

# VPDN を介した MLPPP の設定例

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## 概要

この記事では、クライアントとレイヤ 2 トンネリング プロトコル アクセス コンセントレータ (LNS) 間にバーチャルプライベートダイアルアップネットワーク (VPDN) を介してマルチリンク ポイントツーポイント プロトコル (MLPPP) セッションを確立するのに役立つ、クライアント、LAC およびレイヤ 2 トンネリング プロトコル ネットワークサーバ (LNA) の構成について説明します。

## 前提条件

### 要件

この設定を行う前に、以下の要件を満たしていることを確認してください。

- エンドツーエンドのレイヤ 1 接続が有効

### 使用するコンポーネント

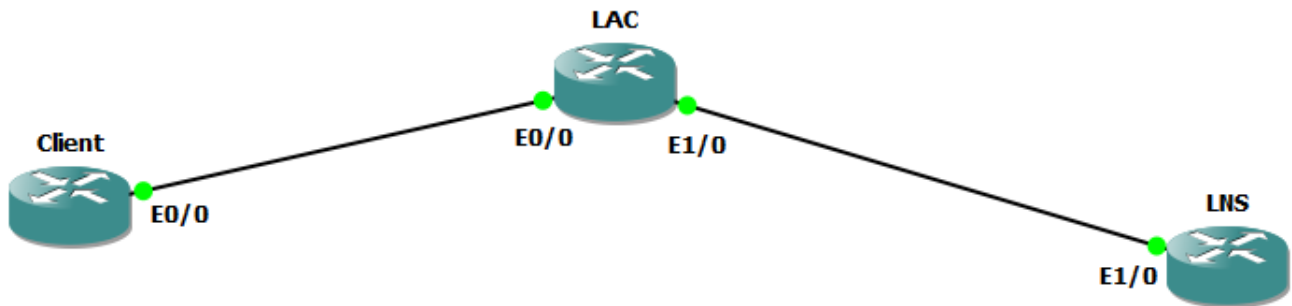
このドキュメントの内容は、特定のソフトウェアやハードウェアのバージョンに限定されるものではありません。

このドキュメントの情報は、特定のラボ環境にあるデバイスに基づいて作成されました。このドキュメントで使用するすべてのデバイスは、初期 (デフォルト) 設定の状態から起動しています。対象のネットワークが実稼働中である場合には、どのようなコマンドについても、その潜在的な影響について確実に理解しておく必要があります。

## 設定

注：このセクションで使用されるコマンドの詳細については、[Command Lookup Tool \(登録ユーザ専用\)](#) を使用してください。

## ネットワーク図



## 設定

注：PPP またはマルチリンク PPP セッションの開始時における PPP 制御パケット交換の際には、マルチリンク PPP セッションは、CPE と LNS との間（LAC との間ではなく）でネゴシエートされます。LAC は、マルチリンク PPP セッションについて認識しません。そのため、CPE が PPP-LCP セッションを開始すると、LCP ネゴシエーションの一部として含まれるマルチリンク（Maximum Receive Reconstructed Unit（MRRU））ネゴシエーションは、LAC が LNS との接続をまだ確立していない場合（通常は確立していません）に失敗することがあります。LAC と LNS 間で IP 到達可能性が確立されると、LNS は CPE とマルチリンク（MRRU）LCP オプションを再ネゴシエートし、2 つのピア デバイスがエンドツーエンドのマルチリンク PPP セッションを確立できるようになります。

### クライアントの設定

クライアント ルータの設定の例は次のとおりです。

```
interface Ethernet0/0

IP

pppoe enable group global

pppoe-client dial-pool-number 1

interface Dialer1

bandwidth 64

ip address negotiated

encapsulation ppp

dialer pool 1

dialer idle-timeout 0

keepalive 30

ppp max-failure 30
```

```
ppp chap hostname user@cisco.com
```

```
ppp chap password cisco
```

```
ppp multilink
```

```
no cdp enable
```

## LAC 設定

LAC ルータの設定例を次に示します。

```
hostname LAC
```

```
!
```

```
vpdn enable
```

```
!
```

```
vpdn-group 1
```

```
request-dialin
```

```
protocol l2tp
```

```
domain cisco.com
```

```
initiate-to ip 192.168.1.2
```

```
no l2tp tunnel authentication
```

```
!
```

```
bba-group pppoe global
```

```
virtual-template 1
```

```
!
```

```
interface Ethernet0/0
```

```
IP
```

```
pppoe enable group global
```

```
interface Ethernet1/0
```

```
ip address 192.168.1.1 255.255.255.0
```

```
interface Virtual-Template1
```

```
IP
```

```
ppp authentication chap
```

```
ppp multilink
```

## LNS の設定

LNS ルータの設定例を次に示します。

```
vpdn enable
```

```
!
```

```
vpdn-group 1
```

```
accept-dialin
```

```
protocol l2tp
```

```
virtual-template 1
```

```
terminate-from hostname LAC
```

```
lcp renegotiation on-mismatch
```

```
no l2tp tunnel authentication
```

```
!
```

```
username user@cisco.com password cisco
```

```
int loopback0
```

```
ip address 10.10.10.10 255.255.255.0
```

```
interface Ethernet1/0
```

```
ip address 192.168.1.2 255.255.255.0
```

```
interface Virtual-Template1
```

```
mtu 1492
```

```
ip unnumbered Loopback0
```

```
peer default ip address pool cisco
```

```
ppp authentication chap
```

```
ppp multilink
```

```
!
```

```
ip local pool cisco 10.10.10.11 10.10.10.24
```

# 確認

次のデバッグが、クライアント、LAC、LNS で有効であることを確認します。

- PPP ネゴシエーションのデバッグ
- PPPoE イベントのデバッグ
- PPP マルチリンク イベントのデバッグ
- VPDN イベントのデバッグ
- VPDN 発信イベントのデバッグ

