

疑難排解 VDSL

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簡介

本檔案介紹如何將思科數位使用者線路(DSL)使用者端裝置(CPE)路由器設定為超高位率數位使用者線路(VDSL)服務。它解釋了如何診斷Cisco 880系列、890系列、860系列和VDSL/非同步數位使用者線路(ADSL)增強型高速WAN介面卡(EHWIC)上的VDSL相關問題。本文檔針對VDSL服務，儘管您可以在上述路由器和模組上使用ADSL或VDSL服務。可能發生故障的層有三個：

- 第1層 — 到您的ISP的數字使用者線路接入複用器(DSLAM)的DSL物理連線
- 第2.1層 — 乙太網端到端連線
- 第2.2層 — 乙太網路上的點對點通訊協定(PPPoE)、乙太網路IP(IPoE)、RFC1483橋接或RFC1483路由
- 第3層 — IP

必要條件

需求

本文件沒有特定需求。

採用元件

本文件所述內容不限於特定軟體和硬體版本。

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。

第1層問題

Cisco DSL路由器前面板上的載波檢測(CD)指示燈是開啟還是關閉？

如果CD指示燈亮起，請轉至本文檔的第2層問題部分。

如果CD指示燈不亮，請繼續下一個問題。

您的ISP是否使用支援Broadcom晶片集的DSLAM？

從ISP驗證資訊。檢查引用資料表的路由器型號或卡的DSLAM互操作性。

Cisco DSL路由器背面的DSL埠是否插入DSL牆上插孔？

如果DSL埠未插入DSL牆上插孔，請使用直通RJ-11電纜將埠連線到牆上。這是標準電話線。VDSL線路使用引腳3和4。

控制器狀態、工作模式和傳輸覆蓋(TC)模式是什麼？

請參閱以下輸出範例：

```
Router#show controller vdsl 0/1/0
```

```
!--- Make sure the controller is in UP state. In case you see it in down state,
it indicates a Layer 1 issue (Hardware issue, Line issue, Interoperability
issue with DSLAM etc.)
```

```
Controller VDSL 0/1/0 is UP
```

```
Daemon Status:          Up
```

```
!--- XTU-R and XTU-C shows local (Cisco Router) and remote (DSLAM) DSL related
details like chipset vendor, Vendor ID etc.
```

	XTU-R (DS)	XTU-C (US)
Chip Vendor ID:	'BDCM'	'BDCM'
Chip Vendor Specific:	0x0000	0xA1AA
Chip Vendor Country:	0xB500	0xB500
Modem Vendor ID:	'CSCO'	' '
Modem Vendor Specific:	0x4602	0x0000

Modem Vendor Country: 0xB500 0x0000
Serial Number Near: FOC15163V2Q 2911/K9 15.5(1)T
Serial Number Far:
Modem Version Near: 15.5(1)T
Modem Version Far: 0xa1aa

Modem Status: TC Sync (Showtime!)

!--- Below shows the configured DSL operating mode, trained mode and TC mode.

DSL Config Mode: AUTO
Trained Mode: G.993.2 (VDSL2) Profile 17a
TC Mode: PTM
Selftest Result: 0x00
DELT configuration: disabled
DELT state: not running

Full inits: 1
Failed full inits: 0
Short inits: 0
Failed short inits: 0

!--- DSL firmware related details

Firmware	Source	File Name
VDSL	embedded	VDSL_LINUX_DEV_01212008

Modem FW Version: 130205_1433-4.02L.03.B2pvC035j.d23j
Modem PHY Version: B2pvC035j.d23j

Trellis: ON ON
SRA: disabled disabled
SRA count: 0 0
Bit swap: enabled enabled
Bit swap count: 0 0

!--- Attenuation and Noise margin are two important parameters which points to the line quality and intern the stability of the DSL connection

