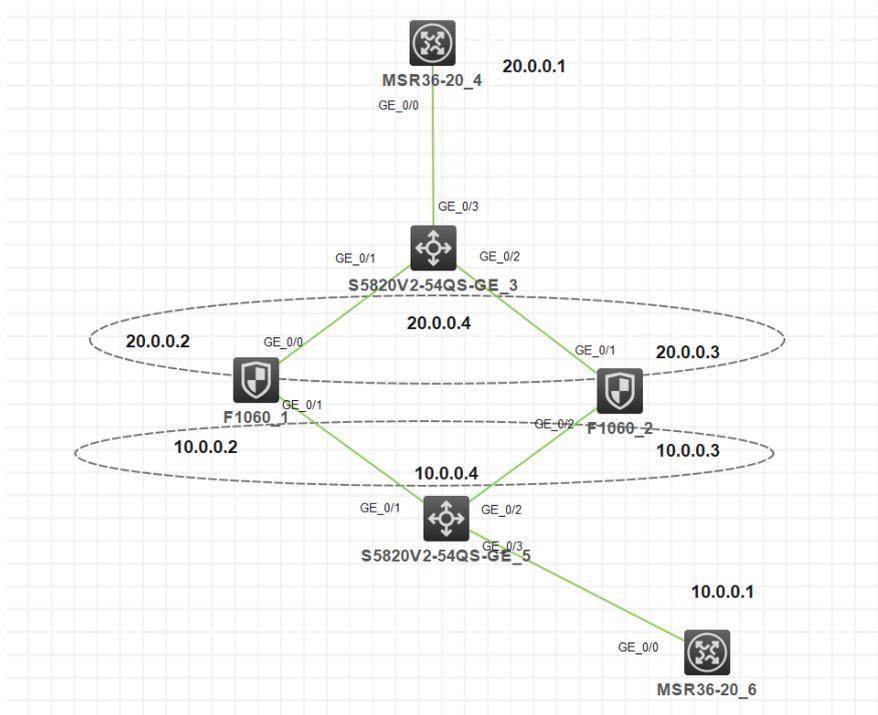


知 防火墙中VRRP中的MAC使用情况

VRRP 孔梦龙 2022-04-28 发表

组网及说明



配置步骤

上行VRRP

下行VRRP

(1) 上下行的VRRP的情况的Master情况，都在右框上:

```
<H3C>dis vrrp
<H3C>dis vrrp
IPv4 Virtual Router Information:
Running mode      : Standard
Total number of virtual routers : 2
Interface         VRID  State      Running Pri  Adver  Auth  Virtual
                  Pri   Timer     Type      IP
-----
GE1/0/1           20   Master    100      100    None  20.0.0.4
GE1/0/2           10   Master    100      100    None  10.0.0.4
```

(2) 在右框上看VRRP的Verbose; 可以看到上行VRRP的虚MAC是0000-5e00-0114, 下行VRRP的虚MAC是0000-5e00-010a

```
<H3C>dis vrrp verbose
<H3C>dis vrrp verbose
IPv4 Virtual Router Information:
Running mode      : Standard
Total number of virtual routers : 2
Interface GigabitEthernet1/0/1
  VRID          : 20
  Admin Status  : Up
  Config Pri    : 100
  Preempt Mode  : Yes
  Auth Type     : None
  Virtual IP    : 20.0.0.4
  Virtual MAC   : 0000-5e00-0114
  Master IP     : 20.0.0.3
  Adver Timer   : 100
  State        : Master
  Running Pri   : 100
  Delay Time    : 0

Interface GigabitEthernet1/0/2
  VRID          : 10
  Admin Status  : Up
  Config Pri    : 100
  Preempt Mode  : Yes
  Auth Type     : None
  Virtual IP    : 10.0.0.4
  Virtual MAC   : 0000-5e00-010a
  Master IP     : 10.0.0.3
  Adver Timer   : 100
  State        : Master
  Running Pri   : 100
  Delay Time    : 0
```

