

VPDN (Rede de Discagem Privada Virtual) L2TP Básica para Recebimento e Envio de Chamadas

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[Introdução](#)

Este documento fornece um exemplo de configuração para o Protocolo de túneis de Camada 2 (L2TP) para chamadas dialin (entrada) e dialout (saída).

Nota: Esta instalação não envolve um servidor de Autenticação, autorização e auditoria (AAA, authentication, authorization, and accounting).

[Pré-requisitos](#)

[Requisitos](#)

Não existem requisitos específicos para este documento.

[Componentes Utilizados](#)

As informações neste documento se baseiam no Cisco IOS® Software Release 12.1.

As informações neste documento foram criadas a partir de dispositivos em um ambiente de laboratório específico. Todos os dispositivos utilizados neste documento foram iniciados com uma configuração (padrão) inicial. Se a sua rede estiver ativa, certifique-se de que entende o impacto potencial de qualquer comando.

Convenções

Para obter mais informações sobre convenções de documento, consulte as [Convenções de dicas técnicas Cisco](#).

Configurar

Nesta seção, você encontrará informações para configurar os recursos descritos neste documento.

Nota: Para localizar informações adicionais sobre os comandos usados neste documento, utilize a Ferramenta Command Lookup (somente clientes [registrados](#)).

Diagrama de Rede

Este documento utiliza a seguinte configuração de rede:

Configurações

Este documento utiliza as seguintes configurações:

- Roteador remoto 1: Loopback0: Nome de usuário 17.17.17.1/32: Número ISDN remote1@cisco.com (BRI 0): 6122
- Roteador remoto2: Loopback: Nome de usuário 17.17.17.2/32: Número ISDN remote2@cisco.com (BRI 0): 6121
- LAC do roteador: Loopback: Número ISDN 18.18.18.1/32 (E1 0): Interface serial 8211 (S0): 18.18.18.6/30
- Roteador LNS: Loopback: Interface serial 18.18.18.2/32 (S0): Interface Ethernet 18.18.18.5/30 (E0): 10.200.20.24/24
- Roteador local1: Loopback: Interface Ethernet 17.17.17.3/32 (E0): 10.200.20.32/24

Os roteadores remote1@cisco.com e remote2@cisco.com utilizam ISDN para acessar Concentrador de acesso L2TP (LAC, L2TP Access Concentrator). Um link serial lado a lado conecta o LAC e o Servidor de rede L2TP (LNS, L2TP Network Server) nessa instalação. O roteador local1 e o LNS compartilham o mesmo link Ethernet

Aqui está o processo:

1. **Discagem L2TP:** O cliente remote1@cisco.com deseja se comunicar com o roteador local1. O cliente gera uma chamada ISDN para o LAC, que ativa um túnel L2TP para o LNS e para a sessão L2TP. O LAC utiliza o nome de domínio para ativar o túnel com o LNS. O LNS autentica os usuários remoto localmente.
2. **Discagem L2TP:** O roteador local1 deseja se comunicar com o cliente remoto remote2@cisco.com. O LNS utiliza o túnel existente com o LAC e cria uma sessão L2TP nova.

Nota: Essas configurações são truncadas para exibir as informações relevantes.

LAC
hostname LAC

```

!
!
ip subnet-zero
no ip domain-lookup
!
vpdn enable
no vpdn logging
vpdn search-order domain
!--- VPDN tunnel authorization is based on the domain
only. ! vpdn-group 1 request-dialin !--- Enables the LAC
to make requests to the LNS for dialin. protocol l2tp
domain cisco.com accept-dialout !--- Enables the LAC to
accept requests from the LNS for dialout. protocol l2tp
dialer 1 !--- Specifies the dialer used to dial out.
terminate-from hostname LNS initiate-to ip 18.18.18.2
local name LAC l2tp tunnel password l2tptunnel source-ip
18.18.18.1 ! isdn switch-type primary-net5 ! !
controller E1 0 clock source line primary pri-group
timeslots 1-31 ! interface Loopback0 ip address
18.18.18.1 255.255.255.255 ! interface Ethernet0 ip
address 10.200.20.34 255.255.255.0 no ip route-cache no
ip mroute-cache no cdp enable ! ! interface Serial0
description -- Connection to the LNS ip address
18.18.18.6 255.255.255.252 no fair-queue clockrate 64000
no cdp enable ! interface Serial0:15 no ip address
encapsulation ppp dialer rotary-group 1 isdn switch-type
primary-net5 no cdp enable ppp authentication chap ppp
chap hostname LAC ! interface Dialer1 ip unnumbered
Loopback0 encapsulation ppp dialer in-band dialer aaa !-
-- L2TP dialout functionality requires this command even
if you do not use AAA. dialer-group 1 no cdp enable ppp
authentication chap ppp chap hostname LAC ppp chap
password 7 1511021F0725 ! no ip http server ip classless
ip route 18.18.18.2 255.255.255.255 18.18.18.5 ! dialer-
list 1 protocol ip permit no cdp run

