

# 排除故障VDSL

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## 简介

本文描述如何配置您的非常比特率数字用户线(VDSL)服务的思科数字用户线路DSL用户预定设备(CPE)路由器。它解释如何排除故障在Cisco 880系列，890系列，860系列和VDSL异步数字用户线路(ADSL)改进的高速的广域网接口卡(EHWICs)的VDSL相关问题。本文是非常详细对VDSL服务，虽然您能有在上述的路由器和模块的ADSL或VDSL服务。有失败能发生的三层：

- 第1层-对您的ISP的数字用户线路访问多路复用器的DSL物理连通性
- 层2.1 -以太网端到端连通性
- 层2.2 -以太网点对点协议(PPPoE)、桥接IP在以太网(IPoE)的RFC1483或者RFC1483路由
- 第3层IP

# [先决条件](#)

## [要求](#)

本文档没有任何特定的要求。

## 使用的组件

本文档不限于特定的软件和硬件版本。

本文档中的信息都是基于特定实验室环境中的设备编写的。本文档中使用的所有设备最初均采用原始（默认）配置。如果您使用的是真实网络，请确保您已经了解所有命令的潜在影响。

## 第1层问题

### 在Cisco DSL路由器的前面板的载波检测(CD)灯是开/关？

如果cd灯是亮的，请参阅本文[第2层问题部分](#)。

如果CD灯是关闭的，请继续下一个问题。

### 您的ISP是否使用支持Broadcom芯片组的DSLAM？

验证从您的ISP的信息。检查DSLAM互通性是指数据表或宣传单页的路由器型号或卡。

### DSL端口在Cisco DSL路由器背面把DSL墙上插座插入？

如果DSL端口没有插入DSL墙上插座，请连接端口到墙壁用一个直通RJ-11电缆。这是标准电话电缆。VDSL线路使用管脚3和4。

### 什么是控制器状态、操作模式和发射覆盖(TC)模式？

看此输出示例：

```
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:	0xalaa	

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	0	3192
SRA Previous Speed:	0	0	0	0	0
Previous Speed:	0	0	0	0	0
Reed-Solomon EC:	0	97252	0	0	0
CRC Errors:	0	15	0	0	0
Header Errors:	0	62	0	0	0
Interleave (ms):	0.00	8.00	0.00	0.00	8.00
Actual INP:	0.00	3.01	0.00	0.00	2.00

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

Router#

检查这些在show controller命令输出中：

- 控制器状态“”。如果它发生故障在“”请陈述，它指示第1层故障(硬件问题、线路问题或者互操作性问题与DSLAM)。继续进行在这种情况下排除故障的第1层。
- 检查操作模式、被培训的模式和TC模式。确保您有正确操作模式配置在控制器下。思科建议您使用Dsl operating-mode自动，如果不是肯定的什么离散多音频问题(DMT)技术您的ISP使用。这些是命令配置操作模式autodetection：

```
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
```

查看被培训的模式并且确保您有正确模式协商与ISP。查看的另一个重要参数是TC模式。万一培训模式是VDSL2或VDSL2+，TC模式将是包传输模式(PTM)。在这种情况下，您需要发现现在的PTM以太网接口“”状态，并且应该配置所有上层的参数例如PPP，IP，等等在以太网接口下。如果被培训的模式是ADSL、ADSL2或者ADSL2+，TC模式应该是ATM，并且应该在这种情况下配置所有上层的参数在ATM永久虚拟电路(PVC)下。如果更改在ADSL和VDSL之间的操作模式，您也许不需要重新启动路由器为了激活对应的以太网或ATM接口。

检查噪声容限和衰减。噪声容限是DSL信噪比的相对优点。高编号好此测量的：

- 6dB以下是坏的，并且不会遇到同步或断断续续同步问题
- 7dB-10dB是一般，但是不离开差异的空间在情况
- 11dB-20dB是好用很少或不同步问题
- 20dB-28dB非常好
- 29dB以上是未清的

衰减是多少的测量信号降低了在DSLAM和调制解调器之间。这主要是距离的功能从交换的。更低dB好此测量的。

- 20dB以下是未清的
- 20dB-30dB非常好
- 30dB-40dB是非常好
- 40dB-50dB是好

- 50dB-60dB差，并且也许遇到连通性问题
- 60dB以上是坏的，并且遇到连通性问题

确保您有其中一个VDSL固件最新的版本。最新的固件有大多数的一个修正已知互操作性问题。您能下载从CCO的最新的固件。

验证DSL同步与适当的上行和下行速度。

## 是否有正确路由器型号？

注意ADSL/VDSL路由器进来两个版本;1)在普通旧式电话服务的在综合业务数字网络(附录B)的DSL (annex-a)和2) DSL。在某些国家(地区)，而在多数其他是annex-a，ISP提供一附录B连接。一个annex-a DSL路由器或卡不会用附录B线路同步反之亦然。因此您需要确保，您有适当正确的路由器型号。欲知更多信息，请参阅路由器数据表。

## 电路是否被正确地测试/供应？

从您的ISP或电话公司得到此信息。

## 第 2 层问题

### PTM是否是以太网？

一旦验证被培训的模式是VDSL，请确保以太网接口在“up”状态。

```
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
```

### 供应商是否期待标记的数据流？如果是，什么是虚拟LAN标识符(VLAN ID)？

大多供应商期待从用户预定设备(CPE)的标记的数据流。在您从您的ISP后，获得VLAN ID您能配置VLAN标记如显示此处。

