

知 某局点S125G R7596P09三层聚合子接口BFD异常震荡问题

BFD 三层链路聚合 张猛 2022-05-07 发表

组网及说明

设备型号为S12504G-AF，版本为R7596P09设备，现场两台S125G堆叠，1框2框分别通过聚合对接华为设备，S125G与华为设备通过三层聚合子接口互联，建立BGP邻居，并配置BGP与BFD联动，相关配置如下：

```
bgp 125000
#
ip vpn-instance 5G_MEC
peer 1.39.8.245 as-number 65398
peer 1.39.8.245 description To-HNLT-RD-MCR-5G_MEC
peer 1.39.8.245 bfd single-hop
peer 1.39.8.249 as-number 65398
peer 1.39.8.249 description To-HNLT-HX-MCR-5G_MEC
peer 1.39.8.249 bfd single-hop
#
address-family ipv4 unicast
aggregate 1.39.8.0 255.255.255.0
import-route direct
peer 1.39.8.245 enable
peer 1.39.8.245 route-policy MCR_v4_5G_MEC_OUT export
peer 1.39.8.249 enable
peer 1.39.8.249 route-policy MCR_v4_5G_MEC_OUT export
```

问题描述

现场发现BFD会话持续震荡:

```
%Apr 29 08:28:26:501 2022 S12500G_IRF2 BGP/5/BGP_STATE_CHANGED: BGP.MEC_N6: 100.64.0.37 state has changed from OPENCONFIRM to ESTABLISHED.
%Apr 29 08:28:26:506 2022 S12500G_IRF2 BFD/5/BFD_CHANGE_FSM: Sess[100.64.0.38/100.64.0.37, LD/RD:4339/34855, Interface:RAGG1.4094, SessType:Ctrl, LinkType:INET], Ver:1, Sta: DOWN->INIT, Diag: 0 (No Diagnostic)
%Apr 29 08:28:27:563 2022 S12500G_IRF2 BFD/5/BFD_CHANGE_FSM: Sess[100.64.0.38/100.64.0.37, LD/RD:4339/34855, Interface:RAGG1.4094, SessType:Ctrl, LinkType:INET], Ver:1, Sta: INIT->UP, Diag: 0 (No Diagnostic)
%Apr 29 08:28:28:061 2022 S12500G_IRF2 BGP/5/BGP_STATE_CHANGED: BGP.5G_MEC: 1.39.8.245 state has changed from OPENCONFIRM to ESTABLISHED.
%Apr 29 08:28:28:062 2022 S12500G_IRF2 BFD/5/BFD_CHANGE_FSM: Sess[1.39.8.246/1.39.8.245, LD/RD:4340/251662359, Interface:RAGG2.839, SessType:Ctrl, LinkType:INET], Ver:1, Sta: DOWN->UP, Diag: 0 (No Diagnostic)
%Apr 29 08:28:28:091 2022 S12500G_IRF2 BFD/5/BFD_CHANGE_FSM: Sess[1.39.8.250/1.39.8.249, LD/RD:4336/34853, Interface:RAGG1.839, SessType:Ctrl, LinkType:INET], Ver:1, Sta: UP->DOWN, Diag: 3 (Neighbor Signaled Session Down)
%Apr 29 08:28:28:100 2022 S12500G_IRF2 BGP/5/BGP_STATE_CHANGED: BGP.5G_MEC: 1.39.8.249 state has changed from ESTABLISHED to IDLE for session down event received from BFD.
%Apr 29 08:28:28:100 2022 S12500G_IRF2 BGP/5/BGP_STATE_CHANGED_REASON: BGP.5G_MEC: 1.39.8.249 state has changed from ESTABLISHED to IDLE. (Reason: a session down event was received from BFD, Error code: Send Notification code 6/0)
%Apr 29 08:28:28:163 2022 S12500G_IRF2 BFD/5/BFD_CHANGE_FSM: Sess[1.90.48.254/1.90.48.253, LD/RD:4334/34854, Interface:RAGG1.837, SessType:Ctrl, LinkType:INET], Ver:1, Sta: UP->DOWN, Diag: 3 (Neighbor Signaled Session Down)
```

过程分析

原因是BFD存在配置限制：三层聚合接口/子接口不支持与BFD功能联动。

虽然通过修改设备模式为expert专家模式后，设备可以开启硬件BFD功能，从而支持与三层聚合子接口联动，现场修改设备工作模式并保存配置重启后发现，主框的BFD会话正常，不会震荡，但是备框的BFD会话则一直无法UP：

1框为主时：

```
<S12500G_IRF2>dis bfd session
```

```
Total Session Num: 7   Up Session Num: 3   Init Mode: Active
```

```
IPv4 session working in control packet mode:
```

LD/RD	SourceAddr	DestAddr	State	Holdtime	Interface
4097/0	11.11.11.1	11.11.11.2	Down	/	RAGG63
4098/34817	100.64.0.38	100.64.0.37	Up	2000ms	RAGG1.4094
4099/34818	1.39.8.250	1.39.8.249	Up	2000ms	RAGG1.839
4100/34819	1.90.48.254	1.90.48.253	Up	2000ms	RAGG1.837
4101/0	100.64.0.34	100.64.0.33	Down	/	RAGG2.4094
4102/0	1.39.8.246	1.39.8.245	Down	/	RAGG2.839
4103/0	1.90.48.250	1.90.48.249	Down	/	RAGG2.837

2框为主时：

```
<S12500G_IRF2>dis bfd session
```

```
Total Session Num: 7   Up Session Num: 3   Init Mode: Active
```

```
IPv4 session working in control packet mode:
```

LD/RD	SourceAddr	DestAddr	State	Holdtime	Interface
4104/0	11.11.11.2	11.11.11.1	Down	/	RAGG63
4105/0	100.64.0.38	100.64.0.37	Down	/	RAGG1.4094
4106/0	1.39.8.250	1.39.8.249	Down	/	RAGG1.839
4107/0	1.90.48.254	1.90.48.253	Down	/	RAGG1.837
4108/251662337	1.39.8.246	1.39.8.245	Up	2000ms	RAGG2.839
4109/251662338	1.90.48.250	1.90.48.249	Up	2000ms	RAGG2.837
4110/251662339	100.64.0.34	100.64.0.33	Up	2000ms	RAGG2.4094

修改为专家模式后，虽然能支持聚合子接口，但也存在限制，不支持VPN。硬件BFD下会选举一块接口板做为会话维护板，现网1框为主时选的是1框堆叠板，2框为主时选的是2框堆叠板，对于维护板自己的会话，底层有VPN信息，BFD状态正常，而对于非维护板，BFD报文需要送到维护板处理，由于上述限制会丢失VPN信息，导致BFD状态异常。

解决方法

建议现网使用默认standard模式（注意调整系统模式需要保存配置并整框重启），即软件BFD实现方式，并通过vlan方式对接。