Line Attenuation:	0.0 dB	0.0 dB
Signal Attenuation:	0.0 dB	0.0 dB
Noise Margin:	11.1 dB	6.0 dB
Attainable Rate:	40440 kbits/s	3280 kbits/s
Actual Power:	14.5 dBm	4.9 dBm
Per Band Status:	D1 D2 D3 U0 U1 U2 U3	
Line Attenuation(dB):	20.0 48.3 73.7 9.4 37.9 56.2	N/A
Signal Attenuation(dB):	20.0 48.3 N/A 10.2 36.2 53.3	N/A
Noise Margin(dB):	10.9 11.3 N/A 5.9 6.0 6.0	N/A
Total FECC:	97252 0	
Total ES:	7 0	
Total SES:	0 0	
Total LOSS:	0 0	
Total UAS:	24 24	
Total LPRS:	0 0	
Total LOFS:	0 0	
Total LOLS:	0 0	

!--- DSL trained speed can be found below

DSChannel1	DSChannel0	US Channel1	US Channel0	
Speed (kbps):	0	25087	0	3192
SRA Previous Speed:	0	0	0	0
Previous Speed:	0	0	0	0
Reed-Solomon EC:	0	97252	0	0
CRC Errors:	0	15	0	0
Header Errors:	0	62	0	0

```
Interleave (ms):          0.00          8.00          0.00          8.00
Actual INP:              0.00          3.01          0.00          2.00
```

```
Training Log :      Stopped
Training Log Filename :  flash:vdsllog.bin
```

Router#

在**show controller**指令輸出中檢查以下專案：

- 控制器狀態為「UP」。如果處於「關閉」狀態，則表明存在第1層問題（硬體問題、線路問題或與DSLAM的互操作性問題）。在此情況下，繼續進行第1層故障排除。
- 檢查操作模式、已培訓模式和TC模式。確保在控制器下配置了正確的操作模式。如果您不確定您的ISP使用哪種離散多音(DMT)技術，Cisco建議您使用DSL操作模式自動。以下是用於配置操作模式自動檢測的命令：

```
Router#configure terminal
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
Router(config)#controller vdsl 0
```

```
Router(config-controller)#operating-mode auto
```

```
Router(config-controller)#end
```

```
Router#write memory
```

檢視經過培訓的模式，確保您與ISP協商的模式正確。另一個要注意的重要引數是TC模式。如果訓練模式是VDSL2或VDSL2+，則TC模式為封包傳輸模式(PTM)。在這種情況下，您需要看到PTM乙太網介面處於「up」狀態，並且所有上層引數（如PPP、IP等）都應在乙太網介面下配置。如果訓練的模式是ADSL、ADSL2或ADSL2+，則TC模式應為ATM，在這種情況下，所有上層引數都應配置在ATM永久虛電路(PVC)下。如果您在ADSL和VDSL之間更改操作模式，則可能無需重新啟動路由器即可啟用相應的乙太網或ATM介面。

檢查雜訊容限和衰減。雜訊容限是DSL訊雜比的相對強度。數字越大，衡量結果越好：

- 6dB或更低版本是錯誤的，不會遇到同步或間歇同步問題
- 7dB-10dB是公平的，但不會給條件留下太多差異空間
- 11dB-20dB較好，同步問題很少或沒有同步問題
- 20dB-28dB非常好
- 29dB或以上的資料尚未完成

衰減是測量DSLAM和數據機之間訊號已降級的程度。這在很大程度上取決於距離交易所的距離。dB越低，測量效果越好。

- 20dB及以下為未完成狀態
- 20dB-30dB非常好
- 30dB-40dB很好
- 40dB-50dB較好
- 50dB-60dB較差，可能遇到連線問題
- 60dB或以上狀態不好，將遇到連線問題

確保您有最新版本的VDSL韌體。最新韌體已經解決了大多數已知互操作性問題。您可以從CCO下載最新的韌體。

驗證DSL是否與適當的上行和下行速度同步。

您的路由器型號是否正確？

請注意，ADSL/VDSL路由器有兩個版本；1)使用普通舊式電話服務的DSL(Annex-A);2)使用整合服務數位網路(Annex-B)的DSL。在某些國家/地區，ISP提供Annex-B連線，而在其他大多數國家/地區，則提供Annex-A連線。Annex-A DSL路由器或卡不會與Annex-B線路同步，反之亦然。因此，您需要確保擁有合適的路由器型號。有關詳細資訊，請參閱路由器資料表。

