

某局点MSR做L2TP拨号失败问题处理经验案例

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某局点使用MSR36做L2TP拨号的LNS侧设备，客户反馈拨号一直不成功。

无

1.首先检查相关L2TP配置，没有发现明显错误：

创建本地PPP用户vpdnuser，设置密码为Hello。

<LNS> system-view

[LNS] local-user vpdnuser class network

[LNS-luser-network-vpdnuser] password cipher \$c\$3\$S3wwwYm3Vlqvai8ca+sDr+Y2n/ojwEJlZA==

[LNS-luser-network-vpdnuser] service-type ppp

[LNS-luser-network-vpdnuser] quit

配置ISP域system对PPP用户采用本地验证。

[LNS] domain system

[LNS-isp-system] authentication ppp local

[LNS-isp-system] quit

开启L2TP功能。

[LNS] l2tp enable

#配置PPP地址池。

[LNS] ip pool aaa 192.168.0.10 192.168.0.20

[LNS] ip pool aaa gateway 192.168.0.1

创建接口Virtual-Template1，PPP认证方式为CHAP，并使用地址池aaa为Client端分配IP地址。

[LNS] interface virtual-template 1

[LNS-virtual-template1] ppp authentication-mode chap domain system

[LNS-virtual-template1] remote address pool aaa

[LNS-virtual-template1] quit

创建LNS模式的L2TP组1，配置隧道本端名称为LNS，指定接收呼叫的虚拟模板接口为VT1，并配置隧道对端名称为LAC。

[LNS] l2tp-group 1 mode lns

[LNS-l2tp1] tunnel name LNS

[LNS-l2tp1] mandatory-lcp

[LNS-l2tp1] allow l2tp virtual-template 1 remote LAC

启用隧道验证功能，并设置隧道验证密钥为aabbcc。

[LNS-l2tp1] tunnel authentication

[LNS-l2tp1] tunnel password cipher \$c\$3\$ESiTGosOePuaX7Tqde9j92pLGni+sNh0yA==

[LNS-l2tp1] quit

2.收集debug信息看交互的过程

*Aug 03 09:24:23:354 2017 ZCSW L2TP/7/L2TDBG: L2TP_PAYLOAD: Recv data Len = 38

*Aug 03 09:24:23:354 2017 ZCSW L2TP/7/L2TDBG: L2TP_EVENT: Received message type: 4

*Aug 03 09:24:23:354 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Received a SCCRQ or Stop CCN, sending it to the upper layer

*Aug 03 09:24:23:354 2017 ZCSW L2TP/7/L2TDBG: L2TP_EVENT: Received message type: 4

*Aug 03 09:24:23:354 2017 ZCSW L2TP/7/L2TDBG: L2TP_EVENT: Board 0 recv from SOCK call ID =0 tunnel ID=4 MsgType = 4 Length = 38

*Aug 03 09:24:23:355 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Proc a control message from the peer: type=4, len = 38

*Aug 03 09:24:23:452 2017 ZCSW L2TP/7/L2TDBG: L2TP_PAYLOAD: Recv data Len = 65

*Aug 03 09:24:23:452 2017 ZCSW L2TP/7/L2TDBG: L2TP_EVENT: Received message type: 1

*Aug 03 09:24:23:452 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Received a SCCRQ or Stop CCN, sending it to the upper layer

*Aug 03 09:24:23:452 2017 ZCSW L2TP/7/L2TDBG: L2TP_EVENT: Received message type: 1

*Aug 03 09:24:23:452 2017 ZCSW L2TP/7/L2TDBG: L2TP_EVENT: Board 0 recv from SOCK call ID =0 tunnel ID=0 MsgType = 1 Length = 65

*Aug 03 09:24:23:523 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Proc a control message from the peer: type=1, len = 65

*Aug 03 09:24:23:523 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Tunnel 1 recv SCCRQ when in state 1 from 115.168.112.133

*Aug 03 09:24:23:523 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Checked SCCRQ MSG TYPE = 1

*Aug 03 09:24:23:523 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Parse AVP Protocol version: 100

*Aug 03 09:24:23:523 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Parse AVP Framing

capability : 1

*Aug 03 09:24:23:523 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Parse AVP Host name, value: fjlac

