

在Cisco 2600上配置PPPoE客戶端以連線到非Cisco DSL CPE

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簡介

本檔案將說明如何在透過乙太網路介面連線到DSL資料機或其他廠商的DSL使用者端裝置(CPE)的Cisco IOS®路由器上支援乙太網路上的點對點通訊協定(PPPoE)使用者端。

ISP通常為其客戶提供DSL數據機，它有一個乙太網介面連線到客戶的乙太網網段，另一個介面用於DSL線路連線。在這種情況下，如果CPE無法配置用於通過DSL的任何IP連線或增強功能，則DSL數據機僅作為網橋。這會將您的連線限制為只有一台PPPoE客戶端PC。通過新增連線到DSL數據機的乙太網的Cisco IOS路由器，您可以在思科路由器上運行PPPoE客戶端IOS功能。這樣可以將乙太網段上的多台PC連線到Cisco IOS路由器。通過使用Cisco IOS路由器，您可以增強與內部主機的DSL連線和所有IOS功能，如安全、網路地址轉換(NAT)和動態主機配置協定(DHCP)。

PPPoE功能允許您在簡單的橋接乙太網連線的客戶端上啟動PPP會話。此作業階段是透過封裝的乙太網路橋接訊框透過ATM連結傳輸。您可在本地交換運營商中心辦公室或ISP存在點終止會話。

必要條件

需求

本文件沒有特定需求。

採用元件

本文中的資訊係根據以下軟體和硬體版本：

- Cisco 827-4V CPE IOS軟體版本12.1(1)XB
- 運行Cisco IOS軟體版本12.2(2)T1映像的Cisco 2611路由器
- 執行Cisco IOS軟體版本12.1(5)DC1映像的Cisco 6400通用存取集中器(UAC)

