F1060路由模式典型组网配置案例5（多区域OSPF）

设备部署方式 H3C模拟器 **韦家宁** 2020-03-29 发表

组网及说明

组网说明：

本案例采用H3C HCL模拟器的F1060防火墙来模拟防火墙路由模式的典型部署。为了实现PC之间能够相互通信，因此需要分别在R1、R2、FW1采用三层互联，同时FW1采用路由模式，最终实现PC之间能够相互PING通。

配置步骤

1、按照网络拓扑图正确配置IP地址

2、R1、FW1、R2之间采用三层互联

3、R1、FW1、R2之间采用多区域OSPF路由协议实现互通。

配置关键点

R1：

```
<H3C>sys
System View: return to User View with Ctrl+Z.
[H3C]sysname R1
[R1]int gi 0/0
[R1-GigabitEthernet0/0]ip address 192.168.1.1 24
[R1-GigabitEthernet0/0]quit
[R1]int gi 0/1
[R1-GigabitEthernet0/1]des <connect to FW1>
[R1-GigabitEthernet0/1]ip address 10.0.0.1 30
[R1-GigabitEthernet0/1]quit
[R1]int loopback 0
[R1-LoopBack0]ip address 1.1.1.1 32
[R1-LoopBack0]quit
[R1]ospf 1 router-id 1.1.1.1
[R1-ospf-1]area 0.0.0.0
[R1-ospf-1-area-0.0.0.0]network 10.0.0.1 0.0.0.0
[R1-ospf-1-area-0.0.0.0]network 1.1.1.1 0.0.0.0
[R1-ospf-1-area-0.0.0.0]network 192.168.1.0 0.0.0.255
[R1-ospf-1-area-0.0.0.0]quit
[R1-ospf-1]quit
```

R2：

```
<H3C>sys
System View: return to User View with Ctrl+Z.
[H3C]sysname R2
[R2]int gi 0/0
[R2-GigabitEthernet0/0]ip address 172.16.1.1 24
[R2-GigabitEthernet0/0]quit
[R2]int gi 0/1
[R2-GigabitEthernet0/1]des <connect to FW1>
[R2-GigabitEthernet0/1]ip address 10.0.0.5 30
[R2-GigabitEthernet0/1]quit
[R2]int loopback 0
```

```
[R2-LoopBack0]ip address 3.3.3.3 32
[R2-LoopBack0]quit
[R2]ospf 1 router-id 3.3.3.3
[R2-ospf-1]area 0.0.0.1
[R2-ospf-1-area-0.0.0.1]network 10.0.0.5 0.0.0.0
[R2-ospf-1-area-0.0.0.1]network 3.3.3.3 0.0.0.0
[R2-ospf-1-area-0.0.0.1]network 172.16.1.0 0.0.0.255
[R2-ospf-1-area-0.0.0.1]quit
[R2-ospf-1]quit
```