*Aug 03 09:24:23:523 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Tunnel password of the L2TP group: *****

*Aug 03 09:24:23:523 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Parse AVP Remote call number, value: 6320

*Aug 03 09:24:23:589 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Parse AVP receive window size, value: 20

*Aug 03 09:24:23:589 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Put AVP Message Type: START_CONTROL_CONNECTION_REPLY

*Aug 03 09:24:23:589 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Put AVP Protocol version: 100

*Aug 03 09:24:23:589 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Put AVP Framing capability :3

*Aug 03 09:24:23:589 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Put AVP Host name: fjpost

*Aug 03 09:24:23:589 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Put AVP Assigned Tunnel ID: 1

*Aug 03 09:24:23:589 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Put AVP Bearer capability: 3

*Aug 03 09:24:23:589 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Put AVP Receive window size: 20

*Aug 03 09:24:23:589 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Put AVP Challenge :D8 57 40 A7 BA 6F F7 87 25 DE 32 C8 FE 8C 29 94

*Aug 03 09:24:23:589 2017 ZCSW L2TP/7/L2TDBG: L2TP_PAYLOAD: Tunnel 1 sent control (Send Up & RcvLow): Ns (0) Nr (1)

*Aug 03 09:24:23:598 2017 ZCSW L2TP/7/L2TDBG: L2TP_PAYLOAD: Tunnel 1 first ctrl in send window, started ack timer

*Aug 03 09:24:23:598 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Tunnel 1 sent SCCRP to Tunnel 6320

*Aug 03 09:24:23:598 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Tunnel 1 started the Hello timer (60 seconds)

*Aug 03 09:24:23:620 2017 ZCSW L2TP/7/L2TDBG: L2TP_PAYLOAD: Recv data Len = 42

*Aug 03 09:24:23:643 2017 ZCSW L2TP/7/L2TDBG: L2TP_EVENT: Received message type: 3

*Aug 03 09:24:23:643 2017 ZCSW L2TP/7/L2TDBG: L2TP_EVENT: Board 0 recv from SOCK call ID =0 tunnel ID=1 MsgType = 3 Length = 42

*Aug 03 09:24:23:662 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Proc a control message from the peer: type=3, len = 42

*Aug 03 09:24:23:662 2017 ZCSW L2TP/7/L2TDBG: L2TP_PAYLOAD: Tunnel 1: flow ctrl msg: Ns (1) Nr (1) from the peer

*Aug 03 09:24:23:662 2017 ZCSW L2TP/7/L2TDBG: L2TP_PAYLOAD: Tunnel 1 (SendLow=0 SendUp=1) proc ack Nr=1 from the peer

*Aug 03 09:24:23:662 2017 ZCSW L2TP/7/L2TDBG: L2TP_PAYLOAD: Tunnel 1 recv a proper ACK: Nr(1) and cleared the acked packet

*Aug 03 09:24:23:662 2017 ZCSW L2TP/7/L2TDBG: L2TP_PAYLOAD: Tunnel 1 send window empty. ACK timer turned off

*Aug 03 09:24:23:662 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Tunnel 1 recv SCCCN when in state 3

*Aug 03 09:24:23:662 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Tunnel 1 started the Hello timer (60 seconds)

*Aug 03 09:24:23:662 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Checked SCCCN MSG TYPE = 3

*Aug 03 09:24:23:662 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Parse AVP Challenge response F0 7F 22 37 23 3D A1 5B 4D 47 9E 34 C8 10 20 30

*Aug 03 09:24:23:665 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: CHAP response failed the authentication

*Aug 03 09:24:23:665 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Challenge: D8 57 40 A7 BA 6F F7 87 25 DE 32 C8 FE 8C 29 94

*Aug 03 09:24:23:665 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Challenge ID: 3

*Aug 03 09:24:23:665 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Challenge secret: \$c\$3\$4LHbOZfBGIM+y4qMeIY222+JsUSd4wGWkA==

*Aug 03 09:24:23:665 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Challenge length: 16

*Aug 03 09:24:23:665 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Response should be : BC 49 73 C7 C2 52 C5 8B 85 9B 2E FD 1B A4 AC 97

*Aug 03 09:24:23:665 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Calls on tunnel 1 cleared be

cause 1

*Aug 03 09:24:23:665 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Tunnel 1 sent StopCCN to Tunnel 6320

