

MSR和cisco设备建立L2TP隧道不成功原因分析

一、组网：

H3C系列路由器作为LAC，Cisco路由器作为LNS，之间通过Internet实现网络层互通。LNS与LAC之间通过WAN接口连接。

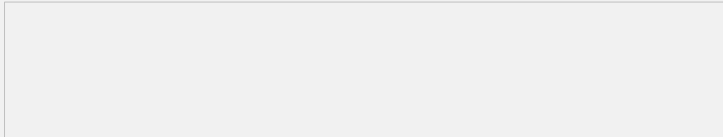


图1

二、问题描述：

正常配置完后H3C路由器（LAC）不能与Cisco路由器（LNS）之间建立隧道。

三、过程分析：

MSR路由器主要配置：

```
l2tp-group 1
undo tunnel authentication
tunnel name lac
start l2tp ip 1.1.2.2 fullusername h3c
```

Cisco侧主要配置：

```
vpdn-group 1
Default L2TP VPDN group
accept-dialin
protocol l2tp
virtual-template 1
local name lns
```

在LAC侧（MSR系列路由器）上使用debugging l2tp all命令打开调试开关，显示控制消息如下：

```
%Oct 12 21:35:35:740 2005 H3C IFNET/5/UPDOWN:Line protocol on the interface
Ethernet 1/1 is UP
*Oct 12 21:35:35:930 2005 H3C L2TP/8/L2TDBG: L2TP::LAC Call UP on interface:
Ethernet 1/1
*Oct 12 21:35:35:930 2005 H3C L2TP/8/L2TDBG: L2TP::Handle Call UP IfIndex =3
718
*Oct 12 21:35:35:930 2005 H3C L2TP/8/L2TDBG: L2TP::LNS Address in Radius =
1.1.2.2
*Oct 12 21:35:35:930 2005 H3C L2TP/8/L2TDBG: L2TP::VPDN Group Number in Ra
dius = 1
*Oct 12 21:35:35:930 2005 H3C L2TP/8/L2TDBG: L2TP::LNS Address = 1.1.2.2
*Oct 12 21:35:35:930 2005 H3C L2TP/8/L2TDBG: L2TP::Add New Call 32006 to Tun
nel 1 call list(total 1)
*Oct 12 21:35:35:930 2005 H3C L2TP/8/L2TDBG: L2TP::Get udp port successfully :
port 57344
*Oct 12 21:35:35:930 2005 H3C L2TP/8/L2TDBG: L2TP::Put AVP Message Type: S
TART_CONTROL_CONNECTION_REQUEST //此处有拨号触发，发送了第一个L2
TP的控制报文。
*Oct 12 21:35:35:930 2005 H3C L2TP/8/L2TDBG: L2TP::Put AVP Protocol version:
100
*Oct 12 21:35:35:930 2005 H3C L2TP/8/L2TDBG: L2TP::Put AVP Host name: lac
*Oct 12 21:35:35:930 2005 H3C L2TP/8/L2TDBG: L2TP::Put AVP Vendor name: Hu
aWei
*Oct 12 21:35:35:930 2005 H3C L2TP/8/L2TDBG: L2TP::Put AVP Framing capability
:3
*Oct 12 21:35:35:930 2005 H3C L2TP/8/L2TDBG: L2TP::Put AVP Assigned Tunnel I
D: 1
*Oct 12 21:35:35:930 2005 H3C L2TP/8/L2TDBG: L2TP::Put AVP Receive window si
ze: 128
*Oct 12 21:35:35:930 2005 H3C L2TP/8/L2TDBG: L2TP::Tunnel 1 send control (Sen
```

dUp & RcvLow):Ns(0) Nr(0)

*Oct 12 21:35:35:930 2005 H3C L2TP/8/L2TDBG: L2TP::Tunnel 1 first ctrl in send window, start ack timer

*Oct 12 21:35:35:930 2005 H3C L2TP/8/L2TDBG: L2TP:: O Tunnel 1 Send SCCRP

*Oct 12 21:35:35:930 2005 H3C L2TP/8/L2TDBG: L2TP::Recv data Len = 128

*Oct 12 21:35:35:930 2005 H3C L2TP/8/L2TDBG: L2TP::Tunnel 1 rcv ctrl message Resume Hello timer

*Oct 12 21:35:35:930 2005 H3C L2TP/8/L2TDBG: L2TP::Receive message with message type: 2

*Oct 12 21:35:35:930 2005 H3C L2TP/8/L2TDBG: L2TP::Board 0 rcv from SOCK CallID=0 TunnelID=1 MsgType = 2 Length = 128

%Oct 12 21:35:35:930 2005 H3C IFNET/5/UPDOWN:Line protocol on the interface Ethernet 1/1 is DOWN

*Oct 12 21:35:35:930 2005 H3C L2TP/8/L2TDBG: L2TP::Proc Peer control type=2, len = 128

*Oct 12 21:35:35:930 2005 H3C L2TP/8/L2TDBG: L2TP::Tunnel 1 Flow ctrl: Ns(0) Nr(1) from peer

*Oct 12 21:35:35:940 2005 H3C L2TP/8/L2TDBG: L2TP::Tunnel 1 (SendLow=0 SendUp=1) proc ack Nr=1 from peer