```

LNS

```

hostname LNS
!
vpdn enable
vpdn-group 1
accept-dialin
!--- Enables the LNS to accept request from the LAC for
dialin. protocol l2tp virtual-template 1 !--- For each
user, a virtual-access is cloned from this virtual-
template. request-dialout !--- Enables the LNS to
request the LAC for dialout. protocol l2tp pool-member 1
!--- Specifies the dialer profile to be used to dial
out. terminate-from hostname LAC initiate-to ip
18.18.18.1 local name LNS l2tp tunnel password
l2tptunnel source-ip 18.18.18.2 ! ! interface Loopback0
ip address 18.18.18.2 255.255.255.255 ! interface
Ethernet0 ip address 10.200.20.24 255.255.255.0 no ip
route-cache no ip mroute-cache ! interface Virtual-
Template1 ip unnumbered Loopback0 no peer default ip
address ppp chap hostname LNS ! interface Serial0
description -- Connection to the LAC ip address
18.18.18.5 255.255.255.252 no ip route-cache no ip
mroute-cache ! interface Dialer1 !--- For each user, a
dialer profile is configured. ip unnumbered Loopback0
encapsulation ppp dialer pool 1 !--- "dialer pool 1"
must match "pool-member 1" in the VPDN-group. dialer
remote-name remotel@cisco.com dialer string 6122 !---
ISDN number that the LAC uses to dialout the remote

```

```
client remotel@cisco.com. dialer vpdn !--- Enables the
dialer profile to use L2TP dialout, and so place a VPDN
call. dialer-group 1 ppp authentication chap callin ppp
chap hostname LNS ! interface Dialer2 ip unnumbered
Loopback0 encapsulation ppp dialer pool 1 dialer remote-
name remote2@cisco.com dialer string 6121 dialer vpdn
dialer-group 1 no cdp enable ppp authentication chap
callin ppp chap hostname LNS ! no ip http server ip
classless ip route 10.200.16.26 255.255.255.255
10.200.20.1 ip route 17.17.17.1 255.255.255.255 Dialer1
ip route 17.17.17.2 255.255.255.255 Dialer2 ip route
17.17.17.3 255.255.255.255 10.200.20.32 ip route
18.18.18.1 255.255.255.255 18.18.18.6 ! dialer-list 1
protocol ip permit no cdp run
```

Verificar

Esta seção fornece informações que você pode usar para confirmar se sua configuração está funcionando adequadamente.

A [Output Interpreter Tool \(somente clientes registrados\)](#) oferece suporte a determinados comandos show, o que permite exibir uma análise da saída do comando show.

- **show vpdn** — exibe informações sobre o túnel de protocolo L2F ativo e identificadores de mensagem em uma Virtual Private Dialup Network (VPDN).
LAC#**show debug** Dial on demand:
Dial on demand events debugging is on VPN: L2X protocol events debugging is on VPDN events debugging is on PPP: PPP authentication debugging is on PPP protocol negotiation debugging is on ISDN: ISDN events debugging is on ISDN events debug DSLs. (On/Off/No DSL:1/0/-) DSL 0 --> 1 1 - LNS#**show debug** Dial on demand: Dial on demand events debugging is on VPN: L2X protocol events debugging is on VPDN events debugging is on PPP: PPP authentication debugging is on PPP protocol negotiation debugging is on VTEMPLATE: Virtual Template debugging is on

Verificação

Discar

O roteador remote1@cisco.com inicia uma chamada para o roteador local1.