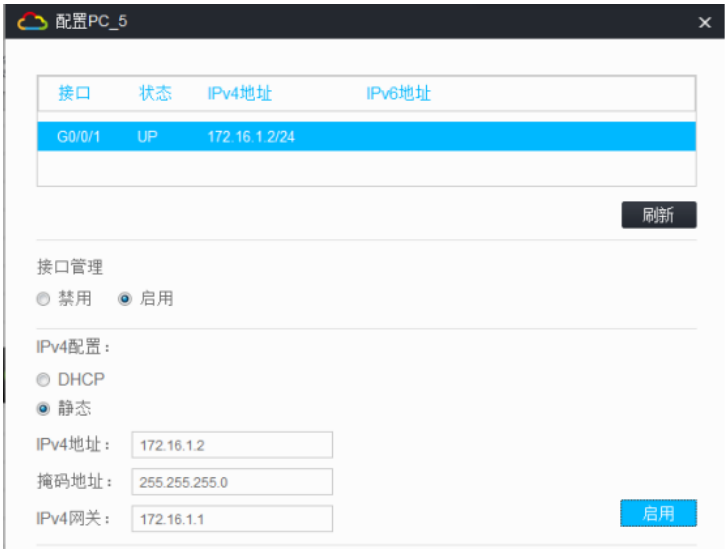
FW1：

```
<H3C>sys
System View: return to User View with Ctrl+Z.
[H3C]sysname FW1
[FW1]acl basic 2002
[FW1-acl-ipv4-basic-2002]rule 0 permit source any
[FW1-acl-ipv4-basic-2002]quit
[FW1]
[FW1]zone-pair security source trust destination untrust
[FW1-zone-pair-security-Trust-Untrust]packet-filter 2002
[FW1-zone-pair-security-Trust-Untrust]quit
[FW1]
[FW1]zone-pair security source untrust destination trust
[FW1-zone-pair-security-Untrust-Trust]packet-filter 2002
[FW1-zone-pair-security-Untrust-Trust]quit
[FW1]
[FW1]zone-pair security source trust destination local
[FW1-zone-pair-security-Trust-Local]packet-filter 2002
[FW1-zone-pair-security-Trust-Local]quit
[FW1]
[FW1]zone-pair security source local destination trust
[FW1-zone-pair-security-Local-Trust]packet-filter 2002
[FW1-zone-pair-security-Local-Trust]quit
[FW1]
[FW1]zone-pair security source untrust destination local
[FW1-zone-pair-security-Untrust-Local]packet-filter 2002
[FW1-zone-pair-security-Untrust-Local]quit
[FW1]
[FW1]zone-pair security source local destination untrust
[FW1-zone-pair-security-Local-Untrust]packet-filter 2002
[FW1-zone-pair-security-Local-Untrust]quit
[FW1]
[FW1]zone-pair security source trust destination trust
[FW1-zone-pair-security-Trust-Trust]packet-filter 2002
[FW1-zone-pair-security-Trust-Trust]quit
[FW1]
[FW1]zone-pair security source untrust destination untrust
[FW1-zone-pair-security-Untrust-Untrust]packet-filter 2002
[FW1-zone-pair-security-Untrust-Untrust]quit
[FW1]int loopback 0
[FW1-LoopBack0]ip address 2.2.2.2 32
[FW1-LoopBack0]quit
[FW1]int gi 1/0/2
[FW1-GigabitEthernet1/0/2]des <connect to R1>
[FW1-GigabitEthernet1/0/2]ip address 10.0.0.2 30
[FW1-GigabitEthernet1/0/2]quit
[FW1]int gi 1/0/3
[FW1-GigabitEthernet1/0/3]des <connect to R2>
[FW1-GigabitEthernet1/0/3]ip address 10.0.0.6 30
[FW1-GigabitEthernet1/0/3]quit
[FW1]security-zone name Trust
[FW1-security-zone-Trust]import interface GigabitEthernet 1/0/2
[FW1-security-zone-Trust]import interface loopback 0
[FW1-security-zone-Trust]quit
```

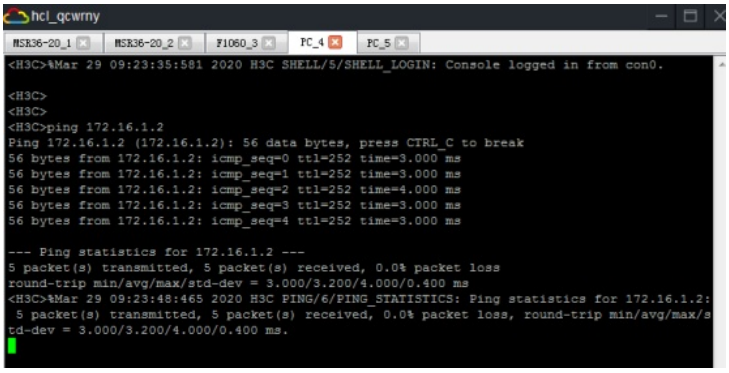
```
[FW1]security-zone name Untrust
[FW1-security-zone-Untrust]import interface GigabitEthernet 1/0/3
[FW1-security-zone-Untrust]quit
[FW1]ospf 1 router-id 2.2.2.2
[FW1-ospf-1]area 0.0.0.0
[FW1-ospf-1-area-0.0.0.0]network 10.0.0.2 0.0.0.0
[FW1-ospf-1-area-0.0.0.0]network 2.2.2.2 0.0.0.0
[FW1-ospf-1-area-0.0.0.0]quit
[FW1-ospf-1]area 0.0.0.1
[FW1-ospf-1-area-0.0.0.1]network 10.0.0.6 0.0.0.0
[FW1-ospf-1-area-0.0.0.1]quit
[FW1-ospf-1]quit
```