```
Router(config)#interface Ethernet0.835

Router(config-subif)#encapsulation dot1Q 835

Router(config-subif)#end
```

Router#

## 地址解析服务(ARP)条目填充？

确定远程的MAC地址是否在show arp命令输出中。

## 是否接收从您的ISP的数据？

如果有正确VLAN ID，下一步是验证您的尝试协商点对点协议(PPP)与您的ISP。为了执行此，请输入show interface ethernet0命令并且检查输入和输出数据包。

```
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
```

如果信息包计数器增加，您应该收到从您的ISP的PPP协商信息包。如果这不是实际情形，请呼叫您的ISP。

如果输出限制计数器增加，您应该发送PPP协商信息包。如果这不是实际情形，请检查在路由器的配置。如果PPP适当地配置，PPP协商信息包连续被派出Ethernet0接口。

## PPP是否适当地协商？

如果第1层上，并且有正确VLAN ID，下一步是确保PPP适当地出现。为了完成此，您需要运行一系列的调试命令Cisco DSL路由器和解释输出。主要的debug命令您使用是debug ppp协商。此命令输出是成功的PPP协商的示例：

```
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#
```

有失败四个要点PPP协商的：

- 从远程设备(您的ISP)的无响应
- 不开放的链路控制协议(LCP)
- 认证失败
- IP Control Protocol (IPCP)失败

## 从您的ISP的无响应

如果您的ISP不响应，这不应该是问题，因为您已经验证数据包在入站方向的Ethernet0接口增加。然而，如果数据包在入站方向的Ethernet0增加和您请接收此，当您运行debug ppp协商时，与您的ISP联系为了验证数据包被发送到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#undebug all
```

在此输出中仅有O数据包，是出局信息包。为了成功协商PPP，应该有从您的ISP的一I入站数据包发送的每O数据包的。如果数据包增加入站，但是看不到I数据包，请与您的ISP联系为了验证被发送到Cisco DSL路由器的数据包。

## 不开放的LCP

如果LCP不是开放的，这通常是由不匹配造成的PPP选项。此不匹配发生，当Cisco DSL路由器有配置的一个PPP参数您的ISP不支持，或者，当您的ISP有配置时的一个参数Cisco DSL路由器不支持。此输出显示PPP选项不匹配的示例：

```
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

```

它是否是I或O数据包，配置否定回答(CONFNAK)是预示的PPP配置不匹配。此的什么含义是PPP连接的该一端请求PPP选项另一侧是无法或不已配置的实行。如果Cisco DSL路由器发送CONFNAK (表示由“O CONFNAK”)， Cisco DSL路由器不能实行也没有为ISP发送的选项配置。如果CONFNAK由您的ISP发送(表示由“我CONFNAK”)，您配置在您的ISP不要执行的Cisco DSL路由器的一个选项。

线路，在CONFNAK描述拒绝的选项后。在此示例输出中，选项是质询握手验证协议(CHAP)，但是它可能是所有选项。PPP选项可以配置Cisco DSL路由器的唯一的地方是interface dialer 1。回车show run interface命令拨号1为了查看您的interface dialer 1配置。

如果您的ISP发送I CONFNAK，请寻找在CONFNAK以后匹配线路并且取消他们的命令在interface dialer 1下。如果Cisco DSL路由器发送O CONFNAK，请添加一命令到interface dialer 1为了适当地协商与您的ISP的PPP。在案件中路由器发送数据包，您也许需要呼叫Cisco支持为了确定哪些命令在Cisco DSL路由器需要启用。

## 认证失败

当您的ISP无法验证您的PPP用户名或密码，认证失败发生。有这能发生的两个方案。第一个方案是认证类型不匹配，导致，当您不适当配置路由器时。在本文列出的所有身份验证配置占两个密码认证协议和CHAP认证类型。对于配置灵活性，您应该安排CHAP和PAP配置。如果不安排两个配置，您也许发现从一debug ppp negotiation命令的输出类似此示例：

```

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#undebug all
```

为了更正两验证不匹配问题，您需要重新配置认证协议到在入站CONFREQ数据包的ISP请求的那个。

## 如何知道我的PAP用户名和口令是否正确？

在您确认后您的ISP使用PAP，请输入**debug ppp negotiation**命令为了确认您的PAP用户名和口令正确。

```
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]
```

您需要与您的ISP联系和获得正确凭证为了修复此。您能重新配置PAP凭证用这些命令：

```
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用户名和密码是否正确？

在您确认后您的ISP使用CHAP，请输入**debug ppp negotiation**命令为了确认您的CHAP用户名和密

码正确。

```
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
```

您需要与您的ISP联系和获得正确凭证为了修复此。您能重新配置CHAP凭证用这些命令：

```
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
```

## 当PPP认证是成功的，如何知道？

此示例显示一成功的CHAP协商。

```
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
```

## 在PPPoE的性能问题

此部分是特定对PPPoE连接。当您使用在拨号接口时的默认最大传输单位(MTU)大小预计发现与吞吐量的问题，缓慢浏览，等等与PPPoE连接。您需要设置在PPPoE拨号程序的MTU到1492为了采取PPPoE报头使用的八个字节的帐户。输入这些命令为了配置适当的MTU:

```
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface dialer 1
Router(config-if)#mtu 1492
```