

知 某局点S12508G-AFIPV6流量软转导致访问外网卡顿问题

IPv6 VPN实例 刘贝 2020-11-09 发表

组网及说明

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问题描述

某局点ADCOMPUS5.0方案和传统网共有核心交换机，现场反馈传统网终端通过IPv6访问外网网址时，出现卡顿现象，通过PC直连设备来排查沿途故障设备，发现只有当PC接到核心交换机，才会出现卡顿现象，故怀疑交换机出现问题。

过程分析

首先在故障现象时，在核心交换机上下行口做双向流统，确定交换机是否丢包，结果显示，TCP报文上行没有问题，下行时有进无处，确定交换机有故障。并重点排查交换机上回程路由信息。

Interface: Ten-GigabitEthernet1/3/0/37-----下行

Direction: Inbound

Policy: It

Classifier: It

Operator: AND

Rule(s) :

If-match acl ipv6 3333

Behavior: It

Accounting enable:

2323 (Packets)

0 (pps)

Interface: Ten-GigabitEthernet1/3/0/37

Direction: Outbound

Policy: It

Classifier: It

Operator: AND

Rule(s) :

If-match acl ipv6 3333

Behavior: It

Accounting enable:

0 (Packets)

0 (pps)

Interface: Ten-GigabitEthernet1/3/0/44-----上行

Direction: Inbound

Policy: It

Classifier: It

Operator: AND

Rule(s) :

If-match acl ipv6 3333

Behavior: It

Accounting enable:

3308 (Packets)

0 (pps)

Interface: Ten-GigabitEthernet1/3/0/44

Direction: Outbound

Policy: It

Classifier: It

Operator: AND

Rule(s) :

If-match acl ipv6 3333

Behavior: It

Accounting enable:

2323 (Packets)

0 (pps)

然后在交换机上查看设备到终端的回程路由发现，在外网出口vpn，即vpna 的路由表中只有对应终端的64位网段路由而无128位主机路由，该网段路由通过路由复制功能从中间vpnb复制过来，而vpnb和vpn-default则通过RT值互引实现路由学习，查看vpn-default路由表中也只有64位网段路由，在交换机上查看ND表项发现是有对应表项的。

```
display ipv6 routing-table vpn-instance vpna 2001:250:5839:600::8-----终端地址
```

```
Summary count : 1
```

```
Destination: 2001:250:5839:600::/64 Protocol : BGP4+
```

```
NextHop : :: Preference: 130
```

```
Interface : Vlan1 Cost: 0
```

```
[S12508G-AF]display ipv6 routing-table vpn-instance vpnb 2001:250:5839:600::8
```

```
Summary count : 2
```

```
Destination: ::/0 Protocol : Static
```

```
NextHop : 2001:250:5839:FF01:10:10:4:13 Preference: 60
```

```
Interface : Vlan4050 Cost : 0
```

```
Destination: 2001:250:5839:600::/64 Protocol : BGP4+
```

```
NextHop : :: Preference: 130
```

```
Interface : Vlan1 Cost : 0
```

```
[S12508G-AF]display ipv6 routing-table vpn-instance vpn-default
```

```
2001:250:5839:600::8
```

```
Summary count : 2
```

```
Destination: ::/0 Protocol : BGP4+
```

```
NextHop : 2001:250:5839:FF01:10:10:4:13 Preference: 130
```

```
Interface : Vlan4050 Cost: 0
```

```
Destination: 2001:250:5839:600::/64 Protocol : Direct
```

```
NextHop : :: Preference: 0
```

```
Interface : Vlan1 Cost: 0
```

```
[S12508G-AF]disp"la"y ipv6 neighbors 2001:250:5839:600::8
```

```
Type: S-Static D-Dynamic O-Openflow R-Rule IS-Invalid static
```

```
IPv6 address MAC address VLAN/VSI Interface State T Aging
```

```
2001:250:5839:600::8 0023-24a3-41da 1 XGE1/3/0/37 REACH D 655
```

通过查询平台路由表项，并结合查询路由的硬件表项，发现按照网段路由表项转发报文会上送平台进行软转，则当访问外网地址时，报文量较大就会导致卡顿。在IPV4网络中，配置vpna从vpnb中route-replicate复制路由，当交换机收到去往终端的报文后，通过复制的路由上送平台，触发ARP学习，最后在vpna中有到终端的32位主机路由。在IPV6网络，配置route-replicate复制路由后，交换机收到IPV6报文后，通过复制的路由上送平台后，不会触发ND学习，从而在vpna中没有到终端的128位主机路由。

```
[S12508G-AF-probe]debug ipv6-drv show route 3 2001:250:5839:600::8 ch 1 sl 3
```

```
*****
```

```
- IPv6 Route Information Chassis 1 Slot 3
```

```
*****
```

```
--- UNIT: 0 ---
```

```
- IPv6 ADDR: 2001:0250:5839:0600:0000:0000:0000:0008
```

```
- VRF: 3
```

```
- MASKLEN: 64
```

```
- EGRESS ID: 149153 -----上送平台
```

```
- FLAGS: 0x2000c
```

```
- PRI: 0
```

```
- CLASS ID: 2
```

```
- HWINDEX: 259
```

```
- TUNNEL OPT: 0
```

```
- HITBIT: Source Dest
```

解决方法

在终端所在vlan对应的vlan虚接口下配置ipv6 nd route-direct advertise命令用来开启ND直连路由通告功能，设备通过该接口学习到的ND表项生成128位的主机路由，vpn-default通过引入直连路由引入该主机路由，继而再通过路由互引和route-replicate复制到vpna中，在vpna中就有到终端的128位路由，此时交换机才能硬转，故障恢复。

```
[S12508G-AF]display ipv6 routing-table vpn-instance vpna 2001:250:5839:600::8
```

```
Summary count : 2
```

```
Destination: 2001:250:5839:600::/64 Protocol : BGP4+
```

```
NextHop : :: Preference: 130
```

```
Interface : Vlan1 Cost : 0
```

```
Destination: 2001:250:5839:600::8/128 Protocol : BGP4+
```

```
NextHop : 2001:250:5839:600::8 Preference: 130
```

```
Interface : Vlan1 Cost : 0
```

```
[S12508G-AF] display ipv6 routing-table vpn-instance vpnb 2001:250:5839:600::8 128
```

```
Summary count : 1
```

```
Destination: 2001:250:5839:600::8/128      Protocol : BGP4+
NextHop    : 2001:250:5839:600::8        Preference: 130
Interface  : Vlan1                        Cost      : 0
[S12508G-AF] display ipv6 routing-table vpn-instance vpn-default 2001:250:5839:600::
8 128
Summary count : 1
Destination: 2001:250:5839:600::8/128      Protocol : Direct
NextHop    : 2001:250:5839:600::8        Preference: 0
Interface  : Vlan1                        Cost      : 0
```

附件下载 : 1.某局点S12508G-AFIPv6流量软转导致访问外网卡顿问题.doc