## クライアント ログ :

```
*Jan 14 11:01:12.744:Sending PADI:Interface = Ethernet0/0
*Jan 14 11:01:12.744:PPPoE 0:I PADO R:aabb.cc02.bd00 L:aabb.cc02.bc00
Et0/0
*Jan 14 11:01:14.824:PPPOE:we've got our pado and the pado timer went
off
*Jan 14 11:01:14.824:OUT PADR from PPPoE Session
*Jan 14 11:01:14.825:PPPoE 9:I PADS R:aabb.cc02.bd00 L:aabb.cc02.bc00
Et0/0
*Jan 14 11:01:14.825:IN PADS from PPPoE Session
*Jan 14 11:01:14.825:%DIALER-6-BIND:Interface Vi3 bound to profile Di1
*Jan 14 11:01:14.825:PPPOE:Virtual Access interface obtained.
*Jan 14 11:01:14.825:PPPOE:encap string prepared
*Jan 14 11:01:14.825:[0]PPPoE 9:data path set to PPPoE Client
*Jan 14 11:01:14.834:%LINK-3-UPDOWN:Interface Virtual-Access3, changed
state to up
*Jan 14 11:01:14.834:Vi3 PPP:Sending cstate UP notification
*Jan 14 11:01:14.834:Vi3 PPP:Processing CstateUp message
*Jan 14 11:01:14.834:PPP:Alloc Context [2A970D92E8]
*Jan 14 11:01:14.834:ppp14 PPP:Phase is ESTABLISHING
*Jan 14 11:01:14.834:Vi3 PPP:Using dialer call direction
*Jan 14 11:01:14.834:Vi3 PPP:Treating connection as a callout
*Jan 14 11:01:14.834:Vi3 PPP:Session handle[C2000013] Session id[14]
*Jan 14 11:01:14.834:Vi3 LCP:Event[OPEN] State[Initial to Starting]
*Jan 14 11:01:14.834:Vi3 PPP:No remote authentication for call-out
*Jan 14 11:01:14.834:Vi3 LCP:O CONFREQ [Starting] id 1 len 30
*Jan 14 11:01:14.834:Vi3 LCP: MagicNumber 0xBC220EF6 (0x0506BC220EF6)
*Jan 14 11:01:14.835:Vi3 LCP: MRRU 1524 (0x110405F4)
*Jan 14 11:01:14.835:Vi3 LCP: EndpointDisc 1 user@cisco.com
(0x1310017573657240737572662E6F7267)
*Jan 14 11:01:14.835:Vi3 LCP:Event[UP] State[Starting to REQsent]
*Jan 14 11:01:14.835:Vi3 LCP:I CONFREQ [REQsent] id 1 len 29
*Jan 14 11:01:14.835:Vi3 LCP: MRU 1492 (0x010405D4)
*Jan 14 11:01:14.835:Vi3 LCP: AuthProto CHAP (0x0305C22305)
*Jan 14 11:01:14.835:Vi3 LCP: MagicNumber 0xBC21F6F0 (0x0506BC21F6F0)
*Jan 14 11:01:14.835:Vi3 LCP: MRRU 1524 (0x110405F4)
*Jan 14 11:01:14.835:Vi3 LCP: EndpointDisc 1 LAC (0x1306014C4143)
*Jan 14 11:01:14.835:Vi3 LCP:O CONFNAK [REQsent] id 1 len 8
*Jan 14 11:01:14.835:Vi3 LCP: MRU 1500 (0x010405DC)
*Jan 14 11:01:14.835:Vi3 LCP:Event[Receive ConfReq-] State[REQsent to
REQsent]
```

```
*Jan 14 11:01:14.835:Vi3 LCP:I CONFACK [REQsent] id 1 len 30
*Jan 14 11:01:14.835:Vi3 LCP: MagicNumber 0xBC220EF6 (0x0506BC220EF6)
*Jan 14 11:01:14.835:Vi3 LCP: MRRU 1524 (0x110405F4)
*Jan 14 11:01:14.835:Vi3 LCP: EndpointDisc 1 user@cisco.com
(0x1310017573657240737572662E6F7267)
*Jan 14 11:01:14.835:Vi3 LCP:Event[Receive ConfAck] State[REQsent to
ACKrcvd]
*Jan 14 11:01:14.836:Vi3 LCP:I CONFREQ [ACKrcvd] id 2 len 29
*Jan 14 11:01:14.836:Vi3 LCP: MRU 1500 (0x010405DC)
*Jan 14 11:01:14.836:Vi3 LCP: AuthProto CHAP (0x0305C22305)
*Jan 14 11:01:14.836:Vi3 LCP: MagicNumber 0xBC21F6F0 (0x0506BC21F6F0)
*Jan 14 11:01:14.836:Vi3 LCP: MRRU 1524 (0x110405F4)
*Jan 14 11:01:14.836:Vi3 LCP: EndpointDisc 1 LAC (0x1306014C4143)
*Jan 14 11:01:14.836:Vi3 LCP:O CONFACK [ACKrcvd] id 2 len 29
*Jan 14 11:01:14.836:Vi3 LCP: MRU 1500 (0x010405DC)
*Jan 14 11:01:14.836:Vi3 LCP: AuthProto CHAP (0x0305C22305)
*Jan 14 11:01:14.836:Vi3 LCP: MagicNumber 0xBC21F6F0 (0x0506BC21F6F0)
*Jan 14 11:01:14.836:Vi3 LCP: MRRU 1524 (0x110405F4)
*Jan 14 11:01:14.836:Vi3 LCP: EndpointDisc 1 LAC (0x1306014C4143)
*Jan 14 11:01:14.836:Vi3 LCP:Event[Receive ConfReq+] State[ACKrcvd to
Open]
*Jan 14 11:01:14.854:Vi3 PPP:Phase is AUTHENTICATING, by the peer
*Jan 14 11:01:14.854:Vi3 LCP:State is Open
*Jan 14 11:01:14.856:Vi3 CHAP:I CHALLENGE id 1 len 24 from "LAC"
*Jan 14 11:01:14.856:Vi3 CHAP:Using hostname from interface CHAP
*Jan 14 11:01:14.856:Vi3 CHAP:Using password from interface CHAP
*Jan 14 11:01:14.856:Vi3 CHAP:O RESPONSE id 1 len 34 from
"user@cisco.com"
*Jan 14 11:01:14.861:Vi3 LCP:I CONFREQ [Open] id 1 len 39
*Jan 14 11:01:14.861:Vi3 LCP: MRU 1492 (0x010405D4)
*Jan 14 11:01:14.861:Vi3 LCP: AuthProto CHAP (0x0305C22305)
*Jan 14 11:01:14.861:Vi3 LCP: MagicNumber 0xBC21E526 (0x0506BC21E526)
*Jan 14 11:01:14.861:Vi3 LCP: MRRU 1524 (0x110405F4)