LAC#

Uma chamada ISDN entra no LAC.

```
Sep 29 02:25:42.923: ISDN Se0:15: Incoming call id = 0x011B, dsl 0
Sep 29 02:25:42.927: Negotiated CCB->int_id 0 B-chan 0, req->int_id 0, B-chan 18
Sep 29 02:25:42.931: CCPRI_ReleaseChan CCB->B_Chan zero
Sep 29 02:25:42.939: ISDN Se0:15: received CALL_INCOMING call_id 0x11B
Sep 29 02:25:42.939: ISDN Se0:15: CALL_INCOMING: call type is DATA , bchan = 17
Sep 29 02:25:42.943: ISDN Se0:15: Event: Received a DATA call from 6122 on B17
at 64 Kb/s
Sep 29 02:25:42.947: ISDN Se0:15: RM returned call_type 0 resource type 0
Sep 29 02:25:42.959: ISDN Se0:15: isdn_send_connect(): msg 74, call id 0x11B,
ces 1 bchan 17, call type DATA
Sep 29 02:25:43.031: %LINK-3-UPDOWN: Interface Serial0:17, changed state to up
Sep 29 02:25:43.059: Se0:17 PPP: Treating connection as a callin
Sep 29 02:25:43.063: Se0:17 PPP: Phase is ESTABLISHING, Passive Open
Sep 29 02:25:43.067: Se0:17 LCP: State is Listen
Sep 29 02:25:43.127: ISDN Se0:15: received CALL_PROGRESSing call_id 0x11B
```

```
Sep 29 02:25:43.199: Se0:17 LCP: I CONFREQ [Listen] id 125 len 10
Sep 29 02:25:43.203: Se0:17 LCP: MagicNumber 0xEB818699 (0x0506EB818699)
Sep 29 02:25:43.207: Se0:17 LCP: O CONFREQ [Listen] id 7 len 15
Sep 29 02:25:43.211: Se0:17 LCP: AuthProto CHAP (0x0305C22305)
Sep 29 02:25:43.215: Se0:17 LCP: MagicNumber 0x6BDE50CC (0x05066BDE50CC)
Sep 29 02:25:43.219: Se0:17 LCP: O CONFACK [Listen] id 125 len 10
Sep 29 02:25:43.223: Se0:17 LCP: MagicNumber 0xEB818699 (0x0506EB818699)
Sep 29 02:25:43.247: Se0:17 LCP: I CONFACK [ACKsent] id 7 len 15
Sep 29 02:25:43.251: Se0:17 LCP: AuthProto CHAP (0x0305C22305)
Sep 29 02:25:43.255: Se0:17 LCP: MagicNumber 0x6BDE50CC (0x05066BDE50CC)
Sep 29 02:25:43.259: Se0:17 LCP: State is Open
Sep 29 02:25:43.259: Se0:17 PPP: Phase is AUTHENTICATING, by this end
```

O LAC envia uma desafio de CHAP ao cliente.

```
Sep 29 02:25:43.263: Se0:17 CHAP: Using alternate hostname LAC
Sep 29 02:25:43.267: Se0:17 CHAP: O CHALLENGE id 7 len 24 from "LAC"
```

O LAC recebe uma resposta CHAP mas não autentica o usuário. O LNS executa a autenticação.

```
Sep 29 02:25:43.295: Se0:17 CHAP: I RESPONSE id 7 len 38 from "remotel@cisco.com"
Sep 29 02:25:43.303: Se0:17 PPP: Phase is FORWARDING
Sep 29 02:25:43.303: Se0:17 VPDN: Got DNIS string 211
```

O LAC verifica se o domínio "cisco.com" existe e coleta as informações necessárias para ativar o túnel com o LNS.

```
Sep 29 02:25:43.307: Se0:17 VPDN: Looking for tunnel -- cisco.com --
Sep 29 02:25:43.347: Se0:17 VPDN/LAC/1: Got tunnel info for cisco.com
Sep 29 02:25:43.351: Se0:17 VPDN/LAC/1: LAC LAC
Sep 29 02:25:43.351: Se0:17 VPDN/LAC/1: source-ip 18.18.18.1
Sep 29 02:25:43.355: Se0:17 VPDN/LAC/1: l2tp-busy-disconnect yes
Sep 29 02:25:43.359: Se0:17 VPDN/LAC/1: l2tp-tunnel-password xxxxxx
Sep 29 02:25:43.359: Se0:17 VPDN/LAC/1: IP 18.18.18.2
Sep 29 02:25:43.371: Se0:17 VPDN/1: curlvl 1 Address 0: 18.18.18.2, priority 1
Sep 29 02:25:43.375: Se0:17 VPDN/1: Select non-active address 18.18.18.2, priority 1
Sep 29 02:25:43.379: Tnl 45029 L2TP: SM State idle
```

