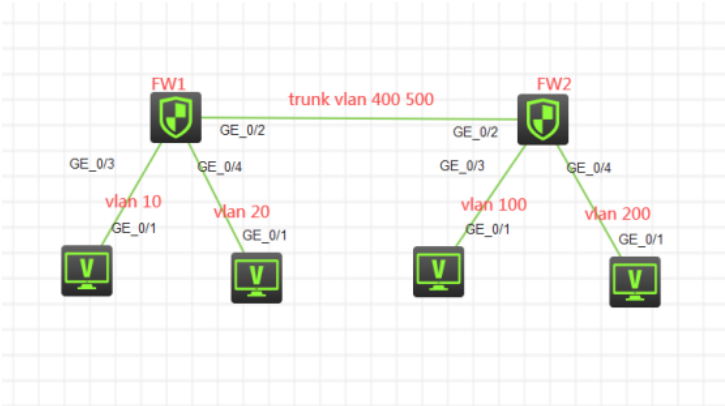


知 F1060防火墙 MPLS VPN OPTION-A典型组网配置案例

设备部署方式 H3C模拟器 韦家宁 2020-04-05 发表

组网及说明



组网说明：  
本案例采用H3C HCL模拟器的F1060防火墙来模拟MPLS VPN OPTION-A 典型组网配置。为了实现业务的相互隔离，需要将不同的VLAN绑定到不同的VPN实例中进行业务的互通，因此在本案例引入多实例VPN，将相关的业务进行捆绑。FW1与FW2采用路由模式，其中FW1属于AS100，FW2属于AS200，FW1与FW2的互联使用trunk，允许VLAN 400 VLAN 500通过，最终建立多VPN实例EBGP邻居关系，宣告业务网段，使得相同VPN实例的业务能互通，不同VPN实例的业务不能互通。

VPN实例规划如下：

| VPN实例名称 | RD值   | RT值   | 业务类型  | 备注 |
|---------|-------|-------|-------|----|
| vpn-rt  | 100:1 | 100:1 | 实时业务  |    |
| vpn-nrt | 200:1 | 200:1 | 非实时业务 |    |
|         |       |       |       |    |

IP地址规划如下：

| 设备名称 | 接口/VLAN    | IP地址         | 子网掩码位数 | 所属VPN实例 | 备注 |
|------|------------|--------------|--------|---------|----|
| FW1  | VLAN 400   | 10.0.0.1     | 30     | vpn-rt  | 互联 |
|      | VLAN 500   | 10.0.0.1     | 30     | vpn-nrt | 互联 |
|      | VLAN 10    | 192.168.10.1 | 24     | vpn-rt  |    |
|      | VLAN 20    | 192.168.20.1 | 24     | vpn-nrt |    |
|      | Loopback 0 | 1.1.1.1      | 32     | vpn-rt  |    |
|      | Loopback 1 | 2.2.2.2      | 32     | vpn-nrt |    |
| FW2  | VLAN 400   | 10.0.0.2     | 30     | vpn-rt  | 互联 |
|      | VLAN 500   | 10.0.0.2     | 30     | vpn-nrt | 互联 |
|      | VLAN 100   | 172.16.10.1  | 24     | vpn-rt  |    |
|      | VLAN 200   | 172.16.20.1  | 24     | vpn-nrt |    |
|      | Loopback 0 | 3.3.3.3      | 32     | vpn-rt  |    |
|      | Loopback 1 | 4.4.4.4      | 32     | vpn-nrt |    |