*Jan 14 11:01:14.861:Vi3 LCP: EndpointDisc 1 user@cisco.com
(0x1310017573657240737572662E6F7267)
*Jan 14 11:01:14.861:Vi3 PPP DISC:PPP Renegotiating
*Jan 14 11:01:14.861:Vi3 PPP:NET STOP send to AAA.
*Jan 14 11:01:14.861:Vi3 LCP:Event[LCP Reneg] State[Open to Open]
*Jan 14 11:01:14.861:Vi3 LCP:Event[DOWN] State[Open to Starting]
*Jan 14 11:01:14.861:Vi3 PPP:Phase is DOWN
*Jan 14 11:01:14.861:Vi3 PPP:Alloc Context [2A970D9898]
*Jan 14 11:01:14.861:Vi3 PPP:Phase is ESTABLISHING
*Jan 14 11:01:14.861:Vi3 PPP:Using dialer call direction
*Jan 14 11:01:14.861:Vi3 PPP:Treating connection as a callout
*Jan 14 11:01:14.861:Vi3 PPP:Session handle[2B000014] Session id[14]
*Jan 14 11:01:14.861:Vi3 LCP:Event[OPEN] State[Initial to Starting]
*Jan 14 11:01:14.861:Vi3 PPP:No remote authentication for call-out
*Jan 14 11:01:14.861:Vi3 LCP:O CONFREQ [Starting] id 1 len 30
*Jan 14 11:01:14.861:Vi3 LCP: MagicNumber 0xBC220F12 (0x0506BC220F12)
*Jan 14 11:01:14.861:Vi3 LCP: MRRU 1524 (0x110405F4)
*Jan 14 11:01:14.861:Vi3 LCP: EndpointDisc 1 user@cisco.com
(0x1310017573657240737572662E6F7267)
*Jan 14 11:01:14.862:Vi3 LCP:Event[UP] State[Starting to REQsent]
```

```
*Jan 14 11:01:14.862:Vi3 LCP:I CONFREQ [REQsent] id 1 len 39
*Jan 14 11:01:14.862:Vi3 LCP: MRU 1492 (0x010405D4)
*Jan 14 11:01:14.862:Vi3 LCP: AuthProto CHAP (0x0305C22305)
*Jan 14 11:01:14.862:Vi3 LCP: MagicNumber 0xBC21E526 (0x0506BC21E526)
*Jan 14 11:01:14.862:Vi3 LCP: MRRU 1524 (0x110405F4)
*Jan 14 11:01:14.862:Vi3 LCP: EndpointDisc 1 user@cisco.com
(0x1310017573657240737572662E6F7267)
*Jan 14 11:01:14.862:Vi3 PPP:Remote endpoint user@cisco.com invalid,
matches local value
*Jan 14 11:01:14.862:Vi3 LCP:O CONFNAK [REQsent] id 1 len 8
*Jan 14 11:01:14.862:Vi3 LCP: MRU 1500 (0x010405DC)
*Jan 14 11:01:14.862:Vi3 LCP:Event[Receive ConfReq-] State[REQsent to
REQsent]
*Jan 14 11:01:14.862:Vi3 LCP:I CONFACK [REQsent] id 1 len 30
*Jan 14 11:01:14.862:Vi3 LCP: MagicNumber 0xBC220F12 (0x0506BC220F12)
*Jan 14 11:01:14.862:Vi3 LCP: MRRU 1524 (0x110405F4)
*Jan 14 11:01:14.862:Vi3 LCP: EndpointDisc 1 user@cisco.com
(0x1310017573657240737572662E6F7267)
*Jan 14 11:01:14.862:Vi3 LCP:Event[Receive ConfAck] State[REQsent to
ACKrcvd]
*Jan 14 11:01:14.862:Vi3 LCP:I CONFREQ [ACKrcvd] id 2 len 39
*Jan 14 11:01:14.862:Vi3 LCP: MRU 1500 (0x010405DC)
*Jan 14 11:01:14.862:Vi3 LCP: AuthProto CHAP (0x0305C22305)
*Jan 14 11:01:14.862:Vi3 LCP: MagicNumber 0xBC21E526 (0x0506BC21E526)
*Jan 14 11:01:14.862:Vi3 LCP: MRRU 1524 (0x110405F4)
*Jan 14 11:01:14.862:Vi3 LCP: EndpointDisc 1 user@cisco.com
(0x1310017573657240737572662E6F7267)
*Jan 14 11:01:14.862:Vi3 PPP:Remote endpoint user@cisco.com invalid,
matches local value
*Jan 14 11:01:14.862:Vi3 LCP:O CONFACK [ACKrcvd] id 2 len 39
*Jan 14 11:01:14.862:Vi3 LCP: MRU 1500 (0x010405DC)
*Jan 14 11:01:14.862:Vi3 LCP: AuthProto CHAP (0x0305C22305)
*Jan 14 11:01:14.862:Vi3 LCP: MagicNumber 0xBC21E526 (0x0506BC21E526)
*Jan 14 11:01:14.862:Vi3 LCP: MRRU 1524 (0x110405F4)
*Jan 14 11:01:14.862:Vi3 LCP: EndpointDisc 1 user@cisco.com
(0x1310017573657240737572662E6F7267)
*Jan 14 11:01:14.862:Vi3 LCP:Event[Receive ConfReq+] State[ACKrcvd to
Open]
*Jan 14 11:01:14.884:Vi3 PPP:Phase is AUTHENTICATING, by the peer
*Jan 14 11:01:14.884:Vi3 LCP:State is Open
*Jan 14 11:01:14.895:Vi3 CHAP:I CHALLENGE id 2 len 27 from "LNS"
*Jan 14 11:01:14.895:Vi3 CHAP:Using hostname from interface CHAP
*Jan 14 11:01:14.895:Vi3 CHAP:Using password from interface CHAP
*Jan 14 11:01:14.895:Vi3 CHAP:O RESPONSE id 2 len 34 from
"user@cisco.com"
*Jan 14 11:01:14.896:Vi3 CHAP:I SUCCESS id 2 len 4
*Jan 14 11:01:14.896:Vi3 PPP:Phase is FORWARDING, Attempting Forward
*Jan 14 11:01:14.897:Vi3 PPP:Phase is ESTABLISHING, Finish LCP
*Jan 14 11:01:14.897:Vi3 MLP:Request add link to bundle
*Jan 14 11:01:14.897:Vi3 PPP:Phase is VIRTUALIZED
*Jan 14 11:01:14.897:Vi3 MLP:Adding link to bundle
*Jan 14 11:01:14.897:Vi3 MLP:Requested bundle vaccess creation
*Jan 14 11:01:14.897:Vi3 MLP:Determine clone source for SSS
```