電路是否已正確測試/調配？

從您的ISP或電話公司獲取此資訊。

第2層問題

PTM乙太網是否已開啟？

確認受訓模式為VDSL後，確保乙太網介面處於「up」狀態。

```
Router#show ip interface brief
Interface                IP-Address      OK? Method Status Protocol
Embedded-Service-Engine0/0 unassigned      YES NVRAM  administratively down down
GigabitEthernet0/0       unassigned      YES NVRAM  up        up
GigabitEthernet0/0.1     unassigned      YES unset  up        up
GigabitEthernet0/1       unassigned      YES NVRAM  administratively down down
GigabitEthernet0/2       192.168.22.1   YES NVRAM  up        up
ISM0/1                   unassigned      YES unset  up        up
ATM0/1/0                 unassigned      YES NVRAM  administratively down down
!--- Verify that the Ethernet interface is in up state
Ethernet0/1/0            unassigned      YES NVRAM  up        up
```

提供商是否期望標籤流量？如果是，虛擬LAN識別符號(VLAN ID)是什麼？

大多數提供商希望從客戶端裝置(CPE)獲得標籤流量。從ISP獲取VLAN ID後，可以按照此處所示配置VLAN標籤。

```
Router(config)#interface Ethernet0.835
Router(config-subif)#encapsulation dot1Q 835
Router(config-subif)#end
Router#
```

是否已填寫地址解析協定(ARP)條目？

判斷遠端的MAC位址是否在show arp指令輸出中。

您是否從ISP接收資料？

如果您的VLAN ID正確，下一步是驗證您嘗試與ISP協商點對點協定(PPP)。為此，請輸入命令show interface Ethernet0並檢查輸入和輸出資料包。

```
Router#show interface ethernet0
Ethernet0/1/0 is up, line protocol is up
Hardware is VDSL_ETHERNET, address is 30f7.0d7e.3408 (bia 30f7.0d7e.3408)
```

```

MTU 1500 bytes, BW 3261 Kbit/sec, DLY 3000 usec,
    reliability 255/255, txload 19/255, rxload 1/255
Encapsulation 802.1Q Virtual LAN, Vlan ID 1., loopback not set
Keepalive set (10 sec)
ARP type: ARPA, ARP Timeout 04:00:00
Last input 00:00:19, output 00:00:00, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: fifo
Output queue: 0/1024 (size/max)
5 minute input rate 23000 bits/sec, 19 packets/sec
5 minute output rate 244000 bits/sec, 29 packets/sec
    3096276 packets input, 3672318911 bytes, 0 no buffer
    Received 0 broadcasts (1517324 IP multicasts)
    0 runts, 0 giants, 1 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
    0 input packets with dribble condition detected
    1287646 packets output, 240862302 bytes, 0 underruns
    0 output errors, 0 collisions, 2 interface resets
    0 unknown protocol drops
    0 babbles, 0 late collision, 0 deferred
    1 lost carrier, 0 no carrier
    0 output buffer failures, 0 output buffers swapped out

```

```
Router#show controller vdsl 0 datapath
```

```

ptm0          Link encap:Ethernet  HWaddr 02:10:18:01:00:02
              UP BROADCAST RUNNING MULTICAST  MTU:1600  Metric:1
              RX packets:3111732 errors:0 dropped:0 overruns:0 frame:0
              TX packets:1311107 errors:0 dropped:0 overruns:0 carrier:0
              collisions:0 txqueuelen:1000
              RX bytes:3677814427 (3.4 GiB)  TX bytes:265796876 (253.4 MiB)

```

```
atm/ptm interface statistics for port 0
```

```

in octets          4983267
out octets         27636440
in packets        16376
out packets       26024
in OAM cells          0
out OAM cells         0
in ASM cells          0
out ASM cells         0
in packet errors     0
in cell errors        0

```

如果資料包計數器增加，您應該從ISP接收PPP協商資料包。如果不是，請致電您的ISP。

如果輸出繫結計數器增加，您應該傳送PPP協商資料包。如果並非如此，請檢查路由器上的配置。如果正確配置了PPP，則會從Ethernet0介面連續傳送PPP協商資料包。