配置步骤

FW1：  
sys  
System View: return to User View with Ctrl+Z.  
[H3C]sysname FW1  
#创建VPN实例，指定RD值、RT值  
[FW1]ip vpn-instance vpn-rt  
[FW1-vpn-instance-vpn-rt]route-distinguisher 100:1  
[FW1-vpn-instance-vpn-rt]vpn-target 100:1  
[FW1-vpn-instance-vpn-rt]quit  
[FW1]ip vpn-instance vpn-nrt  
[FW1-vpn-instance-vpn-nrt]route-distinguisher 200:1  
[FW1-vpn-instance-vpn-nrt]vpn-target 200:1  
[FW1-vpn-instance-vpn-nrt]quit  
[FW1]acl basic 2000  
[FW1-acl-ipv4-basic-2000]rule 0 permit source any  
[FW1-acl-ipv4-basic-2000]rule 1 permit source any vpn-instance vpn-rt  
[FW1-acl-ipv4-basic-2000]rule 2 permit source any vpn-instance vpn-nrt

```

[FW1-acl-ipv4-basic-2000]quit
[FW1]zone-pair security source trust destination untrust
[FW1-zone-pair-security-Trust-Untrust]packet-filter 2000
[FW1-zone-pair-security-Trust-Untrust]quit
[FW1]
[FW1]zone-pair security source untrust destination trust
[FW1-zone-pair-security-Untrust-Trust]packet-filter 2000
[FW1-zone-pair-security-Untrust-Trust]quit
[FW1]
[FW1]zone-pair security source trust destination local
[FW1-zone-pair-security-Trust-Local]packet-filter 2000
[FW1-zone-pair-security-Trust-Local]quit
[FW1]
[FW1]zone-pair security source local destination trust
[FW1-zone-pair-security-Local-Trust]packet-filter 2000
[FW1-zone-pair-security-Local-Trust]quit
[FW1]
[FW1]zone-pair security source untrust destination local
[FW1-zone-pair-security-Untrust-Local]packet-filter 2000
[FW1-zone-pair-security-Untrust-Local]quit
[FW1]
[FW1]zone-pair security source local destination untrust
[FW1-zone-pair-security-Local-Untrust]packet-filter 2000
[FW1-zone-pair-security-Local-Untrust]quit
[FW1]
[FW1]zone-pair security source trust destination trust
[FW1-zone-pair-security-Trust-Trust]packet-filter 2000
[FW1-zone-pair-security-Trust-Trust]quit
[FW1]
[FW1]zone-pair security source untrust destination untrust
[FW1-zone-pair-security-Untrust-Untrust]packet-filter 2000
[FW1-zone-pair-security-Untrust-Untrust]quit
[FW1]vlan 10
[FW1-vlan10]quit
[FW1]vlan 20
[FW1-vlan20]quit
[FW1]vlan 400
[FW1-vlan400]quit
[FW1]vlan 500
[FW1-vlan500]quit
[FW1]int vlan 10
[FW1-Vlan-interface10]ip binding vpn-instance vpn-rt //将VLAN绑定到VPN实例
Some configurations on the interface are removed.
[FW1-Vlan-interface10]ip address 192.168.10.1 24
[FW1-Vlan-interface10]quit
[FW1]int vlan 20
[FW1-Vlan-interface20]ip binding vpn-instance vpn-nrt
Some configurations on the interface are removed.
[FW1-Vlan-interface20]ip address 192.168.20.1 24
[FW1-Vlan-interface20]quit
[FW1]int vlan 400
[FW1-Vlan-interface400]ip binding vpn-instance vpn-rt
Some configurations on the interface are removed.
[FW1-Vlan-interface400]des
[FW1-Vlan-interface400]ip address 10.0.0.1 30
[FW1-Vlan-interface400]quit
[FW1]int vlan 500
[FW1-Vlan-interface500]ip binding vpn-instance vpn-nrt
Some configurations on the interface are removed.
[FW1-Vlan-interface500]des
[FW1-Vlan-interface500]ip address 10.0.0.1 30
[FW1-Vlan-interface500]quit
[FW1]int gi 1/0/3
[FW1-GigabitEthernet1/0/3]port link-mode bridge