本文中的資訊是根據特定實驗室環境內的裝置所建立。文中使用到的所有裝置皆從已清除（預設）的組態來啟動。如果您的網路正在作用，請確保您已瞭解任何指令可能造成的影響。

慣例

如需文件慣例的詳細資訊，請參閱[思科技術提示慣例](#)。

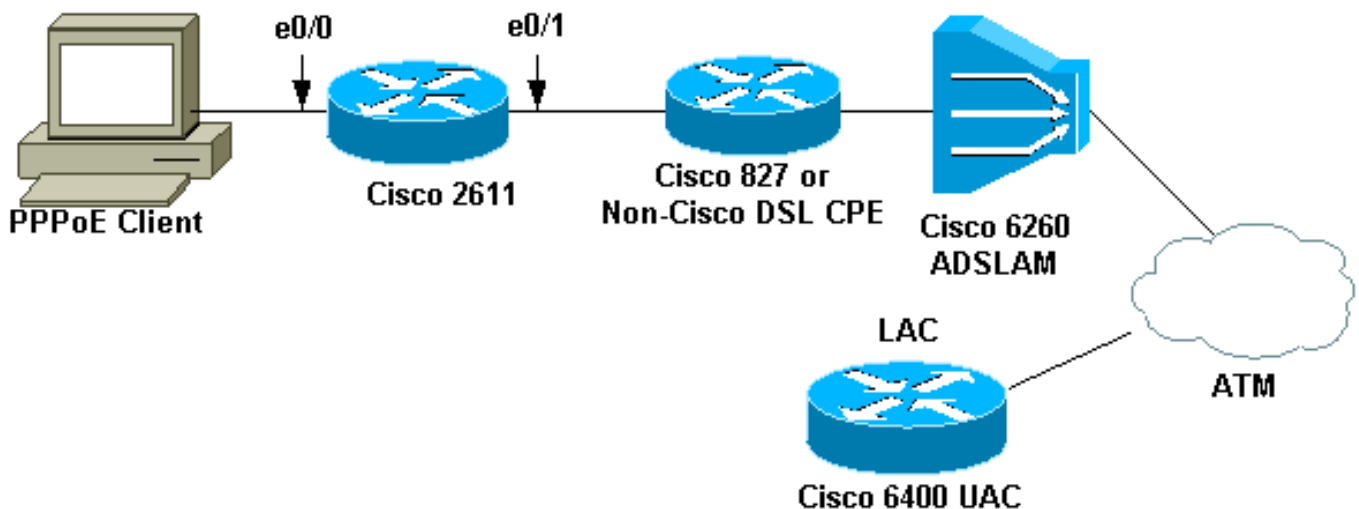
設定

本節提供用於設定本檔案中所述功能的資訊。

注意：若要查詢有關本文檔中使用的命令的其他資訊，請使用[命令查詢工具](#)（僅限[註冊](#)客戶）。

網路圖表

本檔案會使用下圖中所示的網路設定。



註：在本文檔中，PPPoE客戶端連線是從思科路由器啟動的。這是此配置中的Cisco 2611路由器。圖中的Cisco 827路由器代表非Cisco DSL CPE。

組態

本檔案會使用這些設定。

- [2611路由器](#)
- [Cisco DSL 827路由器](#)
- [思科6400路由器](#)

2611路由器
!
hostname pooh

```
ip host rurd 172.17.247.195
!
ip subnet-zero
no ip domain-lookup
!
vpdn enable
no vpdn logging
!
vpdn-group 1
request-dialin
protocol pppoe
!
!
!
!
interface Ethernet0/0
ip address 10.200.56.22 255.255.255.0
ip nat inside
no ip mroute-cache
!
!
!
!
interface Ethernet0/1
no ip address
pppoe enable
pppoe-client dial-pool-number 1
!
interface Dialer1
ip address negotiated
ip nat outside
ip mtu 1492
encapsulation ppp
no ip mroute-cache
dialer pool 1
dialer-group 1
ppp authentication pap
ppp pap sent-username cisco password cisco1
!
ip classless
no ip http server
!
dialer-list 1 protocol ip permit
ip nat inside source list 1 interface Dialer1 overload
ip route 0.0.0.0 0.0.0.0 dialer1
access-list 1 permit 10.200.56.0 0.0.0.255
!
line con 0
exec-timeout 0 0
transport input none
line vty 0 4
login
password ww
!
end
```

Cisco DSL 827路由器

```
Building configuration...
Current configuration : 821 bytes
!
version 12.2
no service pad
```

```
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname Chansey
!
!
ip subnet-zero
no ip domain-lookup
!
!
!
interface Ethernet0
  no ip address
  bridge-group 1
!
interface ATM0
  no ip address
  no atm ilmi-keepalive
  bundle-enable
  bridge-group 1
  dsl operating-mode auto
!
interface ATM0.1 point-to-point
  pvc 53/53
  !--- vpi/vci given by the ISP
  !
  !
ip classless
ip http server
!
bridge 1 protocol ieee
!
line con 0
  exec-timeout 0 0
  stopbits 1
line vty 0 4
  exec-timeout 0 0
  password ww
  login local
!
scheduler max-task-time 5000
end
```

思科6400路由器

```
Current configuration : 3231 bytes
!
version 12.1
no service single-slot-reload-enable
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname alyssa_nrpl
!
logging rate-limit console 10 except errors
aaa new-model
aaa authentication ppp default local
enable password ww
!
username cisco password cisco1
redundancy
```

```
main-cpu
auto-sync standard
no secondary console enable
ip subnet-zero
ip cef
vpdn enable
no vpdn logging
!
vpdn-group cisco
accept-dialin
protocol pppoe
virtual-template 2
!
!
!
!
!
!
!
interface Loopback5
ip address 212.93.195.100 255.255.255.0
!
!
interface ATM0/0/0
no ip address
no ip mroute-cache
load-interval 30
atm pvc 16 0 16 ilmi
no atm ilmi-keepalive
pvc 10/100
!
hold-queue 1000 in
!
interface ATM0/0/0.60 multipoint
pvc 6/60
encapsulation aal5snap
protocol pppoe
!
!
interface Ethernet0/0/1
no ip address
!
interface Ethernet0/0/0
ip address 10.200.56.8 255.255.255.0
!
interface FastEthernet0/0/0
no ip address
full-duplex
!
!
interface Virtual-Template2
ip unnumbered Loopback5
ip mtu 1492
no ip route-cache cef
peer default ip address pool nrp1
ppp authentication pap
!
ip local pool nrp1 212.93.198.1
ip classless
!
!
line con 0
exec-timeout 0 0
password ww
```

```
transport input none
line aux 0
line vty 0 4
exec-timeout 0 0
password ww
!
!
end
```

