

知 F1060 IPV6之OSPFV3典型组网配置

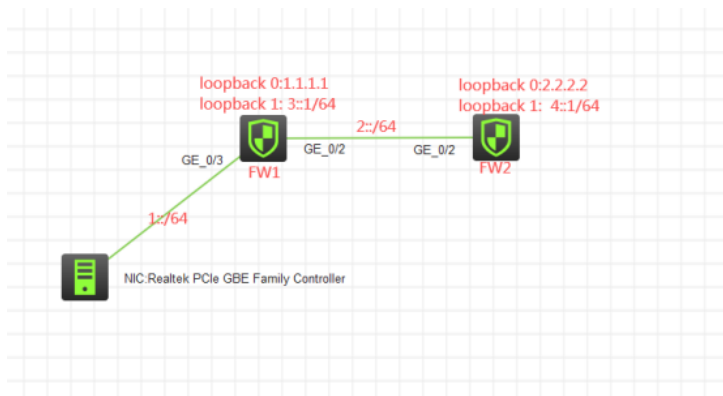
设备部署方式

H3C模拟器

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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IPV6之OSPFV3的典型组网配置，全网均采用IPV6子网，要求通过OSPFV3技术实现全网互通。

配置步骤

- 1、按照网络拓扑图正确配置IPV6地址。
- 2、全网运行OSPFV3路由协议

配置关键点

FW1：

<FW1>sys

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

[FW1]acl ipv6 basic 2001

[FW1-acl-ipv6-basic-2001]rule 0 permit source any

[FW1-acl-ipv6-basic-2001]quit

[FW1]

[FW1]zone-pair security source trust destination untrust

[FW1-zone-pair-security-Trust-Untrust]packet-filter ipv6 2001

[FW1-zone-pair-security-Trust-Untrust]quit

[FW1]

[FW1]zone-pair security source untrust destination trust

[FW1-zone-pair-security-Untrust-Trust]packet-filter ipv6 2001

[FW1-zone-pair-security-Untrust-Trust]quit

[FW1]

[FW1]zone-pair security source trust destination local

[FW1-zone-pair-security-Trust-Local]packet-filter ipv6 2001

[FW1-zone-pair-security-Trust-Local]quit

[FW1]

[FW1]zone-pair security source local destination trust

[FW1-zone-pair-security-Local-Trust]packet-filter ipv6 2001

[FW1-zone-pair-security-Local-Trust]quit

[FW1]

[FW1]zone-pair security source untrust destination local

[FW1-zone-pair-security-Untrust-Local]packet-filter ipv6 2001

[FW1-zone-pair-security-Untrust-Local]quit

[FW1]

[FW1]zone-pair security source local destination untrust

[FW1-zone-pair-security-Local-Untrust]packet-filter ipv6 2001

[FW1-zone-pair-security-Local-Untrust]quit

[FW1]

[FW1]zone-pair security source trust destination trust

[FW1-zone-pair-security-Trust-Trust]packet-filter ipv6 2001

[FW1-zone-pair-security-Trust-Trust]quit

```

[FW1]
[FW1]zone-pair security source untrust destination untrust
[FW1-zone-pair-security-Untrust-Untrust]packet-filter ipv6 2001
[FW1-zone-pair-security-Untrust-Untrust]quit
[FW1]ospfv3 1
[FW1-ospfv3-1]router-id 1.1.1.1
[FW1-ospfv3-1]import-route direct
[FW1-ospfv3-1]quit

[FW1]int loopback 0
[FW1-LoopBack0]ip address 1.1.1.1 32
[FW1-LoopBack0]quit
[FW1]int loopback 1
[FW1-LoopBack1]ipv6 address 3::1 63
[FW1-LoopBack1]ospfv3 1 area 0
[FW1-LoopBack1]quit
[FW1]int gi 1/0/3
[FW1-GigabitEthernet1/0/3]ipv6 address 1::1 64
[FW1-GigabitEthernet1/0/3]ospfv3 1 area 0
[FW1-GigabitEthernet1/0/3]quit
[FW1]int gi 1/0/2
[FW1-GigabitEthernet1/0/2]des <connect to FW2>
[FW1-GigabitEthernet1/0/2]ipv6 address 2::1 64
[FW1-GigabitEthernet1/0/2]ospfv3 1 area 0
[FW1-GigabitEthernet1/0/2]quit
[FW1]security-zone name Trust
[FW1-security-zone-Trust]import interface GigabitEthernet 1/0/3
[FW1-security-zone-Trust]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 GigabitEthernet 1/0/2
[FW1-security-zone-Untrust]quit

