time=3.000 ms
56 bytes from 192.168.20.2: icmp_seq=1 ttl=253 time=2.000 ms
56 bytes from 192.168.20.2: icmp_seq=2 ttl=253 time=3.000 ms
56 bytes from 192.168.20.2: icmp_seq=3 ttl=253 time=2.000 ms
56 bytes from 192.168.20.2: icmp_seq=4 ttl=253 time=3.000 ms
--- Ping statistics for 192.168.20.2 ---
5 packet(s) transmitted, 5 packet(s) received, 0.0% packet loss
round-trip min/avg/max/std-dev = 2.000/2.600/3.000/0.490 ms
```

至此，多VPN实例静态路由典型组网配置案例已完成！