RBM切换后ipsec不通

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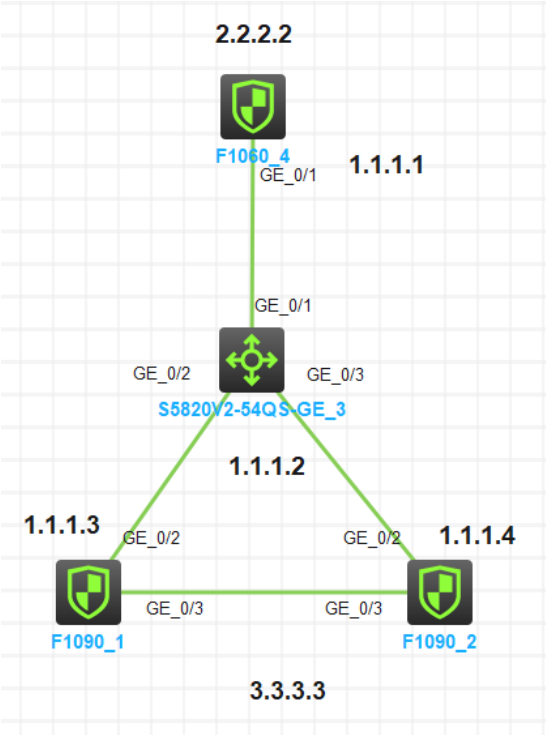
组网及说明



F1060和F1090建立主模式ipsec，两台F1090做RBM+vrrp主备部署，防火墙起环回地址作为ipsec保护的数据流

问题描述

RBM没有发生切换时，ipsec隧道正常，业务正常，当RBM发生切换后，ipsec出现中断，重置两边的ike sa和ipsec sa之后，可以建立ipsec隧道。

过程分析

当RBM发生主备切换后，出现ping不通的情况

```
56 bytes from 3.3.3.3: icmp_seq=40 ttl=255 time=2.000 ms
56 bytes from 3.3.3.3: icmp_seq=41 ttl=255 time=2.000 ms
56 bytes from 3.3.3.3: icmp_seq=42 ttl=255 time=15.000 ms
Request time out
Request time out
Request time out
Request time out
```

debug显示没有ike sa报文被丢弃

```
RBM_S<H3C>%Aug 23 15:42:42:734 2022 H3C VRRP4/6/VRRP_STATUS_CHANGE: -Context=1;
The status of IPv4 virtual router 1 (configured on GigabitEthernet1/0/2) changed from Backup to Master: Controled by RBM.

*Aug 23 15:42:42:735 2022 H3C IKE/7/EVENT: -Context=1; Received message from ipsec, message type is 8.
*Aug 23 15:42:42:856 2022 H3C IKE/7/EVENT: -Context=1; Received message from ipsec, message type is 6.
*Aug 23 15:42:42:856 2022 H3C IKE/7/ERROR: -Context=1; vrf = 0, local = 1.1.1.2, remote = 1.1.1.1/500
Receive invalid SPI message from IPsec, but no IKE SA exists.
*Aug 23 15:42:45:782 2022 H3C IKE/7/EVENT: -Context=1; Received packet successfully.
*Aug 23 15:42:45:782 2022 H3C IKE/7/PACKET: -Context=1; vrf = 0, local = 1.1.1.2, remote = 1.1.1.1/500
Received packet from 1.1.1.1 source port 500 destination port 500.
*Aug 23 15:42:45:782 2022 H3C IKE/7/PACKET: -Context=1; vrf = 0, local = 1.1.1.2, remote = 1.1.1.1/500

  I-Cookie: c341cec17ec350e0
  R-Cookie: a7aa81bc4a10f75d
  next payload: HASH
  version: ISAKMP Version 1.0
  exchange mode: Info
  flags: ENCRYPT
  message ID: 148774b
  length: 84
*Aug 23 15:42:45:782 2022 H3C IKE/7/EVENT: -Context=1; IKE thread 3051461584 processes a job.
*Aug 23 15:42:45:782 2022 H3C IKE/7/EVENT: -Context=1; Info packet process started.
*Aug 23 15:42:45:782 2022 H3C IKE/7/EVENT: -Context=1; Received informational exchange packet, but IKE SA is inexistent or incomplete.
*Aug 23 15:42:49:135 2022 H3C IKE/7/EVENT: -Context=1; Received packet successfully.
*Aug 23 15:42:49:135 2022 H3C IKE/7/PACKET: -Context=1; vrf = 0, local = 1.1.1.2, remote = 1.1.1.1/500
Received packet from 1.1.1.1 source port 500 destination port 500.
*Aug 23 15:42:49:135 2022 H3C IKE/7/PACKET: -Context=1; vrf = 0, local = 1.1.1.2, remote = 1.1.1.1/500
```

因为F1090是用vrrp虚地址与F1060建立ipsec的，F1090发生RBM切换后，对于F1060是无感知的，所以，从F1060去ping 3.3.3.3时依然匹配与原RBM主协商的ipsec sa发出去，没有重新走ipsec 协商流程，导致对端F1090因为没有ike sa出现不通 的情况。此处从F1090侧重新触发一下ipsec协商后既可以通信。

解决方法

需要在F1060和F1090上都配置dpd检测，DPD（Dead Peer Detection，对等体存活检测）用于检测对端是否存活。本端主动向对端发送DPD请求报文，对对端是否存活进行检测。如果本端在DPD报文的重传时间间隔（retry seconds）内未收到对端发送的DPD回应报文，则重传DPD请求报文，若重传两次之后仍然没有收到对端的DPD回应报文，则删除该IKE SA和对应的IPsec SA。

配置dpd之后RBM切换后，重新触发ipsec协商，协商完成后ping能够正常通信

ike dpd interval 3 retry 3 periodic

```
56 bytes from 3.3.3.3: icmp_seq=102 ttl=255 time=2.000 ms
56 bytes from 3.3.3.3: icmp_seq=103 ttl=255 time=1.000 ms
56 bytes from 3.3.3.3: icmp_seq=104 ttl=255 time=8.000 ms
Request time out
Request time out
Request time out
Request time out
Request time out
Request time out
Request time out
Request time out
Request time out
Request time out
56 bytes from 3.3.3.3: icmp_seq=115 ttl=255 time=2.000 ms
56 bytes from 3.3.3.3: icmp_seq=116 ttl=255 time=2.000 ms
56 bytes from 3.3.3.3: icmp_seq=117 ttl=255 time=2.000 ms
56 bytes from 3.3.3.3: icmp_seq=118 ttl=255 time=2.000 ms
```