

Configurazione del multihop L2TP per l'esecuzione di più hop dal NAS all'LNS

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[Introduzione](#)

La VPDN (Virtual Private Dialup Network) multihop consente di configurare diversi hop nel percorso dal concentratore di accesso L2TP (LAC) al server di rete L2TP (LNS). È supportato un massimo di quattro hop. Il tunnel viene terminato in ogni hop (LNS) e riavviato alla destinazione dell'hop successivo. Questo processo consente la commutazione del tunnel. Il multihopping può essere utilizzato tra gli ISP per fornire un servizio di accesso all'ingrosso VPN (Virtual Private Network).

In questo scenario sono supportati sia l'inoltro di livello 2 (L2F) che il protocollo L2TP (Layer 2 Tunnel Protocol). Tuttavia, poiché L2TP sta diventando lo standard di settore, il presente documento si concentra su L2TP.

[Prerequisiti](#)

[Convenzioni](#)

Per ulteriori informazioni sulle convenzioni usate, consultare il documento [Cisco sulle convenzioni nei suggerimenti tecnici](#).

[Requisiti](#)

Non sono previsti prerequisiti specifici per questo documento.

Per una spiegazione del processo VPDN, consultare il documento sulla [VPDN](#).

Componenti usati

Le informazioni fornite in questo documento si basano sulle versioni software e hardware riportate di seguito.

- Software Cisco IOS® versioni 12.3(6)
- L2TP Access Concentrator (LAC): un server di accesso Cisco AS5400
- Server di rete L2TP (LNS): Cisco 7200 Router

Le informazioni discusse in questo documento fanno riferimento a dispositivi usati in uno specifico ambiente di emulazione. Su tutti i dispositivi menzionati nel documento la configurazione è stata ripristinata ai valori predefiniti. Se la rete è operativa, valutare attentamente eventuali conseguenze derivanti dall'uso dei comandi.

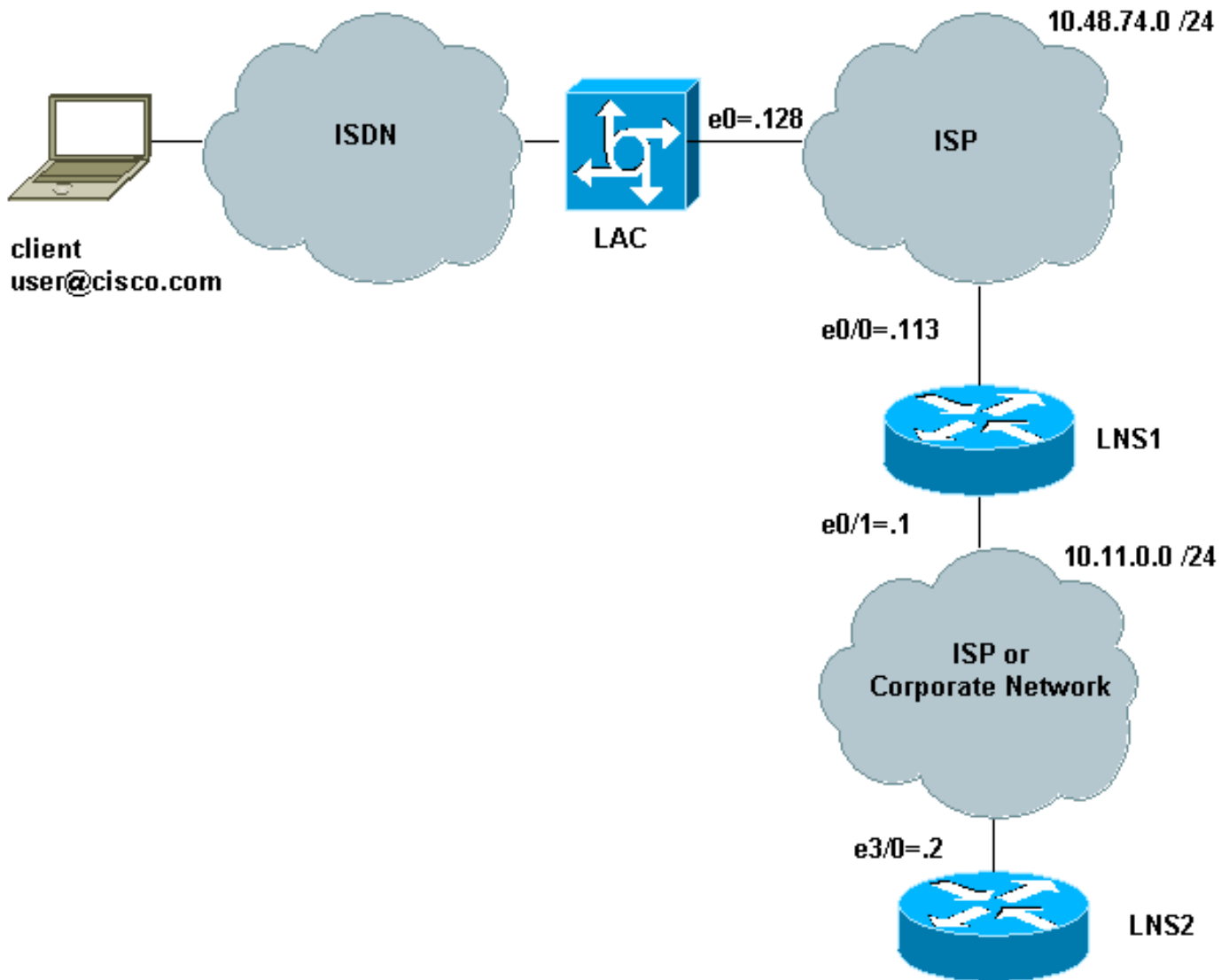
Configurazione

In questa sezione vengono presentate le informazioni necessarie per configurare le funzionalità descritte più avanti nel documento.