驗證

本節提供的資訊可用於確認您的組態是否正常運作。

[輸出直譯器工具](#)(僅供註冊客戶使用)支援某些show命令，此工具可讓您檢視show命令輸出的分析。

- **show vpdn session all** — 顯示VPDN會話資訊。此資訊包括介面、隧道、使用者名稱、資料包、狀態和視窗統計資訊。
- **show interface ethernet 0/1** — 顯示路由器上乙太網介面的資訊。
- **show interfaces dialer 1** — 顯示路由器上撥號程式的資訊。
- **show ip local pool nrp1** — 顯示有關ip local pool的資訊。
- **show ip route** — 顯示路由器上IP路由的相關資訊。

這是Cisco 2611上的show vpdn session all命令輸出。

```
pooh#show vpdn session all
%No active L2TP tunnels
%No active L2F tunnels
%No active PPTP tunnels
PPPoE Session Information Total tunnels 1 sessions 1
session id: 1
!--- Local MAC address. local MAC address: 0030.9424.af21, remote MAC address: 0050.736f.4c37
virtual access interface: Vi1, outgoing interface: Et0/1 599 packets sent, 599 received 9202
bytes sent, 8154 received !--- Verify that the outgoing interface for the PPPoE session !--- is
Ethernet0/1 and the local MAC address that displays is the !--- MAC address of Ethernet0/1. The
remote MAC address that displays !--- is the MAC address of the Aggregator device (6400). !---
You can see it on the 6400 as the local MAC address in the !--- show vpdn session on the 6400.
```

這是Cisco 2611上的show interface ethernet 0/1命令輸出。

```
pooh#show interface ethernet 0/1
Ethernet0/1 is up, line protocol is up
Hardware is AmdP2, address is 0030.9424.af21 (bia 0030.9424.af21)
MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation ARPA, loopback not set
Keepalive set (10 sec)
ARP type: ARPA, ARP Timeout 04:00:00
Last input 00:00:40, output 00:00:01, output hang never
Last clearing of "show interface" counters never
Queueing strategy: fifo
Output queue 0/40, 0 drops; input queue 0/75, 0 drops
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
739 packets input, 64127 bytes, 0 no buffer
Received 57 broadcasts, 0 runts, 0 giants, 0 throttles
```

```
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
0 input packets with dribble condition detected
1153 packets output, 89766 bytes, 0 underruns(1/0/0)
0 output errors, 1 collisions, 1 interface resets
0 babbles, 0 late collision, 2 deferred
0 lost carrier, 0 no carrier
0 output buffer failures, 0 output buffers swapped out
```

這是Cisco 2611上的show interfaces dialer 1命令輸出。

```
pooh#show interfaces dialer 1
Dialer1 is up, line protocol is up (spoofing)
Hardware is Unknown
Internet address is 212.93.198.1/32
MTU 1500 bytes, BW 56 Kbit, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation PPP, loopback not set
DTR is pulsed for 1 seconds on reset
Interface is bound to Vi1
Last input never, output never, output hang never
Last clearing of "show interface" counters 01:38:43
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
Conversations 0/0/16 (active/max active/max total)
Reserved Conversations 0/0 (allocated/max allocated)
Available Bandwidth 42 kilobits/sec
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
403 packets input, 6082 bytes
403 packets output, 6978 bytes
Bound to:
Virtual-Access1 is up, line protocol is up
Hardware is Virtual Access interface
MTU 1500 bytes, BW 100000 Kbit, DLY 100000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation PPP, loopback not set
Keepalive set (10 sec)
Interface is bound to Di1 (Encapsulation PPP)
LCP Open
Listen: CDPCP
Open: IPCP
Last input 00:00:09, output never, output hang never
Last clearing of "show interface" counters 00:35:16
Queueing strategy: fifo
Output queue 0/40, 0 drops; input queue 0/75, 0 drops
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
430 packets input, 6453 bytes, 0 no buffer
Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
430 packets output, 7400 bytes, 0 underruns
0 output errors, 0 collisions, 0 interface resets
0 output buffer failures, 0 output buffers swapped out
0 carrier transitions
```