\*Jan 14 11:01:14.897:Vi3 MLP:Clone from dialer profile Di1  
\*Jan 14 11:01:14.897:Vi3 MLP:Determine clone source for SSS  
\*Jan 14 11:01:14.897:Vi3 MLP:Clone from dialer profile Di1  
\*Jan 14 11:01:14.897:Vi3 MLP:SSS connect, bundle interface Vi4  
\*Jan 14 11:01:14.897:PPP:Alloc Context [2A970D95C0]  
\*Jan 14 11:01:14.897:ppp15 PPP:Phase is ESTABLISHING  
\*Jan 14 11:01:14.897:Vi4 MLP:Changing bundle bandwidth from 100000 to 64  
\*Jan 14 11:01:14.897:Vi4 MLP:Bandwidth manually configured, updating  
lost frag timeout on bundle  
\*Jan 14 11:01:14.897:Vi4 MLP:Increasing lost frag timeout from 100 to  
1524 ms due to slippage constraints  
\*Jan 14 11:01:14.897:Vi4 MLP:Increasing lost frag timeout from 100 to  
1524 ms due to slippage constraints  
\*Jan 14 11:01:14.897:%DIALER-6-BIND:Interface Vi4 bound to profile Di1  
\*Jan 14 11:01:14.897:Vi4 MLP:Added to dialer pool Di1  
\*Jan 14 11:01:14.897:Vi4 MLP:Ready to finish adding link Vi3 to bundle  
\*Jan 14 11:01:14.897:Vi4 MLP:Update bundle bandwidth 64 set 64  
\*Jan 14 11:01:14.897:Vi3 MLP:Change transmit status from Init to  
Enabled, transmit links 1  
\*Jan 14 11:01:14.897:Vi4 MLP:Idle timer running, restart  
\*Jan 14 11:01:14.897:Vi4 MLP:Added first link Vi3 to bundle LNS  
\*Jan 14 11:01:14.897:Vi4 MLP:Increasing lost frag timeout from 100 to  
1524 ms due to slippage constraints  
\*Jan 14 11:01:14.898:Vi3 MLP:Updating bundle's PPP handle[0x6F000015] in  
SSS context  
\*Jan 14 11:01:14.898:%LINEPROTO-5-UPDOWN:Line protocol on Interface  
Virtual-Access3, changed state to up  
\*Jan 14 11:01:14.898:Vi4 MLP:Received segment updated message for bundle  
\*Jan 14 11:01:14.914:%LINK-3-UPDOWN:Interface Virtual-Access4, changed  
state to up  
\*Jan 14 11:01:14.914:Vi4 PPP:Force LCP OPEN on MLP Bundle  
\*Jan 14 11:01:14.914:Vi4 PPP:Phase is UP  
\*Jan 14 11:01:14.914:Vi4 IPCP:CP[]  
\*Jan 14 11:01:14.914:Vi4 IPCP:Event[OPEN] State[Initial to Starting]  
\*Jan 14 11:01:14.914:Vi4 IPCP:O CONFREQ [Starting] id 1 len 10  
\*Jan 14 11:01:14.914:Vi4 IPCP: Address 0.0.0.0 (0x030600000000)  
\*Jan 14 11:01:14.914:Vi4 IPCP:Event[UP] State[Starting to REQsent]  
\*Jan 14 11:01:14.915:Vi4 IPCP:I CONFREQ [REQsent] id 1 len 10  
\*Jan 14 11:01:14.915:Vi4 IPCP: Address 10.10.10.10 (0x03060A0A0A0A)  
\*Jan 14 11:01:14.915:Vi4 IPCP:O CONFACK [REQsent] id 1 len 10  
\*Jan 14 11:01:14.915:Vi4 IPCP: Address 10.10.10.10 (0x03060A0A0A0A)  
\*Jan 14 11:01:14.915:Vi4 IPCP:Event[Receive ConfReq+] State[REQsent to  
ACKsent]  
\*Jan 14 11:01:14.915:%LINEPROTO-5-UPDOWN:Line protocol on Interface  
Virtual-Access4, changed state to up  
\*Jan 14 11:01:14.915:Vi4 IPCP:I CONFNAK [ACKsent] id 1 len 10  
\*Jan 14 11:01:14.915:Vi4 IPCP: Address 10.10.10.18 (0x03060A0A0A12)  
\*Jan 14 11:01:14.915:Vi4 IPCP:O CONFREQ [ACKsent] id 2 len 10  
\*Jan 14 11:01:14.915:Vi4 IPCP: Address 10.10.10.18 (0x03060A0A0A12)  
\*Jan 14 11:01:14.915:Vi4 IPCP:Event[Receive ConfNak/Rej] State[ACKsent  
to ACKsent]  
\*Jan 14 11:01:14.936:Vi4 IPCP:I CONFACK [ACKsent] id 2 len 10  
\*Jan 14 11:01:14.936:Vi4 IPCP: Address 10.10.10.18 (0x03060A0A0A12)



```
*Jan 14 11:01:14.936:Vi4 IPCP:Event[Receive ConfAck] State[ACKsent to Open]
*Jan 14 11:01:14.954:Vi4 IPCP:State is Open
*Jan 14 11:01:14.954:Di1 IPCP:Install negotiated IP interface address 10.10.10.18
*Jan 14 11:01:14.954:Di1 Added to neighbor route AVL tree:topoid 0, address 10.10.10.10
*Jan 14 11:01:14.954:Di1 IPCP:Install route to 10.10.10.10
```