Nota: per ulteriori informazioni sui comandi menzionati in questo documento, usare lo [strumento di ricerca dei comandi](#) (solo utenti [registrati](#)).

Esempio di rete

Questo documento utilizza le impostazioni di rete mostrate nel diagramma sottostante.



In questa configurazione:

- Il client utilizza la linea ISDN per comporre il numero in LAC (potrebbe, ad esempio, utilizzare la linea DSL).
- Il LAC utilizza un'interfaccia PRI (Primary Rate Interface) E1 per accettare le chiamate.
- Nessun tunnel già aperto tra i dispositivi L2TP.
- Il tunnel e la configurazione della sessione si basano sul nome di dominio. Nessun server AAA per l'autenticazione o l'autorizzazione.
- Utilizza due linee LAN.

Il processo è il seguente:

1. Il client effettua la chiamata al LAC. Il client e il LAC negoziano le opzioni LCP. La fase di autenticazione viene eseguita e il LAC ottiene il nome utente (user@cisco.com) e la password. In base al nome di dominio (cisco.com nell'esempio), apre un tunnel seguito da una sessione per LNS1.
2. Una volta aperta la sessione L2TP tra il LAC e il LNS1, il LNS1 ottiene le opzioni LCP negoziate tra il LAC e il client, insieme al nome utente e alla password (user@cisco.com, password).
3. L'LNS1 ha un gruppo VPDN con lo stesso dominio (cisco.com) nella sua configurazione. Apre un tunnel e una sessione all'LNS2. Se non dispone di tale configurazione, termina la sessione PPP autenticando il client, negoziando l'indirizzo IP e installando la route.

4. Una volta aperta la sessione L2TP tra LNS1 e LNS2, LNS2 ottiene le opzioni LCP negoziate tra il LAC e il client, insieme all'utente e alla password (user@cisco.com, password).
Consente di autenticare l'utente, negoziare IPCP e installare la route.

Configurazioni

Questo documento utilizza le configurazioni mostrate di seguito. In questo caso viene utilizzato il numero minimo di comandi. Ad esempio, il LAC non terminerà alcuna sessione, quindi non è necessario configurare un indirizzo IP nell'interfaccia Dialer1 o Group-async1. LNS1 non terminerà alcuna sessione PPP, pertanto non è presente alcun indirizzo IP in virtual-template1.

- [LAC](#)
- [LNS1](#)
- [LNS2](#)

LAC

```
version 12.3
service timestamps debug datetime msec
service timestamps log datetime msec
service password-encryption
!
hostname LAC
!
boot-start-marker
no boot startup-test
boot-end-marker
!
enable password 7 02050D480809
!
!
!
resource-pool disable
spe default-firmware spe-firmware-2
no aaa new-model
ip subnet-zero
no ip domain lookup
!
ip cef
! -- Enables VPDN. vpdn enable ! -- VPDN tunnel
authorization is based first on the domain name ! --
(the default is DNIS). ! vpdn search-order domain ! ! --
The LAC opens an L2TP tunnel and session to 10.48.74.113
(LNS1) ! -- using the password LACLNS1 for users whose
domain-name is cisco.com. vpdn-group 1 request-dialin
protocol l2tp domain cisco.com initiate-to ip
10.48.74.113 l2tp tunnel password LACLNS1 ! isdn switch-
type primary-net5 ! ! no voice hpi capture buffer no
voice hpi capture destination ! ! controller E1 7/0 pri-
group timeslots 1-31 ! interface FastEthernet0/0 ip
address 10.48.74.128 255.255.255.0 duplex auto speed
auto ! interface Serial7/0:15 no ip address
encapsulation ppp dialer rotary-group 1 isdn switch-type
primary-net5 ! interface Group-Async1 no ip address
encapsulation ppp async mode interactive ppp
authentication chap callin group-range 1/00 3/107 !
interface Dialer1 no ip address encapsulation ppp ppp
authentication chap callin ! ip classless no ip http
```

```
server !! voice-port 7/0:D ! line con 0 exec-timeout 0
0 line aux 0 line vty 0 4 line 1/00 1/107 modem InOut
transport input all line 3/00 3/107 modem InOut
transport input all ! scheduler allocate 10000 400 ! end
```