```

FW2:

```

<H3C>sys
System View: return to User View with Ctrl+Z.
[H3C]sysname FW2
[FW2]acl ipv6 basic 2001
[FW2-acl-ipv6-basic-2001]rule 0 permit source any
[FW2-acl-ipv6-basic-2001]quit
[FW2]
[FW2]zone-pair security source trust destination untrust
[FW2-zone-pair-security-Trust-Untrust]packet-filter ipv6 2001
[FW2-zone-pair-security-Trust-Untrust]quit
[FW2]
[FW2]zone-pair security source untrust destination trust
[FW2-zone-pair-security-Untrust-Trust]packet-filter ipv6 2001
[FW2-zone-pair-security-Untrust-Trust]quit
[FW2]
[FW2]zone-pair security source trust destination local
[FW2-zone-pair-security-Trust-Local]packet-filter ipv6 2001
[FW2-zone-pair-security-Trust-Local]quit
[FW2]
[FW2]zone-pair security source local destination trust
[FW2-zone-pair-security-Local-Trust]packet-filter ipv6 2001
[FW2-zone-pair-security-Local-Trust]quit
[FW2]
[FW2]zone-pair security source untrust destination local
[FW2-zone-pair-security-Untrust-Local]packet-filter ipv6 2001
[FW2-zone-pair-security-Untrust-Local]quit
[FW2]

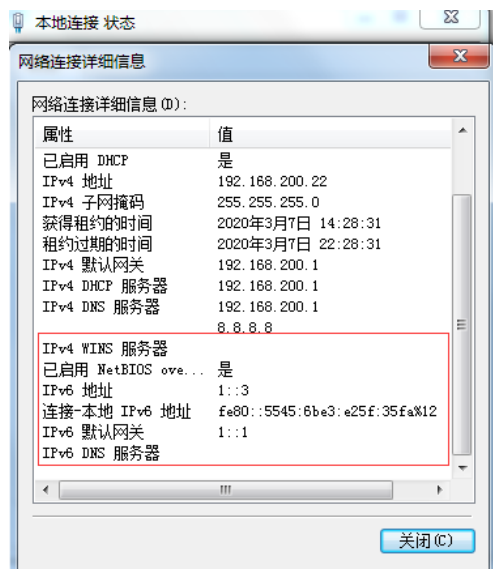
```

```

[FW2]zone-pair security source local destination untrust
[FW2-zone-pair-security-Local-Untrust]packet-filter ipv6 2001
[FW2-zone-pair-security-Local-Untrust]quit
[FW2]
[FW2]zone-pair security source trust destination trust
[FW2-zone-pair-security-Trust-Trust]packet-filter ipv6 2001
[FW2-zone-pair-security-Trust-Trust]quit
[FW2]
[FW2]zone-pair security source untrust destination untrust
[FW2-zone-pair-security-Untrust-Untrust]packet-filter ipv6 2001
[FW2-zone-pair-security-Untrust-Untrust]quit
[FW2]ospfv3 1
[FW2-ospfv3-1]router-id 2.2.2.2
[FW2-ospfv3-1]import-route direct
[FW2-ospfv3-1]quit
[FW2]int loopback 0
[FW2-LoopBack0]ip address 2.2.2.2 32
[FW2-LoopBack0]quit
[FW2]int loopback 1
[FW2-LoopBack1]ipv6 address 4::1 64
[FW2-LoopBack1]ospfv3 1 area 0
[FW2-LoopBack1]quit
[FW2]int gi 1/0/2
[FW2-GigabitEthernet1/0/2]des <connect to FW1>
[FW2-GigabitEthernet1/0/2]ipv6 address 2::2 64
[FW2-GigabitEthernet1/0/2]ospfv3 1 area 0
[FW2-GigabitEthernet1/0/2]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
[FW2-security-zone-Untrust]quit

```

PC填写IPV6地址:



PC可以PING通FW1、FW2的loopback 1:

```
管理员: C:\Windows\system32\cmd.exe

C:\Users\Administrator.USER-20190510MA>ping 3::1

正在 Ping 3::1 具有 32 字节的数据:
来自 3::1 的回复: 时间<1ms
来自 3::1 的回复: 时间<1ms
来自 3::1 的回复: 时间<1ms
来自 3::1 的回复: 时间<1ms

3::1 的 Ping 统计信息:
    数据包: 已发送 = 4, 已接收 = 4, 丢失 = 0 (0% 丢失),
往返行程的估计时间(以毫秒为单位):
    最短 = 0ms, 最长 = 1ms, 平均 = 0ms

C:\Users\Administrator.USER-20190510MA>ping 4::1

正在 Ping 4::1 具有 32 字节的数据:
来自 4::1 的回复: 时间<1ms
来自 4::1 的回复: 时间<1ms
来自 4::1 的回复: 时间<1ms
来自 4::1 的回复: 时间<1ms

4::1 的 Ping 统计信息:
    数据包: 已发送 = 4, 已接收 = 4, 丢失 = 0 (0% 丢失),
往返行程的估计时间(以毫秒为单位):
```

FW1可以PING通PC及FW2的loopback1:

```
[FW1]ping ipv6 1::3
Ping6(56 data bytes) 1::1 --> 1::3, press CTRL_C to break
56 bytes from 1::3, icmp_seq=0 hlim=128 time=2.000 ms
56 bytes from 1::3, icmp_seq=1 hlim=128 time=0.000 ms
56 bytes from 1::3, icmp_seq=2 hlim=128 time=0.000 ms
56 bytes from 1::3, icmp_seq=3 hlim=128 time=0.000 ms
56 bytes from 1::3, icmp_seq=4 hlim=128 time=0.000 ms

--- Ping6 statistics for 1::3 ---
5 packet(s) transmitted, 5 packet(s) received, 0.0% packet loss
round-trip min/avg/max/std-dev = 0.000/0.400/2.000/0.800 ms
[FW1]Mar 7 15:19:36:138 2020 FW1 PING/6/PING STATISTICS: -Context=1: Ping6 statistics fo
r 1::3: 5 packet(s) transmitted, 5 packet(s) received, 0.0% packet loss, round-trip min/av
g/max/std-dev = 0.000/0.400/2.000/0.800 ms.

ping ipv6 4::1
Ping6(56 data bytes) 2::1 --> 4::1, press CTRL_C to break
56 bytes from 4::1, icmp_seq=0 hlim=64 time=2.000 ms
56 bytes from 4::1, icmp_seq=1 hlim=64 time=1.000 ms
56 bytes from 4::1, icmp_seq=2 hlim=64 time=1.000 ms
56 bytes from 4::1, icmp_seq=3 hlim=64 time=1.000 ms
56 bytes from 4::1, icmp_seq=4 hlim=64 time=1.000 ms

--- Ping6 statistics for 4::1 ---
```

FW2可以PING通PC及FW1的loopback1:

```
[FW2]ping ipv6 1::3
Ping6(56 data bytes) 2::2 --> 1::3, press CTRL_C to break
56 bytes from 1::3, icmp_seq=0 hlim=127 time=3.000 ms
56 bytes from 1::3, icmp_seq=1 hlim=127 time=1.000 ms
56 bytes from 1::3, icmp_seq=2 hlim=127 time=1.000 ms
56 bytes from 1::3, icmp_seq=3 hlim=127 time=2.000 ms
56 bytes from 1::3, icmp_seq=4 hlim=127 time=2.000 ms

--- Ping6 statistics for 1::3 ---
5 packet(s) transmitted, 5 packet(s) received, 0.0% packet loss
round-trip min/avg/max/std-dev = 1.000/1.800/3.000/0.748 ms
[FW2]Mar 7 15:21:01:127 2020 FW2 PING/6/PING STATISTICS: -Context=1: Ping6 statistics fo
r 1::3: 5 packet(s) transmitted, 5 packet(s) received, 0.0% packet loss, round-trip min/av
g/max/std-dev = 1.000/1.800/3.000/0.748 ms.

[FW2]ping ipv6 3::1
Ping6(56 data bytes) 2::2 --> 3::1, press CTRL_C to break
56 bytes from 3::1, icmp_seq=0 hlim=64 time=1.000 ms
56 bytes from 3::1, icmp_seq=1 hlim=64 time=1.000 ms
56 bytes from 3::1, icmp_seq=2 hlim=64 time=1.000 ms
56 bytes from 3::1, icmp_seq=3 hlim=64 time=0.000 ms
56 bytes from 3::1, icmp_seq=4 hlim=64 time=1.000 ms

--- Ping6 statistics for 3::1 ---
```