**Client#show ppp all**

Interface/ID	OPEN+	Nego*	Fail-	Stage	Peer Address	Peer Name
Vi4		IPCP+		LocalT	10.10.10.10	LNS
Vi3		LCP+		LocalT	10.10.10.10	LNS

**Client#show ppp multilink**

```
Virtual-Access4
Bundle name:LNS
Remote Username:LNS
Remote Endpoint Discriminator:[1] user@cisco.com
Local Username:user@cisco.com
Local Endpoint Discriminator:[1] user@cisco.com
Bundle up for 00:00:17, total bandwidth 64, load 1/255
Receive buffer limit 12192 bytes, frag timeout 1524 ms
Dialer interface is Dialer1
    0/0 fragments/bytes in reassembly list
    0 lost fragments, 0 reordered
    0/0 discarded fragments/bytes, 0 lost received
    0x3 received sequence, 0x0 sent sequence
Member links:1 (max 255, min not set)
    Vi3, since 00:00:17
No inactive multilink interfaces
```

## LAC

```
*Jan 14 11:01:12.744:PPPoE 0:I PADI R:aabb.cc02.bc00 L:ffff.ffff.ffff
Et0/0

*Jan 14 11:01:12.744:Service tag:NULL Tag

*Jan 14 11:01:12.744:PPPoE 0:O PADO, R:aabb.cc02.bd00 L:aabb.cc02.bc00
Et0/0

*Jan 14 11:01:12.744:Service tag:NULL Tag

*Jan 14 11:01:14.824:PPPoE 0:I PADR R:aabb.cc02.bc00 L:aabb.cc02.bd00
Et0/0

*Jan 14 11:01:14.824:Service tag:NULL Tag

*Jan 14 11:01:14.824:PPPOE:encap string prepared

*Jan 14 11:01:14.824:[9]PPPoE 9:Access IE handle allocated

*Jan 14 11:01:14.824:[9]PPPoE 9:AAA unique ID 17 allocated

*Jan 14 11:01:14.824:[9]PPPoE 9:No AAA accounting method list

*Jan 14 11:01:14.824:[9]PPPoE 9:Service request sent to SSS

*Jan 14 11:01:14.824:[9]PPPoE 9:Created, Service:None R:aabb.cc02.bd00
L:aabb.cc02.bc00 Et0/0

*Jan 14 11:01:14.825:[9]PPPoE 9:State NAS_PORT_POLICY_INQUIRY      Event
SSS MORE KEYS

*Jan 14 11:01:14.825:PPP:Alloc Context [2A970D9898]

*Jan 14 11:01:14.825:ppp9 PPP:Phase is ESTABLISHING

*Jan 14 11:01:14.825:[9]PPPoE 9:data path set to PPP

*Jan 14 11:01:14.825:[9]PPPoE 9:Segment (SSS class):PROVISION

*Jan 14 11:01:14.825:[9]PPPoE 9:State PROVISION_PPP      Event SSM
PROVISIONED

*Jan 14 11:01:14.825:[9]PPPoE 9:O PADS R:aabb.cc02.bc00 L:aabb.cc02.bd00
Et0/0

*Jan 14 11:01:14.825:ppp9 PPP:Using vpn set call direction

*Jan 14 11:01:14.825:ppp9 PPP:Treating connection as a callin

*Jan 14 11:01:14.825:ppp9 PPP:Session handle[B4000009] Session id[9]
```

\*Jan 14 11:01:14.825:ppp9 LCP:Event[OPEN] State[Initial to Starting]

\*Jan 14 11:01:14.825:ppp9 PPP LCP:Enter passive mode, state[Stopped]

\*Jan 14 11:01:14.835:ppp9 LCP:I CONFREQ [Stopped] id 1 len 30

\*Jan 14 11:01:14.835:ppp9 LCP: MagicNumber 0xBC220EF6 (0x0506BC220EF6)

\*Jan 14 11:01:14.835:ppp9 LCP: MRRU 1524 (0x110405F4)

\*Jan 14 11:01:14.835:ppp9 LCP: EndpointDisc 1 user@cisco.com  
(0x1310017573657240737572662E6F7267)

\*Jan 14 11:01:14.835:ppp9 LCP:O CONFREQ [Stopped] id 1 len 29

\*Jan 14 11:01:14.835:ppp9 LCP: MRU 1492 (0x010405D4)

\*Jan 14 11:01:14.835:ppp9 LCP: AuthProto CHAP (0x0305C22305)

\*Jan 14 11:01:14.835:ppp9 LCP: MagicNumber 0xBC21F6F0 (0x0506BC21F6F0)

\*Jan 14 11:01:14.835:ppp9 LCP: MRRU 1524 (0x110405F4)

\*Jan 14 11:01:14.835:ppp9 LCP: EndpointDisc 1 LAC (0x1306014C4143)

\*Jan 14 11:01:14.835:ppp9 LCP:O CONFACK [Stopped] id 1 len 30

\*Jan 14 11:01:14.835:ppp9 LCP: MagicNumber 0xBC220EF6 (0x0506BC220EF6)

\*Jan 14 11:01:14.835:ppp9 LCP: MRRU 1524 (0x110405F4)

\*Jan 14 11:01:14.835:ppp9 LCP: EndpointDisc 1 user@cisco.com  
(0x1310017573657240737572662E6F7267)

\*Jan 14 11:01:14.835:ppp9 LCP:Event[Receive ConfReq+] State[Stopped to ACKsent]

\*Jan 14 11:01:14.836:ppp9 LCP:I CONFNAK [ACKsent] id 1 len 8

\*Jan 14 11:01:14.836:ppp9 LCP: MRU 1500 (0x010405DC)

\*Jan 14 11:01:14.836:ppp9 LCP:O CONFREQ [ACKsent] id 2 len 29

\*Jan 14 11:01:14.836:ppp9 LCP: MRU 1500 (0x010405DC)

\*Jan 14 11:01:14.836:ppp9 LCP: AuthProto CHAP (0x0305C22305)

\*Jan 14 11:01:14.836:ppp9 LCP: MagicNumber 0xBC21F6F0 (0x0506BC21F6F0)

\*Jan 14 11:01:14.836:ppp9 LCP: MRRU 1524 (0x110405F4)

\*Jan 14 11:01:14.836:ppp9 LCP: EndpointDisc 1 LAC (0x1306014C4143)

\*Jan 14 11:01:14.836:ppp9 LCP:Event[Receive ConfNak/Rej] State[ACKsent to ACKsent]