這是Cisco 6400上的show vpdn session all命令輸出。

```
alyssa_nrpl#show vpdn session all
%No active L2TP tunnels
%No active L2F tunnels
%No active PPTP tunnels
```

```
PPPoE Session Information Total tunnels 1 sessions 1
session id: 1
local MAC address: 0050.736f.4c37, remote MAC address: 0030.9424.af21
virtual access interface: Vi3, outgoing interface: AT0/0/0, vc: 6/60
495 packets sent, 494 received
7369 bytes sent, 7346 received
```

這是Cisco 6400上的show ip local pool nrp1命令輸出。

```
alyssa_nrp1#show ip local pool nrp1
Pool                Begin          End            Free   In use
nrp1                212.93.198.1  212.93.198.1  0      1
Available addresses:
None
Inuse addresses:
212.93.198.1      Vi3                nrp1
```

這是Cisco 6400上的show ip route命令輸出。

```
alyssa_nrp1#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route
Gateway of last resort is 0.0.0.0 to network 0.0.0.0
212.93.198.0/32 is subnetted, 1 subnets
C      212.93.198.1 is directly connected, Virtual-Access3
!--- You have to see the installed route for the remote PPPoE session. C 212.93.195.0/24 is
directly connected, Loopback5 10.0.0.0/8 is variably subnetted, 3 subnets, 2 masks C
10.200.56.0/24 is directly connected, Ethernet0/0/0
```