O LAC ativa o túnel com o LNS.

```
Sep 29 02:25:43.383: Tnl 45029 L2TP: O SCCRQ
Sep 29 02:25:43.391: Tnl 45029 L2TP: Tunnel state change from idle to
wait-ctl-reply
Sep 29 02:25:43.395: Tnl 45029 L2TP: SM State wait-ctl-reply
Sep 29 02:25:43.399: Se0:17 VPDN: Find LNS process created
Sep 29 02:25:43.403: Se0:17 VPDN: Forward to address 18.18.18.2
Sep 29 02:25:43.403: Se0:17 VPDN: Pending
Sep 29 02:25:43.411: Se0:17 VPDN: Process created
Sep 29 02:25:43.463: Tnl 45029 L2TP: I SCCRP from LNS
Sep 29 02:25:43.467: Tnl 45029 L2TP: Got a challenge from remote peer, LNS
Sep 29 02:25:43.471: Tnl 45029 L2TP: Got a response from remote peer, LNS
Sep 29 02:25:43.475: Tnl 45029 L2TP: Tunnel Authentication success
Sep 29 02:25:43.479: Tnl 45029 L2TP: Tunnel state change from wait-ctl-reply
to established
Sep 29 02:25:43.483: Tnl 45029 L2TP: O SCCCN to LNS tn lid 11407
Sep 29 02:25:43.487: Tnl 45029 L2TP: SM State established
Sep 29 02:25:43.495: Se0:17 VPDN: Forwarding...
Sep 29 02:25:43.499: Se0:17 DDR: Authenticated host remotel@cisco.com with no
matching dialer map
Sep 29 02:25:43.503: Se0:17 VPDN: Bind interface direction=1
Sep 29 02:25:43.507: Tnl/C1 45029/291 L2TP: Session FS enabled
Sep 29 02:25:43.511: Tnl/C1 45029/291 L2TP: Session state change from idle to
wait-for-tunnel
Sep 29 02:25:43.515: Se0:17 Tnl/C1 45029/291 L2TP: Create session
Sep 29 02:25:43.519: Tnl 45029 L2TP: SM State established
```

O LAC ativa a sessão do usuário remote1@cisco.com.

```
Sep 29 02:25:43.523: Se0:17 Tnl/Cl 45029/291 L2TP: O ICRQ to LNS 11407/0
Sep 29 02:25:43.531: Se0:17 Tnl/Cl 45029/291 L2TP: Session state change from
wait-for-tunnel to wait-reply
Sep 29 02:25:43.535: Se0:17 VPDN: remotel@cisco.com is forwarded
Sep 29 02:25:43.635: Se0:17 Tnl/Cl 45029/291 L2TP: O ICCN to LNS 11407/303
Sep 29 02:25:43.639: Se0:17 Tnl/Cl 45029/291 L2TP: Session state change from
wait-reply to established
Sep 29 02:25:44.535: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0:17,
changed state to up
Sep 29 02:25:49.055: %ISDN-6-CONNECT: Interface Serial0:17 is now connected to
6122 remotel@cisco.com
```

```
LAC#show vpdn L2TP Tunnel and Session Information Total tunnels 1 sessions 1 LocID RemID Remote
Name State Remote Address Port Sessions 45029 11407 LNS est 18.18.18.2 1701 1 LocID RemID TunID
Intf Username State Last Chg Fastswitch 291 303 45029 Se0:17 remotel@cisco.com est 00:00:14
enabled % No active L2F tunnels
```

[Dial out](#)

O roteador local1 inicia uma chamada para o roteador remote2@cisco.com.

LAC#

O LAC recebe uma solicitação de LNS para ativar uma nova sessão para discagem.

```
Sep 29 02:26:19.479: Tnl 45029 L2TP: I OCRQ from LNS tnl 11407
Sep 29 02:26:19.483: Tnl/Cl 45029/292 L2TP: Session FS enabled
Sep 29 02:26:19.487: Tnl/Cl 45029/292 L2TP: New session created
Sep 29 02:26:19.491: 1D4C: Same state, 0
Sep 29 02:26:19.495: DSES 1D4C: Session create
Sep 29 02:26:19.499: L2TP: Send OCRP
Sep 29 02:26:19.503: Tnl/Cl 45029/292 L2TP: Session state change from
idle to wait-cs-answer
```