\*Jan 14 11:01:14.836:ppp9 LCP:I CONFACK [ACKsent] id 2 len 29

\*Jan 14 11:01:14.836:ppp9 LCP: MRU 1500 (0x010405DC)

\*Jan 14 11:01:14.836:ppp9 LCP: AuthProto CHAP (0x0305C22305)

\*Jan 14 11:01:14.836:ppp9 LCP: MagicNumber 0xBC21F6F0 (0x0506BC21F6F0)

\*Jan 14 11:01:14.836:ppp9 LCP: MRRU 1524 (0x110405F4)

\*Jan 14 11:01:14.836:ppp9 LCP: EndpointDisc 1 LAC (0x1306014C4143)

\*Jan 14 11:01:14.836:ppp9 LCP:Event[Receive ConfAck] State[ACKsent to Open]

\*Jan 14 11:01:14.856:ppp9 PPP:Phase is AUTHENTICATING, by this end

\*Jan 14 11:01:14.856:ppp9 CHAP:O CHALLENGE id 1 len 24 from "LAC"

\*Jan 14 11:01:14.856:ppp9 LCP:State is Open

\*Jan 14 11:01:14.856:ppp9 CHAP:I RESPONSE id 1 len 34 from "user@cisco.com"

\*Jan 14 11:01:14.856:ppp9 PPP:Phase is FORWARDING, Attempting Forward

\*Jan 14 11:01:14.856:VPDN CALL [uid:9]:Requesting connection

\*Jan 14 11:01:14.856:VPDN CALL [uid:9]:Call request sent

\*Jan 14 11:01:14.857:[9]PPPoE 9:Access IE nas port called

\*Jan 14 11:01:14.857:VPDN uid:9 Obtained connect speeds are TX(10000000) RX(10000000)

\*Jan 14 11:01:14.857:VPDN uid:9 Obtained connect speeds are TX(10000000) RX(10000000)

\*Jan 14 11:01:14.857:VPDN uid:9 L2TUN socket session connect requested for socket handle F600000C

\*Jan 14 11:01:14.857:VPDN uid:9 Setting up dataplane for L2-L2, no idb

\*Jan 14 11:01:14.857:VPDN MGR [uid:9]:Initiating compulsory connection to 192.168.1.2

\*Jan 14 11:01:14.857:[9]PPPoE 9:State LCP\_NEGOTIATION Event PPP FORWARDING

\*Jan 14 11:01:14.857:[9]PPPoE 9:Segment (SSS class):UPDATED

```

*Jan 14 11:01:14.857:[9]PPPoE 9:SSS switch updated
*Jan 14 11:01:14.859:VPDN Received L2TUN socket message Status
*Jan 14 11:01:14.859:VPDN uid:9 cannot find swidb for session
*Jan 14 11:01:14.859:[9]PPPoE 9:Segment (SSS class):BOUND
*Jan 14 11:01:14.859:[9]PPPoE 9:data path set to SSS Switch
*Jan 14 11:01:14.859:VPDN Received L2TUN socket message Connected
*Jan 14 11:01:14.859:VPDN MGR [uid:9]:Succeed to forward user@cisco.com
*Jan 14 11:01:14.859:VPDN uid:9 VPDN session up
*Jan 14 11:01:14.859:VPDN CALL [uid:9]:Connection succeeded
*Jan 14 11:01:14.860:ppp9 PPP:Phase is FORWARDED, Session Forwarded
*Jan 14 11:01:14.860:[9]PPPoE 9:State LCP_NEGOTIATION Event PPP
FORWARDED
*Jan 14 11:01:14.860:[9]PPPoE 9:Connected Forwarded

```

**LAC#show ppp all**

Interface/ID	OPEN+	Nego*	Fail-	Stage	Peer Address	Peer Name
0xB4000009		LCP+	CHAP*	Fwded	0.0.0.0	user@cisco.com

**LAC#show ppp multilink**

```

No active bundles
No inactive multilink interfaces

```

**LNS**

```

*Jan 14 11:01:14.858:VPDN Received L2TUN socket message Incoming
*Jan 14 11:01:14.859:VPDN uid:13 L2TUN socket session accept requested
*Jan 14 11:01:14.859:VPDN uid:13 Setting up dataplane for L2-L2, no idb
*Jan 14 11:01:14.860:VPDN Received L2TUN socket message Connected
*Jan 14 11:01:14.860:VPDN uid:13 VPDN session up
*Jan 14 11:01:14.860:PPP:Alloc Context [2A970D95C0]

```

\*Jan 14 11:01:14.860:ppp13 PPP:Phase is ESTABLISHING

\*Jan 14 11:01:14.860:ppp13 LCP:Event[Jam Start] State[Initial to Closed]

\*Jan 14 11:01:14.860:ppp13 LCP:I FORCED rcvd CONFACK len 29

\*Jan 14 11:01:14.861:ppp13 LCP: MRU 1500 (0x010405DC)

\*Jan 14 11:01:14.861:ppp13 LCP: AuthProto CHAP (0x0305C22305)

\*Jan 14 11:01:14.861:ppp13 LCP: MagicNumber 0xBC21F6F0  
(0x0506BC21F6F0)

\*Jan 14 11:01:14.861:ppp13 LCP: MRRU 1524 (0x110405F4)

\*Jan 14 11:01:14.861:ppp13 LCP: EndpointDisc 1 LAC (0x1306014C4143)

\*Jan 14 11:01:14.861:ppp13 PPP:LCP not accepting rcv CONFACK

\*Jan 14 11:01:14.861:ppp13 LCP:I FORCED sent CONFACK len 30

\*Jan 14 11:01:14.861:ppp13 LCP: MagicNumber 0xBC220EF6  
(0x0506BC220EF6)

\*Jan 14 11:01:14.861:ppp13 LCP: MRRU 1524 (0x110405F4)

\*Jan 14 11:01:14.861:ppp13 LCP: EndpointDisc 1 user@cisco.com  
(0x1310017573657240737572662E6F7267)

\*Jan 14 11:01:14.861:ppp13 LCP:Event[DOWN] State[Closed to Initial]

\*Jan 14 11:01:14.861:ppp13 LCP:Event[CLOSE] State[Initial to Initial]