疑難排解

本節提供的資訊可用於對組態進行疑難排解。

疑難排解指令

[輸出直譯器工具](#)(僅供註冊客戶使用)支援某些show命令，此工具可讓您檢視show命令輸出的分析。

注意：發出debug指令之前，請參閱[有關Debug指令的重要資訊](#)。

- **show debugging** — 顯示路由器上的調試資訊。

這是Cisco 2611上的show debugging命令輸出。

```
pooh#show debugging
PPP:
PPP protocol negotiation debugging is on
VPN:
PPPoE protocol events debugging is on
PPPoE control packets debugging is on
01:54:21: Sending PADI: Interface = Ethernet0/1
01:54:21: pppoe_send_padi:
FF FF FF FF FF FF 00 30 94 24 AF 21 88 63 11 09
00 00 00 0C 01 01 00 00 01 03 00 04 82 2E 39 F0
```



```
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ...
01:54:21: PPPoE 0: I PADO L:0030.9424.af21 R:0050.736f.4c37 Et0/1
00 30 94 24 AF 21 00 50 73 6F 4C 37 88 63 11 07
00 00 00 2F 01 01 00 00 01 03 00 04 82 2E 39 F0
01 02 00 0B 61 6C 79 73 73 61 5F 6E 72 70 31 ...
01:54:23: PPPOE: we've got our pado and the pado timer went off
01:54:23: OUT PADR from PPPoE tunnel
00 50 73 6F 4C 37 00 30 94 24 AF 21 88 63 11 19
00 00 00 2F 01 01 00 00 01 03 00 04 82 2E 39 F0
01 02 00 0B 61 6C 79 73 73 61 5F 6E 72 70 31 ...
01:54:23: PPPoE 1: I PADS L:0030.9424.af21 R:0050.736f.4c37 Et0/1
00 30 94 24 AF 21 00 50 73 6F 4C 37 88 63 11 65
00 01 00 2F 01 01 00 00 01 03 00 04 82 2E 39 F0
01 02 00 0B 61 6C 79 73 73 61 5F 6E 72 70 31 ...
01:54:23: IN PADS from PPPoE tunnel
01:54:23: Vi1 Debug: Condition 1, interface Di1 triggered, count 1
01:54:23: %DIALER-6-BIND: Interface Vi1 bound to profile Di1
01:54:23: PPPoE: Virtual Access interface obtained.
01:54:23: %LINK-3-UPDOWN: Interface Virtual-Access1, changed state to up
01:54:23: Vi1 PPP: Treating connection as a callout
01:54:23: Vi1 PPP: Phase is ESTABLISHING, Active Open [0 sess, 0 load]
01:54:23: Vi1 PPP: No remote authentication for call-out
01:54:23: Vi1 LCP: O CONFREQ [Closed] id 1 len 10
01:54:23: Vi1 LCP: MagicNumber 0x30FCDE42 (0x050630FCDE42)
01:54:23: Vi1 LCP: I CONFACK [REQsent] id 1 len 10
01:54:23: Vi1 LCP: MagicNumber 0x30FCDE42 (0x050630FCDE42)
01:54:25: Vi1 LCP: I CONFREQ [ACKrcvd] id 2 len 18
01:54:25: Vi1 LCP: MRU 1492 (0x010405D4)
01:54:25: Vi1 LCP: AuthProto PAP (0x0304C023)
01:54:25: Vi1 LCP: MagicNumber 0x5C799D85 (0x05065C799D85)
01:54:25: Vi1 LCP: O CONFNAK [ACKrcvd] id 2 len 8
01:54:25: Vi1 LCP: MRU 1500 (0x010405DC)
01:54:25: Vi1 LCP: TIMEOUT: State ACKrcvd
01:54:25: Vi1 LCP: O CONFREQ [ACKrcvd] id 2 len 10
01:54:25: Vi1 LCP: MagicNumber 0x30FCDE42 (0x050630FCDE42)
01:54:25: Vi1 LCP: I CONFREQ [REQsent] id 3 len 18
01:54:25: Vi1 LCP: MRU 1500 (0x010405DC)
01:54:25: Vi1 LCP: AuthProto PAP (0x0304C023)
01:54:25: Vi1 LCP: MagicNumber 0x5C799D85 (0x05065C799D85)
01:54:25: Vi1 LCP: O CONFACK [REQsent] id 3 len 18
01:54:25: Vi1 LCP: MRU 1500 (0x010405DC)
01:54:25: Vi1 LCP: AuthProto PAP (0x0304C023)
01:54:25: Vi1 LCP: MagicNumber 0x5C799D85 (0x05065C799D85)
01:54:25: Vi1 LCP: I CONFACK [ACKsent] id 2 len 10
01:54:25: Vi1 LCP: MagicNumber 0x30FCDE42 (0x050630FCDE42)
01:54:25: Vi1 LCP: State is Open
01:54:25: Vi1 PPP: Phase is AUTHENTICATING, by the peer [0 sess, 0 load]
01:54:25: Vi1 PAP: O AUTH-REQ id 4 len 18 from "cisco"
01:54:25: Vi1 PAP: I AUTH-ACK id 4 len 5
01:54:25: Vi1 PPP: Phase is UP [0 sess, 0 load]
01:54:25: Vi1 IPCP: O CONFREQ [Closed] id 1 len 10
01:54:25: Vi1 IPCP: Address 0.0.0.0 (0x030600000000)
01:54:25: Vi1 CDPCP: O CONFREQ [Closed] id 1 len 4
01:54:25: Vi1 IPCP: I CONFREQ [REQsent] id 1 len 10
01:54:25: Vi1 IPCP: Address 212.93.195.100 (0x0306D45DC364)
01:54:25: Vi1 IPCP: O CONFACK [REQsent] id 1 len 10
01:54:25: Vi1 IPCP: Address 212.93.195.100 (0x0306D45DC364)
01:54:25: Vi1 IPCP: I CONFNAK [ACKsent] id 1 len 10
01:54:25: Vi1 IPCP: Address 212.93.198.1 (0x0306D45DC601)
01:54:25: Vi1 IPCP: O CONFREQ [ACKsent] id 2 len 10
01:54:25: Vi1 IPCP: Address 212.93.198.1 (0x0306D45DC601)
01:54:25: Vi1 LCP: I PROTREJ [Open] id 4 len 10 protocol CDPCP
(0x820701010004)
01:54:25: Vi1 CDPCP: State is Closed
```

```
01:54:25: Vi1 IPCP: I CONFACK [ACKsent] id 2 len 10
01:54:25: Vi1 IPCP:   Address 212.93.198.1 (0x0306D45DC601)
01:54:25: Vi1 IPCP: State is Open
01:54:25: Di1 IPCP: Install negotiated IP interface address 212.93.198.1
01:54:25: Di1 IPCP: Install route to 212.93.195.100
01:54:26: %LINEPROTO-5-UPDOWN: Line protocol on Interface Virtual-Access1,
changed state to up
```