LNS1

```
version 12.3
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname LNS1
!
boot-start-marker
boot-end-marker
!
enable password cisco
!
clock timezone CET 1
no aaa new-model
ip subnet-zero
ip cef
!
!
no ip domain lookup
!
! -- Enables VPDN. vpdn enable ! -- Enables VPDN
multihop. vpdn multihop !!-- LNS1 accepts L2TP
tunnel/session from the router named LAC. !-- The
password LACLNS1 is used between LAC and LNS1 for
authentication. !-- The virtual-template 1 is used for
the PPP phase. vpdn-group FromLAC accept-dialin protocol
l2tp virtual-template 1 terminate-from hostname LAC l2tp
tunnel password 0 LACLNS1 ! ! -- The LNS1 opens a L2TP
tunnel and session to 10.11.0.2 (LNS2) ! -- using the
password LNS1LNS2 for users whose domain-name is
cisco.com. vpdn-group TowardsLNS2 request-dialin
protocol l2tp domain cisco.com initiate-to ip 10.11.0.2
l2tp tunnel password 0 LNS1LNS2 ! ! interface
Ethernet0/0 ip address 10.48.74.113 255.255.255.0 no ip
proxy-arp half-duplex ! interface Ethernet0/1 ip address
10.11.0.1 255.255.255.0 half-duplex ! interface Virtual-
Templatel no ip address ppp authentication chap callin !
no ip http server ip classless ! ! dial-peer cor custom
! line con 0 exec-timeout 0 0 line aux 0 line vty 0 4
exec-timeout 0 0 password ww login ! ntp clock-period
17208915 ntp server 10.48.75.134 ! ! end
```

LNS2

```
version 12.3
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname LNS2
!
boot-start-marker
boot-end-marker
!
```

```

enable password cisco
!
username user@cisco.com password 0 cisco
no aaa new-model
ip subnet-zero
!
!
ip cef
!
!-- Enables VPDN. vpdn enable !!-- LNS2 accepts L2TP
tunnel/session from the router named LNS1. !-- The
password LNS1LNS2 is used between LNS1 and LNS2 for
authentication. !-- The virtual-template 1 is used for
the PPP phase. vpdn-group FromLNS1 ! Default L2TP VPDN
group accept-dialin protocol l2tp virtual-template 1
l2tp tunnel password 0 LNS1LNS2 ! ! interface Loopback0
ip address 192.168.1.1 255.255.255.0 ! interface
Ethernet3/0 ip address 10.11.0.2 255.255.255.0 duplex
half ! interface Virtual-Templatel ip unnumbered
Loopback0 peer default ip address pool VpdnUsers ppp
authentication chap callin ! ip local pool VpdnUsers
192.168.1.2 192.168.1.254 ip classless no ip http server
! ! line con 0 exec-timeout 0 0 transport preferred all
transport output all stopbits 1 line aux 0 transport
preferred all transport output all stopbits 1 line vty 0
4 login transport preferred all transport input all
transport output all ! ! ! end

```

Verifica

Le informazioni contenute in questa sezione permettono di verificare che la configurazione funzioni correttamente.

Alcuni comandi **show** sono supportati dallo [strumento Output Interpreter \(solo utenti registrati\)](#); lo strumento permette di visualizzare un'analisi dell'output del comando **show**.

- **show vpdn**: visualizza informazioni sul tunnel del protocollo L2TP o L2F attivo e sugli identificatori di messaggio in una VPDN.
- **show caller user user detail** - visualizza le informazioni sul chiamante.

Di seguito è riportato l'output dell'uso di questi comandi sui LAC, LNS1 e LNS2:

LAC#**show vpdn**

L2TP Tunnel and Session Information Total tunnels 1 sessions 1

LocID	RemID	Remote Name	State	Remote Address	Port	Sessions	VPDN Group
18693	28416	LNS1	est	10.48.74.113	1701	1	1

LocID	RemID	TunID	Intf	Username	State	Last Chg	Uniq ID
19	21	18693	Se7/0:3	user@cisco.com	est	00:02:04	28

%No active L2F tunnels

%No active PPTP tunnels

LAC#

Vediamo che LNS1 ha due tunnel con una sessione in ciascuno.

LNS1#**show vpdn**

L2TP Tunnel and Session Information Total tunnels 2 sessions 2

LocID	RemID	Remote Name	State	Remote Address	Port	Sessions	VPDN Group
28416	18693	LAC	est	10.48.74.128	1701	1	FromLAC

LocID	RemID	TunID	Intf	Username	State	Last Chg	Uniq ID
21	19	28416	SSS Circuit	user@cisco.com	est	00:02:25	13

LocID	RemID	Remote Name	State	Remote Address	Port	Sessions	VPDN Group
30255	35837	LNS2	est	10.11.0.2	1701	1	TowardsLNS2

LocID	RemID	TunID	Intf	Username	State	Last Chg	Uniq ID
22	9	30255	SSS Circuit	user@cisco.com	est	00:02:25	13

%No active L2F tunnels

%No active PPTP tunnels

LNS1#

LNS2#**show vpdn**

L2TP Tunnel and Session Information Total tunnels 1 sessions 1

LocID	RemID	Remote Name	State	Remote Address	Port	Sessions	VPDN Group
35837	30255	LNS1	est	10.11.0.1	1701	1	FromLNS1

