

# L2TP负载均衡和故障切换

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## 简介

执行负载均衡和故障切换功能到多个L2TP网络服务器的本文解释L2TP接入集中器(LAC)功能(LNS)。

## 先决条件

### 要求

本文档没有任何特定的要求。

### 使用的组件

本文档不限于特定的软件和硬件版本。

### 规则

有关文档规则的详细信息，请参阅 [Cisco 技术提示规则](#)。

## LNS负载均衡

当使用RADIUS提供虚拟专用拨号网络(VPDN)隧道信息到LAC时，转发同样拨号号码识别服务(DNIS)的用户或域到多个LNS是可能的。当流入通道和会话在负载分配需要在多个LNSs间共享帮助和提供更高的水平冗余时，这是需求。为了启用是可行的负载均衡功能，每个LNS的IP地址，因为在思科供应商专用属性(VSA)属性/值对必须传送隧道终点。

```
Cisco:Avpair = "vpdn:ip-addresses=10.51.6.82,10.51.6.59"
```

“使用作为分隔符表明有多个终端可用对LAC (您能也使用空间作为分隔符指示隧道终点相等优先级)。使用的终端根据传送的第一个非活动IP地址随机选择的LAC选择。如果这忙碌(LAC不能连接到IP地址)下个IP地址选择。如果没有非活动IP地址联机，下选择根据在‘开放隧道状态’的IP地址和终于是‘待定隧道状态’的IP地址。

## [LNS故障切换](#)

当使用多个LNSs时，Cisco IOS软件允许最多六个优先级。通过使用‘/’作为分隔符，您能分配下载对LAC的不同的优先级组到LNS。这允许某一LNSs运行作为主要的LNS和其他作为备份。和前面，隧道终点在Cisco VSA属性/值对传送。

```
Cisco:Avpair = "vpdn:ip-addresses=10.51.6.82/10.51.6.59"
```

‘/’分隔符表明10.51.6.82在优先级组1中，并且10.51.6.59在优先级组2中。

## [LNS负载均衡和故障切换](#)

使用负载均衡和故障切换在同样配置文件是可能的。通过使用Cisco VSA属性/值对“VPDN这达到IP”，如显示此处：

```
Cisco:Avpair = "vpdn:ip-addresses=1.1.1.1,2.2.2.2/3.3.3.3,4.4.4.4/5.5.5.5,6.6.6.6"
```

这解释如下：

- 隧道终点1.1.1.1和2.2.2.2在优先级组1中
- 隧道终点3.3.3.3和4.4.4.4在优先级组2中
- 隧道终点5.5.5.5和6.6.6.6在优先级组3中

负载均衡功能在不忙的优先级组1执行-非活动/，开放，待定。如果什么都不是可用的在此优先级，请去下个优先级，并且继续选择逻辑。

## [实验室测试](#)

在此部分的测试显示三个不同的方案为使用负载均衡和故障切换功能：

- LNS负载均衡使用思科供应商专用属性/值配对
- LNS故障切换使用思科供应商专用属性/值配对
- LNS负载均衡和故障切换使用思科供应商专用属性/值对

## [LNS负载均衡使用思科供应商专用属性/值配对](#)

### [RADIUS配置文件](#)

在Merit RADIUS服务器3.6B的RADIUS用户和通道配置文件：

```
2500-1 Password = "cisco"
Service-Type = Framed,
Framed-Protocol = PPP,
Framed-IP-Address = 255.255.255.255
```

```
dnis:614629 Password = "cisco"
Service-Type = Outbound,
Cisco:Avpair = "vpdn:tunnel-type=l2tp",
Cisco:Avpair = "vpdn:tunnel-id=hgw",
Cisco:Avpair = "vpdn:ip-addresses=10.51.6.82,10.51.6.59",
Cisco:Avpair = "vpdn:l2tp-tunnel-password=hello"
```

## LAC -配置

```
aaa new-model
```

```
!--- Enables Authentication, Authorization and Accounting functionality. aaa group server radius
NSA_LAB server 10.51.6.3 auth-port 1645 acct-port 0 non-standard ! aaa authentication login
default local aaa authentication ppp default local group NSA_LAB aaa authentication ppp DIAL
group NSA_LAB local aaa authorization network default group NSA_LAB local aaa authorization
network DIAL group NSA_LAB local !--- Authentication and Authorization will be implemented !---
in sequence by the methods configured. vpdn enable !--- Enables the VPDN feature. no vpdn
logging vpdn search-order dnis !--- Once LCP state is open, the dialed number is checked !--- to
see if the remote is a VPDN user. interface Serial0:15 no ip address encapsulation ppp no
logging event link-status dialer rotary-group 1 dialer-group 1 autodetect encapsulation ppp v120
no snmp trap link-status isdn switch-type primary-net5 isdn incoming-voice modem compress stac !
interface Dialer1 ip unnumbered Loopback0 encapsulation ppp no ip mroute-cache dialer-group 1
autodetect encapsulation ppp v120 !--- Allows the encapsulation type to be dynamically set if
the call !--- type is not identified in the ISDN Q.931 Lower Layer Compatibility. peer default
ip address pool default compress stac ppp authentication chap pap DIAL ppp authorization DIAL !--
-- The list-name DIAL is configured, that PPP Authentication and !--- Authorization will use.
ppp chap hostname 5300-1 !--- The name 5300-1 is used for all CHAP challenge and response on !---
- this interface. ppp multilink ! radius-server host 10.51.6.3 auth-port 1645 acct-port 1646
non-standard !--- 'non-standard' indicates that the RADIUS Server will use !--- non standard
RADIUS attributes.
```

## LNS -配置

```
aaa new-model
```

```
!--- Enables Authentication, Authorization and Accounting functionality. aaa authentication
login default local aaa authentication enable default group radius enable aaa authentication ppp
default local aaa authentication ppp vpdn group radius none aaa authorization network default
local none aaa authorization network vpdn group radius local !--- Authentication and
Authorization will be implemented !--- in sequence by the methods configured. vpdn enable !---
Enables the VPDN feature. vpdn-group 1 accept-dialin protocol l2tp virtual-template 1 local name
l2tp-gw l2tp tunnel password 7 1211001B1E04 !--- The LNS will accept connections from the LAC
using L2TP !--- using All Virtual-Access Interfaces that are created will be cloned from !---
Virtual-Template 1. The name 'l2tp-gw' is used to identify the password, !--- that will
authenticate the tunnel, is encrypted. interface Ethernet5/0 ip address 10.51.6.59 255.255.252.0
! interface Virtual-Template1 ip unnumbered Ethernet5/0 no ip route-cache cef peer default ip
address pool default ppp authentication chap vpdn ppp authorization vpdn ! radius-server host
10.51.6.3 auth-port 1645 acct-port 1646 non-standard !--- 'non-standard' identifies the RADIUS
Server will be !--- using nonstandard RADIUS attributes.
```