```

```

[FW1-GigabitEthernet1/0/3]port link-type access
[FW1-GigabitEthernet1/0/3]port access vlan 10
[FW1-GigabitEthernet1/0/3]quit
[FW1]int gi 1/0/4
[FW1-GigabitEthernet1/0/4]port link-mode bridge
[FW1-GigabitEthernet1/0/4]port link-type access
[FW1-GigabitEthernet1/0/4]port access vlan 20
[FW1-GigabitEthernet1/0/4]quit
[FW1]int gi 1/0/2
[FW1-GigabitEthernet1/0/2]port link-mode bridge
[FW1-GigabitEthernet1/0/2]port link-type trunk
[FW1-GigabitEthernet1/0/2]undo port trunk permit vlan 1
[FW1-GigabitEthernet1/0/2]port trunk permit vlan 400 500
[FW1-GigabitEthernet1/0/2]quit
[FW1]security-zone name Trust
[FW1-security-zone-Trust]import interface vlan 10
[FW1-security-zone-Trust]import interface vlan 20
[FW1-security-zone-Trust]import interface GigabitEthernet 1/0/3 vlan 10
[FW1-security-zone-Trust]import interface GigabitEthernet 1/0/4 vlan 20
[FW1-security-zone-Trust]quit
[FW1]int loopback 0
[FW1-LoopBack0]ip binding vpn-instance vpn-rt
Some configurations on the interface are removed.
[FW1-LoopBack0]ip address 1.1.1.1 32
[FW1-LoopBack0]quit
[FW1]int loopback 1
[FW1-LoopBack1]ip binding vpn-instance vpn-nrt
Some configurations on the interface are removed.
[FW1-LoopBack1]ip address 2.2.2.2 32
[FW1-LoopBack1]quit
[FW1]security-zone name Untrust
[FW1-security-zone-Untrust]import interface LoopBack 0
[FW1-security-zone-Untrust]import interface LoopBack 1
[FW1-security-zone-Untrust]import interface vlan 400
[FW1-security-zone-Untrust]import interface vlan 500
[FW1-security-zone-Untrust]import interface GigabitEthernet 1/0/2 vlan 400 500
[FW1-security-zone-Untrust]quit
[FW1]bgp 100
[FW1-bgp-default]router-id 1.1.1.1
[FW1-bgp-default]ip vpn-instance vpn-rt //在BGP内绑定VPN实例
[FW1-bgp-default-vpn-rt]peer 10.0.0.2 as-number 200
[FW1-bgp-default-vpn-rt]address-family ipv4 unicast
[FW1-bgp-default-ipv4-vpn-rt]peer 10.0.0.2 enable
[FW1-bgp-default-ipv4-vpn-rt]network 192.168.10.0 255.255.255.0
[FW1-bgp-default-ipv4-vpn-rt]network 1.1.1.1 255.255.255.255
[FW1-bgp-default-ipv4-vpn-rt]quit
[FW1-bgp-default-vpn-rt]quit
[FW1-bgp-default]ip vpn-instance vpn-nrt
[FW1-bgp-default-vpn-nrt]peer 10.0.0.2 as-number 200
[FW1-bgp-default-vpn-nrt]address-family ipv4 unicast
[FW1-bgp-default-ipv4-vpn-nrt]peer 10.0.0.2 enable
[FW1-bgp-default-ipv4-vpn-nrt]network 192.168.20.0 255.255.255.0
[FW1-bgp-default-ipv4-vpn-nrt]network 2.2.2.2 255.255.255.255
[FW1-bgp-default-ipv4-vpn-nrt]quit
[FW1-bgp-default-vpn-nrt]quit

```

FW2:

sys

System View: return to User View with Ctrl+Z.

```
[H3C]sysname FW2
```

```
[FW2]ip vpn-instance vpn-rt
```

```
[FW2-vpn-instance-vpn-rt]route-distinguisher 100:1
```

```
[FW2-vpn-instance-vpn-rt]vpn-target 100:1
```

```
[FW2-vpn-instance-vpn-rt]quit
```

```
[FW2]ip vpn-instance vpn-nrt
[FW2-vpn-instance-vpn-nrt]route-distinguisher 200:1
[FW2-vpn-instance-vpn-nrt]vpn-target 200:1
[FW2-vpn-instance-vpn-nrt]quit
[FW2]acl basic 2000
[FW2-acl-ipv4-basic-2000]rule 0 permit source any
[FW2-acl-ipv4-basic-2000]rule 1 permit source any vpn-instance vpn-rt
[FW2-acl-ipv4-basic-2000]rule 2 permit source any vpn-instance vpn-nrt
[FW2-acl-ipv4-basic-2000]quit
[FW2]zone-pair security source trust destination untrust
[FW2-zone-pair-security-Trust-Untrust]packet-filter 2000
[FW2-zone-pair-security-Trust-Untrust]quit
[FW2]
[FW2]zone-pair security source untrust destination trust
[FW2-zone-pair-security-Untrust-Trust]packet-filter 2000
[FW2-zone-pair-security-Untrust-Trust]quit
[FW2]
[FW2]zone-pair security source trust destination local
[FW2-zone-pair-security-Trust-Local]packet-filter 2000
[FW2-zone-pair-security-Trust-Local]quit
[FW2]
[FW2]zone-pair security source local destination trust
[FW2-zone-pair-security-Local-Trust]packet-filter 2000
[FW2-zone-pair-security-Local-Trust]quit
[FW2]
[FW2]zone-pair security source untrust destination local
[FW2-zone-pair-security-Untrust-Local]packet-filter 2000
[FW2-zone-pair-security-Untrust-Local]quit
[FW2]
[FW2]zone-pair security source local destination untrust
[FW2-zone-pair-security-Local-Untrust]packet-filter 2000
[FW2-zone-pair-security-Local-Untrust]quit
[FW2]
[FW2]zone-pair security source trust destination trust
[FW2-zone-pair-security-Trust-Trust]packet-filter 2000
[FW2-zone-pair-security-Trust-Trust]quit
[FW2]
[FW2]zone-pair security source untrust destination untrust
[FW2-zone-pair-security-Untrust-Untrust]packet-filter 2000
[FW2-zone-pair-security-Untrust-Untrust]quit
[FW2]vlan 100
[FW2-vlan100]quit
[FW2]vlan 200
[FW2-vlan200]quit
[FW2]vlan 400
[FW2-vlan400]quit
[FW2]vlan 500
[FW2-vlan500]quit
[FW2]int vlan 100
[FW2-Vlan-interface100]ip binding vpn-instance vpn-rt
Some configurations on the interface are removed.
[FW2-Vlan-interface100]ip address 172.16.10.1 24
[FW2-Vlan-interface100]quit
[FW2]int vlan 200
[FW2-Vlan-interface200]ip binding vpn-instance vpn-nrt
Some configurations on the interface are removed.
[FW2-Vlan-interface200]ip address 172.16.20.1 24
[FW2-Vlan-interface200]quit
[FW2]int vlan 400
[FW2-Vlan-interface400]ip binding vpn-instance vpn-rt
Some configurations on the interface are removed.
[FW2-Vlan-interface400]ip address 10.0.0.2 30
[FW2-Vlan-interface400]des
[FW2-Vlan-interface400]quit
```

```
[FW2]int vlan 500