PPP是否正常協商？

如果第1層已啟動，並且您有正確的VLAN ID，下一步就是確保PPP正常啟動。為此，您需要在Cisco DSL路由器上運行一系列debug命令並解釋輸出。使用的主要調試命令是debug ppp negotiation。以下命令輸出是成功的PPP協商示例：

```
Router#debug ppp negotiation
```

```
PPP protocol negotiation debugging is on
```

```
Router#
```

```

2w3d: Vi1 PPP: No remote authentication for call-out
2w3d: Vi1 PPP: Phase is ESTABLISHING
2w3d: Vi1 LCP: O CONFREQ [Open] id 146 len 10
2w3d: Vi1 LCP: MagicNumber 0x8CCF0E1E (0x05068CCF0E1E)
2w3d: Vi1 LCP: O CONFACK [Open] id 102 Len 15
2w3d: Vi1 LCP: AuthProto CHAP (0x0305C22305)
2w3d: Vi1 LCP: MagicNumber 0xD945AD0A (0x0506D945AD0A)
2w3d: Di1 IPCP: Remove route to 10.10.10.1
2w3d: Vi1 LCP: I CONFACK [ACKsent] id 146 Len 10
2w3d: Vi1 LCP: MagicNumber 0x8CCF0E1E (0x05068CCF0E1E)
2w3d: Vi1 LCP: State is Open
2w3d: Vi1 PPP: Phase is AUTHENTICATING, by the peer
2w3d: Vi1 CHAP: I CHALLENGE id 79 Len 33 from "6400-2-NRP-2"
2w3d: Vi1 CHAP: O RESPONSE id 79 Len 28 from "John"
2w3d: Vi1 CHAP: I SUCCESS id 79 Len 4
2w3d: Vi1 PPP: Phase is UP
2w3d: Vi1 IPCP: O CONFREQ [Closed] id 7 Len 10
2w3d: Vi1 IPCP: Address 0.0.0.0 (0x030600000000)
2w3d: Vi1 IPCP: I CONFREQ [REQsent] id 4 Len 10
2w3d: Vi1 IPCP: Address 10.10.10.1 (0x030614140201)
2w3d: Vi1 IPCP: O CONFACK [REQsent] id 4 Len 10
2w3d: Vi1 IPCP: Address 10.10.10.1 (0x030614140201)
2w3d: Vi1 IPCP: I CONFNAK [ACKsent] id 7 Len 10
2w3d: Vi1 IPCP: Address 10.1.1.1 (0x030628010102)
2w3d: Vi1 IPCP: O CONFREQ [ACKsent] id 8 Len 10
2w3d: Vi1 IPCP: Address 10.1.1.1 (0x030628010102)
2w3d: Vi1 IPCP: I CONFACK [ACKsent] id 8 Len 10
2w3d: Vi1 IPCP: Address 10.1.1.1 (0x030628010102)
2w3d: Vi1 IPCP: State is Open
2w3d: Di1 IPCP: Install negotiated IP interface address 10.1.1.1
2w3d: Di1 IPCP: Install route to 10.10.10.1
Router#

```

PPP協商存在四個主要故障點：

- 遠端裝置 (您的ISP) 沒有響應
- 連結控制通訊協定(LCP)未開啟
- 驗證失敗
- IP控制通訊協定(IPCP)失敗

您的ISP無響應

如果您的ISP不響應，這應該不是問題，因為您已經驗證了Ethernet0介面上的資料包在入站方向上遞增。但是，如果資料包在Ethernet0上沿入站方向遞增，並且您在運行debug ppp negotiation時收到此消息，請與ISP聯絡，以驗證資料包是否被傳送到Cisco DSL路由器。

```
Router#debug ppp negotiation
```

```

*Mar 1 04:04:50.718: Vi1 PPP: Treating connection as a callout
*Mar 1 04:04:50.718: Vi1 PPP: Phase is ESTABLISHING, Active Open [0 sess, 0 load]
*Mar 1 04:04:50.718: Vi1 PPP: No remote authentication for call-out
*Mar 1 04:04:50.722: Vi1 LCP: O CONFREQ [Closed] id 1 Len 10

```

```
!--- "O" specifies an outbound packet
```

```

*Mar 1 04:04:50.722: Vi1 LCP: MagicNumber 0x317722F4 (0x0506317722F4)
*Mar 1 04:04:52.722: Vi1 LCP: TIMEOUT: State REQsent
*Mar 1 04:04:52.722: Vi1 LCP: O CONFREQ [REQsent] id 2 Len 10

