

组网及说明

L1000下联两台华为设备，呈三角形组网

问题描述

三台设备两两建立ospf邻居，发现我司设备与华为设备卡在exstart阶段无法建立，华为两台设备之间正常建立

过程分析

从ospf邻居状态来看,P2P模式没有DR的选举，EXSTART报文处于DD报文交互，建立2-WAY邻居后发现DD报文，交互成功进入下一阶段

目前卡在EXSTART怀疑DD报文交互存在问题

一般DD报文交互异常怀疑MTU两边协商不一致，我司默认为0不进行协商，查看华为DD报文也是为0，排除MTU因素

进一步在设备上debug发现

P2P方式时，在我方设备上debug查看只有send，没有receive

\*Oct 13 00:12:58:110 2019 CSGD-H3C-LB OSPF/7/DEBUG: -COntext=1; OSPF 1:Sending packets.

\*Oct 13 00:12:58:110 2019 CSGD-H3C-LB OSPF/7/DEBUG: -COntext=1; Source address: 172.28.1.1

\*Oct 13 00:12:58:110 2019 CSGD-H3C-LB OSPF/7/DEBUG: -COntext=1; Destination address: 172.28.1.2

\*Oct 13 00:12:58:110 2019 CSGD-H3C-LB OSPF/7/DEBUG: -COntext=1; Version 2, Type: 2, Length: 32.

\*Oct 13 00:12:58:110 2019 CSGD-H3C-LB OSPF/7/DEBUG: -COntext=1; Router: 172.28.1.132, Area: 0.0.0.0, Checksum: 19532.

\*Oct 13 00:12:58:110 2019 CSGD-H3C-LB OSPF/7/DEBUG: -COntext=1; Authentication type: 00, Key(ASCII): 0 0 0 0 0 0 0 0.

\*Oct 13 00:12:58:110 2019 CSGD-H3C-LB OSPF/7/DEBUG: -COntext=1;MTU: 0, Option: \_E\_, R\_I\_M\_MS Bit: \_I\_M\_MS\_.

\*Oct 13 00:12:58:110 2019 CSGD-H3C-LB OSPF/7/DEBUG: -COntext=1; DD Sequence number: 1e a.

查看发往224.0.0.5的两方报文，对端发的MTU也是0，但是我方没有收到单播过来的报文，华为侧debug和抓包反馈没有收到我方发过去的报文

\*Oct 13 00:12:59:851 2019 CSGD-H3C-LB OSPF/7/DEBUG: -COntext=1; OSPF 1: Sending packets.

\*Oct 13 00:12:59:851 2019 CSGD-H3C-LB OSPF/7/DEBUG: -COntext=1; Source address:172.28.1.1

\*Oct 13 00:12:59:851 2019 CSGD-H3C-LB OSPF/7/DEBUG: -COntext=1; Destination address: 224.0.0.5

\*Oct 13 00:12:59:851 2019 CSGD-H3C-LB OSPF/7/DEBUG: -COntext=1; Version 2, Type: 1, Length: 48.

\*Oct 13 00:12:59:851 2019 CSGD-H3C-LB OSPF/7/DEBUG: -COntext=1; Router: 172.28.1.132, Area: 0.0.0.0, Checksum: 41059.

\*Oct 13 00:12:59:851 2019 CSGD-H3C-LB OSPF/7/DEBUG: -COntext=1; Authentication type: 00, Key(ASCII): 0 0 0 0 0 0 0 0.

\*Oct 13 00:12:59:851 2019 CSGD-H3C-LB OSPF/7/DEBUG: -COntext=1; Network mask: 255.255.255.248, Hello interval: 10, Option: \_E\_.

\*Oct 13 00:12:59:851 2019 CSGD-H3C-LB OSPF/7/DEBUG: -COntext=1; Router priority: 1, Dead Interval: 40, DR: 0.0.0.0, BDR: 0.0.0.0.

\*Oct 13 00:12:59:851 2019 CSGD-H3C-LB OSPF/7/DEBUG: -COntext=1; Neighbor ID: 172.28.1.130.

\*Oct 13 00:13:02:543 2019 CSGD-H3C-LB OSPF/7/DEBUG: -COntext=1; OSPF 1: Receiving packets.

