交换机BGP使能ipv6地址族时导致ipv4邻居中断

BGP 李鹏飞 2020-02-27 发表

组网及说明

不涉及

问题描述

交换机BGP使能ipv6地址族时导致ipv4邻居中断

过程分析

1、我司设备在ipv6单播地址族时支持6PE功能，即IPv4邻居可以承载IPv6路由信息。
2、同一个ipv4 bgp邻居,处于ESTABLISHED状态的情况下，该邻居使能IPv6地址族能力，BGP需要重新发送OPEN报文以协商BGP能力，根据RFC状态机规定，需要重新切换状态机从IDLE->CONNECT->OPEN->ESTABLISHED。
3、因此**当IPv4邻居在配置组并且在IPv6地址族下使能该配置组**，从配置含义上认为该配置组里的IPv4邻居也是要承载IPv6路由信息的，因此**需要断开邻居重新协商支持的地址族能力。**

H3C：

```
address-family ipv6 unicast
 balance 128
 preference 20 200 10
 peer HBHL-SUPER_CORE-A enable --------peer enable的时候会重建邻居
 peer HBHL-SUPER_CORE-B enable
 peer HBHL-SUPER_CORE-C enable
```

HW：

```
#
bgp 100
 group ebgp external
peer ebgp as-number 200
peer 10.0.0.2 as-number 200
 peer 10.0.0.2 group ebgp      ----------------配置该命令后，上面黄色配置自动添加。
peer 2001:10::2 as-number 200
peer 2001:10::2 group ebgp
#
ipv4-family unicast
  peer ebgp enable   ------------配置该命令后，下面两个黄色配置自动添加。
  peer 10.0.0.2 enable
  peer 10.0.0.2 group ebgp
 #
ipv6-family unicast
  peer 2001:10::2 enable
  peer ebgp enable   ------------单配置这条命令，ipv6邻居无法建立，需要手工配置上面具体peer才行，配置后也会重建邻居
#
```

cisco：

```
router bgp 200
  router-id 10.0.0.2
  address-family ipv4 unicast
  template peer ebgp
    remote-as 100
    address-family ipv4 unicast
      send-community both
      weight 10
    address-family ipv6 unicast   ----------在template peer中增加ipv6地址族，会造成已有的ipv4邻邻居重建
  neighbor 10.0.0.1
inherit peer ebgp

后续绑定neighbor时候，不会震荡
  neighbor 2001:10::1
```

inherit peer ebgp

测试使能其他地址族也是一样的

[host-bgp-default-vpnv4]peer 112.1.1.254 enable

*Jan 15 06:28:43:820 2011 host BGP/7/DEBUG:
BGP.: 112.1.1.254 Receive ManualStop event in ESTABLISHED state.

*Jan 15 06:28:43:820 2011 host BGP/7/DEBUG:
BGP.: 112.1.1.254 Send NOTIFICATION
Err/SubErr: 6/6 (Cease/Other Configuration Change)
Error data NULL.

*Jan 15 06:28:43:820 2011 host BGP/7/DEBUG:
BGP.: 112.1.1.254 State is changed from ESTABLISHED to IDLE.

%Jan 15 06:28:43:821 2011 host BGP/5/BGP_STATE_CHANGED:
BGP.: 112.1.1.254 state has changed from ESTABLISHED to IDLE for other configuration change.

*Jan 15 06:28:45:611 2011 host BGP/7/DEBUG:
BGP.: 112.1.1.254 Receive ConnectRetryTimer_Expires event in IDLE state.

*Jan 15 06:28:45:611 2011 host BGP/7/DEBUG:
BGP.: 112.1.1.254 Receive ManualStart event in IDLE state.

*Jan 15 06:28:45:612 2011 host BGP/7/DEBUG:
BGP.: 112.1.1.254 State is changed from IDLE to CONNECT.

*Jan 15 06:28:45:613 2011 host BGP/7/DEBUG:
BGP.: 112.1.1.254 Receive Tcp_CR_Acked event in CONNECT state.

*Jan 15 06:28:45:613 2011 host BGP/7/DEBUG:
BGP.: Connected to 112.1.1.254.

*Jan 15 06:28:45:613 2011 host BGP/7/DEBUG:
BGP.: 112.1.1.254 State is changed from CONNECT to OPENSENT.

*Jan 15 06:28:45:615 2011 host BGP/7/DEBUG:
BGP.: 112.1.1.254 Receive ReceiveOpenMessage event in OPENSENT state.

*Jan 15 06:28:45:615 2011 host BGP/7/DEBUG:
BGP.: 112.1.1.254 State is changed from OPENSENT to OPENCONFIRM.

*Jan 15 06:28:45:616 2011 host BGP/7/DEBUG:
BGP.: 112.1.1.254 Receive ReceiveKeepAliveMsg event in OPENCONFIRM state.

*Jan 15 06:28:45:616 2011 host BGP/7/DEBUG:
BGP.: 112.1.1.254 State is changed from OPENCONFIRM to ESTABLISHED.

%Jan 15 06:28:45:616 2011 host BGP/5/BGP_STATE_CHANGED:
BGP.: 112.1.1.254 State is changed from OPENCONFIRM to ESTABLISHED.

*Jan 15 06:28:46:321 2011 host BGP/7/DEBUG:
BGP.: 112.1.1.254 Receive ReceiveUpdateMsg event in ESTABLISHED state.

解决方法

当前主要设备厂商均是如此实现。