```

```
!--- "O" specifies an outbound packet
```

```

*Mar 1 04:04:52.722: Vi1 LCP: MagicNumber 0x317722F4 (0x0506317722F4)
*Mar 1 04:04:54.722: Vi1 LCP: TIMEOUT: State REQsent
*Mar 1 04:04:54.722: Vi1 LCP: O CONFREQ [REQsent] id 3 Len 10
*Mar 1 04:04:54.722: Vi1 LCP: MagicNumber 0x317722F4 (0x0506317722F4)
*Mar 1 04:04:56.722: Vi1 LCP: TIMEOUT: State REQsent
*Mar 1 04:04:56.722: Vi1 LCP: O CONFREQ [REQsent] id 4 Len 10
*Mar 1 04:04:56.722: Vi1 LCP: MagicNumber 0x317722F4 (0x0506317722F4)
*Mar 1 04:04:58.722: Vi1 LCP: TIMEOUT: State REQsent
*Mar 1 04:04:58.722: Vi1 LCP: O CONFREQ [REQsent] id 5 Len 10
*Mar 1 04:04:58.722: Vi1 LCP: MagicNumber 0x317722F4 (0x0506317722F4)
*Mar 1 04:05:00.722: Vi1 LCP: TIMEOUT: State REQsent
*Mar 1 04:05:00.722: Vi1 LCP: O CONFREQ [REQsent] id 6 Len 10
*Mar 1 04:05:00.722: Vi1 LCP: MagicNumber 0x317722F4 (0x0506317722F4)
*Mar 1 04:05:02.722: Vi1 LCP: TIMEOUT: State REQsent
*Mar 1 04:05:02.722: Vi1 LCP: O CONFREQ [REQsent] id 7 Len 10

```

!--- "O" specifies an outbound packet

```

*Mar 1 04:05:02.722: Vi1 LCP: MagicNumber 0x317722F4 (0x0506317722F4)

```

Router#**undebg all**

在此輸出中，只有O封包，這是傳出封包。為了成功協商PPP，對於傳送的每個O資料包，都應該有來自ISP的I入站資料包。如果資料包遞增入站，但您看不到I資料包，請與您的ISP聯絡以驗證傳送到Cisco DSL路由器的資料包。

LCP未開啟

如果LCP未開啟，這通常是由於PPP選項不匹配引起的。當Cisco DSL路由器配置了ISP不支援的PPP引數，或者您的ISP配置了Cisco DSL路由器不支援的引數時，就會發生這種不匹配。此輸出顯示PPP選項不相符的範例：

Router#**debug ppp negotiation**

```

*Mar 1 04:52:43.254: Vi1 PPP: Treating connection as a callout
*Mar 1 04:52:43.258: Vi1 PPP: Phase is ESTABLISHING, Active Open [0 sess, 1 load]
*Mar 1 04:52:43.258: Vi1 PPP: No remote authentication for call-out
*Mar 1 04:52:43.258: Vi1 LCP: O CONFREQ [Closed] id 3 len 10
*Mar 1 04:52:43.262: Vi1 LCP: MagicNumber 0x31A2F808 (0x050631A2F808)
*Mar 1 04:52:43.310: Vi1 LCP: I CONFREQ [REQsent] id 180 Len 14
*Mar 1 04:52:43.310: Vi1 LCP: AuthProto PAP (0x0304C023)
*Mar 1 04:52:43.310: Vi1 LCP: MagicNumber 0x39D50E9B (0x050639D50E9B)
*Mar 1 04:52:43.314: Vi1 LCP: O CONFNAK [REQsent] id 180 Len 9

```

!--- PPP option reject

```

*Mar 1 04:52:43.314: Vi1 LCP: AuthProto CHAP (0x0305C22305)

```

!--- PPP option that is rejected

```

*Mar 1 04:52:43.314: Vi1 LCP: I CONFACK [REQsent] id 3 Len 10
*Mar 1 04:52:43.318: Vi1 LCP: MagicNumber 0x31A2F808 (0x050631A2F808)
*Mar 1 04:52:43.366: Vi1 LCP: I CONFREQ [ACKrcvd] id 181 Len 14
*Mar 1 04:52:43.366: Vi1 LCP: AuthProto PAP (0x0304C023)
*Mar 1 04:52:43.366: Vi1 LCP: MagicNumber 0x39D50E9B (0x050639D50E9B)
*Mar 1 04:52:43.370: Vi1 LCP: O CONFNAK [ACKrcvd] id 181 Len 9