\*Oct 13 00:13:02:544 2019 CSGD-H3C-LB OSPF/7/DEBUG: -COntext=1; Source address:172.28.1.2

\*Oct 13 00:13:02:544 2019 CSGD-H3C-LB OSPF/7/DEBUG: -COntext=1; Destination address: 224.0.0.5

\*Oct 13 00:13:02:544 2019 CSGD-H3C-LB OSPF/7/DEBUG: -COntext=1; Version 2, Type: 2, Length: 32.

\*Oct 13 00:13:02:545 2019 CSGD-H3C-LB OSPF/7/DEBUG: -COntext=1; Router: 172.28.1.130, Area: 0.0.0.0, Checksum: 19017.

\*Oct 13 00:13:02:545 2019 CSGD-H3C-LB OSPF/7/DEBUG: -COntext=1; Authentication type: 00, Key(y(ASCII)): 0 0 0 0 0 0 0 0.

\*Oct 13 00:13:02:545 2019 CSGD-H3C-LB OSPF/7/DEBUG: -COntext=1; MTU: 0, Option: \_E\_, R\_L\_M\_MS Bit: \_L\_M\_MS\_.

\*Oct 13 00:13:02:545 2019 CSGD-H3C-LB OSPF/7/DEBUG: -COntext=1; DD Sequence number: 3ef.

怀疑我司DD报文没有收到回复

从LB的抓包和debug分析，我司设备接口在P2P模式下，DD报文是以单播形式发送，但是华为防火墙上实现机制是他们的DD报文是通过组播形式发送

我司设备的抓包，发出了hello报文之后也发送了DD报文（单播），也显示收到了对端的组播形式的DD报文。

No.	Time	Source	Destination	Length	Protocol	Identification	ES info
1	2019-10-13 23:12:55.860640	172.28.1.1	172.28.1.2	66	OSPF	0xae4d (44621)	DB Description
2	2019-10-13 23:12:58.214601	172.28.1.2	224.0.0.5	66	OSPF	0x9cbe (40126)	DB Description
5	2019-10-13 23:13:00.504384	172.28.1.2	224.0.0.5	82	OSPF	0x9cc6 (40134)	Hello Packet
7	2019-10-13 23:13:00.860604	172.28.1.1	172.28.1.2	66	OSPF	0xae75 (44661)	DB Description
10	2019-10-13 23:13:03.674564	172.28.1.2	224.0.0.5	66	OSPF	0x9cd0 (40144)	DB Description
13	2019-10-13 23:13:05.860595	172.28.1.1	172.28.1.2	66	OSPF	0xaeb6 (44726)	DB Description
15	2019-10-13 23:13:09.134289	172.28.1.2	224.0.0.5	66	OSPF	0x9ce3 (40163)	DB Description
17	2019-10-13 23:13:10.224347	172.28.1.2	224.0.0.5	82	OSPF	0x9ce7 (40167)	Hello Packet
19	2019-10-13 23:13:10.860604	172.28.1.1	172.28.1.2	66	OSPF	0xaeF3 (44787)	DB Description
22	2019-10-13 23:13:14.594152	172.28.1.2	224.0.0.5	66	OSPF	0x9cf5 (40181)	DB Description
31	2019-10-13 23:13:19.943932	172.28.1.2	224.0.0.5	82	OSPF	0x9d0a (40202)	Hello Packet
34	2019-10-13 23:13:19.946352	172.28.1.2	224.0.0.5	66	OSPF	0x9d0b (40203)	DB Description
36	2019-10-13 23:13:20.953142	172.28.1.1	172.28.1.2	66	OSPF	0xaf81 (44929)	DB Description
38	2019-10-13 23:13:24.653939	172.28.1.2	224.0.0.5	66	OSPF	0x9d1a (40218)	DB Description
41	2019-10-13 23:13:25.958617	172.28.1.1	172.28.1.2	66	OSPF	0xafac (44972)	DB Description
44	2019-10-13 23:13:29.363823	172.28.1.2	224.0.0.5	66	OSPF	0x9d2a (40234)	DB Description
46	2019-10-13 23:13:29.663755	172.28.1.2	224.0.0.5	82	OSPF	0x9d2b (40235)	Hello Packet
48	2019-10-13 23:13:30.953367	172.28.1.1	172.28.1.2	66	OSPF	0xafdf (45023)	DB Description
49	2019-10-13 23:13:34.073835	172.28.1.2	224.0.0.5	66	OSPF	0x9d3b (40251)	DB Description