*Oct 12 21:35:35:940 2005 H3C L2TP/8/L2TDBG: L2TP::Tunnel 1 rcv a proper:Nr(1) and clear

*Oct 12 21:35:35:940 2005 H3C L2TP/8/L2TDBG: L2TP::Tunnel 1 send window empty, turn off the ack timer

*Oct 12 21:35:35:940 2005 H3C L2TP/8/L2TDBG: L2TP:: I Tunnel 1 rcv SCCRP in state 2

*Oct 12 21:35:35:940 2005 H3C L2TP/8/L2TDBG: L2TP::Check SCCRP MSG Type 2 //收到了对端回应的SCCRP报文，并且在后面解出了AVP携带的参数。

*Oct 12 21:35:35:940 2005 H3C L2TP/8/L2TDBG: L2TP::Parse AVP Protocol version, value: 100

*Oct 12 21:35:35:940 2005 H3C L2TP/8/L2TDBG: L2TP::Parse AVP Framing capability, value: 0

*Oct 12 21:35:35:940 2005 H3C L2TP/8/L2TDBG: L2TP::Parse AVP Bearer capability, value: 0

*Oct 12 21:35:35:940 2005 H3C L2TP/8/L2TDBG: L2TP::Parse AVP Firmware revision, value: 1120

*Oct 12 21:35:35:940 2005 H3C L2TP/8/L2TDBG: L2TP::Parse AVP Host name, value: lns

*Oct 12 21:35:35:940 2005 H3C L2TP/8/L2TDBG: L2TP::Parse AVP Vendor name, value: Cisco Systems, Inc.

*Oct 12 21:35:35:940 2005 H3C L2TP/8/L2TDBG: L2TP::Parse AVP Remote tunnel ID: 49345

*Oct 12 21:35:35:940 2005 H3C L2TP/8/L2TDBG: L2TP::Parse AVP Receive window size: 800

*Oct 12 21:35:35:940 2005 H3C L2TP/8/L2TDBG: L2TP::Parse AVP Challenge, Value: 3C B1 B6 F8 69 67 E3 74 A1 2B 3B 9C 19 9D A9 6F //收到了隧道验证的挑战码，由于我们没有配置隧道验证密码，无法做出回应，此时在后面马上回应是SCCCN。

*Oct 12 21:35:35:940 2005 H3C L2TP/8/L2TDBG: L2TP::Put AVP Message Type: START_CONTROL_CONNECTION_CONNECTED

*Oct 12 21:35:35:940 2005 H3C L2TP/8/L2TDBG: L2TP::Get a challenge from Peer LNS.

*Oct 12 21:35:35:940 2005 H3C L2TP/8/L2TDBG: L2TP:: O Tunnel 1 Send StopCCN to Tunnel 49345

*Oct 12 21:35:35:940 2005 H3C L2TP/8/L2TDBG: L2TP::Put AVP Message Type: STOP_CONTROL_CONNECTION_NOTIFICATION //

*Oct 12 21:35:35:950 2005 H3C L2TP/8/L2TDBG: L2TP::Put AVP Assigned Tunnel ID: 1

*Oct 12 21:35:35:950 2005 H3C L2TP/8/L2TDBG: L2TP::Put AVP Result code: RESULT_GENERAL_ERROR

*Oct 12 21:35:35:950 2005 H3C L2TP/8/L2TDBG: L2TP::Tunnel 1 send control (SendUp & RcvLow):Ns(1) Nr(1)

*Oct 12 21:35:35:950 2005 H3C L2TP/8/L2TDBG: L2TP::Tunnel 1 first ctrl in send window, start ack timer

*Oct 12 21:35:35:950 2005 H3C L2TP/8/L2TDBG: L2TP::Clear Calls On Tunnel ID=1

Reason=1

*Oct 12 21:35:35:950 2005 H3C L2TP/8/L2TDBG: L2TP::Clear Calls On Tunnel pst
Node=790d744 total=1

*Oct 12 21:35:35:950 2005 H3C L2TP/8/L2TDBG: L2TP::Clean Call Structure ID = 3
2006

*Oct 12 21:35:35:950 2005 H3C L2TP/8/L2TDBG: L2TP::Proc Call ID = 32006 Down

*Oct 12 21:35:35:950 2005 H3C L2TP/8/L2TDBG: L2TP::Clear Tunnel remote
ID:49345, local ID:1

*Oct 12 21:35:35:950 2005 H3C L2TP/8/L2TDBG: L2TP::Recv data Len = 12

*Oct 12 21:35:35:950 2005 H3C L2TP/8/L2TDBG: L2TP::Error::Receive ctrl
message too short, discard it!

分析原因，Cisco路由器必须配置隧道密码，默认为空，而H3C系列路由器默认隧道密码不为空。缺省情况下，Cisco路由器和H3C系列路由器都默认进行隧道验证，Cisco路由器在密码为空时自动断开隧道连接，不给对端发任何消息。

四、 解决方法：

检查LAC和LNS侧的隧道验证配置，确保两端一致，即两端都不配置隧道验证，或两端都配隧道验证且隧道验证密码相同。