O LAC utiliza ISDN para chamar o número 6121.

```
Sep 29 02:26:19.511: DSES 0x1D4C: Building dialer map
Sep 29 02:26:19.511: Dialout 0x1D4C: Next hop name is 6121
Sep 29 02:26:19.515: Se0:15 DDR: rotor dialout [priority]
Sep 29 02:26:19.519: Se0:15 DDR: Dialing cause dialer session 0x1D4C
Sep 29 02:26:19.523: Se0:15 DDR: Attempting to dial 6121
Sep 29 02:26:19.523: ISDN Se0:15: Outgoing call id = 0x8055, dsl 0
Sep 29 02:26:19.527: ISDN Se0:15: Event: Call to 6121 at 64 Kb/s
Sep 29 02:26:19.531: ISDN Se0:15: process_pri_call(): call id 0x8055,
number 6121, speed 64, call type DATA
Sep 29 02:26:19.539: building outgoing channel id for call nfas_int is 0 len is 0
Sep 29 02:26:19.623: ISDN Se0:15: received CALL_ACCEPT call_id 0x8055
Sep 29 02:26:19.623: ISDN Se0:15: PRI Event: CALL_ACCEPT, bchan = 30,
call type = DATA
Sep 29 02:26:20.043: ISDN Se0:15: received CALL_CONNECT call_id 0x8055
Sep 29 02:26:20.115: %LINK-3-UPDOWN: Interface Serial0:30, changed state to up
Sep 29 02:26:20.147: Di1: Session free, 1D4C
Sep 29 02:26:20.151: : 0 packets unqueued and discarded
Sep 29 02:26:20.155: Se0:30 VPDN: Bind interface direction=1
Sep 29 02:26:20.159: Se0:30 Tnl/Cl 45029/292 L2TP: Session state change
from wait-cs-answer to established
Sep 29 02:26:20.163: L2TP: Send OCCN
```

O LAC vincula a sessão ISDN se0:30 à sessão VPDN.

```
Sep 29 02:26:20.167: Se0:30 VPDN: bound to vpdn session
Sep 29 02:26:20.175: ISDN Se0:15: received CALL_PROGRESSing call_id 0x8055
```

```
Sep 29 02:26:26.143: %ISDN-6-CONNECT: Interface Serial0:30 is now connected to 6121  
LAC#
```

```
LAC#show vpdn L2TP Tunnel and Session Information Total tunnels 1 sessions 2 LocID RemID Remote  
Name State Remote Address Port Sessions 45029 11407 LNS est 18.18.18.2 1701 2 LocID RemID TunID  
Intf Username State Last Chg Fastswitch 291 303 45029 Se0:17 remotel@cisco.com est 00:00:57  
enabled 292 304 45029 Se0:30 est 00:00:20 enabled % No active L2F tunnels LAC#
```

Troubleshooting

Esta seção fornece informações que podem ser usadas para o troubleshooting da sua configuração.

Comandos para Troubleshooting

A [Output Interpreter Tool \(somente clientes registrados\)](#) oferece suporte a determinados comandos show, o que permite exibir uma análise da saída do comando show.

Nota: Antes de emitir **comandos debug**, consulte [Informações importantes sobre comandos debug](#).

- **debug dialer events** — exibe informações de depuração sobre os pacotes recebidos em uma interface de discador.
- **debug vpdn l2x-events** — exibe mensagens sobre eventos que fazem parte do estabelecimento ou desligamento de túnel normal.
- **debug vpdn l2x-packets** — exibe cada pacote de protocolo trocado. Esse comando pode resultar em um grande número de mensagens de depuração. Use esse comando apenas em um chassi de depuração com uma única sessão ativa.
- **debug vpdn l2x-errors** — exibe erros que impedem o estabelecimento de um túnel ou erros que fazem o túnel estabelecido ser fechado.
- **debug ppp negotiation** — faz o comando debug ppp exibir pacotes PPP transmitidos durante a inicialização PPP, em que as opções PPP são negociadas.
- **debug ppp authentication** — faz o comando debug ppp exibir mensagens do protocolo de autenticação. As mensagens incluem trocas de pacote Challenge Handshake Authentication Protocol (CHAP) e trocas Password Authentication Protocol (PAP).
- **debug isdn events** — exibe eventos de Rede digital de serviços integrados (ISDN, Integrated Services Digital Network) ocorridos no lado do usuário (no roteador) da interface ISDN.
- **debug isdn q931** — exibe informações sobre configuração de chamada e subdivisão de conexões de rede ISDN (Camada 3) entre o roteador local (lado do usuário) e a rede.
- **debug vtemplate** — exibe informações sobre clonagem de uma interface de acesso virtual do momento do clone a partir de um modelo virtual até o momento em que a interface de acesso virtual é desativada quando a chamada termina.

Debugar no LNS

Discar

O roteador remote1@cisco.com inicia uma chamada para o roteador local1.