這是Cisco 6400上的show debugging命令輸出。

```
*Aug 16 15:58:51.346: PPPoE: IN PADI discovery packet
*Aug 16 15:58:51.346:   PPPoE: LMAC:ffff.ffff.ffff RMAC:0030.9424.af21 6/60
AT0/0/0.60
FF FF FF FF FF FF 00 30 94 24 AF 21 88 63 11 09
00 00 00 0C 01 01 00 00 01 03 00 04 82 2E 39 F0
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ...
*Aug 16 15:58:51.346: PPPoE: PADO OUT from PPPoE tunnel
*Aug 16 15:58:51.346:   PPPoE: LMAC:0050.736f.4c37 RMAC:0030.9424.af21 6/60
AT0/0/0.60
00 05 09 00 AA AA 03 00 80 C2 00 07 00 00 00 30
94 24 AF 21 00 50 73 6F 4C 37 88 63 11 07 00 00
00 2F 01 01 00 00 01 03 00 04 82 2E 39 F0 01 ...
*Aug 16 15:58:53.390: PPPoE: IN PADR discovery packet
*Aug 16 15:58:53.390:   PPPoE: LMAC:0050.736f.4c37 RMAC:0030.9424.af21 6/60
AT0/0/0.60
00 50 73 6F 4C 37 00 30 94 24 AF 21 88 63 11 19
00 00 00 2F 01 01 00 00 01 03 00 04 82 2E 39 F0
01 02 00 0B 61 6C 79 73 73 61 5F 6E 72 70 31 ...
*Aug 16 15:58:53.394: Vi3 PPP: Phase is DOWN, Setup [0 sess, 0 load]
*Aug 16 15:58:53.418: PPPoE: Create session: 1
*Aug 16 15:58:53.418: PPPoE:   1: Created
*Aug 16 15:58:53.418:   PPPoE: LMAC:0050.736f.4c37 RMAC:0030.9424.af21 6/60
AT0/0/0.60
*Aug 16 15:58:53.418: PPPoE: PADS OUT from PPPoE tunnel
*Aug 16 15:58:53.418:   PPPoE: LMAC:0050.736f.4c37 RMAC:0030.9424.af21 6/60
AT0/0/0.60
00 05 09 00 AA AA 03 00 80 C2 00 07 00 00 00 30
94 24 AF 21 00 50 73 6F 4C 37 88 63 11 65 00 01
00 2F 01 01 00 00 01 03 00 04 82 2E 39 F0 01 ...
2d08h: %LINK-3-UPDOWN: Interface Virtual-Access3, changed state to up
*Aug 16 15:58:53.426: Vi3 PPP: Treating connection as a dedicated line
*Aug 16 15:58:53.426: Vi3 PPP: Phase is ESTABLISHING, Active Open [0 sess,
0 load]
*Aug 16 15:58:53.426: Vi3 LCP: O CONFREQ [Closed] id 1 len 18
*Aug 16 15:58:53.426: Vi3 LCP:   MRU 1492 (0x010405D4)
*Aug 16 15:58:53.426: Vi3 LCP:   AuthProto PAP (0x0304C023)
*Aug 16 15:58:53.426: Vi3 LCP:   MagicNumber 0x5C7E3144 (0x05065C7E3144)
*Aug 16 15:58:53.466: Vi3 LCP: I CONFREQ [REQsent] id 1 len 10
*Aug 16 15:58:53.466: Vi3 LCP:   MagicNumber 0x31017223 (0x050631017223)
*Aug 16 15:58:53.466: Vi3 LCP: O CONFACK [REQsent] id 1 len 10
*Aug 16 15:58:53.466: Vi3 LCP:   MagicNumber 0x31017223 (0x050631017223)
*Aug 16 15:58:53.470: Vi3 LCP: I CONFNAK [ACKsent] id 1 len 8
*Aug 16 15:58:53.470: Vi3 LCP:   MRU 1500 (0x010405DC)