分别查看FW1、FW2的OSPFv3邻居信息:

```
[FW1]dis ospfv3 peer

          OSPFv3 Process 1 with Router ID 1.1.1.1

Area: 0.0.0.0
-----
Router ID  Pri  State                Dead-Time InstID Interface
2.2.2.2    1    Full/BDR                00:00:31  0    GE1/0/2
[FW1]
```

```
[FW2]dis ospfv3 peer

          OSPFv3 Process 1 with Router ID 2.2.2.2

Area: 0.0.0.0
-----
Router ID  Pri  State                Dead-Time InstID Interface
1.1.1.1    1    Full/DR                 00:00:32  0    GE1/0/2
[FW2]
```

分别查看FW1、FW2的IPV6路由表:

[FW1]dis ipv6 routing-table

Destinations : 11 Routes : 11

Destination: ::1/128	Protocol : Direct
NextHop : ::1	Preference: 0
Interface : InLoop0	Cost : 0
Destination: 1::/64	Protocol : Direct
NextHop : ::	Preference: 0
Interface : GE1/0/3	Cost : 0
Destination: 1::1/128	Protocol : Direct
NextHop : ::1	Preference: 0
Interface : InLoop0	Cost : 0
Destination: 2::/64	Protocol : Direct
NextHop : ::	Preference: 0
Interface : GE1/0/2	Cost : 0
Destination: 2::1/128	Protocol : Direct
NextHop : ::1	Preference: 0
Interface : InLoop0	Cost : 0
Destination: 3::/63	Protocol : Direct
NextHop : ::	Preference: 0
Interface : Loop1	Cost : 0
Destination: 3::1/128	Protocol : Direct
NextHop : ::1	Preference: 0
Interface : InLoop0	Cost : 0
Destination: 4::/64	Protocol : O_ASE2
NextHop : FE80::28D6:6FF:FE21:207	Preference: 150
Interface : GE1/0/2	Cost : 1
Destination: 4::1/128	Protocol : O_INTRA
NextHop : FE80::28D6:6FF:FE21:207	Preference: 10
Interface : GE1/0/2	Cost : 1
Destination: FE80::/10	Protocol : Direct
NextHop : ::	Preference: 0
Interface : InLoop0	Cost : 0
Destination: FF00::/8	Protocol : Direct
NextHop : ::	Preference: 0
Interface : NULL0	Cost : 0

[FW1]

[FW2]dis ipv6 routing-table

Destinations : 10 Routes : 10

Destination: ::1/128	Protocol : Direct
NextHop : ::1	Preference: 0
Interface : InLoop0	Cost : 0
Destination: 1::/64	Protocol : O_INTRA
NextHop : FE80::28D6:FF:FE91:107	Preference: 10
Interface : GE1/0/2	Cost : 2
Destination: 2::/64	Protocol : Direct
NextHop : ::	Preference: 0
Interface : GE1/0/2	Cost : 0
Destination: 2::2/128	Protocol : Direct
NextHop : ::1	Preference: 0

```
Interface : InLoop0                Cost    : 0

Destination: 3::/63                Protocol : O_ASE2
NextHop    : FE80::28D6:FF:FE91:107 Preference: 150
Interface  : GE1/0/2                Cost    : 1

Destination: 3::1/128              Protocol : O_INTRA
NextHop    : FE80::28D6:FF:FE91:107 Preference: 10
Interface  : GE1/0/2                Cost    : 1

Destination: 4::/64                Protocol : Direct
NextHop    : ::                     Preference: 0
Interface  : Loop1                  Cost    : 0

Destination: 4::1/128              Protocol : Direct
NextHop    : ::1                    Preference: 0
Interface  : InLoop0                Cost    : 0

Destination: FE80::/10              Protocol : Direct
NextHop    : ::                     Preference: 0
Interface  : InLoop0                Cost    : 0

Destination: FF00::/8              Protocol : Direct
NextHop    : ::                     Preference: 0
Interface  : NULL0                  Cost    : 0
[FW2]
```

至此，F1060 IPV6之OSPFV3典型组网配置案例已完成！