\*Jan 14 11:01:14.861:ppp13 LCP:Event[OPEN] State[Initial to Starting]

\*Jan 14 11:01:14.861:ppp13 LCP:O CONFREQ [Starting] id 1 len 39

\*Jan 14 11:01:14.861:ppp13 LCP: MRU 1492 (0x010405D4)

\*Jan 14 11:01:14.861:ppp13 LCP: AuthProto CHAP (0x0305C22305)

\*Jan 14 11:01:14.861:ppp13 LCP: MagicNumber 0xBC21E526  
(0x0506BC21E526)

\*Jan 14 11:01:14.861:ppp13 LCP: MRRU 1524 (0x110405F4)

\*Jan 14 11:01:14.861:ppp13 LCP: EndpointDisc 1 user@cisco.com  
(0x1310017573657240737572662E6F7267)

\*Jan 14 11:01:14.861:ppp13 LCP:Event[UP] State[Starting to REQsent]

\*Jan 14 11:01:14.862:ppp13 LCP:I CONFREQ [REQsent] id 1 len 30

\*Jan 14 11:01:14.862:ppp13 LCP: MagicNumber 0xBC220F12  
(0x0506BC220F12)

\*Jan 14 11:01:14.862:ppp13 LCP: MRRU 1524 (0x110405F4)

\*Jan 14 11:01:14.862:ppp13 LCP: EndpointDisc 1 user@cisco.com  
(0x1310017573657240737572662E6F7267)

\*Jan 14 11:01:14.862:ppp13 PPP:Remote endpoint user@cisco.com invalid,  
matches local value

\*Jan 14 11:01:14.862:ppp13 LCP:O CONFACK [REQsent] id 1 len 30

\*Jan 14 11:01:14.862:ppp13 LCP: MagicNumber 0xBC220F12  
(0x0506BC220F12)

\*Jan 14 11:01:14.862:ppp13 LCP: MRRU 1524 (0x110405F4)

\*Jan 14 11:01:14.862:ppp13 LCP: EndpointDisc 1 user@cisco.com  
(0x1310017573657240737572662E6F7267)

\*Jan 14 11:01:14.862:ppp13 LCP:Event[Receive ConfReq+] State[REQsent to  
ACKsent]

\*Jan 14 11:01:14.862:ppp13 LCP:I CONFNAK [ACKsent] id 1 len 8

\*Jan 14 11:01:14.862:ppp13 LCP: MRU 1500 (0x010405DC)

\*Jan 14 11:01:14.862:ppp13 LCP:O CONFREQ [ACKsent] id 2 len 39

\*Jan 14 11:01:14.862:ppp13 LCP: MRU 1500 (0x010405DC)

\*Jan 14 11:01:14.862:ppp13 LCP: AuthProto CHAP (0x0305C22305)

\*Jan 14 11:01:14.862:ppp13 LCP: MagicNumber 0xBC21E526  
(0x0506BC21E526)

\*Jan 14 11:01:14.862:ppp13 LCP: MRRU 1524 (0x110405F4)

\*Jan 14 11:01:14.862:ppp13 LCP: EndpointDisc 1 user@cisco.com  
(0x1310017573657240737572662E6F7267)

\*Jan 14 11:01:14.862:ppp13 LCP:Event[Receive ConfNak/Rej] State[ACKsent  
to ACKsent]

\*Jan 14 11:01:14.863:ppp13 LCP:I CONFACK [ACKsent] id 2 len 39

\*Jan 14 11:01:14.863:ppp13 LCP: MRU 1500 (0x010405DC)

\*Jan 14 11:01:14.863:ppp13 LCP: AuthProto CHAP (0x0305C22305)

\*Jan 14 11:01:14.863:ppp13 LCP: MagicNumber 0xBC21E526  
(0x0506BC21E526)

\*Jan 14 11:01:14.863:ppp13 LCP: MRRU 1524 (0x110405F4)

\*Jan 14 11:01:14.863:ppp13 LCP: EndpointDisc 1 user@cisco.com (0x1310017573657240737572662E6F7267)

\*Jan 14 11:01:14.863:ppp13 LCP:Event[Receive ConfAck] State[ACKsent to Open]

\*Jan 14 11:01:14.895:ppp13 PPP:Phase is AUTHENTICATING, by this end

\*Jan 14 11:01:14.895:ppp13 CHAP:O CHALLENGE id 2 len 27 from "LNS"

\*Jan 14 11:01:14.895:ppp13 LCP:State is Open

\*Jan 14 11:01:14.895:ppp13 CHAP:I RESPONSE id 2 len 34 from "user@cisco.com"

\*Jan 14 11:01:14.895:ppp13 PPP:Phase is FORWARDING, Attempting Forward

\*Jan 14 11:01:14.895:ppp13 PPP:Phase is AUTHENTICATING, Unauthenticated User

\*Jan 14 11:01:14.895:ppp13 PPP:Phase is FORWARDING, Attempting Forward

\*Jan 14 11:01:14.896:VPDN uid:13 Virtual interface created for user@cisco.com bandwidth 10000 Kbps

\*Jan 14 11:01:14.896:VPDN Vi3 Virtual interface created for user@cisco.com, bandwidth 10000 Kbps

L2X\_ADJ:Vi3:allocated ctx, size 1

\*Jan 14 11:01:14.896:VPDN Received L2TUN socket message Data UP

\*Jan 14 11:01:14.896:Vi3 PPP:Phase is AUTHENTICATING, Authenticated User

\*Jan 14 11:01:14.896:Vi3 CHAP:O SUCCESS id 2 len 4

\*Jan 14 11:01:14.896:Vi3 MLP:Request add link to bundle

\*Jan 14 11:01:14.896:Vi3 PPP:Phase is VIRTUALIZED

\*Jan 14 11:01:14.896:Vi3 MLP:Adding link to bundle

\*Jan 14 11:01:14.896:Vi3 MLP:Requested bundle vaccess creation

\*Jan 14 11:01:14.896:Vi3 MLP:Determine clone source for SSS

\*Jan 14 11:01:14.896:Vi3 MLP:Link is Virtual-Access, clone from Virtual-Template 1

\*Jan 14 11:01:14.897:Vi3 MLP:Determine clone source for SSS



\*Jan 14 11:01:14.897:Vi3 MLP:Link is Virtual-Access, clone from Virtual-Template 1