## 从LAC采取的调试

```
Jan 1 00:32:54.847: %LINK-3-UPDOWN: Interface Serial0:0, changed state to up
Jan 1 00:32:55.027: Se0:0 PPP: Treating connection as a callin
Jan 1 00:32:55.027: Se0:0 PPP: Phase is ESTABLISHING, Passive Open
Jan 1 00:32:55.027: Se0:0 CHAP: Using alternate hostname 5300-1
Jan 1 00:32:55.027: Se0:0 LCP: State is Listen
Jan 1 00:32:55.027: Se0:0 LCP: I CONFREQ [Listen] id 112 len 10
- snip -
Jan 1 00:32:55.063: Se0:0 LCP: State is Open Jan 1 00:32:55.063: Se0:0 PPP: Phase is
AUTHENTICATING, by this end Jan 1 00:32:55.063: Se0:0 CHAP: Using alternate hostname 5300-1 Jan
```

1 00:32:55.063: Se0:0 CHAP: O CHALLENGE id 14 len 27 from "5300-1" Jan 1 00:32:55.083: Se0:0  
CHAP: I RESPONSE id 14 len 27 from "2500-1" Jan 1 00:32:55.083: Se0:0 PPP: Phase is FORWARDING  
**Jan 1 00:32:55.083: Se0:0 VPDN: Got DNIS string 614629 Jan 1 00:32:55.083: Se0:0 VPDN: Looking  
for tunnel -- dnis:614629 --** Jan 1 00:32:55.083: Serial0:0 AAA/AUTHOR/VPDN (480033158):  
Port='Serial0:0' list='default' service=NET Jan 1 00:32:55.083: AAA/AUTHOR/VPDN: Serial0:0  
(480033158) user='dnis:614629' Jan 1 00:32:55.087: Serial0:0 AAA/AUTHOR/VPDN (480033158): send  
AV service=ppp Jan 1 00:32:55.087: Serial0:0 AAA/AUTHOR/VPDN (480033158): send AV protocol=vpdn  
Jan 1 00:32:55.087: Serial0:0 AAA/AUTHOR/VPDN (480033158): found list "default" Jan 1  
00:32:55.087: Serial0:0 AAA/AUTHOR/VPDN (480033158): Method=NSA\_LAB (radius) Jan 1 00:32:55.087:  
RADIUS: Initial Transmit Serial0:0 id 50 10.51.6.3:1645, Access-Request, len 100 Jan 1  
00:32:55.087: Attribute 4 6 0A330644 Jan 1 00:32:55.087: Attribute 5 6 00000000 Jan 1  
00:32:55.087: Attribute 26 17 00000009020B5365 Jan 1 00:32:55.087: Attribute 61 6 00000002 Jan 1  
00:32:55.087: Attribute 1 13 646E6973 Jan 1 00:32:55.087: Attribute 30 8 36313436 Jan 1  
00:32:55.087: Attribute 2 18 F0AF3BC4 Jan 1 00:32:55.087: Attribute 6 6 00000005 Jan 1  
00:32:55.091: RADIUS: Received from id 50 10.51.6.3:1645, Access-Accept, len 167 Jan 1  
00:32:55.091: Attribute 6 6 00000005 Jan 1 00:32:55.091: Attribute 26 29 0000000901177670 Jan 1  
00:32:55.091: Attribute 26 26 0000000901147670 Jan 1 00:32:55.091: Attribute 26 47  
0000000901297670 Jan 1 00:32:55.091: Attribute 26 39 0000000901217670 *!--- LAC receives a call,  
negotiates PPP, LCP is declared Open, !--- the dialed number is queried to ascertain if this is  
a VPDN customer. !--- VPDN attempts to find an existing tunnel for the user, queries RADIUS for  
!--- the tunnel information.* Jan 1 00:32:55.091: RADIUS: saved authorization data for user  
61F40024 at 61F9813C Jan 1 00:32:55.091: RADIUS: cisco AVPair "vpdn:tunnel-type=l2tp" Jan 1  
00:32:55.091: RADIUS: cisco AVPair "vpdn:tunnel-id=hgw" Jan 1 00:32:55.091: RADIUS: cisco AVPair  
"vpdn:ip-addresses=10.51.6.82,10.51.6.59" Jan 1 00:32:55.095: RADIUS: cisco AVPair "vpdn:l2tp-  
tunnel-password=hello" Jan 1 00:32:55.095: AAA/AUTHOR (480033158): Post authorization status =  
PASS\_ADD Jan 1 00:32:55.095: AAA/AUTHOR/VPDN: Processing AV service=ppp Jan 1 00:32:55.095:  
AAA/AUTHOR/VPDN: Processing AV protocol=vpdn Jan 1 00:32:55.095: AAA/AUTHOR/VPDN: Processing AV  
tunnel-type=l2tp Jan 1 00:32:55.095: AAA/AUTHOR/VPDN: Processing AV tunnel-id=hgw **Jan 1  
00:32:55.095: AAA/AUTHOR/VPDN: Processing AV ip-addresses= 10.51.6.82,10.51.6.59** Jan 1  
00:32:55.095: AAA/AUTHOR/VPDN: Processing AV l2tp-tunnel-password=hello Jan 1 00:32:55.095:  
Se0:0 VPDN/RPMS/: Got tunnel info for dnis:614629 Jan 1 00:32:55.095: Se0:0 VPDN/RPMS/: LAC hgw  
Jan 1 00:32:55.095: Se0:0 VPDN/RPMS/: l2tp-busy-disconnect yes Jan 1 00:32:55.095: Se0:0  
VPDN/RPMS/: l2tp-tunnel-password xxxxxx Jan 1 00:32:55.095: Se0:0 VPDN/RPMS/: 2 IP addresses Jan  
1 00:32:55.095: Se0:0 VPDN/RPMS/: IP 10.51.6.82 Priority 1 Jan 1 00:32:55.095: Se0:0 VPDN/RPMS/:  
IP 10.51.6.59 Priority 1 **Jan 1 00:32:55.095: Se0:0 VPDN/: curlvl 1 Address 0: 10.51.6.82,  
priority 1 Jan 1 00:32:55.095: Se0:0 VPDN/: Select non-active address 10.51.6.82, priority 1 !--  
- The tunnel information is downloaded, using Cisco VSA. Two LNS IP !--- Addresses are used with  
a ',' as the delimiter, indicating that both !--- have equal priority. In this case 10.51.6.82  
is selected as the tunnel !--- endpoint.** Jan 1 00:32:55.095: Se0:0 VPDN: Find LNS process  
created Jan 1 00:32:55.095: Tnl 49467 L2TP: SM State idle Jan 1 00:32:55.095: Tnl 49467 L2TP: O  
SCCRQ Jan 1 00:32:55.099: Tnl 49467 L2TP: Tunnel state change from idle to wait-ctl-reply Jan 1  
00:32:55.099: Tnl 49467 L2TP: SM State wait-ctl-reply **Jan 1 00:32:55.099: Se0:0 VPDN: Forward to  
address 10.51.6.82** Jan 1 00:32:55.099: Se0:0 VPDN: Pending Jan 1 00:32:55.099: Se0:0 VPDN:  
Process created Jan 1 00:32:55.191: Tnl 49467 L2TP: I SCCRP from l2tp-gw Jan 1 00:32:55.191: Tnl  
49467 L2TP: Got a challenge from remote peer, l2tp-gw Jan 1 00:32:55.191: Tnl 49467 L2TP: Got a  
response from remote peer, l2tp-gw Jan 1 00:32:55.191: Tnl 49467 L2TP: Tunnel Authentication  
success **Jan 1 00:32:55.191: Tnl 49467 L2TP: Tunnel state change from wait-ctl-reply to  
established** Jan 1 00:32:55.191: Tnl 49467 L2TP: O SCCCN to l2tp-gw tnlid 62193 Jan 1  
00:32:55.195: Tnl 49467 L2TP: SM State established Jan 1 00:32:55.195: Tnl/Cl 49467/16 L2TP:  
Session FS enabled Jan 1 00:32:55.195: Tnl/Cl 49467/16 L2TP: Session state change from idle to  
wait-for-tunnel Jan 1 00:32:55.195: Se0:0 Tnl/Cl 49467/16 L2TP: Create session Jan 1  
00:32:55.195: Tnl 49467 L2TP: SM State established Jan 1 00:32:55.195: Se0:0 Tnl/Cl 49467/16  
L2TP: O ICRQ to l2tp-gw 62193/0 Jan 1 00:32:55.195: Se0:0 Tnl/Cl 49467/16 L2TP: Session state  
change from wait-for-tunnel to wait-reply Jan 1 00:32:55.195: Se0:0 VPDN: 2500-1 is forwarded  
Jan 1 00:32:55.327: Se0:0 Tnl/Cl 49467/16 L2TP: O ICCN to l2tp-gw 62193/17 **Jan 1 00:32:55.327:  
Se0:0 Tnl/Cl 49467/16 L2TP: Session state change from wait-reply to established** Jan 1  
00:32:56.195: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0:0, changed state to up Jan  
1 00:33:00.851: %ISDN-6-CONNECT:Interface Serial0:0 is now connected to 2500-1 Jan 1  
00:33:06.111: %ISDN-6-CONNECT: Interface Serial0:1 is now connected to N/A N/A *!--- Second call  
is received by the LAC, !--- the dialed number is a VPDN customer.* Jan 1 00:33:35.027: As1 LCP:  
I CONFREQ [Closed] id 1 len 23 - snip - **Jan 1 00:33:39.275: As1 LCP: State is Open** Jan 1  
00:33:39.275: As1 PPP: Phase is AUTHENTICATING, by this end Jan 1 00:33:39.275: As1 CHAP: Using  
alternate hostname 5300-1 Jan 1 00:33:39.275: As1 CHAP: O CHALLENGE id 2 len 27 from "5300-1"  
Jan 1 00:33:39.383: As1 CHAP: I RESPONSE id 2 len 25 from "paul" Jan 1 00:33:39.383: As1 PPP:

Phase is FORWARDING Jan 1 00:33:39.383: As1 VPDN: Got DNIS string 614629 Jan 1 00:33:39.383: As1 VPDN: Looking for tunnel -- dnis:614629 -- Jan 1 00:33:39.387: Async1 AAA/AUTHOR/VPDN (3019717950): Port='Async1' list='default' service=NET Jan 1 00:33:39.387: AAA/AUTHOR/VPDN: Async1 (3019717950) user='dnis:614629' Jan 1 00:33:39.387: Async1 AAA/AUTHOR/VPDN (3019717950): send AV service=ppp Jan 1 00:33:39.387: Async1 AAA/AUTHOR/VPDN (3019717950): send AV protocol=vpdn Jan 1 00:33:39.387: Async1 AAA/AUTHOR/VPDN (3019717950): found list "default" Jan 1 00:33:39.387: Async1 AAA/AUTHOR/VPDN (3019717950): Method=NSA\_LAB (radius) Jan 1 00:33:39.387: RADIUS: Initial Transmit Async1 id 52 10.51.6.3:1645, Access-Request, len 97 Jan 1 00:33:39.387: Attribute 4 6 0A330644 Jan 1 00:33:39.387: Attribute 5 6 00000001 Jan 1 00:33:39.387: Attribute 26 14 0000000902084173 Jan 1 00:33:39.387: Attribute 61 6 00000000 Jan 1 00:33:39.387: Attribute 1 13 646E6973 Jan 1 00:33:39.387: Attribute 30 8 36313436 Jan 1 00:33:39.387: Attribute 2 18 E9164E4C Jan 1 00:33:39.387: Attribute 6 6 00000005 Jan 1 00:33:39.391: RADIUS: Received from id 52 10.51.6.3:1645, Access-Accept, len 167 Jan 1 00:33:39.391: Attribute 6 6 00000005 Jan 1 00:33:39.391: Attribute 26 29 0000000901177670 Jan 1 00:33:39.391: Attribute 26 26 0000000901147670 Jan 1 00:33:39.391: Attribute 26 47 0000000901297670 Jan 1 00:33:39.391: Attribute 26 39 0000000901217670 Jan 1 00:33:39.391: RADIUS: saved authorization data for user 621904CC at 61FAB9EC Jan 1 00:33:39.391: RADIUS: cisco AVPair "vpdn:tunnel-type=l2tp" Jan 1 00:33:39.391: RADIUS: cisco AVPair "vpdn:tunnel-id=hgw" Jan 1 00:33:39.391: RADIUS: cisco AVPair "vpdn:ip-addresses=10.51.6.82,10.51.6.59" Jan 1 00:33:39.391: RADIUS: cisco AVPair "vpdn:l2tp-tunnel-password=hello" Jan 1 00:33:39.395: AAA/AUTHOR (3019717950): Post authorization status = PASS\_ADD Jan 1 00:33:39.395: AAA/AUTHOR/VPDN: Processing AV service=ppp Jan 1 00:33:39.395: AAA/AUTHOR/VPDN: Processing AV protocol=vpdn Jan 1 00:33:39.395: AAA/AUTHOR/VPDN: Processing AV tunnel-type=l2tp Jan 1 00:33:39.395: AAA/AUTHOR/VPDN: Processing AV tunnel-id=hgw Jan 1 00:33:39.395: AAA/AUTHOR/VPDN: Processing AV ip-addresses=10.51.6.82,10.51.6.59 Jan 1 00:33:39.395: AAA/AUTHOR/VPDN: Processing AV l2tp-tunnel-password=hello Jan 1 00:33:39.395: As1 VPDN/RPMS/: Got tunnel info for dnis:614629 Jan 1 00:33:39.395: As1 VPDN/RPMS/: LAC hgw Jan 1 00:33:39.395: As1 VPDN/RPMS/: l2tp-busy-disconnect yes Jan 1 00:33:39.395: As1 VPDN/RPMS/: l2tp-tunnel-password xxxxxx Jan 1 00:33:39.395: As1 VPDN/RPMS/: 2 IP addresses Jan 1 00:33:39.395: As1 VPDN/RPMS/: IP 10.51.6.82 Priority 1 Jan 1 00:33:39.395: As1 VPDN/RPMS/: IP 10.51.6.59 Priority 1 Jan 1 00:33:39.395: As1 VPDN/: curlvl 1 Address 1: 10.51.6.59, priority 1 **Jan 1 00:33:39.395: As1 VPDN/: Select non-active address 10.51.6.59, priority 1 !---** *The second non-active endpoint is selected 10.51.6.59 !---* *and the control connection is established.* Jan 1 00:33:39.395: As1 VPDN: Find LNS process created Jan 1 00:33:39.395: Tnl 20770 L2TP: SM State idle Jan 1 00:33:39.395: Tnl 20770 L2TP: O SCCRQ Jan 1 00:33:39.399: Tnl 20770 L2TP: Tunnel state change from idle to wait-ctl-reply Jan 1 00:33:39.399: Tnl 20770 L2TP: SM State wait-ctl-reply **Jan 1 00:33:39.399: As1 VPDN: Forward to address 10.51.6.59** Jan 1 00:33:39.399: As1 VPDN: Pending Jan 1 00:33:39.399: As1 VPDN: Process created Jan 1 00:33:39.399: Tnl 20770 L2TP: I SCCRP from l2tp-gw Jan 1 00:33:39.399: Tnl 20770 L2TP: Got a challenge from remote peer, l2tp-gw Jan 1 00:33:39.399: Tnl 20770 L2TP: Got a response from remote peer, l2tp-gw Jan 1 00:33:39.399: Tnl 20770 L2TP: Tunnel Authentication success Jan 1 00:33:39.399: Tnl 20770 L2TP: Tunnel state change from wait-ctl-reply to established Jan 1 00:33:39.403: Tnl 20770 L2TP: O SCCCN to l2tp-gw tnlid 42921 Jan 1 00:33:39.403: Tnl 20770 L2TP: SM State established Jan 1 00:33:39.403: As1 VPDN: Forwarding... Jan 1 00:33:39.403: Tnl/Cl 20770/17 L2TP: Session FS enabled Jan 1 00:33:39.403: Tnl/Cl 20770/17 L2TP: Session state change from idle to wait-for-tunnel Jan 1 00:33:39.403: As1 Tnl/Cl 20770/17 L2TP: Create session Jan 1 00:33:39.403: Tnl 20770 L2TP: SM State established Jan 1 00:33:39.403: As1 Tnl/Cl 20770/17 L2TP: O ICRQ to l2tp-gw 42921/0 Jan 1 00:33:39.403: As1 Tnl/Cl 20770/17 L2TP: Session state change from wait-for-tunnel to wait-reply Jan 1 00:33:39.403: As1 VPDN: paul is forwarded Jan 1 00:33:39.407: As1 Tnl/Cl 20770/17 L2TP: O ICCN to l2tp-gw 42921/16 **Jan 1 00:33:39.407: As1 Tnl/Cl 20770/17 L2TP: Session state change from wait-reply to established**