*Aug 03 09:24:23:665 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Put AVP Message Type: STOP_CONTROL_CONNECTION_NOTIFICATION

*Aug 03 09:24:23:689 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Put AVP Assigned Tunnel ID: 1

*Aug 03 09:24:23:689 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Put AVP Result code: RESULT_GENERAL_ERROR

*Aug 03 09:24:23:689 2017 ZCSW L2TP/7/L2TDBG: L2TP_PAYLOAD: Tunnel 1 sent control (Send Up & RcvLow): Ns (1) Nr (2)

*Aug 03 09:24:23:689 2017 ZCSW L2TP/7/L2TDBG: L2TP_PAYLOAD: Tunnel 1 first ctrl in send window, started ack timer

*Aug 03 09:24:23:974 2017 ZCSW L2TP/7/L2TDBG: L2TP_EVENT: Cleared Tunnel remote ID:6320, local ID:1

*Aug 03 09:24:23:995 2017 ZCSW L2TP/7/L2TDBG: L2TP_PAYLOAD: Recv data Len = 12

*Aug 03 09:24:24:105 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: Received ctrl message is ZLB, discard it

*Aug 03 09:24:24:126 2017 ZCSW L2TP/7/L2TDBG: L2TP_PAYLOAD: Recv data Len = 69

*Aug 03 09:24:24:231 2017 ZCSW L2TP/7/L2TDBG: L2TP_EVENT: Received message type: 10

*Aug 03 09:24:24:335 2017 ZCSW L2TP/7/L2TDBG: L2TP_ERROR:Failed to get the descriptor for this ctrl message

*Aug 03 09:24:24:577 2017 ZCSW L2TP/7/L2TDBG: because the message isn't SCCRQ or StopCCN. The message was discarded

3.搜索fail、error等关键字，找到以下报错：

*Aug 03 09:24:23:665 2017 ZCSW L2TP/7/L2TDBG: L2TP_CONTROL: CHAP response failed the authentication

*Aug 03 09:24:24:335 2017 ZCSW L2TP/7/L2TDBG: L2TP_ERROR:Failed to get the descriptor for this ctrl message

4.NAS-Initiated模式L2TP隧道的建立过程为：

- (1) 远端系统Host A发起呼叫，请求建立连接。
- (2) Host A和LAC（Device A）进行PPP LCP协商。
- (3) LAC对Host A提供的PPP用户信息进行PAP或CHAP认证。
- (4) LAC将认证信息（用户名、密码）发送给RADIUS服务器进行认证。
- (5) RADIUS服务器认证该用户，并返回认证结果。
- (6) 如果认证通过，且根据用户名或用户所属ISP域判断该用户为L2TP用户，则LAC向LNS（Device B）发起L2TP隧道建立请求。
- (7) 在需要对隧道进行认证的情况下，LAC和LNS分别发送CHAP challenge信息，以验证对方身份。隧道验证通过后，LAC和LNS之间成功建立了L2TP隧道。
- (8) LAC和LNS在L2TP隧道上协商建立L2TP会话。
- (9) LAC将PPP用户信息和PPP协商参数等传送给LNS。
- (10) LNS将认证信息发送给RADIUS服务器进行认证。
- (11) RADIUS服务器认证该用户，并返回认证结果。
- (12) 认证通过后，LNS为Host A分配一个企业网内部的IP地址。
- (13) 获得IP地址后，PPP用户可以通过Host A访问企业内部资源。

在步骤(12)和(13)中，LAC负责在Host A和LNS之间转发报文。Host A和LAC之间交互的是PPP数据帧，LAC和LNS之间交互的是L2TP数据报文。

5.第一条报错提示在步骤（7）隧道认证阶段发生了错误，因为从配置的文本中是看不到密钥，所以我们将两边的密钥都重新配置为aabbcc测试,发现能正常建立起来拨号。

[ZCSW-l2tp1] tunnel password simple aabbcc

[LAC-l2tp1] tunnel password simple aabbcc

修改两边隧道密码解决

拨号业务涉及到两边的密钥一致问题，但是在文本配置中是检查不出来的，如果拨号不成功可以先将两边的密钥删除重新配置为一致观察，如果还不行再收集debug信息查看交互的过程。