\*Jan 14 11:01:14.897:%LINK-3-UPDOWN:Interface Virtual-Access3, changed state to up

\*Jan 14 11:01:14.897:Vi3 MLP:SSS connect, bundle interface Vi4

\*Jan 14 11:01:14.897:PPP:Alloc Context [2A970D9898]

\*Jan 14 11:01:14.897:ppp14 PPP:Phase is ESTABLISHING

\*Jan 14 11:01:14.897:Vi4 MLP:Changing bundle bandwidth from 100000 to 10000

\*Jan 14 11:01:14.897:Vi4 MLP:Ready to finish adding link Vi3 to bundle

\*Jan 14 11:01:14.897:Vi3 MLP:Computed frag size 37492 exceeds MTU, changed to 1488

\*Jan 14 11:01:14.897:Vi4 MLP:Update bundle bandwidth 10000 set 10000

\*Jan 14 11:01:14.897:Vi3 MLP:Change transmit status from Init to Enabled, transmit links 1

\*Jan 14 11:01:14.897:Vi4 MLP:Added first link Vi3 to bundle user@cisco.com

\*Jan 14 11:01:14.898:Vi3 MLP:Updating bundle's PPP handle[0x5900000E] in SSS context

\*Jan 14 11:01:14.898:%LINEPROTO-5-UPDOWN:Line protocol on Interface Virtual-Access3, changed state to up

\*Jan 14 11:01:14.898:Vi4 MLP:Received segment updated message for bundle

\*Jan 14 11:01:14.915:%LINK-3-UPDOWN:Interface Virtual-Access4, changed state to up

\*Jan 14 11:01:14.915:Vi4 PPP:Force LCP OPEN on MLP Bundle

\*Jan 14 11:01:14.915:Vi3 PPP:Queue IPCP code[1] id[1]

\*Jan 14 11:01:14.915:Vi4 PPP:Phase is UP

\*Jan 14 11:01:14.915:Vi4 IPCP:CP[]

\*Jan 14 11:01:14.915:Vi4 IPCP:Event[OPEN] State[Initial to Starting]

\*Jan 14 11:01:14.915:Vi4 IPCP:O CONFREQ [Starting] id 1 len 10

\*Jan 14 11:01:14.915:Vi4 IPCP: Address 10.10.10.10 (0x03060A0A0A0A)

```

*Jan 14 11:01:14.915:Vi4 IPCP:Event[UP] State[Starting to REQsent]
*Jan 14 11:01:14.915:Vi3 PPP:Process pending ncp packets
*Jan 14 11:01:14.915:Vi3 IPCP:Redirect packet to Vi4
*Jan 14 11:01:14.915:Vi4 IPCP:I CONFREQ [REQsent] id 1 len 10
*Jan 14 11:01:14.915:Vi4 IPCP:   Address 0.0.0.0 (0x030600000000)
*Jan 14 11:01:14.915:Vi4 IPCP AUTHOR:Her address 0.0.0.0, we want
0.0.0.0
*Jan 14 11:01:14.915:Vi4 IPCP:Pool returned 10.10.10.18
*Jan 14 11:01:14.915:Vi4 IPCP:O CONFNAK [REQsent] id 1 len 10
*Jan 14 11:01:14.915:Vi4 IPCP:   Address 10.10.10.18 (0x03060A0A0A12)
*Jan 14 11:01:14.915:Vi4 IPCP:Event[Receive ConfReq-] State[REQsent to
REQsent]
*Jan 14 11:01:14.915:Vi4 IPCP:I CONFACK [REQsent] id 1 len 10
*Jan 14 11:01:14.915:Vi4 IPCP:   Address 10.10.10.10 (0x03060A0A0A0A)
*Jan 14 11:01:14.915:Vi4 IPCP:Event[Receive ConfAck] State[REQsent to
ACKrcvd]
*Jan 14 11:01:14.916:%LINEPROTO-5-UPDOWN:Line protocol on Interface
Virtual-Access4, changed state to up
*Jan 14 11:01:14.936:Vi4 IPCP:I CONFREQ [ACKrcvd] id 2 len 10
*Jan 14 11:01:14.936:Vi4 IPCP:   Address 10.10.10.18 (0x03060A0A0A12)
*Jan 14 11:01:14.936:Vi4 IPCP:O CONFACK [ACKrcvd] id 2 len 10
*Jan 14 11:01:14.936:Vi4 IPCP:   Address 10.10.10.18 (0x03060A0A0A12)
*Jan 14 11:01:14.936:Vi4 IPCP:Event[Receive ConfReq+] State[ACKrcvd to
Open]
*Jan 14 11:01:14.965:Vi4 IPCP:State is Open
*Jan 14 11:01:14.965:Vi4 Added to neighbor route AVL tree:topoid 0,
address 10.10.10.18
*Jan 14 11:01:14.965:Vi4 IPCP:Install route to 10.10.10.18

```

**LNS#show ppp all**

```

Interface/ID OPEN+ Nego* Fail-      Stage   Peer Address   Peer Name

```

-- -- --

Vi4 IPCP+ LocalT 10.10.10.18  
user@cisco.com

Vi3 LCP+ CHAP+ LocalT 10.10.10.18  
user@cisco.com

### LNS#show ppp multilink

Virtual-Access4

Bundle name:user@cisco.com

Remote Username:user@cisco.com

Remote Endpoint Discriminator:[1] user@cisco.com

Local Username:LNS

Local Endpoint Discriminator:[1] user@cisco.com

Bundle up for 00:00:10, total bandwidth 10000, load 1/255

Receive buffer limit 12192 bytes, frag timeout 15 ms

Using relaxed lost fragment detection algorithm.

0/0 fragments/bytes in reassembly list

0 lost fragments, 0 reordered

0/0 discarded fragments/bytes, 0 lost received

0x0 received sequence, 0x3 sent sequence

Member links:1 (max 255, min not set)

LAC:Vi3 (192.168.1.1), since 00:00:10, 37500 weight, 1488 frag size,  
unsequenced

No inactive multilink interfaces

## 関連情報

- [クライアント開始ダイヤルイン VPDN トンネリングの設定](#)
- [Tテクニカルサポートとドキュメント - Cisco Systems](#)