## [LNS故障切换使用思科供应商专用属性/值对](#)

### [RADIUS配置文件](#)

在Merit RADIUS服务器3.6B的RADIUS用户和通道配置文件：

```
2500-1 Password = "cisco"
Service-Type = Framed,
Framed-Protocol = PPP,
Framed-IP-Address = 255.255.255.255
```

```
dnis:614629 Password = "cisco"
Service-Type = Outbound,
Cisco:Avpair = "vpdn:tunnel-type=l2tp",
Cisco:Avpair = "vpdn:tunnel-id=hgw",
Cisco:Avpair = "vpdn:ip-addresses=10.51.6.82/10.51.6.59",
Cisco:Avpair = "vpdn:l2tp-tunnel-password=hello"
```

## LAC和LNS配置

同上一个一样。

## 从LAC采取的调试

```
Jan 1 02:00:35.767: As2 LCP: State is Open Jan 1 02:00:35.767: As2 PPP: Phase is AUTHENTICATING,
by this end [0 sess, 0 load] Jan 1 02:00:35.767: As2 CHAP: Using alternate hostname 5300-1 Jan 1
02:00:35.767: As2 CHAP: O CHALLENGE id 1 len 27 from "5300-1" Jan 1 02:00:35.959: As2 CHAP: I
RESPONSE id 1 len 25 from "paul" Jan 1 02:00:35.959: As2 PPP: Phase is FORWARDING [0 sess, 0
load] Jan 1 02:00:35.959: As2 VPDN: Got DNIS string 614629 Jan 1 02:00:35.959: As2 VPDN: Looking
for tunnel -- dnis:614629 -- Jan 1 02:00:35.959: AAA/AUTHOR/VPDN: Async2 (3581154520)
user='dnis:614629' Jan 1 02:00:35.963: Async2 AAA/AUTHOR/VPDN (3581154520): send AV service=ppp
Jan 1 02:00:35.963: Async2 AAA/AUTHOR/VPDN (3581154520): send AV protocol=vpdn Jan 1
02:00:35.963: Async2 AAA/AUTHOR/VPDN (3581154520): found list "default" Jan 1 02:00:35.963:
Async2 AAA/AUTHOR/VPDN (3581154520): Method=NSA_LAB (radius) Jan 1 02:00:35.963: RADIUS: Initial
Transmit Async2 id 56 10.51.6.3:1645, Access-Request, len 109 Jan 1 02:00:35.963: Attribute 4 6
0A330644 Jan 1 02:00:35.963: Attribute 5 6 00000000 Jan 1 02:00:35.963: Attribute 26 14
0000000902084173 Jan 1 02:00:35.963: Attribute 61 6 00000000 Jan 1 02:00:35.963: Attribute 1 13
646E6973 Jan 1 02:00:35.963: Attribute 30 8 36313436 Jan 1 02:00:35.963: Attribute 31 12
31363139 Jan 1 02:00:35.963: Attribute 2 18 2A5AF04C Jan 1 02:00:35.963: Attribute 6 6 00000005
Jan 1 02:00:35.967: RADIUS: Received from id 56 10.51.6.3:1645, Access-Accept, len 167 Jan 1
02:00:35.967: Attribute 6 6 00000005 Jan 1 02:00:35.967: Attribute 26 29 0000000901177670 Jan 1
02:00:35.967: Attribute 26 26 0000000901147670 Jan 1 02:00:35.967: Attribute 26 47
0000000901297670 Jan 1 02:00:35.967: Attribute 26 39 0000000901217670 Jan 1 02:00:35.967:
RADIUS: cisco AVPair "vpdn:tunnel-type=l2tp" Jan 1 02:00:35.967: RADIUS: cisco AVPair
"vpdn:tunnel-id=hgw" Jan 1 02:00:35.967: RADIUS: cisco AVPair "vpdn:ip-
addresses=10.51.6.82/10.51.6.59" Jan 1 02:00:35.967: RADIUS: cisco AVPair "vpdn:l2tp-tunnel-
password=hello" Jan 1 02:00:35.967: AAA/AUTHOR (3581154520): Post authorization status =
PASS_ADD Jan 1 02:00:35.967: AAA/AUTHOR/VPDN: Processing AV service=ppp Jan 1 02:00:35.967:
AAA/AUTHOR/VPDN: Processing AV protocol=vpdn Jan 1 02:00:35.967: AAA/AUTHOR/VPDN: Processing AV
tunnel-type=l2tp Jan 1 02:00:35.967: AAA/AUTHOR/VPDN: Processing AV tunnel-id=hgw Jan 1
02:00:35.967: AAA/AUTHOR/VPDN: Processing AV ip-addresses= 10.51.6.82/10.51.6.59 Jan 1
02:00:35.967: AAA/AUTHOR/VPDN: Processing AV l2tp-tunnel-password=hello !--- LAC receives a
call, negotiates PPP, LCP is declared Open, !--- the dialed number is queried to ascertain if
this is a VPDN customer. !--- VPDN attempts to find an existing tunnel for the user, queries
RADIUS for !--- the tunnel information. Jan 1 02:00:35.971: As2 VPDN/RPMS/: Got tunnel info for
dnis:614629 Jan 1 02:00:35.971: As2 VPDN/RPMS/: LAC hgw Jan 1 02:00:35.971: As2 VPDN/RPMS/:
l2tp-busy-disconnect yes Jan 1 02:00:35.971: As2 VPDN/RPMS/: l2tp-tunnel-password xxxxxx Jan 1
02:00:35.971: As2 VPDN/RPMS/: 2 IP addresses Jan 1 02:00:35.971: As2 VPDN/RPMS/: IP 10.51.6.82
Priority 1 Jan 1 02:00:35.971: As2 VPDN/RPMS/: IP 10.51.6.59 Priority 2 Jan 1 02:00:35.971: As2
VPDN/: curlvl 1 Address 0: 10.51.6.82, priority 1 Jan 1 02:00:35.971: As2 VPDN/: Select non-
active address 10.51.6.82, priority 1 !--- The tunnel information is downloaded, using Cisco
VSA. !--- Two RADIUS server IP Address's are used with a '/' as the delimiter, !--- indicating
that there are two priority groups. In this case 10.51.6.82, !--- as Priority level 1, is
selected as the tunnel endpoint. Jan 1 02:00:35.971: Tnl 17044 L2TP: SM State idle Jan 1
02:00:35.971: Tnl 17044 L2TP: O SCCRQ Jan 1 02:00:35.971: Tnl 17044 L2TP: Tunnel state change
from idle to wait-ctl-reply Jan 1 02:00:35.971: Tnl 17044 L2TP: SM State wait-ctl-reply Jan 1
02:00:35.971: As2 VPDN: Find LNS process created Jan 1 02:00:35.971: As2 VPDN: Forward to
address 10.51.6.82 Jan 1 02:00:35.971: As2 VPDN: Pending Jan 1 02:00:35.971: As2 VPDN: Process
created Jan 1 02:00:35.983: Tnl 17044 L2TP: I SCCRP from l2tp-gw Jan 1 02:00:35.983: Tnl 17044
L2TP: Got a challenge from remote peer, l2tp-gw Jan 1 02:00:35.983: Tnl 17044 L2TP: Got a
response from remote peer, l2tp-gw Jan 1 02:00:35.983: Tnl 17044 L2TP: Tunnel Authentication
success Jan 1 02:00:35.983: Tnl 17044 L2TP: Tunnel state change from wait-ctl-reply to
```