LocID	RemID	TunID	Intf	Username	State	Last Chg	Uniq ID
9	22	35837	Vi2.1	user@cisco.com	est	00:03:22	8

%No active L2F tunnels

%No active PPTP tunnels

LNS2#

LNS2#**show caller user user@cisco.com detail**

User: user@cisco.com, line Vi2.1, service PPPoVPDN

Connected for 00:03:33, Idle for 00:00:58

Timeouts: Limit Remaining Timer Type

- - -

PPP: LCP Open, CHAP (-), IPCP

LCP: -> peer, AuthProto, MagicNumber

<- peer, MagicNumber, EndpointDisc

NCP: Open IPCP

IPCP: <- peer, Address

-> peer, Address

IP: Local 192.168.1.1, remote 192.168.1.2

Counts: 56 packets input, 2562 bytes

57 packets output, 2570 bytes

LNS2#

[Risoluzione dei problemi](#)

Le informazioni contenute in questa sezione permettono di risolvere i problemi relativi alla configurazione.

[Comandi per la risoluzione dei problemi](#)

Alcuni comandi **show** sono supportati dallo [strumento Output Interpreter \(solo utenti registrati\)](#); lo strumento permette di visualizzare un'analisi dell'output del comando **show**.

Nota: prima di usare i comandi di **debug**, consultare le [informazioni importanti sui comandi di debug](#).

[Comandi per la risoluzione dei problemi sui LAC](#)

- **debug isdn q931** - Visualizza informazioni sulla configurazione delle chiamate e sul disinserimento delle connessioni di rete ISDN (livello 3) tra il router locale (lato utente) e la rete.
- **debug vpdn event**: visualizza gli errori e gli eventi L2TP che fanno parte della normale procedura di impostazione o chiusura del tunnel per le VPDN.
- **debug vpdn error** - Risoluzione dei problemi di Layer 2 Tunnel Protocol versione 3 (L2TPv3) e dell'infrastruttura di tunneling di Layer 2 circostante.
- **debug vpdn l2x-events**: visualizza gli eventi risultanti da condizioni specifiche del protocollo.
- **vpdn l2x-errors**: visualizza gli errori che si verificano nelle condizioni specifiche del protocollo.
- **debug ppp negotiation**: visualizza se un client sta passando una negoziazione PPP. È possibile visualizzare le opzioni (ad esempio, callback o MLP) e i protocolli (ad esempio IP e IPX) da negoziare.

[Comandi per la risoluzione dei problemi su LNS1](#)

- **debug vpdn event**
- **errore di debug vpdn**
- **debug vpdn l2x event**
- **vpdn l2x-error**
- **negoziazione ppp di debug**
- **debug vtemplate error**: visualizza le informazioni di duplicazione per un'interfaccia di accesso virtuale dal momento della duplicazione da un modello virtuale al momento in cui l'interfaccia di accesso virtuale diventa inattiva al termine della chiamata.
- **debug vtemplate event**: visualizza le informazioni di duplicazione per un'interfaccia di accesso virtuale dal momento in cui viene duplicata da un modello virtuale al momento in cui l'interfaccia di accesso virtuale diventa inattiva al termine della chiamata.

[Comandi per la risoluzione dei problemi su LNS2](#)

Come per LNS1, ma con un comando aggiuntivo:

- **debug ip peer**: visualizza l'attività dell'indirizzo e contiene output aggiuntivo quando vengono definiti i gruppi di pool.

[Output di debug - LAC](#)

L'output del comando debug sul LAC è il seguente:

LAC#

```
*Apr 23 08:55:23.579: ISDN Se7/0:15 Q931: RX <- SETUP pd = 8 callref = 0x256F
Sending Complete
Bearer Capability i = 0x8890
    Standard = CCITT
    Transer Capability = Unrestricted Digital
    Transfer Mode = Circuit
    Transfer Rate = 64 kbit/s
Channel ID i = 0xA18384
    Preferred, Channel 4
Calling Party Number i = 0xA1, '8101'
    Plan:ISDN, Type:National
Called Party Number i = 0x81, '7070'
    Plan:ISDN, Type:Unknown
Locking Shift to Codeset 6
Codeset 6 IE 0x28 i = 'TAC BRI 8101'
*Apr 23 08:55:23.583: ISDN Se7/0:15 Q931: TX -> CALL_PROC pd = 8 callref = 0xA56F
Channel ID i = 0xA98384
    Exclusive, Channel 4
*Apr 23 08:55:23.583: ISDN Se7/0:15 Q931: TX -> CONNECT pd = 8 callref = 0xA56F
Channel ID i = 0xA98384
    Exclusive, Channel 4
*Apr 23 08:55:23.583: Se7/0:3 PPP: Using dialer call direction
*Apr 23 08:55:23.583: Se7/0:3 PPP: Treating connection as a callin
*Apr 23 08:55:23.583: Se7/0:3 PPP: Phase is ESTABLISHING, Passive Open
*Apr 23 08:55:23.583: Se7/0:3 LCP: State is Listen
*Apr 23 08:55:23.607: ISDN Se7/0:15 Q931: RX <- CONNECT_ACK pd = 8
callref = 0x256F
*Apr 23 08:55:23.695: Se7/0:3 LCP: I CONFREQ [Listen] id 180 len 31
*Apr 23 08:55:23.695: Se7/0:3 LCP:     MagicNumber 0x9028FFED (0x05069028FFED)
*Apr 23 08:55:23.695: Se7/0:3 LCP:     MRRU 1524 (0x110405F4)
*Apr 23 08:55:23.695: Se7/0:3 LCP:     EndpointDisc 1 user@cisco.com
*Apr 23 08:55:23.695: Se7/0:3 LCP:     (0x1311017573657240636973636F2E636F)
*Apr 23 08:55:23.695: Se7/0:3 LCP:     (0x6D)
*Apr 23 08:55:23.695: Se7/0:3 LCP: O CONFREQ [Listen] id 1 len 15
*Apr 23 08:55:23.695: Se7/0:3 LCP:     AuthProto CHAP (0x0305C22305)
*Apr 23 08:55:23.695: Se7/0:3 LCP:     MagicNumber 0x050E44FB (0x0506050E44FB)
*Apr 23 08:55:23.695: Se7/0:3 LCP: O CONFREQ [Listen] id 180 len 8
*Apr 23 08:55:23.695: Se7/0:3 LCP:     MRRU 1524 (0x110405F4)
*Apr 23 08:55:23.727: Se7/0:3 LCP: I CONFACK [REQsent] id 1 len 15
*Apr 23 08:55:23.727: Se7/0:3 LCP:     AuthProto CHAP (0x0305C22305)
*Apr 23 08:55:23.727: Se7/0:3 LCP:     MagicNumber 0x050E44FB (0x0506050E44FB)
*Apr 23 08:55:23.751: Se7/0:3 LCP: I CONFREQ [ACKrcvd] id 181 len 27
*Apr 23 08:55:23.751: Se7/0:3 LCP:     MagicNumber 0x9028FFED (0x05069028FFED)
*Apr 23 08:55:23.751: Se7/0:3 LCP:     EndpointDisc 1 user@cisco.com
*Apr 23 08:55:23.751: Se7/0:3 LCP:     (0x1311017573657240636973636F2E636F)
*Apr 23 08:55:23.751: Se7/0:3 LCP:     (0x6D)
*Apr 23 08:55:23.751: Se7/0:3 LCP: O CONFACK [ACKrcvd] id 181 len 27
*Apr 23 08:55:23.751: Se7/0:3 LCP:     MagicNumber 0x9028FFED (0x05069028FFED)
*Apr 23 08:55:23.751: Se7/0:3 LCP:     EndpointDisc 1 user@cisco.com
*Apr 23 08:55:23.751: Se7/0:3 LCP:     (0x1311017573657240636973636F2E636F)
*Apr 23 08:55:23.751: Se7/0:3 LCP:     (0x6D)
*Apr 23 08:55:23.751: Se7/0:3 LCP: State is Open
*Apr 23 08:55:23.751: Se7/0:3 PPP: Phase is AUTHENTICATING, by this end
*Apr 23 08:55:23.751: Se7/0:3 CHAP: O CHALLENGE id 1 len 24 from "LAC"
*Apr 23 08:55:23.803: Se7/0:3 CHAP: I RESPONSE id 1 len 35 from "user@cisco.com"
*Apr 23 08:55:23.807: Se7/0:3 PPP: Phase is FORWARDING, Attempting Forward
*Apr 23 08:55:23.807: Tnl/Sn 18693/19 L2TP: Session FS enabled
*Apr 23 08:55:23.807: Tnl/Sn 18693/19 L2TP: Session state change
from idle to wait-for-tunnel
*Apr 23 08:55:23.807: Se7/0:3 Tnl/Sn 18693/19 L2TP: Create session
*Apr 23 08:55:23.807: Tnl 18693 L2TP: SM State idle
```

```

*Apr 23 08:55:23.807: Tnl 18693 L2TP: O SCCRQ
*Apr 23 08:55:23.807: Tnl 18693 L2TP: Control channel retransmit delay
set to 1 seconds
*Apr 23 08:55:23.807: Tnl 18693 L2TP: Tunnel state change from idle to
wait-ctl-reply
*Apr 23 08:55:23.807: Tnl 18693 L2TP: SM State wait-ctl-reply
*Apr 23 08:55:23.815: Tnl 18693 L2TP: I SCCRP from LNS1
*Apr 23 08:55:23.815: Tnl 18693 L2TP: Got a challenge from remote peer, LNS1
*Apr 23 08:55:23.815: Tnl 18693 L2TP: Got a response from remote peer, LNS1
*Apr 23 08:55:23.815: Tnl 18693 L2TP: Tunnel Authentication success
*Apr 23 08:55:23.815: Tnl 18693 L2TP: Tunnel state change from
wait-ctl-reply to established
*Apr 23 08:55:23.815: Tnl 18693 L2TP: O SCCCN to LNS1 tnlid 28416
*Apr 23 08:55:23.815: Tnl 18693 L2TP: Control channel retransmit
delay set to 1 seconds
*Apr 23 08:55:23.815: Tnl 18693 L2TP: SM State established
*Apr 23 08:55:23.815: Se7/0:3 Tnl/Sn 18693/19 L2TP: O ICRQ to LNS1 28416/0
*Apr 23 08:55:23.815: Se7/0:3 Tnl/Sn 18693/19 L2TP: Session state change
from wait-for-tunnel to wai
t-reply
*Apr 23 08:55:23.831: Se7/0:3 Tnl/Sn 18693/19 L2TP: O ICCN to LNS1 28416/21
*Apr 23 08:55:23.831: Tnl 18693 L2TP: Control channel retransmit delay
set to 1 seconds
*Apr 23 08:55:23.831: Se7/0:3 Tnl/Sn 18693/19 L2TP: Session state change
from wait-reply to establis
hed
*Apr 23 08:55:23.831: Se7/0:3 Tnl/Sn 18693/19 L2TP: VPDN session up
*Apr 23 08:55:23.831: Se7/0:3 PPP: Phase is FORWARDED, Session Forwarded
*Apr 23 08:55:23.831: Se7/0:3 PPP: Process pending packets
LAC#