```

!--- PPP option reject

```

*Mar 1 04:52:43.370: Vi1 LCP: AuthProto CHAP (0x0305C22305)

```

!--- PPP option that is rejected


```
*Mar 1 04:52:43.418: Vi1 LCP: I CONFREQ [ACKrcvd] id 182 Len 14
*Mar 1 04:52:43.418: Vi1 LCP: AuthProto PAP (0x0304C023)
*Mar 1 04:52:43.418: Vi1 LCP: MagicNumber 0x39D50E9B (0x050639D50E9B)
```

```
Router#undebg all
```

無論是I封包還是O封包，Configure-Negative-Acknowledge(CONFIG)都表示PPP組態不相符的情況。這就意味著PPP連線的一方請求另一方無法或尚未配置為執行的PPP選項。如果Cisco DSL路由器傳送CONFNAK(由「O CONFNAK」指示)，則Cisco DSL路由器無法執行或未配置ISP傳送的選項。如果ISP傳送CONFNAK(以「I CONFNAK」表示)，則您已在Cisco DSL路由器上配置了ISP不想執行的選項。

CONFNAK後面的行描述了被拒絕的選項。在本示例輸出中，選項是Challenge Handshake Authentication Protocol(CHAP)，但它可以是任何選項。Cisco DSL路由器上唯一可以配置PPP選項的地方是介面撥號器1。輸入命令**show run interface dialer 1**以檢視介面撥號器1的配置。

如果ISP傳送I CONFIG，請在介面撥號器1下查詢與CONFIG NAME後的線路匹配的命令，然後將其刪除。如果Cisco DSL路由器傳送O CONFIG，請向介面撥號器1新增命令，以便與您的ISP正確協商PPP。在路由器傳送資料包的情況下，您可能需要致電思科支援部門，以確定需要在思科DSL路由器上啟用哪些命令。

驗證失敗

當ISP無法驗證您的PPP使用者名稱或密碼時，就會發生身份驗證失敗。有兩種情況，可能會發生這種情況。第一種情況是身份驗證型別不匹配，這是當您未正確配置路由器時造成的。本文檔中列出的所有身份驗證配置均用於密碼身份驗證協定(PAP)和CHAP身份驗證型別。為了靈活配置，您應該同時配置CHAP和PAP。如果沒有同時設定兩種設定，您可能會看到**debug ppp negotiation**命令的輸出，如下所示：

```
Router#debug ppp negotiation
00:34:29: Vi1 LCP:O CONFREQ [REQsent] id 53 Len 15
00:34:29: Vi1 LCP: AuthProto CHAP (0x0305C22305)

!--- Sends CHAP requests

00:34:29: Vi1 LCP: MagicNumber 0x01B63483 (0x050601B63483)
00:34:29: Vi1 LCP: I CONFREQ [REQsent] id 252 Len 14
00:34:29: Vi1 LCP: AuthProto PAP (0x0304C023)

!--- Receives PAP requests from the service provider

00:34:29: Vi1 LCP: MagicNumber 0xBC5233F9 (0x0506BC5233F9)
00:34:29: Vi1 LCP: O CONFREQ [REQsent] id 252 Len 8
Router#undebg all
```