established Jan 1 02:00:35.983: Tnl 17044 L2TP: O SCCCN to l2tp-gw tnlid 9017 Jan 1  
02:00:35.983: Tnl 17044 L2TP: SM State established Jan 1 02:00:35.983: As2 VPDN: Forwarding...  
Jan 1 02:00:35.987: Tnl/Cl 17044/2 L2TP: Session FS enabled Jan 1 02:00:35.987: Tnl/Cl 17044/2  
L2TP: Session state change from idle to wait-for-tunnel Jan 1 02:00:35.987: As2 Tnl/Cl 17044/2  
L2TP: Create session Jan 1 02:00:35.987: Tnl 17044 L2TP: SM State established Jan 1  
02:00:35.987: As2 Tnl/Cl 17044/2 L2TP: O ICRQ to l2tp-gw 9017/0 Jan 1 02:00:35.987: As2 Tnl/Cl  
17044/2 L2TP: Session state change from wait-for-tunnel to wait-reply Jan 1 02:00:35.987: As2  
VPDN: paul is forwarded Jan 1 02:00:35.995: As2 Tnl/Cl 17044/2 L2TP: O ICCN to l2tp-gw 9017/2  
**Jan 1 02:00:35.995: As2 Tnl/Cl 17044/2 L2TP: Session state change from wait-reply to established**  
*!--- The Tunnel and Session are now established. !--- A second call is received by the LAC. Jan*  
**1 02:03:21.775: Se0:1 LCP: State is Open** Jan 1 02:03:21.775: Se0:1 PPP: Phase is AUTHENTICATING,  
by this end [0 sess, 0 load] Jan 1 02:03:21.775: Se0:1 CHAP: Using alternate hostname 5300-1 Jan  
1 02:03:21.775: Se0:1 CHAP: O CHALLENGE id 1 len 27 from "5300-1" Jan 1 02:03:21.799: Se0:1  
CHAP: I RESPONSE id 1 len 27 from "2500-1" Jan 1 02:03:21.799: Se0:1 PPP: Phase is FORWARDING [0  
sess, 0 load] **Jan 1 02:03:21.799: Se0:1 VPDN: Got DNIS string 614629 Jan 1 02:03:21.799: Se0:1**  
**VPDN: Looking for tunnel -- dnis:614629 --** Jan 1 02:03:21.799: Serial0:1 AAA/AUTHOR/VPDN  
(2106866192): Port='Serial0:1' list='default' service=NET Jan 1 02:03:21.799: AAA/AUTHOR/VPDN:  
Serial0:1 (2106866192) user='dnis:614629' Jan 1 02:03:21.799: Serial0:1 AAA/AUTHOR/VPDN  
(2106866192): send AV service=ppp Jan 1 02:03:21.799: Serial0:1 AAA/AUTHOR/VPDN (2106866192):  
send AV protocol=vpdn Jan 1 02:03:21.799: Serial0:1 AAA/AUTHOR/VPDN (2106866192): found list  
"default" Jan 1 02:03:21.799: Serial0:1 AAA/AUTHOR/VPDN (2106866192): Method=NSA\_LAB (radius)  
Jan 1 02:03:21.803: RADIUS: Initial Transmit Serial0:1 id 60 10.51.6.3:1645, Access-Request, len  
112 Jan 1 02:03:21.803: Attribute 4 6 0A330644 Jan 1 02:03:21.803: Attribute 5 6 00000001 Jan 1  
02:03:21.803: Attribute 26 17 00000009020B5365 Jan 1 02:03:21.803: Attribute 61 6 00000002 Jan 1  
02:03:21.803: Attribute 1 13 646E6973 Jan 1 02:03:21.803: Attribute 30 8 36313436 Jan 1  
02:03:21.803: Attribute 31 12 32303835 Jan 1 02:03:21.803: Attribute 2 18 1A511187 Jan 1  
02:03:21.803: Attribute 6 6 00000005 Jan 1 02:03:21.803: RADIUS: Received from id 60  
10.51.6.3:1645, Access-Accept, len 167 Jan 1 02:03:21.803: Attribute 6 6 00000005 Jan 1  
02:03:21.803: Attribute 26 29 0000000901177670 Jan 1 02:03:21.803: Attribute 26 26  
0000000901147670 Jan 1 02:03:21.803: Attribute 26 47 0000000901297670 Jan 1 02:03:21.803:  
Attribute 26 39 0000000901217670 Jan 1 02:03:21.807: RADIUS: cisco AVPair "vpdn:tunnel-  
type=l2tp" Jan 1 02:03:21.807: RADIUS: cisco AVPair "vpdn:tunnel-id=hgw" Jan 1 02:03:21.807:  
RADIUS: cisco AVPair "vpdn:ip-addresses=10.51.6.82/10.51.6.59" Jan 1 02:03:21.807: RADIUS: cisco  
AVPair "vpdn:l2tp-tunnel-password=hello" Jan 1 02:03:21.807: AAA/AUTHOR (2106866192): Post  
authorization status = PASS\_ADD Jan 1 02:03:21.807: AAA/AUTHOR/VPDN: Processing AV service=ppp  
Jan 1 02:03:21.807: AAA/AUTHOR/VPDN: Processing AV protocol=vpdn Jan 1 02:03:21.807:  
AAA/AUTHOR/VPDN: Processing AV tunnel-type=l2tp Jan 1 02:03:21.807: AAA/AUTHOR/VPDN: Processing  
AV tunnel-id=hgw Jan 1 02:03:21.807: AAA/AUTHOR/VPDN: Processing AV ip-addresses=  
10.51.6.82/10.51.6.59 Jan 1 02:03:21.807: AAA/AUTHOR/VPDN: Processing AV l2tp-tunnel-  
password=hello Jan 1 02:03:21.807: Se0:1 VPDN/RPMS/: Got tunnel info for dnis:614629 Jan 1  
02:03:21.807: Se0:1 VPDN/RPMS/: LAC hgw Jan 1 02:03:21.807: Se0:1 VPDN/RPMS/: l2tp-busy-  
disconnect yes Jan 1 02:03:21.807: Se0:1 VPDN/RPMS/: l2tp-tunnel-password xxxxxx Jan 1  
02:03:21.807: Se0:1 VPDN/RPMS/: 2 IP addresses **Jan 1 02:03:21.807: Se0:1 VPDN/RPMS/: IP**  
**10.51.6.82 Priority 1 Jan 1 02:03:21.807: Se0:1 VPDN/RPMS/: IP 10.51.6.59 Priority 2 Jan 1**  
**02:03:21.807: Se0:1 VPDN/: curlvl 1 Address 0: 10.51.6.82, priority 1 Jan 1 02:03:21.811: Se0:1**  
**VPDN/: Select open address 10.51.6.82, priority 1 Jan 1 02:03:21.811: Se0:1 VPDN: Forward to**  
**address 10.51.6.82 !--- The tunnel information is downloaded, LNS - 10.51.6.82 is !--- selected**  
*again as the tunnel endpoint as this is in Priority level 1. Jan 1 02:03:21.811: Se0:1 VPDN:*  
Forwarding... Jan 1 02:03:21.811: Tnl/Cl 17044/3 L2TP: Session state change from idle to wait-  
for-tunnel Jan 1 02:03:21.811: Se0:1 Tnl/Cl 17044/3 L2TP: Create session Jan 1 02:03:21.811: Tnl  
17044 L2TP: SM State established Jan 1 02:03:21.811: Se0:1 Tnl/Cl 17044/3 L2TP: O ICRQ to l2tp-  
gw 9017/0 Jan 1 02:03:21.811: Se0:1 Tnl/Cl 17044/3 L2TP: Session state change from wait-for-  
tunnel to wait-reply Jan 1 02:03:21.811: Se0:1 VPDN: 2500-1 is forwarded Jan 1 02:03:21.819:  
Se0:1 Tnl/Cl 17044/3 L2TP: O ICCN to l2tp-gw 9017/3 Jan 1 02:03:21.819: Se0:1 Tnl/Cl 17044/3  
L2TP: Session state change from wait-reply to established