(3) 看右框的上行1/0/1口的MAC: 9cfe-b157-0206

```
<H3C>
<H3C>dis int g
<H3C>dis int GigabitEthernet 1/0/1
GigabitEthernet1/0/1
Current state: UP
Line protocol state: UP
Description: GigabitEthernet1/0/1 Interface
Bandwidth: 1000000 kbps
Maximum transmission unit: 1500
Internet address: 20.0.0.3/24 (primary)
IP packet frame type: Ethernet II, hardware address: 9cfe-b157-0206
IPv6 packet frame type: Ethernet II, hardware address: 9cfe-b157-0206
Last link flapping: 0 hours 4 minutes 55 seconds
Last clearing of counters: Never
Current system time:2022-04-28 09:51:23
Last time when physical state changed to up:2022-04-28 09:46:28
Last time when physical state changed to down:2022-04-28 09:46:21
Peak input rate: 0 bytes/sec, at 00-00-00 00:00:00
Peak output rate: 0 bytes/sec, at 00-00-00 00:00:00
Last 300 second input: 0 packets/sec 0 bytes/sec 0%
Last 300 second output: 0 packets/sec 0 bytes/sec 0%
Input (total): 0 packets, 0 bytes
```

(4) 看右框的下行口1/0/2的MAC: 9cfe-b157-0207

```
<H3C>
<H3C>dis int GigabitEthernet 1/0/2
GigabitEthernet1/0/2
Current state: UP
Line protocol state: UP
Description: GigabitEthernet1/0/2 Interface
Bandwidth: 1000000 kbps
Maximum transmission unit: 1500
Source MAC: 0405, 目的MAC: 0114; 目的MAC是虚MAC;
目的MAC是虚MAC;

135 82.244188 20.0.0.1 20.0.0.4 ICMP 98 0x0002 (2)
136 82.246064 20.0.0.4 20.0.0.4 ICMP 98 0x0046 (70)
137 82.449504 20.0.0.1 20.0.0.4 ICMP 98 0x0003 (3)
138 82.452835 20.0.0.4 20.0.0.1 ICMP 98 0x0047 (71)

Frame 135: 98 bytes on wire (784 bits), 98 bytes captured (784 bits)
Ethernet II, Src: 9c:fe:d6:95:04:05 (9c:fe:d6:95:04:05), Dst: IETF-VRRP-VRID_14 (00:00:5e:00:01:14)
Internet Protocol Version 4, Src: 20.0.0.1, Dst: 20.0.0.4
Internet Control Message Protocol
```