[FW2-Vlan-interface500]ip binding vpn-instance vpn-nrt
Some configurations on the interface are removed.
[FW2-Vlan-interface500]ip address 10.0.0.2 30
[FW2-Vlan-interface500]des
[FW2-Vlan-interface500]quit
[FW2]int loopback 0
[FW2-LoopBack0]ip binding vpn-instance vpn-rt
Some configurations on the interface are removed.
[FW2-LoopBack0]ip address 3.3.3.3 32
[FW2-LoopBack0]quit
[FW2]int loopback 1
[FW2-LoopBack1]ip binding vpn-instance vpn-nrt
Some configurations on the interface are removed.
[FW2-LoopBack1]ip address 4.4.4.4 32
[FW2-LoopBack1]quit
[FW2]int gi 1/0/3
[FW2-GigabitEthernet1/0/3]port link-mode bridge
[FW2-GigabitEthernet1/0/3]port link-type access
[FW2-GigabitEthernet1/0/3]port access vlan 100
[FW2-GigabitEthernet1/0/3]quit
[FW2]int gi 1/0/4
[FW2-GigabitEthernet1/0/4]port link-mode bridge
[FW2-GigabitEthernet1/0/4]port link-type access
[FW2-GigabitEthernet1/0/4]port access vlan 200
[FW2-GigabitEthernet1/0/4]quit
[FW2]int gi 1/0/2
[FW2-GigabitEthernet1/0/2]port link-mode bridge
[FW2-GigabitEthernet1/0/2]des
[FW2-GigabitEthernet1/0/2]port link-type trunk
[FW2-GigabitEthernet1/0/2]undo port trunk permit vlan 1
[FW2-GigabitEthernet1/0/2]port trunk permit vlan 400 500
[FW2-GigabitEthernet1/0/2]quit
[FW2]security-zone name Trust
[FW2-security-zone-Trust]import interface vlan 100
[FW2-security-zone-Trust]import interface vlan 200
[FW2-security-zone-Trust]import interface GigabitEthernet 1/0/3 vlan 100
[FW2-security-zone-Trust]import interface GigabitEthernet 1/0/4 vlan 200
[FW2-security-zone-Trust]quit
[FW2]security-zone name Untrust
[FW2-security-zone-Untrust]import interface LoopBack 0
[FW2-security-zone-Untrust]import interface LoopBack 1
[FW2-security-zone-Untrust]import interface GigabitEthernet 1/0/2 vlan 400 500
[FW2-security-zone-Untrust]import interface vlan 400
[FW2-security-zone-Untrust]import interface vlan 500
[FW2-security-zone-Untrust]quit
[FW2]bgp 200
[FW2-bgp-default]router-id 3.3.3.3
[FW2-bgp-default]ip vpn-instance vpn-rt
[FW2-bgp-default-vpn-rt]peer 10.0.0.1 as-number 100
[FW2-bgp-default-vpn-rt]address-family ipv4 unicast
[FW2-bgp-default-ipv4-vpn-rt]peer 10.0.0.1 enable
[FW2-bgp-default-ipv4-vpn-rt]network 172.16.10.0 255.255.255.0
[FW2-bgp-default-ipv4-vpn-rt]network 3.3.3.3 255.255.255.255
[FW2-bgp-default-ipv4-vpn-rt]quit
[FW2-bgp-default-vpn-rt]quit
[FW2-bgp-default]ip vpn-instance vpn-nrt
[FW2-bgp-default-vpn-nrt]peer 10.0.0.1 as-number 100
[FW2-bgp-default-vpn-nrt]address-family ipv4 unicast
[FW2-bgp-default-ipv4-vpn-nrt]peer 10.0.0.1 enable
[FW2-bgp-default-ipv4-vpn-nrt]network 172.16.20.0 255.255.255.0
[FW2-bgp-default-ipv4-vpn-nrt]network 4.4.4.4 255.255.255.255
[FW2-bgp-default-ipv4-vpn-nrt]quit
[FW2-bgp-default-vpn-nrt]quit
```