為了糾正兩個身份驗證不相符的問題，您需要將身份驗證協定重新配置為ISP在入站CONFREQ資料包中請求的身份協定。

如何知道我的PAP使用者名稱和密碼是否正確？

確認ISP使用PAP後，輸入**debug ppp negotiation**命令以確認PAP使用者名稱和密碼正確。

```
Router#debug ppp negotiation
*Mar 2 00:50:15.741: Vi1 PPP: Treating connection as a callout
*Mar 2 00:50:15.745: Vi1 PPP: Phase is ESTABLISHING, Active Open [0 sess, 1 load]
*Mar 2 00:50:15.745: Vi1 PPP: No remote authentication for call-out
*Mar 2 00:50:15.745: Vi1 LCP: O CONFREQ [Closed] id 177 Len 10
```

```

*Mar 2 00:50:15.745: Vi1 LCP: MagicNumber 0x35EB5D4F (0x050635EB5D4F)
*Mar 2 00:50:15.789: Vi1 LCP: I CONFACK [REQsent] id 177 Len 10
*Mar 2 00:50:15.793: Vi1 LCP: MagicNumber 0x35EB5D4F (0x050635EB5D4F)
*Mar 2 00:50:17.241: Vi1 LCP: I CONFREQ [ACKrcvd] id 203 Len 14
*Mar 2 00:50:17.241: Vi1 LCP: AuthProto PAP (0x0304C023)
*Mar 2 00:50:17.241: Vi1 LCP: MagicNumber 0x3E1D1E5E (0x05063E1D1E5E)
*Mar 2 00:50:17.245: Vi1 LCP: O CONFACK [ACKrcvd] id 203 Len 14
*Mar 2 00:50:17.245: Vi1 LCP: AuthProto PAP (0x0304C023)
*Mar 2 00:50:17.245: Vi1 LCP: MagicNumber 0x3E1D1E5E (0x05063E1D1E5E)
*Mar 2 00:50:17.249: Vi1 LCP: State is Open
*Mar 2 00:50:17.249: Vi1 PPP: Phase is AUTHENTICATING, by the peer [0 sess, 1 load]
*Mar 2 00:50:17.249: Vi1 PAP: O AUTH-REQ id 9 Len 14 from "cisco"

```

!--- "cisco" is the PAP username configured on this DSL Router.

```

*Mar 2 00:50:17.297: Vi1 PAP: I AUTH-NAK id 9 Len 27 msg is "Authentication failure"
*Mar 2 00:50:17.301: Vi1 LCP: I TERMREQ [Open] id 204 Len 4
*Mar 2 00:50:17.301: Vi1 LCP: O TERMACK [Open] id 204 Len 4
*Mar 2 00:50:17.305: Vi1 PPP: Phase is TERMINATING [0 sess, 1 load]u
*Mar 2 00:50:19.305: Vi1 LCP: TIMEOUT: State TERMSent
*Mar 2 00:50:19.305: Vi1 LCP: State is Closed
*Mar 2 00:50:19.305: Vi1 PPP: Phase is DOWN [0 sess, 1 load]

```

您需要聯絡您的ISP並獲得正確的憑證才能解決此問題。您可以使用以下命令重新配置PAP憑據：

```

Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface dialer 1
Router(config-if)#ppp pap sent-username <username> password <password>
Router(config-if)#end
Router#write memory

```

如何知道我的CHAP使用者名稱和密碼是否正確？

確認ISP使用CHAP後，輸入debug ppp negotiation命令以確認CHAP使用者名稱和密碼是否正確。

```

Router#debug ppp negotiation
*Mar 3 02:51:47.287: Vi1 PPP: Treating connection as a callout
*Mar 3 02:51:47.287: Vi1 PPP: Phase is ESTABLISHING, Active Open [0 sess, 1 load]
*Mar 3 02:51:47.291: Vi1 PPP: No remote authentication for call-out
*Mar 3 02:51:47.291: Vi1 LCP: O CONFREQ [Closed] id 188 Len 10
*Mar 3 02:51:47.291: Vi1 LCP: MagicNumber 0x3B821FF1 (0x05063B821FF1)
*Mar 3 02:51:47.339: Vi1 LCP: I CONFREQ [REQsent] id 204 Len 15
*Mar 3 02:51:47.343: Vi1 LCP: AuthProto CHAP (0x0305C22305)
*Mar 3 02:51:47.343: Vi1 LCP: MagicNumber 0x43B3F393 (0x050643B3F393)
*Mar 3 02:51:47.343: Vi1 LCP: O CONFACK [REQsent] id 204 Len 15
*Mar 3 02:51:47.347: Vi1 LCP: AuthProto CHAP (0x0305C22305)
*Mar 3 02:51:47.347: Vi1 LCP: MagicNumber 0x43B3F393 (0x050643B3F393)
*Mar 3 02:51:47.347: Vi1 LCP: I CONFACK [ACKsent] id 188 Len 10
*Mar 3 02:51:47.351: Vi1 LCP: MagicNumber 0x3B821FF1 (0x05063B821FF1)
*Mar 3 02:51:47.351: Vi1 LCP: State is Open
*Mar 3 02:51:47.351: Vi1 PPP: Phase is AUTHENTICATING, by the peer [0 sess, 1 load]
*Mar 3 02:51:47.395: Vi1 CHAP: I CHALLENGE id 1 Len 32 from "6400-2-NRP3"
*Mar 3 02:51:47.395: Vi1 CHAP: Using alternate hostname cisco
*Mar 3 02:51:47.399: Vi1 CHAP: Username 6400-2-NRP3 not found
*Mar 3 02:51:47.399: Vi1 CHAP: Using default password
*Mar 3 02:51:47.399: Vi1 CHAP: O RESPONSE id 1 Len 26 from "cisco"