O LNS recebe uma solicitação do LAC para ativar um túnel.

```
Sep 29 02:25:44.531: L2TP: I SCCRQ from LAC tnl 45029
Sep 29 02:25:44.539: Tnl 11407 L2TP: Got a challenge in SCCRQ, LAC
Sep 29 02:25:44.543: Tnl 11407 L2TP: New tunnel created for remote LAC,
address 18.18.18.1
Sep 29 02:25:44.547: Tnl 11407 L2TP: O SCCRP to LAC tnlid 45029
Sep 29 02:25:44.555: Tnl 11407 L2TP: Tunnel state change from idle to
wait-ctl-reply
Sep 29 02:25:44.623: Tnl 11407 L2TP: I SCCCN from LAC tnl 45029
Sep 29 02:25:44.627: Tnl 11407 L2TP: Got a Challenge Response in SCCCN from LAC
Sep 29 02:25:44.631: Tnl 11407 L2TP: Tunnel Authentication success
Sep 29 02:25:44.635: Tnl 11407 L2TP: Tunnel state change from wait-ctl-reply
to established
Sep 29 02:25:44.639: Tnl 11407 L2TP: SM State established
```

O LNS recebe uma solicitação do LAC para ativar uma sessão.

```
Sep 29 02:25:44.667: Tnl 11407 L2TP: I ICRQ from LAC tnl 45029
Sep 29 02:25:44.671: Tnl/Cl 11407/303 L2TP: Session FS enabled
Sep 29 02:25:44.679: Tnl/Cl 11407/303 L2TP: Session state change from idle
to wait-connect
Sep 29 02:25:44.679: Tnl/Cl 11407/303 L2TP: New session created
Sep 29 02:25:44.683: Tnl/Cl 11407/303 L2TP: O ICRP to LAC 45029/291
Sep 29 02:25:44.791: Tnl/Cl 11407/303 L2TP: I ICCN from LAC tnl 45029, cl 291
Sep 29 02:25:44.799: Tnl/Cl 11407/303 L2TP: Session state change from wait-connect
to established
```

O LNS clona o acesso virtual para o usuário remote1@cisco.com.

```
Sep 29 02:25:44.803: Vt1 VTEMPLATE: Unable to create and clone vaccess
Sep 29 02:25:44.803: Vi2 VTEMPLATE: Reuse Vi2, recycle queue size 1
Sep 29 02:25:44.807: Vi2 VTEMPLATE: Hardware address 0060.4780.ac23
Sep 29 02:25:44.807: Vi2 VPDN: Virtual interface created for remotel@cisco.com
Sep 29 02:25:44.811: Vi2 PPP: Phase is DOWN, Setup
Sep 29 02:25:44.815: Vi2 VPDN: Clone from Vtemplate 1 filterPPP=0 blocking
Sep 29 02:25:44.819: Vi2 VTEMPLATE: Has a new cloneblk vtemplate,
now it has vtemplate
Sep 29 02:25:44.827: Vi2 VTEMPLATE: ***** CLONE VACCESS2 *****
Sep 29 02:25:44.827: Vi2 VTEMPLATE: Clone from Virtual-Templatel interface
Virtual-Access2
encapsulation ppp
ip unnumbered loopback 0
ppp chap hostname LNS
ppp authentication chap
end
```

```
Sep 29 02:25:46.975: %LINK-3-UPDOWN: Interface Virtual-Access2,
changed state to up
Sep 29 02:25:46.995: Vi2 PPP: Using set call direction
Sep 29 02:25:46.999: Vi2 PPP: Treating connection as a callin
Sep 29 02:25:46.999: Vi2 PPP: Phase is ESTABLISHING, Passive Open
Sep 29 02:25:47.003: Vi2 LCP: State is Listen
Sep 29 02:25:47.007: Vi2 VPDN: Bind interface direction=2
Sep 29 02:25:47.007: Vi2 LCP: I FORCED CONFREQ len 11
Sep 29 02:25:47.011: Vi2 LCP: AuthProto CHAP (0x0305C22305)
Sep 29 02:25:47.015: Vi2 LCP: MagicNumber 0x6BDE50CC (0x05066BDE50CC)
```