PC都填写IP地址:

配置PC\_3

| 接口     | 状态 | IPv4地址          | IPv6地址 |
|--------|----|-----------------|--------|
| G0/0/1 | UP | 192.168.10.2/24 |        |

刷新

接口管理

禁用

启用

IPv4配置:

DHCP

静态

IPv4地址:

192.168.10.2

掩码地址:

255.255.255.0

IPv4网关:

192.168.10.1

启用

配置PC\_4

| 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:

192.168.20.2

掩码地址:

255.255.255.0

IPv4网关:

192.168.20.1

启用

配置PC\_5

| 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:

172.16.10.2

掩码地址:

255.255.255.0

IPv4网关:

172.16.10.1

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:

172.16.20.2

掩码地址:

255.255.255.0

IPv4网关:

172.16.20.1

启用

相同VPN实例的业务可以互通，不同VPN实例的业务不可以互通：

hcl\_vyadpp

F1060\_1 PC\_3 PC\_4 PC\_5 PC\_6

```
<H3C>ping 172.16.10.2
Ping 172.16.10.2 (172.16.10.2): 56 data bytes, press CTRL_C to break
56 bytes from 172.16.10.2: icmp_seq=0 ttl=253 time=7.000 ms
56 bytes from 172.16.10.2: icmp_seq=1 ttl=253 time=2.000 ms
56 bytes from 172.16.10.2: icmp_seq=2 ttl=253 time=3.000 ms
56 bytes from 172.16.10.2: icmp_seq=3 ttl=253 time=2.000 ms
56 bytes from 172.16.10.2: icmp_seq=4 ttl=253 time=2.000 ms

--- Ping statistics for 172.16.10.2 ---
5 packet(s) transmitted, 5 packet(s) received, 0.0% packet loss
round-trip min/avg/max/std-dev = 2.000/3.200/7.000/1.939 ms
<H3C>Apr  2 11:05:53:246 2020 H3C PING/6/PING_STATISTICS: Ping statistics for 172.16.10.2
: 5 packet(s) transmitted, 5 packet(s) received, 0.0% packet loss, round-trip min/avg/max/
std-dev = 2.000/3.200/7.000/1.939 ms.

<H3C>ping 172.16.20.2
Ping 172.16.20.2 (172.16.20.2): 56 data bytes, press CTRL_C to break
Request time out
Request time out
Request time out
Request time out
Request time out

--- Ping statistics for 172.16.20.2 ---
```

hcl\_vyadpp

F1060\_1 F1060\_2 PC\_3 PC\_4 PC\_5 PC\_6

```
<H3C>ping 172.16.10.2
Ping 172.16.10.2 (172.16.10.2): 56 data bytes, press CTRL_C to break
56 bytes from 172.16.10.2: icmp_seq=0 ttl=253 time=7.000 ms
56 bytes from 172.16.10.2: icmp_seq=1 ttl=253 time=2.000 ms
56 bytes from 172.16.10.2: icmp_seq=2 ttl=253 time=3.000 ms
56 bytes from 172.16.10.2: icmp_seq=3 ttl=253 time=2.000 ms
56 bytes from 172.16.10.2: icmp_seq=4 ttl=253 time=2.000 ms

--- Ping statistics for 172.16.10.2 ---
5 packet(s) transmitted, 5 packet(s) received, 0.0% packet loss
round-trip min/avg/max/std-dev = 2.000/3.200/7.000/1.939 ms
<H3C>Apr  2 11:05:53:246 2020 H3C PING/6/PING_STATISTICS: Ping statistics for 172.16.10.2
: 5 packet(s) transmitted, 5 packet(s) received, 0.0% packet loss, round-trip min/avg/max/
std-dev = 2.000/3.200/7.000/1.939 ms.

<H3C>ping 172.16.20.2
Ping 172.16.20.2 (172.16.20.2): 56 data bytes, press CTRL_C to break
Request time out
Request time out
Request time out
Request time out
Request time out

--- Ping statistics for 172.16.20.2 ---
```

```
hcl_vyadpp
FI060_1 FI060_2 PC_3 PC_4 PC_5 PC_6
<H3C>%Apr 2 11:02:57:406 2020 H3C SHELL/5/SHELL_LOGIN: Console logged in from con0.

<H3C>ping 192.168.10.2
Ping 192.168.10.2 (192.168.10.2): 56 data bytes, press CTRL_C to break
56 bytes from 192.168.10.2: icmp_seq=0 ttl=253 time=4.000 ms
56 bytes from 192.168.10.2: icmp_seq=1 ttl=253 time=2.000 ms
56 bytes from 192.168.10.2: icmp_seq=2 ttl=253 time=2.000 ms
56 bytes from 192.168.10.2: icmp_seq=3 ttl=253 time=3.000 ms
56 bytes from 192.168.10.2: icmp_seq=4 ttl=253 time=1.000 ms

--- Ping statistics for 192.168.10.2 ---
5 packet(s) transmitted, 5 packet(s) received, 0.0% packet loss
round-trip min/avg/max/std-dev = 1.000/2.400/4.000/1.020 ms
<H3C>%Apr 2 11:04:56:635 2020 H3C PING/6/PING_STATISTICS: Ping statistics for 192.168.10.2: 5 packet(s) transmitted, 5 packet(s) received, 0.0% packet loss, round-trip min/avg/max/std-dev = 1.000/2.400/4.000/1.020 ms.

ping 192.168.20.2
Ping 192.168.20.2 (192.168.20.2): 56 data bytes, press CTRL_C to break
Request time out
Request time out
Request time out
Request time out
Request time out

--- Ping statistics for 192.168.20.2 ---
```

```
hcl_vyadpp
FI060_1 FI060_2 PC_3 PC_4 PC_5 PC_6
<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=5.000 ms
56 bytes from 192.168.20.2: icmp_seq=1 ttl=253 time=3.000 ms
56 bytes from 192.168.20.2: icmp_seq=2 ttl=253 time=2.000 ms
56 bytes from 192.168.20.2: icmp_seq=3 ttl=253 time=4.000 ms
56 bytes from 192.168.20.2: icmp_seq=4 ttl=253 time=2.000 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 = 2.000/3.200/5.000/1.166 ms
<H3C>%Apr 2 11:09:42:110 2020 H3C PING/6/PING_STATISTICS: 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 = 2.000/3.200/5.000/1.166 ms.

<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

--- Ping statistics for 192.168.10.2 ---
```