## [LNS负载均衡和故障切换使用思科供应商专用属性/值对](#)

### [RADIUS配置文件](#)

在Merit RADIUS服务器3.6B的RADIUS用户和通道配置文件：

```
2500-1 Password = "cisco"
Service-Type = Framed,
Framed-Protocol = PPP,
Framed-IP-Address = 255.255.255.255
dnis:614629 Password = "cisco"
Service-Type = Outbound,
Cisco:Avpair = "vpdn:tunnel-type=l2tp",
Cisco:Avpair = "vpdn:tunnel-id=hgw",
Cisco:Avpair = "vpdn:ip-addresses=
10.51.6.80,10.51.6.59/10.51.6.2,10.51.6.3/10.51.6.82,10.51.6.5",
Cisco:Avpair = "vpdn:l2tp-tunnel-password=hello"
```

## [LAC和LNS配置](#)

同上一个一样。

## [从LAC采取的调试](#)

```
Jan 1 00:43:11.539: %LINK-3-UPDOWN: Interface Serial0:0, changed state to up
```

```
Jan 1 00:43:11.755: Se0:0 LCP: State is Open Jan 1 00:43:11.755: Se0:0 PPP: Phase is
AUTHENTICATING, by this end Jan 1 00:43:11.755: Se0:0 CHAP: Using alternate hostname 5300-1 Jan
1 00:43:11.755: Se0:0 CHAP: O CHALLENGE id 18 len 27 from "5300-1" Jan 1 00:43:11.775: Se0:0
CHAP: I RESPONSE id 18 len 27 from "2500-1" Jan 1 00:43:11.775: Se0:0 PPP: Phase is FORWARDING
Jan 1 00:43:11.775: Se0:0 VPDN: Got DNIS string 614629 Jan 1 00:43:11.775: Se0:0 VPDN: Looking
for tunnel -- dnis:614629 -- Jan 1 00:43:11.775: Serial0:0 AAA/AUTHOR/VPDN (2215378044):
Port='Serial0:0' list='default' service=NET Jan 1 00:43:11.775: AAA/AUTHOR/VPDN: Serial0:0
(2215378044) user='dnis:614629' Jan 1 00:43:11.775: Serial0:0 AAA/AUTHOR/VPDN (2215378044): send
AV service=ppp Jan 1 00:43:11.775: Serial0:0 AAA/AUTHOR/VPDN (2215378044): send AV protocol=vpdn
Jan 1 00:43:11.775: Serial0:0 AAA/AUTHOR/VPDN (2215378044): found list "default" Jan 1
00:43:11.775: Serial0:0 AAA/AUTHOR/VPDN (2215378044): Method=NSA_LAB (radius) Jan 1
00:43:11.779: RADIUS: Initial Transmit Serial0:0 id 57 10.51.6.3:1645, Access-Request, len 112
Jan 1 00:43:11.779: Attribute 4 6 0A330644 Jan 1 00:43:11.779: Attribute 5 6 00000000 Jan 1
00:43:11.779: Attribute 26 17 00000009020B5365 Jan 1 00:43:11.779: Attribute 61 6 00000002 Jan 1
00:43:11.779: Attribute 1 13 646E6973 Jan 1 00:43:11.779: Attribute 30 8 36313436 Jan 1
00:43:11.779: Attribute 31 12 32303835 Jan 1 00:43:11.779: Attribute 2 18 BA50FCD1 Jan 1
00:43:11.779: Attribute 6 6 00000005 Jan 1 00:43:11.783: RADIUS: Received from id 57
10.51.6.3:1645, Access-Accept, len 208 Jan 1 00:43:11.783: Attribute 6 6 00000005 Jan 1
00:43:11.783: Attribute 26 29 0000000901177670 Jan 1 00:43:11.783: Attribute 26 26
0000000901147670 Jan 1 00:43:11.783: Attribute 26 88 0000000901527670 Jan 1 00:43:11.783:
Attribute 26 39 0000000901217670 Jan 1 00:43:11.783: RADIUS: cisco AVPair "vpdn:tunnel-
type=l2tp" Jan 1 00:43:11.783: RADIUS: cisco AVPair "vpdn:tunnel-id=hgw" Jan 1 00:43:11.783:
RADIUS: cisco AVPair "vpdn:ip-addresses=
10.51.6.80,10.51.6.59/10.51.6.2,10.51.6.3/10.51.6.82,10.51.6.5" Jan 1 00:43:11.783: RADIUS:
cisco AVPair "vpdn:l2tp-tunnel-password=hello" Jan 1 00:43:11.783: AAA/AUTHOR (2215378044): Post
authorization status = PASS_ADD Jan 1 00:43:11.783: AAA/AUTHOR/VPDN: Processing AV service=ppp
Jan 1 00:43:11.783: AAA/AUTHOR/VPDN: Processing AV protocol=vpdn Jan 1 00:43:11.783:
AAA/AUTHOR/VPDN: Processing AV tunnel-type=l2tp Jan 1 00:43:11.783: AAA/AUTHOR/VPDN: Processing
AV tunnel-id=hgw Jan 1 00:43:11.783: AAA/AUTHOR/VPDN: Processing AV ip-addresses=
10.51.6.80,10.51.6.59/10.51.6.2,10.51.6.3/10.51.6.82,10.51.6.5 Jan 1 00:43:11.783:
AAA/AUTHOR/VPDN: Processing AV l2tp-tunnel-password=hello Jan 1 00:43:11.783: Se0:0 VPDN/RPMS/:
Got tunnel info for dnis:614629 Jan 1 00:43:11.783: Se0:0 VPDN/RPMS/: LAC hgw Jan 1
00:43:11.787: Se0:0 VPDN/RPMS/: l2tp-busy-disconnect yes Jan 1 00:43:11.787: Se0:0 VPDN/RPMS/:
l2tp-tunnel-password xxxxxx Jan 1 00:43:11.787: Se0:0 VPDN/RPMS/: 6 IP addresses Jan 1
00:43:11.787: Se0:0 VPDN/RPMS/: IP 10.51.6.80 Priority 1 Jan 1 00:43:11.787: Se0:0 VPDN/RPMS/:
IP 10.51.6.59 Priority 1 Jan 1 00:43:11.787: Se0:0 VPDN/RPMS/: IP 10.51.6.2 Priority 2 Jan 1
00:43:11.787: Se0:0 VPDN/RPMS/: IP 10.51.6.3 Priority 2 Jan 1 00:43:11.787: Se0:0 VPDN/RPMS/: IP
10.51.6.82 Priority 3 Jan 1 00:43:11.787: Se0:0 VPDN/RPMS/: IP 10.51.6.5 Priority 3 !--- The
tunnel information is downloaded, using Cisco VSA. Two RADIUS !--- server IP Addresses are used
with a '/' as the delimiter for each !--- of the three priority groups. In this case, 10.51.6.82
in Priority !--- Group 3, is the tunnel endpoint that is valid. Jan 1 00:43:11.787: Se0:0 VPDN/:
curlvl 1 Address 1: 10.51.6.59, priority 1 Jan 1 00:43:11.787: VPDN: Free busy address
```