*Aug 16 15:58:53.470: Vi3 LCP: O CONFREQ [ACKsent] id 2 len 18
*Aug 16 15:58:53.470: Vi3 LCP:   MRU 1500 (0x010405DC)
*Aug 16 15:58:53.470: Vi3 LCP:   AuthProto PAP (0x0304C023)
*Aug 16 15:58:53.470: Vi3 LCP:   MagicNumber 0x5C7E3144 (0x05065C7E3144)
*Aug 16 15:58:53.510: Vi3 LCP: I CONFACK [ACKsent] id 2 len 18
*Aug 16 15:58:53.510: Vi3 LCP:   MRU 1500 (0x010405DC)
*Aug 16 15:58:53.510: Vi3 LCP:   AuthProto PAP (0x0304C023)
*Aug 16 15:58:53.510: Vi3 LCP:   MagicNumber 0x5C7E3144 (0x05065C7E3144)
*Aug 16 15:58:53.510: Vi3 LCP: State is Open
*Aug 16 15:58:53.510: Vi3 PPP: Phase is AUTHENTICATING, by this end [0
```

```
sess, 0 load]
*Aug 16 15:58:53.514: Vi3 PAP: I AUTH-REQ id 5 len 18 from "cisco"
*Aug 16 15:58:53.514: Vi3 PPP: Phase is FORWARDING [0 sess, 0 load]
*Aug 16 15:58:53.514: Vi3 PPP: Phase is AUTHENTICATING [0 sess, 0 load]
*Aug 16 15:58:53.514: Vi3 PAP: Authenticating peer cisco
*Aug 16 15:58:53.514: Vi3 PAP: O AUTH-ACK id 5 len 5
*Aug 16 15:58:53.514: Vi3 PPP: Phase is UP [0 sess, 0 load]
*Aug 16 15:58:53.514: Vi3 IPCP: O CONFREQ [Closed] id 1 len 10
*Aug 16 15:58:53.514: Vi3 IPCP: Address 212.93.195.100 (0x0306D45DC364)
*Aug 16 15:58:53.574: Vi3 IPCP: I CONFREQ [REQsent] id 1 len 10
*Aug 16 15:58:53.574: Vi3 IPCP: Address 0.0.0.0 (0x030600000000)
*Aug 16 15:58:53.574: Vi3 IPCP: Pool returned 212.93.198.1
*Aug 16 15:58:53.574: Vi3 IPCP: O CONFNAK [REQsent] id 1 len 10
*Aug 16 15:58:53.574: Vi3 IPCP: Address 212.93.198.1 (0x0306D45DC601)
*Aug 16 15:58:53.574: Vi3 CDPCP: I CONFREQ [Not negotiated] id 1 len 4
*Aug 16 15:58:53.574: Vi3 LCP: O PROTREJ [Open] id 3 len 10 protocol CDPCP
(0x820701010004)
*Aug 16 15:58:53.574: Vi3 IPCP: I CONFACK [REQsent] id 1 len 10
*Aug 16 15:58:53.574: Vi3 IPCP: Address 212.93.195.100 (0x0306D45DC364)
*Aug 16 15:58:53.618: Vi3 IPCP: I CONFREQ [ACKrcvd] id 2 len 10
*Aug 16 15:58:53.618: Vi3 IPCP: Address 212.93.198.1 (0x0306D45DC601)
*Aug 16 15:58:53.618: Vi3 IPCP: O CONFACK [ACKrcvd] id 2 len 10
*Aug 16 15:58:53.618: Vi3 IPCP: Address 212.93.198.1 (0x0306D45DC601)
*Aug 16 15:58:53.618: Vi3 IPCP: State is Open
*Aug 16 15:58:53.622: Vi3 IPCP: Install route to 212.93.198.1
2d08h: %LINEPROTO-5-UPDOWN: Line protocol on Interface Virtual-Access3,
changed state to up
```

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