```

Output di debug - LNS1

Di seguito è riportato l'output del comando debug su LNS1:

```

LNS1#
.Apr 23 08:57:08.900: L2TP: I SCCRQ from LAC tnl 18693
.Apr 23 08:57:08.900: Tnl 28416 L2TP: Got a challenge in SCCRQ, LAC
.Apr 23 08:57:08.900: Tnl 28416 L2TP: New tunnel created for remote LAC,
address 10.48.74.128
.Apr 23 08:57:08.904: Tnl 28416 L2TP: O SCCRP to LAC tnlid 18693
.Apr 23 08:57:08.904: Tnl 28416 L2TP: Control channel retransmit delay
set to 1 seconds
.Apr 23 08:57:08.904: Tnl 28416 L2TP: Tunnel state change from idle to
wait-ctl-reply
.Apr 23 08:57:08.908: Tnl 28416 L2TP: I SCCCN from LAC tnl 18693
.Apr 23 08:57:08.908: Tnl 28416 L2TP: Got a Challenge Response in
SCCCN from LAC
.Apr 23 08:57:08.912: Tnl 28416 L2TP: Tunnel Authentication success
.Apr 23 08:57:08.912: Tnl 28416 L2TP: Tunnel state change from
wait-ctl-reply to established
.Apr 23 08:57:08.912: Tnl 28416 L2TP: SM State established
.Apr 23 08:57:08.912: Tnl 28416 L2TP: I ICRQ from LAC tnl 18693
.Apr 23 08:57:08.916: Tnl/Sn 28416/21 L2TP: Session FS enabled
.Apr 23 08:57:08.916: Tnl/Sn 28416/21 L2TP: Session state change
from idle to wait-connect
.Apr 23 08:57:08.916: Tnl/Sn 28416/21 L2TP: New session created
.Apr 23 08:57:08.916: Tnl/Sn 28416/21 L2TP: O ICRP to LAC 18693/19
.Apr 23 08:57:08.920: Tnl 28416 L2TP: Control channel retransmit
delay set to 1 seconds
.Apr 23 08:57:08.924: Tnl/Sn 28416/21 L2TP:

```

```

I ICCN from LAC tnl 18693, cl 19
.Apr 23 08:57:08.924: user@cisco.com Tnl/Sn 28416/21 L2TP:
Session state change from wait-connect to wait-for-service-selection
.Apr 23 08:57:08.932: ppp13 PPP: Phase is ESTABLISHING
.Apr 23 08:57:08.932: ppp13 LCP: I FORCED rcvd CONFACK len 11
.Apr 23 08:57:08.932: ppp13 LCP:   AuthProto CHAP (0x0305C22305)
.Apr 23 08:57:08.936: ppp13 LCP:   MagicNumber 0x050E44FB (0x0506050E44FB)
.Apr 23 08:57:08.936: ppp13 LCP: I FORCED sent CONFACK len 23
.Apr 23 08:57:08.936: ppp13 LCP:   MagicNumber 0x9028FFED (0x05069028FFED)
.Apr 23 08:57:08.936: ppp13 LCP:   EndpointDisc 1 user@cisco.com
.Apr 23 08:57:08.936: ppp13 LCP:   (0x1311017573657240636973636F2E636F)
.Apr 23 08:57:08.936: ppp13 LCP:   (0x6D)
.Apr 23 08:57:08.940: ppp13 PPP: Phase is FORWARDING, Attempting Forward
.Apr 23 08:57:08.948: Tnl/Sn 30255/22 L2TP: Session FS enabled
.Apr 23 08:57:08.952: Tnl/Sn 30255/22 L2TP: Session state change
from idle to wait-for-tunnel
.Apr 23 08:57:08.952: uid:13 Tnl/Sn 30255/22 L2TP: Create session
.Apr 23 08:57:08.952: Tnl 30255 L2TP: SM State idle
.Apr 23 08:57:08.952: Tnl 30255 L2TP: O SCCRP
.Apr 23 08:57:08.956: Tnl 30255 L2TP: Control channel retransmit
delay set to 1 seconds
.Apr 23 08:57:08.956: Tnl 30255 L2TP: Tunnel state change from
idle to wait-ctl-reply
.Apr 23 08:57:08.956: Tnl 30255 L2TP: SM State wait-ctl-reply
.Apr 23 08:57:08.960: Tnl 30255 L2TP: I SCCRP from LNS2
.Apr 23 08:57:08.960: Tnl 30255 L2TP: Got a challenge from remote peer, LNS2
.Apr 23 08:57:08.964: Tnl 30255 L2TP: Got a response from remote peer, LNS2
.Apr 23 08:57:08.964: Tnl 30255 L2TP: Tunnel Authentication success
.Apr 23 08:57:08.964: Tnl 30255 L2TP: Tunnel state change from
wait-ctl-reply to established
.Apr 23 08:57:08.964: Tnl 30255 L2TP: O SCCCN to LNS2 tnlid 35837
.Apr 23 08:57:08.968: Tnl 30255 L2TP: Control channel retransmit
delay set to 1 seconds
.Apr 23 08:57:08.968: Tnl 30255 L2TP: SM State established
.Apr 23 08:57:08.968: uid:13 Tnl/Sn 30255/22 L2TP: O ICRQ to LNS2 35837/0
.Apr 23 08:57:08.968: uid:13 Tnl/Sn 30255/22 L2TP: Session state
change from wait-for-tunnel to wait-reply
.Apr 23 08:57:08.972: uid:13 Tnl/Sn 30255/22 L2TP: O ICCN to LNS2 35837/9
.Apr 23 08:57:08.976: Tnl 30255 L2TP: Control channel retransmit
delay set to 1 seconds
.Apr 23 08:57:08.976: uid:13 Tnl/Sn 30255/22 L2TP: Session state
change from wait-reply to established
.Apr 23 08:57:08.976: uid:13 Tnl/Sn 30255/22 L2TP: VPDN session up
.Apr 23 08:57:08.980: ppp13 PPP: Phase is FORWARDED, Session Forwarded
.Apr 23 08:57:08.984: user@cisco.com Tnl/Sn 28416/21 L2TP:
Session state change from wait-for-service-selection to established
.Apr 23 08:57:08.984: user@cisco.com Tnl/Sn 28416/21 L2TP: VPDN session up
.Apr 23 08:57:08.984: ppp13 PPP: Process pending ncp packets
LNS1#

```

Output di debug - LNS2

Di seguito è riportato l'output del comando debug sull'LNS2:

```

LNS2#
*Apr 23 08:57:59.615: L2TP: I SCCRP from LNS1 tnl 30255
*Apr 23 08:57:59.615: Tnl 35837 L2TP: Got a challenge in SCCRP, LNS1
*Apr 23 08:57:59.615: Tnl 35837 L2TP: New tunnel created for remote LNS1,
address 10.11
.0.1
*Apr 23 08:57:59.615: Tnl 35837 L2TP: O SCCRP to LNS1 tnlid 30255