```

!--- "cisco" is the CHAP username configured on this DSL Router.

```

*Mar 3 02:51:47.447: Vi1 CHAP: I FAILURE id 1 Len 26 MSG is "Authentication failure"

```

```
*Mar 3 02:51:47.447: Vi1 LCP: I TERMREQ [Open] id 205 Len 4
*Mar 3 02:51:47.451: Vi1 LCP: O TERMACK [Open] id 205 Len 4
*Mar 3 02:51:47.451: Vi1 PPP: Phase is TERMINATING [0 sess, 0 load]
*Mar 3 02:51:49.451: Vi1 LCP: TIMEOUT: State TERMSent
*Mar 3 02:51:49.451: Vi1 LCP: State is Closed
*Mar 3 02:51:49.451: Vi1 PPP: Phase is DOWN [0 sess, 0 load]
```

```
Router#undebug all
```

您需要聯絡您的ISP並獲得正確的憑證才能解決此問題。可以使用以下命令重新配置CHAP憑據：

```
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface dialer 1
Router(config-if)#ppp chap hostname <username>
Router(config-if)#ppp chap password <password>
Router(config-if)#end
Router#write memory
```

如何知道PPP身份驗證何時成功？

此示例顯示成功的CHAP協商。

```
Router#debug ppp negotiation
<... snipped ...>
*Mar 3 03:30:09.335: Vi1 LCP: State is Open
*Mar 3 03:30:09.335: Vi1 PPP: Phase is AUTHENTICATING, by the peer [0 sess, 1 load]
*Mar 3 03:30:09.379: Vi1 CHAP: I CHALLENGE id 41 len 32 from "6400-2-NRP3"
*Mar 3 03:30:09.379: Vi1 CHAP: Using alternate hostname cisco
*Mar 3 03:30:09.379: Vi1 CHAP: Username 6400-2-NRP3 not found
*Mar 3 03:30:09.383: Vi1 CHAP: Using default password
*Mar 3 03:30:09.383: Vi1 CHAP: O RESPONSE id 41 Len 26 from "cisco"
*Mar 3 03:30:09.431: Vi1 CHAP: I SUCCESS id 41 Len 4
```

```
!--- CHAP negotiation was a success.
```

```
*Mar 3 03:30:09.431: Vi1 PPP: Phase is UP [0 sess, 1 load]
<... snipped ...>
Router#undebug all
This example shows a successful PAP negotiation.
Router#debug ppp negotiation
<... snipped ...>
*Mar 3 03:33:19.491: Vi1 LCP: State is Open
*Mar 3 03:33:19.491: Vi1 PPP: Phase is AUTHENTICATING, by the peer [0 sess, 0 load]
*Mar 3 03:33:19.495: Vi1 PAP: O AUTH-REQ id 255 Len 16 from "cisco"
*Mar 3 03:33:19.539: Vi1 PAP: I AUTH-ACK id 255 Len 5
*Mar 3 03:33:19.539: Vi1 PPP: Phase is UP [0 sess, 0 load]
```

```
!--- PAP negotiation was a success.
```

```
<... snipped ...>
Router#undebug all
```

PPPoE的效能問題

本節特定於PPPoE連線。當您在撥號器介面上使用預設最大傳輸單位(MTU)大小時，PPPoE連線預期會遇到輸送量、瀏覽速度慢等問題。您需要將PPPoE撥號器上的MTU設定為1492，以便考慮PPPoE標頭使用的八個位元組。輸入以下命令以設定適當的MTU：

Router#**configure terminal**

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#**interface dialer 1**

Router(config-if)#**mtu 1492**