回包：源地址20.0.0.4，目的地址20.0.0.1，源MAC: 0206，目的MAC: 0405；源MAC是实际的master的MAC；

```
<H3C>display int g 0/0
+ 135 82.244188 20.0.0.1 20.0.0.4 ICMP 98 0x0002 (2)
+ 136 82.246064 20.0.0.4 20.0.0.1 ICMP 98 0x0046 (70)
+ 137 82.449504 20.0.0.1 20.0.0.4 ICMP 98 0x0003 (3)
+ 138 82.452835 20.0.0.4 20.0.0.1 ICMP 98 0x0047 (71)

> Frame 136: 98 bytes on wire (784 bits), 98 bytes captured (784 bits)
> Ethernet II, Src: 9c:fe:b1:57:02:06 (9c:fe:b1:57:02:06), Dst: 9c:fe:d6:95:04:05 (9c:fe:d6:95:04:05)
> Internet Protocol Version 4, Src: 20.0.0.4, Dst: 20.0.0.1
> Internet Control Message Protocol
```

```
Multicast max-ratio: 100%
Unicast max-ratio: 100%
Internet address: 20.0.0.1/24 (primary)
IP packet frame type: Ethernet II, hardware address: 9cfe-d695-0405
IPv6 packet frame type: Ethernet II, hardware address: 9cfe-d695-0405

184 98.116893 9c:fe:c4:24:03:00 Spanning-tree STP 119
185 99.066644 20.0.0.3 224.0.0.18 VRRP 60 0x006c (108)
+ 186 99.601306 20.0.0.4 20.0.0.1 ICMP 98 0x006d (109)
+ 187 99.601529 20.0.0.1 20.0.0.4 ICMP 98 0x006d (109)
188 99.627403 9c:fe:c4:24:03:04 Broadcast 0xb003 22
189 99.805223 20.0.0.4 20.0.0.1 ICMP 98 0x006e (110)
190 99.805473 20.0.0.1 20.0.0.4 ICMP 98 0x006e (110)
191 100.009331 20.0.0.4 20.0.0.1 ICMP 98 0x006f (111)

> Frame 186: 98 bytes on wire (784 bits), 98 bytes captured (784 bits)
> Ethernet II, Src: 9c:fe:b1:57:02:06 (9c:fe:b1:57:02:06), Dst: 9c:fe:d6:95:04:05 (9c:fe:d6:95:04:05)
> Internet Protocol Version 4, Src: 20.0.0.4, Dst: 20.0.0.1
> Internet Control Message Protocol
```

```
Maximum transmission unit: 1500
Allow jumbo frames to pass

185 99.066644 20.0.0.3 224.0.0.18 VRRP 60 0x006c (108) Jan 1, 1970 0:
+ 186 99.601306 20.0.0.4 20.0.0.1 ICMP 98 0x006d (109) Jan 1, 1970 0:
+ 187 99.601529 20.0.0.1 20.0.0.4 ICMP 98 0x006d (109) Jan 1, 1970 0:
188 99.627403 9c:fe:c4:24:03:04 Broadcast 0xb003 22 Jan 1, 1970 0:
189 99.805223 20.0.0.4 20.0.0.1 ICMP 98 0x006e (110) Jan 1, 1970 0:
190 99.805473 20.0.0.1 20.0.0.4 ICMP 98 0x006e (110) Jan 1, 1970 0:
191 100.009331 20.0.0.4 20.0.0.1 ICMP 98 0x006f (111) Jan 1, 1970 0:

> Frame 187: 98 bytes on wire (784 bits), 98 bytes captured (784 bits)
> Ethernet II, Src: 9c:fe:d6:95:04:05 (9c:fe:d6:95:04:05), Dst: IETF-VRRP-VRID_14 (00:00:5e:00:01:14)
> Internet Protocol Version 4, Src: 20.0.0.1, Dst: 20.0.0.4
> Internet Control Message Protocol
```

Fast link flapping: 0 hours 7 minutes 27 seconds

(3) MSR-4 ping 10.0.0.1
下一跳的MAC是VRRP的虚MAC

```
225 110.370770 20.0.0.1 10.0.0.1 ICMP 98 0x0006 (6)
226 110.372595 10.0.0.1 20.0.0.1 ICMP 98 0x0006 (6)
227 110.577140 20.0.0.1 10.0.0.1 ICMP 98 0x0007 (7)
228 110.578759 10.0.0.1 20.0.0.1 ICMP 98 0x0007 (7)
229 110.782124 20.0.0.1 10.0.0.1 ICMP 98 0x0008 (8)
230 110.783657 10.0.0.1 20.0.0.1 ICMP 98 0x0008 (8)
231 110.987920 20.0.0.1 10.0.0.1 ICMP 98 0x0009 (9)
232 110.987920 10.0.0.1 20.0.0.1 ICMP 98 0x0009 (9)

Frame 225: 98 bytes on wire (784 bits), 98 bytes captured (784 bits)
Ethernet II, Src: 9c:fe:d6:95:04:05 (9c:fe:d6:95:04:05), Dst: IETF-VRRP-VRID_14 (00:00:5e:00:01:14)
Internet Protocol Version 4, Src: 20.0.0.1, Dst: 10.0.0.1
Internet Control Message Protocol
```

回包实际Master的MAC

224 110.115445	yc:fe:c4:24:03:00	Spanning-tree	SIP	119
→ 225 110.370770	20.0.0.1	10.0.0.1	ICMP	98 0x0006 (6)
← 226 110.372595	10.0.0.1	20.0.0.1	ICMP	98 0x0006 (6)
227 110.577140	20.0.0.1	10.0.0.1	ICMP	98 0x0007 (7)
228 110.578759	10.0.0.1	20.0.0.1	ICMP	98 0x0007 (7)
229 110.579111	20.0.0.1	10.0.0.1	ICMP	98 0x0007 (7)