```

```
*Apr 23 08:57:59.615: Tnl 35837 L2TP: Control channel retransmit delay
set to 1 seconds
*Apr 23 08:57:59.615: Tnl 35837 L2TP: Tunnel state change from idle to
wait-ctl-reply
*Apr 23 08:57:59.623: Tnl 35837 L2TP: I SCCCN from LNS1 tnl 30255
*Apr 23 08:57:59.623: Tnl 35837 L2TP: Got a Challenge Response in
SCCCN from LNS1
*Apr 23 08:57:59.623: Tnl 35837 L2TP: Tunnel Authentication success
*Apr 23 08:57:59.623: Tnl 35837 L2TP: Tunnel state change from
wait-ctl-reply to establ
ished
*Apr 23 08:57:59.623: Tnl 35837 L2TP: SM State established
*Apr 23 08:57:59.627: Tnl 35837 L2TP: I ICRQ from LNS1 tnl 30255
*Apr 23 08:57:59.627: Tnl/Sn 35837/9 L2TP: Session FS enabled
*Apr 23 08:57:59.627: Tnl/Sn 35837/9 L2TP: Session state change
from idle to wait-conne
ct
*Apr 23 08:57:59.627: Tnl/Sn 35837/9 L2TP: New session created
*Apr 23 08:57:59.627: Tnl/Sn 35837/9 L2TP: O ICRP to LNS1 30255/22
*Apr 23 08:57:59.627: Tnl 35837 L2TP: Control channel retransmit
delay set to 1 seconds
*Apr 23 08:57:59.635: Tnl/Sn 35837/9 L2TP: I ICCN from LNS1 tnl 30255, cl 22
*Apr 23 08:57:59.635: user@cisco.com Tnl/Sn 35837/9 L2TP: Session state
change from wait - connect to wait-for-service-selection
*Apr 23 08:57:59.635: ppp8 PPP: Phase is ESTABLISHING
*Apr 23 08:57:59.635: ppp8 LCP: I FORCED rcvd CONFACK len 11
*Apr 23 08:57:59.635: ppp8 LCP: AuthProto CHAP (0x0305C22305)
*Apr 23 08:57:59.635: ppp8 LCP: MagicNumber 0x050E44FB (0x0506050E44FB)
*Apr 23 08:57:59.635: ppp8 LCP: I FORCED sent CONFACK len 23
*Apr 23 08:57:59.635: ppp8 LCP: MagicNumber 0x9028FFED (0x05069028FFED)
*Apr 23 08:57:59.635: ppp8 LCP: EndpointDisc 1 user@cisco.com
*Apr 23 08:57:59.635: ppp8 LCP: (0x1311017573657240636973636F2E636F)
*Apr 23 08:57:59.635: ppp8 LCP: (0x6D)
*Apr 23 08:57:59.635: ppp8 PPP: Phase is FORWARDING, Attempting Forward
*Apr 23 08:57:59.639: ppp8 PPP: Phase is AUTHENTICATING, Unauthenticated User
*Apr 23 08:57:59.639: ppp8 PPP: Phase is FORWARDING, Attempting Forward
*Apr 23 08:57:59.639: VT[Vi2]:Sending vaccess request, id 0x73000015
*Apr 23 08:57:59.639: VT:Processing vaccess requests, 1 outstanding
*Apr 23 08:57:59.639: VT:Create and clone subif, base Vi2 Vt1
*Apr 23 08:57:59.639: VT[Vi2.1]:Reuse subinterface, recycle queue size 1
*Apr 23 08:57:59.639: VT[Vi2.1]:Recycled subinterface becomes Vi2.1
*Apr 23 08:57:59.639: VT[Vi2.1]:Cloning a recycled vaccess
*Apr 23 08:57:59.639: VT[Vi2.1]:Processing vaccess response,
id 0x73000015, result success (1)
*Apr 23 08:57:59.643: Vi2.1 Tnl/Sn 35837/9 L2TP:
Virtual interface created for user@cisco.com, bandwidth 64 Kbps
*Apr 23 08:57:59.643: Vi2.1 Tnl/Sn 35837/9 L2TP: VPDN session up
*Apr 23 08:57:59.643: Vi2.1 Tnl/Sn 35837/9 L2TP:
Session state change from wait-for-service-selection to established
*Apr 23 08:57:59.643: Vi2.1 PPP: Phase is AUTHENTICATING, Authenticated User
*Apr 23 08:57:59.643: Vi2.1 CHAP: O SUCCESS id 1 len 4
*Apr 23 08:57:59.643: Vi2.1 PPP: Phase is UP
*Apr 23 08:57:59.643: Vi2.1 PPP: Process pending ncp packets
*Apr 23 08:57:59.643: Vi2.1 IPCP: O CONFREQ [Closed] id 1 len 10
*Apr 23 08:57:59.643: Vi2.1 IPCP: Address 192.168.1.1 (0x0306C0A80101)
*Apr 23 08:57:59.667: Vi2.1 IPCP: I CONFREQ [REQsent] id 125 len 10
*Apr 23 08:57:59.667: Vi2.1 IPCP: Address 0.0.0.0 (0x030600000000)
*Apr 23 08:57:59.667: Vi2.1 AAA/AUTHOR/IPCP: Start. Her address 0.0.0.0,
we want 0.0.0.0
*Apr 23 08:57:59.667: Vi2.1 AAA/AUTHOR/IPCP: Done. Her address 0.0.0.0,
we want 0.0.0.0
*Apr 23 08:57:59.667: Vi2.1: Pools to search : VpdnUsers
*Apr 23 08:57:59.667: Vi2.1: Pool VpdnUsers returned address = 192.168.1.2
*Apr 23 08:57:59.667: Vi2.1 IPCP: Pool returned 192.168.1.2
```

```
*Apr 23 08:57:59.667: Vi2.1 IPCP: O CONFNAK [REQsent] id 125 len 10
*Apr 23 08:57:59.667: Vi2.1 IPCP:   Address 192.168.1.2 (0x0306C0A80102)
*Apr 23 08:57:59.683: Vi2.1 IPCP: I CONFACK [REQsent] id 1 len 10
*Apr 23 08:57:59.683: Vi2.1 IPCP:   Address 192.168.1.1 (0x0306C0A80101)
*Apr 23 08:57:59.699: Vi2.1 IPCP: I CONFREQ [ACKrcvd] id 126 len 10
*Apr 23 08:57:59.699: Vi2.1 IPCP:   Address 192.168.1.2 (0x0306C0A80102)
*Apr 23 08:57:59.699: Vi2.1 IPCP: O CONFACK [ACKrcvd] id 126 len 10
*Apr 23 08:57:59.699: Vi2.1 IPCP:   Address 192.168.1.2 (0x0306C0A80102)
*Apr 23 08:57:59.699: Vi2.1 IPCP: State is Open
*Apr 23 08:57:59.703: Vi2.1 IPCP: Install route to 192.168.1.2
*Apr 23 08:57:59.703: Vi2.1 IPCP: Add link info for cef entry 192.168.1.2
LNS2#
```

[Informazioni correlate](#)

- [Protocollo tunnel di livello 2](#)
- [VPDN multihop](#)
- [Pagine di supporto della tecnologia di composizione Access](#)
- [Supporto tecnico – Cisco Systems](#)