10.51.6.59 Jan 1 00:43:11.787: Se0:0 VPDN/: Select non-active address 10.51.6.59, priority 1 Jan 1 00:43:11.787: Se0:0 VPDN: Find LNS process created Jan 1 00:43:11.787: Tnl 8262 L2TP: SM State idle Jan 1 00:43:11.787: Tnl 8262 L2TP: O SCCRQ Jan 1 00:43:11.787: Tnl 8262 L2TP: Tunnel state change from idle to wait-ctl-reply Jan 1 00:43:11.787: Tnl 8262 L2TP: SM State wait-ctl-reply Jan 1 00:43:11.787: Se0:0 VPDN: Forward to address 10.51.6.59 Jan 1 00:43:11.791: Se0:0 VPDN: Pending Jan 1 00:43:11.791: Se0:0 VPDN: Process created Jan 1 00:43:12.787: Tnl 8262 L2TP: O Resend SCCRQ, flg TLS, ver 2, len 128, tnl 0, cl 0, ns 0, nr 0 Jan 1 00:43:12.787: Tnl 8262 L2TP: Control channel retransmit delay set to 1 seconds Jan 1 00:43:13.787: Tnl 8262 L2TP: O Resend SCCRQ, flg TLS, ver 2, len 128, tnl 0, cl 0, ns 0, nr 0 Jan 1 00:43:13.787: Tnl 8262 L2TP: Control channel retransmit delay set to 2 seconds Jan 1 00:43:15.787: Tnl 8262 L2TP: Timeout opening tunnel to 10.51.6.59 Jan 1 00:43:15.787: Tnl 63291 L2TP: Control channel retransmit delay set to 4 seconds Jan 1 00:43:15.787: Se0:0 VPDN/: curlvl 1 Address 1: 10.51.6.59, priority 1 busy !--- 10.51.6.59 is selected as the first non-active IP Address in Priority !--- Group 1. As we cannot establish the Control Connection after the !--- 4 second SCCRQ timeout, we select the next non-active IP !--- Address in the same Priority Group. Jan 1 00:43:15.787: Se0:0 VPDN/: curlvl 1 Address 0: 10.51.6.80, priority 1 Jan 1 00:43:15.787: VPDN: Free busy address 10.51.6.80 Jan 1 00:43:15.787: Se0:0 VPDN/: Select non-active address 10.51.6.80, priority 1 Jan 1 00:43:15.787: Tnl 63291 L2TP: Tunnel state change from wait-ctl-reply to idle Jan 1 00:43:15.787: Tnl 63291 L2TP: SM State idle Jan 1 00:43:15.787: Tnl 63291 L2TP: O SCCRQ Jan 1 00:43:15.787: Tnl 63291 L2TP: Tunnel state change from idle to wait-ctl-reply Jan 1 00:43:15.787: Tnl 63291 L2TP: SM State wait-ctl-reply Jan 1 00:43:16.787: Tnl 63291 L2TP: O Resend SCCRQ, flg TLS, ver 2, len 128, tnl 0, cl 0, ns 0, nr 0 Jan 1 00:43:16.787: Tnl 63291 L2TP: Control channel retransmit delay set to 1 seconds Jan 1 00:43:17.543: %ISDN-6-CONNECT: Interface Serial0:0 is now connected to 2085730592 Jan 1 00:43:17.787: Tnl 63291 L2TP: O Resend SCCRQ, flg TLS, ver 2, len 128, tnl 0, cl 0, ns 0, nr 0 Jan 1 00:43:17.787: Tnl 63291 L2TP: Control channel retransmit delay set to 2 seconds Jan 1 00:43:19.787: Tnl 63291 L2TP: Timeout opening tunnel to 10.51.6.80 Jan 1 00:43:19.787: Tnl 52784 L2TP: Control channel retransmit delay set to 4 seconds Jan 1 00:43:19.787: Se0:0 VPDN/: curlvl 1 Address 0: 10.51.6.80, priority 1 busy Jan 1 00:43:19.787: Se0:0 VPDN/: curlvl 1 Address 1: 10.51.6.59, priority 1 busy Jan 1 00:43:19.787: Se0:0 VPDN/: curlvl 2 Address 2: 10.51.6.2, priority 2 Jan 1 00:43:19.787: VPDN: Free busy address 10.51.6.2 Jan 1 00:43:19.787: Se0:0 VPDN/: Select non-active address 10.51.6.2, priority 2 Jan 1 00:43:19.787: Tnl 52784 L2TP: Tunnel state change from wait-ctl-reply to idle Jan 1 00:43:19.787: Tnl 52784 L2TP: SM State idle Jan 1 00:43:19.787: Tnl 52784 L2TP: O SCCRQ Jan 1 00:43:19.787: Tnl 52784 L2TP: Tunnel state change from idle to wait-ctl-reply Jan 1 00:43:19.787: Tnl 52784 L2TP: SM State wait-ctl-reply Jan 1 00:43:20.787: Tnl 52784 L2TP: O Resend SCCRQ, flg TLS, ver 2, len 128, tnl 0, cl 0, ns 0, nr 0 Jan 1 00:43:20.787: Tnl 52784 L2TP: Control channel retransmit delay set to 1 seconds Jan 1 00:43:21.671: Se0:0 CHAP: I RESPONSE id 18 len 27 from "2500-1" Jan 1 00:43:21.671: Se0:0 VPDN: LCP state already FORWARDING/FORWARDED, silent discard Jan 1 00:43:21.787: Tnl 52784 