但是从华为侧的debug信息查看，发现他们并没有收到我们发出的DBD报文：

```
*0.67154200 USG6600 RM/7/RMDEBUG:
*0.67155040 USG6600 RM/7/RMDEBUG:OSPF 10: RECV Packet.
*0.67155040 USG6600 RM/7/RMDEBUG: Source Address: 172.28.1.1
*0.67155040 USG6600 RM/7/RMDEBUG: Destination Address: 224.0.0.5
*0.67155040 USG6600 RM/7/RMDEBUG: Ver# 2, Type: 1 (Hello)
*0.67155040 USG6600 RM/7/RMDEBUG: Length: 48, Router: 172.28.1.132
*0.67155040 USG6600 RM/7/RMDEBUG: Area: 0.0.0.0, Chksum: a063
*0.67155040 USG6600 RM/7/RMDEBUG: AuType: 00
*0.67155040 USG6600 RM/7/RMDEBUG: Key(ascii): * * * * *
*0.67155040 USG6600 RM/7/RMDEBUG: Net Mask: 255.255.255.248
*0.67155040 USG6600 RM/7/RMDEBUG: Hello Int: 10, Option: _E_
*0.67155040 USG6600 RM/7/RMDEBUG: Rtr Priority: 1, Dead Int: 40
*0.67155040 USG6600 RM/7/RMDEBUG: DR: 0.0.0.0
*0.67155040 USG6600 RM/7/RMDEBUG: BDR: 0.0.0.0
*0.67155040 USG6600 RM/7/RMDEBUG: # Attached Neighbors: 1
*0.67155040 USG6600 RM/7/RMDEBUG: Neighbor: 172.28.1.130
*0.67155040 USG6600 RM/7/RMDEBUG: Hello Extended Options: _
*0.67155040 USG6600 RM/7/RMDEBUG:
*0.67157880 USG6600 RM/7/RMDEBUG:OSPF 10: SEND Packet.
*0.67157880 USG6600 RM/7/RMDEBUG: Source Address: 172.28.1.2
*0.67157880 USG6600 RM/7/RMDEBUG: Destination Address: 224.0.0.5
*0.67157880 USG6600 RM/7/RMDEBUG: Ver# 2, Type: 2 (DB Description)
*0.67157880 USG6600 RM/7/RMDEBUG: Length: 32, Router: 172.28.1.130
*0.67157880 USG6600 RM/7/RMDEBUG: Area: 0.0.0.0, Chksum: 4a49
*0.67157880 USG6600 RM/7/RMDEBUG: AuType: 00
*0.67157880 USG6600 RM/7/RMDEBUG: Key(ascii): * * * * *
*0.67157880 USG6600 RM/7/RMDEBUG: MTU: 0, Option: _E_
*0.67157880 USG6600 RM/7/RMDEBUG: L_M_MSBit: _L_M_MS_
*0.67157880 USG6600 RM/7/RMDEBUG: DD SeqNumber: 3ef
*0.67157880 USG6600 RM/7/RMDEBUG: # LSA Headers: 0
*0.67157880 USG6600 RM/7/RMDEBUG: DD Extended Options: _
*0.67157880 USG6600 RM/7/RMDEBUG:
```

查看华为侧的配置如下：

```
#
interface GigabitEthernet1/0/2
ip address 172.28.1.2 255.255.255.248
```

```
ospf network-type p2p
hrp track active
lldp enable
lldp tlv-enable basic-tlv all
service-manage https permit
service-manage ping permit
service-manage ssh permit
service-manage telnet permit
anti-ddos flow-statistic enable
#
firewall zone untrust
set priority 5
add interface GigabitEthernet1/0/2
#
#
security-policy //策略没有放通untrust到local
default policy logging
rule name policy_sec
policy logging
session logging
source-zone trust
destination-zone untrust
profile av default
profile data-filter default
profile file-block default
profile ips ids
profile url-filter default
action permit
rule name policy2
source-zone untrust
destination-zone trust
profile av default
profile data-filter default
profile file-block default
profile ips ids
profile url-filter default
action permit
rule name policy1
source-zone trust
destination-zone local
destination-zone trust
action permit
rule name policy_local
policy logging
session logging
source-zone local
action permit
#
```

## 解决方法

华为侧放通后解决