查看FW1的BGP邻居信息:

```
[FW1]dis bgp peer ipv4 vpn-instance vpn-rt

BGP local router ID: 1.1.1.1
Local AS number: 100
Total number of peers: 1                Peers in established state: 1

* - Dynamically created peer
Peer      AS   MsgRcvd  MsgSent  OutQ  PrefRcv  Up/Down  State
10.0.0.2   200     7        7      0     2 00:02:01 Established
[FW1]dis bgp peer ipv4 vpn-instance vpn-nrt

BGP local router ID: 1.1.1.1
Local AS number: 100
Total number of peers: 1                Peers in established state: 1

* - Dynamically created peer
Peer      AS   MsgRcvd  MsgSent  OutQ  PrefRcv  Up/Down  State
10.0.0.2   200     6        6      0     2 00:01:15 Established
[FW1]
```

```
[FW2]dis bgp peer ipv4 vpn-instance vpn-rt

BGP local router ID: 3.3.3.3
Local AS number: 200
Total number of peers: 1                Peers in established state: 1

* - Dynamically created peer
Peer      AS   MsgRcvd  MsgSent  OutQ  PrefRcv  Up/Down  State
10.0.0.1   100     7        7      0     2 00:02:30 Established
[FW2]dis bgp peer ipv4 vpn-instance vpn-nrt

BGP local router ID: 3.3.3.3
Local AS number: 200
Total number of peers: 1                Peers in established state: 1

* - Dynamically created peer
Peer      AS   MsgRcvd  MsgSent  OutQ  PrefRcv  Up/Down  State
10.0.0.1   100     7        7      0     2 00:01:39 Established
[FW2]
```

查看FW1的VPN实例路由表:

```
[FW1]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
3.3.3.3/32          BGP    255 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
172.16.10.0/24       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
[FW1]
```

```
[FW1]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
2.2.2.2/32          Direct 0 0             127.0.0.1         InLoop0
4.4.4.4/32          BGP    255 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
172.16.20.0/24       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
[FW1]
```

查看FW2的VPN实例路由表:

```
[FW2]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          BGP    255 0            10.0.0.1           Vlan400
3.3.3.3/32          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
172.16.10.0/24       Direct 0 0             172.16.10.1       Vlan100
172.16.10.0/32       Direct 0 0             172.16.10.1       Vlan100
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       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
[FW2]
```

```
[FW2]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
2.2.2.2/32          BGP     255 0             10.0.0.1          Vlan500
4.4.4.4/32          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
172.16.20.0/24        Direct  0   0             172.16.20.1      Vlan200
172.16.20.0/32        Direct  0   0             172.16.20.1      Vlan200
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      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
[FW2]
```

至此，F1060 MPLS VPN OPTION-A典型组网配置案例已完成！

配置关键点