L2TP: O Resend SCCRQ, flg TLS, ver 2, len 128, tnl 0, cl 0, ns 0, nr 0 Jan 1 00:43:21.787: Tnl 52784 L2TP: Control channel retransmit delay set to 2 seconds Jan 1 00:43:23.787: Tnl 52784 L2TP: Timeout opening tunnel to 10.51.6.2 Jan 1 00:43:23.787: Tnl 42277 L2TP: Control channel retransmit delay set to 4 seconds Jan 1 00:43:23.787: Se0:0 VPDN/: curlvl 2 Address 2: 10.51.6.2, priority 2 busy Jan 1 00:43:23.787: Se0:0 VPDN/: curlvl 2 Address 3: 10.51.6.3, priority 2 Jan 1 00:43:23.787: VPDN: Free busy address 10.51.6.3 Jan 1 00:43:23.787: Se0:0 VPDN/: Select non-active address 10.51.6.3, priority 2 Jan 1 00:43:23.787: Tnl 42277 L2TP: Tunnel state change from wait-ctl-reply to idle Jan 1 00:43:23.787: Tnl 42277 L2TP: SM State idle Jan 1 00:43:23.787: Tnl 42277 L2TP: O SCCRQ Jan 1 00:43:23.787: Tnl 42277 L2TP: Tunnel state change from idle to wait-ctl-reply Jan 1 00:43:23.787: Tnl 42277 L2TP: SM State wait-ctl-reply Jan 1 00:43:24.787: Tnl 42277 L2TP: O Resend SCCRQ, flg TLS, ver 2, len 128, tnl 0, cl 0, ns 0, nr 0 Jan 1 00:43:24.787: Tnl 42277 L2TP: Control channel retransmit delay set to 1 seconds Jan 1 00:43:25.787: Tnl 42277 L2TP: O Resend SCCRQ, flg TLS, ver 2, len 128, tnl 0, cl 0, ns 0, nr 0 Jan 1 00:43:25.787: Tnl 42277 L2TP: Control channel retransmit delay set to 2 seconds Jan 1 00:43:27.787: Tnl 42277 L2TP: Timeout opening tunnel to 10.51.6.3 Jan 1 00:43:27.787: Tnl 31770 L2TP: Control channel retransmit delay set to 4 seconds Jan 1 00:43:27.787: Se0:0 VPDN/: curlvl 2 Address 3: 10.51.6.3, priority 2 busy Jan 1 00:43:27.787: Se0:0 VPDN/: curlvl 2 Address 2: 10.51.6.2, priority 2 busy Jan 1 00:43:27.787: Se0:0 VPDN/: curlvl 3 Address 4: 10.51.6.82, priority 3 Jan 1 00:43:27.787: Se0:0 VPDN/: Select non-active address 10.51.6.82, priority 3 !--- Eventually arrive at the IP Address 10.51.6.82 in Priority Group 3. !--- As this is valid, the Control Connection and session are established. Jan 1 00:43:27.787: Tnl 31770 L2TP: Tunnel state change from wait-ctl-reply to idle Jan 1 00:43:27.787: Tnl 31770 L2TP: SM State idle Jan 1 00:43:27.787: Tnl 31770 L2TP: O SCCRQ Jan 1 00:43:27.787: Tnl 31770 L2TP: Tunnel state change from idle to wait-ctl-reply Jan 1 00:43:27.787: Tnl 31770 L2TP: SM State wait-ctl-reply Jan 1 00:43:27.799: Tnl 31770 L2TP: I SCCRP from l2tp-gw Jan 1 00:43:27.799: Tnl 31770 L2TP: Got a

challenge from remote peer, l2tp-gw Jan 1 00:43:27.799: Tnl 31770 L2TP: Got a response from remote peer, l2tp-gw Jan 1 00:43:27.799: Tnl 31770 L2TP: Tunnel Authentication success **Jan 1 00:43:27.799: Tnl 31770 L2TP: Tunnel state change from wait-ctl-reply to established** Jan 1 00:43:27.799: Tnl 31770 L2TP: O SCCCN to l2tp-gw tnlid 3843 Jan 1 00:43:27.799: Tnl 31770 L2TP: SM State established Jan 1 00:43:27.799: Se0:0 VPDN: Forwarding... Jan 1 00:43:27.799: Tnl/Cl 31770/7 L2TP: Session FS enabled Jan 1 00:43:27.799: Tnl/Cl 31770/7 L2TP: Session state change from idle to wait-for-tunnel Jan 1 00:43:27.803: Se0:0 Tnl/Cl 31770/7 L2TP: Create session Jan 1 00:43:27.803: Tnl 31770 L2TP: SM State established Jan 1 00:43:27.803: Se0:0 Tnl/Cl 31770/7 L2TP: O ICRQ to l2tp-gw 3843/0 Jan 1 00:43:27.803: Se0:0 Tnl/Cl 31770/7 L2TP: Session state change from wait-for-tunnel to wait-reply Jan 1 00:43:27.803: Se0:0 VPDN: 2500-1 is forwarded Jan 1 00:43:27.811: Se0:0 Tnl/Cl 31770/7 L2TP: O ICCN to l2tp-gw 3843/9 **Jan 1 00:43:27.811: Se0:0 Tnl/Cl 31770/7 L2TP: Session state change from wait-reply to established** Jan 1 00:43:28.803: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0:0, changed state to up

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