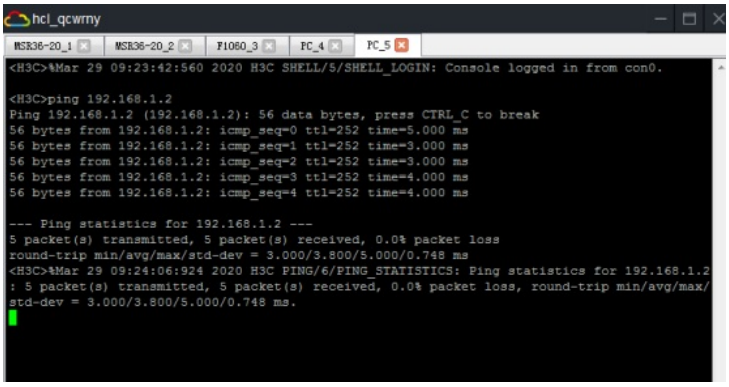
测试：

PC都填写IP地址：

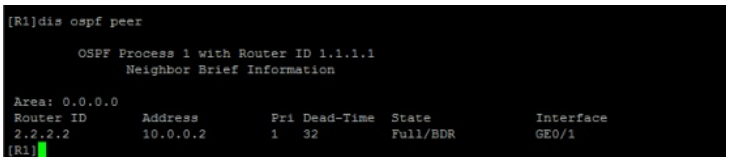


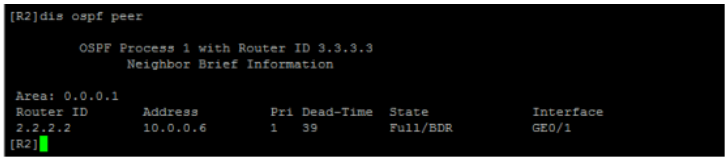
PC之间可以相互PING通：

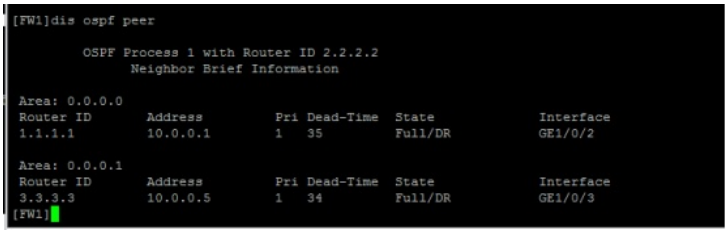




分别查看R1、R2、FW1的OSPF邻居信息：







分别查看R1、R2、FW1的路由表：

```
[R1]dis ip routing-table

Destinations : 21       Routes : 21

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          O_INTRA 10  1           10.0.0.2        GE0/1
3.3.3.3/32          O_INTER 10  2           10.0.0.2        GE0/1
10.0.0.0/30         Direct  0   0           10.0.0.1        GE0/1
10.0.0.0/32         Direct  0   0           10.0.0.1        GE0/1
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        GE0/1
10.0.0.4/30         O_INTER 10  2           10.0.0.2        GE0/1
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
172.16.1.0/24       O_INTER 10  3           10.0.0.2        GE0/1
192.168.1.0/24      Direct  0   0           192.168.1.1     GE0/0
192.168.1.0/32      Direct  0   0           192.168.1.1     GE0/0
192.168.1.1/32      Direct  0   0           127.0.0.1       InLoop0
192.168.1.255/32    Direct  0   0           192.168.1.1     GE0/0
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
[R1]
```

```
[R2]dis ip routing-table

Destinations : 21       Routes : 21

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          O_INTER 10  2           10.0.0.6        GE0/1
2.2.2.2/32          O_INTER 10  1           10.0.0.6        GE0/1
3.3.3.3/32          Direct  0   0           127.0.0.1       InLoop0
10.0.0.0/30         O_INTER 10  2           10.0.0.6        GE0/1
10.0.0.4/30         Direct  0   0           10.0.0.5        GE0/1
10.0.0.4/32         Direct  0   0           10.0.0.5        GE0/1
10.0.0.5/32         Direct  0   0           127.0.0.1       InLoop0
10.0.0.7/32         Direct  0   0           10.0.0.5        GE0/1
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
172.16.1.0/24       Direct  0   0           172.16.1.1      GE0/0
172.16.1.0/32       Direct  0   0           172.16.1.1      GE0/0
172.16.1.1/32       Direct  0   0           127.0.0.1       InLoop0
172.16.1.255/32     Direct  0   0           172.16.1.1      GE0/0
192.168.1.0/24      O_INTER 10  3           10.0.0.6        GE0/1
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
[R2]
```

```
[FW1]dis ip routing-table

Destinations : 21       Routes : 21

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          O_INTRA 10  1           10.0.0.1        GE1/0/2
2.2.2.2/32          Direct  0   0           127.0.0.1       InLoop0
3.3.3.3/32          O_INTRA 10  1           10.0.0.5        GE1/0/3
10.0.0.0/30         Direct  0   0           10.0.0.2        GE1/0/2
10.0.0.0/32         Direct  0   0           10.0.0.2        GE1/0/2
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        GE1/0/2
10.0.0.4/30         Direct  0   0           10.0.0.6        GE1/0/3
10.0.0.4/32         Direct  0   0           10.0.0.6        GE1/0/3
10.0.0.6/32         Direct  0   0           127.0.0.1       InLoop0
10.0.0.7/32         Direct  0   0           10.0.0.6        GE1/0/3
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
172.16.1.0/24       O_INTRA 10  2           10.0.0.5        GE1/0/3
192.168.1.0/24      O_INTRA 10  2           10.0.0.1        GE1/0/2
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]
```

至此，F1060路由模式典型组网配置案例5（多区域OSPF）已完成!