O LNS recebe a camada LCP que o LAC negociou com o cliente remote1@cisco.com. Por isso, o LNS não renegocia o LCP com o cliente.

```
Sep 29 02:25:47.019: Vi2 VPDN: PPP LCP accepted rcv CONFACK
Sep 29 02:25:47.019: Vi2 VPDN: PPP LCP accepted sent CONFACK
Sep 29 02:25:47.023: Vi2 PPP: Phase is AUTHENTICATING, by this end
Sep 29 02:25:47.023: Vi2 CHAP: Using alternate hostname LNS
Sep 29 02:25:47.027: Vi2 CHAP: O CHALLENGE id 8 len 24 from "LNS"
Sep 29 02:25:47.039: Vi2 CHAP: I RESPONSE id 7 len 38 from "remotel@cisco.com"
```



```
Sep 29 02:25:47.051: Vi2 CHAP: O SUCCESS id 7 len 4
Sep 29 02:25:47.055: Vi2 PPP: Phase is UP
Sep 29 02:25:47.059: Vi2 IPCP: O CONFREQ [Not negotiated] id 1 len 10
Sep 29 02:25:47.063: Vi2 IPCP: Address 18.18.18.2 (0x030612121202)
Sep 29 02:25:47.111: Vi2 IPCP: I CONFREQ [REQsent] id 110 len 10
Sep 29 02:25:47.115: Vi2 IPCP: Address 17.17.17.1 (0x030611111101)
Sep 29 02:25:47.119: Vi2 IPCP: O CONFACK [REQsent] id 110 len 10
Sep 29 02:25:47.123: Vi2 IPCP: Address 17.17.17.1 (0x030611111101)
Sep 29 02:25:47.127: Vi2 IPCP: I CONFACK [ACKsent] id 1 len 10
Sep 29 02:25:47.131: Vi2 IPCP: Address 18.18.18.2 (0x030612121202)
Sep 29 02:25:47.135: Vi2 IPCP: State is Open
Sep 29 02:25:47.143: Vi2 IPCP: Install route to 17.17.17.1
Sep 29 02:25:48.131: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Virtual-Access2, changed state to up
```

```
LNS#show vpdn L2TP Tunnel and Session Information Total tunnels 1 sessions 1 LocID RemID Remote
Name State Remote Address Port Sessions 11407 45029 LAC est 18.18.18.1 1701 1 LocID RemID TunID
Intf Username State Last Chg Fastswitch 303 291 11407 Vi2 remotel@cisco.com est 00:00:22 enabled
% No active L2F tunnels
```

Dial out

O roteador local1 inicia uma chamada para o roteador remote2@cisco.com.

```
LNS#
Sep 29 02:26:20.531: Vi1 VTEMPLATE: Reuse Vi1, recycle queue size 0
Sep 29 02:26:20.531: Vi1 VTEMPLATE: Hardware address 0060.4780.ac23
Sep 29 02:26:20.535: Vi1 PPP: Phase is DOWN, Setup
Sep 29 02:26:20.543: Vi1 VTEMPLATE: Has a new cloneblk dialer, now it has dialer
Sep 29 02:26:20.547: Vi1 DDR: Dialing cause ip (s=10.200.20.32, d=17.17.17.2)
Sep 29 02:26:20.551: Vi1 DDR: Attempting to dial 6121
Sep 29 02:26:20.555: Tnl/Cl 11407/304 L2TP: Session FS enabled
Sep 29 02:26:20.559: Tnl/Cl 11407/304 L2TP: Session state change from idle
to wait-for-tunnel
Sep 29 02:26:20.563: Tnl/Cl 11407/304 L2TP: Create dialout session
Sep 29 02:26:20.567: Tnl 11407 L2TP: SM State established
```

O LNS envia uma solicitação para o LAC de discagem.

```
Sep 29 02:26:20.571: L2TP: O OCRQ
Sep 29 02:26:20.575: Vi1 Tnl/Cl 11407/304 L2TP: Session state change from
wait-for-tunnel to wait-reply
Sep 29 02:26:20.579: Vi1 VPDN: Bind interface direction=2
Sep 29 02:26:20.635: Vi1 Tnl/Cl 11407/304 L2TP: I OCRP from LAC tnl 45029, cl 0
Sep 29 02:26:20.639: Vi1 Tnl/Cl 11407/304 L2TP: Session state change from
wait-reply to wait-connect
Sep 29 02:26:21.299: Vi1 Tnl/Cl 11407/304 L2TP: I OCCN from LAC tnl 45029, cl 292
Sep 29 02:26:21.303: Vi1 Tnl/Cl 11407/304 L2TP: Session state change from
wait-connect to established
Sep 29 02:26:21.307: Vi1 VPDN: Connection is up, start LCP negotiation now
Sep 29 02:26:21.315: %LINK-3-UPDOWN: Interface Virtual-Access1, changed state to up
Sep 29 02:26:21.335: Vi1 DDR: Dialer statechange to up
```

O acesso virtual 1 é associado ao discador de perfil 2 em que a configuração de remote2@cisco.com está localizada.

```
Sep 29 02:26:21.335: %DIALER-6-BIND: Interface Vi1 bound to profile Di2
Sep 29 02:26:21.339: Vi1 DDR: Dialer call has been placed
```

