S6800 批量OSPF震荡案例

产品特性 OSPF **程飞** 2020-02-24 发表

组网及说明

无

问题描述

多台S6800突然与下联服务器建立OSPF邻居，突然出现OSPF邻居震荡，然后后自动恢复。

%Aug 27 10:41:52:326 2019 SH-LG-0203-J16-H6800QTH1-XGWW-01 OSPF/5/OSPF_NBR_CHG: OSPF 4 Neighbor 9.18.77.172(Vlan-interface203) changed from FULL to EXSTART.

%Aug 27 10:41:52:327 2019 SH-LG-0203-J16-H6800QTH1-XGWW-01 OSPF/5/OSPF_NBR_CHG: OSPF 4 Neighbor 9.18.77.164(Vlan-interface203) changed from FULL to EXSTART.

%Aug 27 10:41:52:328 2019 SH-LG-0203-J16-H6800QTH1-XGWW-01 OSPF/5/OSPF_NBR_CHG: OSPF 4 Neighbor 9.18.77.144(Vlan-interface203) changed from FULL to EXSTART.

%Aug 27 10:41:52:329 2019 SH-LG-0203-J16-H6800QTH1-XGWW-01 OSPF/5/OSPF_NBR_CHG: OSPF 4 Neighbor 9.18.77.181(Vlan-interface203) changed from FULL to EXSTART.

%Aug 27 10:41:55:809 2019 SH-LG-0203-J16-H6800QTH1-XGWW-01 OSPF/5/OSPF_NBR_CHG: OSPF 4 Neighbor 9.18.77.168(Vlan-interface203) changed from LOADING to FULL.

%Aug 27 10:41:55:835 2019 SH-LG-0203-J16-H6800QTH1-XGWW-01 OSPF/5/OSPF_NBR_CHG: OSPF 4 Neighbor 9.18.77.139(Vlan-interface203) changed from LOADING to FULL.

%Aug 27 10:41:55:835 2019 SH-LG-0203-J16-H6800QTH1-XGWW-01 OSPF/5/OSPF_NBR_CHG: OSPF 4 Neighbor 9.18.77.156(Vlan-interface203) changed from LOADING to FULL.

过程分析

1. 查看OSPF DOWN的原因是由于ospf hello报文超时，因此首先看softcar，发现OSPF报文上CPU的较多，但是并没有ospf报文超限速丢弃的情况。
   %Jul 27 21:48:51:104 2019 SH-LG-0203-K14-H6800QTH1-XGWW-01 OSPF/6/OSPF_LAST_NBR_DOWN: OSPF 4 Last neighbor down event: Router ID: 9.18.80.172 Local address: 9.18.77.129 Remote address: 9.18.77.172 Reason: DeadInterval timer expired.
   %Jul 27 21:48:51:104 2019 SH-LG-0203-K14-H6800QTH1-XGWW-01 OSPF/6/OSPF_LAST_NBR_DOWN: OSPF 4 Last neighbor down event: Router ID: 9.18.80.172 Local address: 9.18.77.129 Remote address: 9.18.77.172 Reason: DeadInterval timer expired.
   %Jul 27 21:48:51:104 2019 SH-LG-0203-K14-H6800QTH1-XGWW-01 OSPF/6/OSPF_LAST_NBR_DOWN: OSPF 4 Last neighbor down event: Router ID: 9.18.80.172 Local address: 9.18.77.129 Remote address: 9.18.77.172 Reason: DeadInterval timer expired.

```
11  IPV4_MC_OSPF_5     871    -690389413 0        2000 S   On  SMAC 8
12  IPV4_MC_OSPF_6     48     35222692   0        2000 S   On  SMAC 8
```

2、查看show/c发现有上CPU 硬件35队列丢包的情况。 通过如下命令确定系统ACL是将 OSPF报文通过 CPU队列35 上送的。 如下show/c和pw里都能看到35 队列在丢包。

[SH-LG-0203-J16-H6800QTH1-XGWW-01-probe]debug qacl show slot 1 chip 0 verbose 0 sysidx 11

========
Acl-Type RX IPv4 Middle High, Stage IFP, Pipe 0, Global, Installed, Active
Prio Mjr/Sub 523/23, Group 16 [16], Slice/Idx 10/20, Entry 79, Double: 14356/15380
Rule Match --------
    Ports:
        0x00000000000000000000000000000000000000000000001fffffffffffffffe
        0x00000000000000000000000000000000000000200000001fffffffffffffff
    Lookup: VLAN ID valid[y], STP forwarding, 0x1c, 0x1c
    Dest IP: 224.0.0.5, 255.255.255.255
    IP protocol: ospf
    Vlan Class id: 0x0   Mask: 0x20
Actions --------
    CAR cir 0x7d0, cbs 0x800, pir 0x7d0, pbs 0x800, mode srTCM color blind,Packets
    Account mode packets, green and non-green
    Copy_to_cpu : Yes
    Change CPU pkt COS 35 //将该OSPF报文送到35队列上传CPU。
    Permit
    Red Deny
    Red_Copy_to_cpu : No
    Yel Deny
    Yel_Copy_to_cpu : No
MatchedName:11, IPV4_MC_OSPF_5
    Remark COS 5, pri 5
RateValue: 0
Accounting: Hi 1083, LO 0

MCQ_DROP_PKT(35).cpu0:   918,978   +16,507   98/s
MCQ_DROP_BYTE(35).cpu0:   105,162,904   +1,787,742   10,035/s

3、设备上有如下四个协议共用硬件队列35，35队列的的限速也是2000PPS， 其他几项类型的报文也有收包计数，这几项上来的报文一起有瞬间超2000PPS的情况。

11 IPV4_MC_OSPF_5   871   -690389413 0   2000 S   On SMAC 8
12 IPV4_MC_OSPF_6   48   35222692   0   2000 S   On SMAC 8
13 IPV4_UC_OSPF   0   0   0   2000 S   On SMAC 8
73 IPV4_UCOSPF_TTL   0   428919   0   2000 S   On SMAC 8

===============bcm slot 1 chip 0 pw===============
  Queue 35: PPS 2000. CurPkts 0. TotPkts -644864102. Disc rate 731, qlen 0.

因此从如上信息来看是收到大量的的OSPF协议报文，超过硬件队列35 限速导致OSPF协议down：
%Aug 27 11:19:07:350 2019 SH-LG-0203-J16-H6800QTH1-XGWW-01 OSPF/5/OSPF_NBR_CHG:
OSPF 4 Neighbor 9.18.77.171(Vlan-interface203) changed from FULL to DOWN.
%Aug 27 11:19:27:287 2019 SH-LG-0203-J16-H6800QTH1-XGWW-01 OSPF/5/OSPF_NBR_CHG:
OSPF 4 Neighbor 9.18.77.171(Vlan-interface203) changed from LOADING to FULL.

解决方法

经过排查是LD服务器OSPF中配置了大量的network业务网段，没有过滤业务网段的ospf hello报文，导致大量的ospf hello报文发给S6800，导致设备超过硬件35队列阈值导致丢包，把有用的协议ospf hello报文丢弃，出现交换机到LD的ospf 震荡，目前在LD上已经进行限制。

注：交换机有三个地方的协议限速，第一，硬件CAR限速，对于每个协议的单独限速情况，第二，硬件到CPU的队列限速，（由于6800硬件到CPU的队列只有48个，而协议不止48个，因此存在多个协议共用一个队列的情况），第三，软件softcar限速，对于报文上送到CPU后的限速。