A fase PPP começa entre o LNS e o cliente de remote2@cisco.com.

```
Sep 29 02:26:21.343: Vi1 PPP: Treating connection as a callout
Sep 29 02:26:21.343: Vi1 PPP: Phase is ESTABLISHING, Active Open
Sep 29 02:26:21.347: Vi1 PPP: No remote authentication for call-out
```

```

Sep 29 02:26:21.351: Vi1 LCP: O CONFREQ [Closed] id 1 len 10
Sep 29 02:26:21.355: Vi1 LCP: MagicNumber 0x6F87121F (0x05066F87121F)
Sep 29 02:26:21.427: Vi1 LCP: I CONFREQ [REQsent] id 79 len 39
Sep 29 02:26:21.431: Vi1 LCP: AuthProto CHAP (0x0305C22305)
Sep 29 02:26:21.435: Vi1 LCP: MagicNumber 0x059935DB (0x0506059935DB)
Sep 29 02:26:21.435: Vi1 LCP: MRRU 1524 (0x110405F4)
Sep 29 02:26:21.439: Vi1 LCP: EndpointDisc 1 Local
Sep 29 02:26:21.443: Vi1 LCP: (0x13140172656D6F74653240636973636F)
Sep 29 02:26:21.447: Vi1 LCP: (0x2E636F6D)
Sep 29 02:26:21.451: Vi1 LCP: O CONFREQ [REQsent] id 79 len 28
Sep 29 02:26:21.455: Vi1 LCP: MRRU 1524 (0x110405F4)
Sep 29 02:26:21.455: Vi1 LCP: EndpointDisc 1 Local
Sep 29 02:26:21.459: Vi1 LCP: (0x13140172656D6F74653240636973636F)
Sep 29 02:26:21.463: Vi1 LCP: (0x2E636F6D)
Sep 29 02:26:21.467: Vi1 LCP: I CONFACK [REQsent] id 1 len 10
Sep 29 02:26:21.471: Vi1 LCP: MagicNumber 0x6F87121F (0x05066F87121F)
Sep 29 02:26:21.559: Vi1 LCP: I CONFREQ [ACKrcvd] id 80 len 15
Sep 29 02:26:21.563: Vi1 LCP: AuthProto CHAP (0x0305C22305)
Sep 29 02:26:21.567: Vi1 LCP: MagicNumber 0x059935DB (0x0506059935DB)
Sep 29 02:26:21.571: Vi1 LCP: O CONFACK [ACKrcvd] id 80 len 15
Sep 29 02:26:21.575: Vi1 LCP: AuthProto CHAP (0x0305C22305)
Sep 29 02:26:21.579: Vi1 LCP: MagicNumber 0x059935DB (0x0506059935DB)
Sep 29 02:26:21.583: Vi1 LCP: State is Open
Sep 29 02:26:21.583: Vi1 PPP: Phase is AUTHENTICATING, by the peer
Sep 29 02:26:21.647: Vi1 CHAP: I CHALLENGE id 8 len 38 from "remote2@cisco.com"
Sep 29 02:26:21.651: Vi1 CHAP: Using alternate hostname LNS
Sep 29 02:26:21.655: Vi1 CHAP: O RESPONSE id 8 len 24 from "LNS"
Sep 29 02:26:21.699: Vi1 CHAP: I SUCCESS id 8 len 4
Sep 29 02:26:21.703: Vi1 PPP: Phase is UP
Sep 29 02:26:21.707: Vi1 IPCP: O CONFREQ [Closed] id 1 len 10
Sep 29 02:26:21.711: Vi1 IPCP: Address 18.18.18.2 (0x030612121202)
Sep 29 02:26:21.715: Vi1 IPCP: I CONFREQ [REQsent] id 40 len 10
Sep 29 02:26:21.719: Vi1 IPCP: Address 17.17.17.2 (0x030611111102)
Sep 29 02:26:21.723: Vi1 IPCP: O CONFACK [REQsent] id 40 len 10
Sep 29 02:26:21.727: Vi1 IPCP: Address 17.17.17.2 (0x030611111102)
Sep 29 02:26:21.775: Vi1 IPCP: I CONFACK [ACKsent] id 1 len 10
Sep 29 02:26:21.779: Vi1 IPCP: Address 18.18.18.2 (0x030612121202)
Sep 29 02:26:21.783: Vi1 IPCP: State is Open

Sep 29 02:26:21.791: Vi1 DDR: dialer protocol up
Sep 29 02:26:21.795: Di2 IPCP: Install route to 17.17.17.2
Sep 29 02:26:22.703: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Virtual-Access1, changed state to up

```

```

LNS#show vpdn L2TP Tunnel and Session Information Total tunnels 1 sessions 2 LocID RemID Remote
Name State Remote Address Port Sessions 11407 45029 LAC est 18.18.18.1 1701 2 LocID RemID TunID
Intf Username State Last Chg Fastswitch 304 292 11407 Vi1 est 00:00:16 enabled 303 291 11407 Vi2
remotel@cisco.com est 00:00:52 enabled % No active L2F tunnels

```

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