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简介

Cisco 1700、2600 和 3600 系列路由器支持非对称数字用户线 (ADSL) WAN 接口卡 (WIC)。全部三平台根本配置同样。然而，有差异在硬件方面和在为每一个要求的Cisco IOS软件版本。在本文中，Cisco 1700、2600及3600呼叫？Cisco ADSL WIC。？

先决条件

要求

本文档没有任何特定的要求。

使用的组件

本文档中的信息基于以下软件和硬件版本：

- Cisco 6400 UAC-NRP IOS软件版本12.1(3)DC1
- Cisco 6400 UAC-NSP IOS软件版本12.1(3)DB
- Cisco 6130 DSLAM-NI2 IOS软件版本12.1(5)DA

要支持在Cisco2600/3600上的ADSL WIC，需要这些硬件：

2600	3600
机箱WIC槽	NM-1FE1R2W
NM-2W	NM-1FE2W
	NM-2FE2W
	NM-2W

重要信息：对于Cisco3600，此硬件不支持ADSL WIC：

- NM-1E1R2W
- NM-1E2W
- NM-2E2W

为支持 ADSL WIC，至少需要以下思科 IOS 软件版本：

- Cisco IOS软件版本12.1(5)yb (仅加强版本)在Cisco2600/3600
- Cisco IOS软件版本IOS 12.1(3)XP或以上(仅加强版本或ADSL功能集)在Cisco 1700。ADSL功能集识别由 ?y7 ? 在镜像名称。例如，c1700-sy7-mz.121-3.XP.bin。
- 当您下载Cisco 1700的时镜像，请确保您选择镜像名称1700。不要下载1720或1750镜像。这些功能不支持ADSL WIC。

要支持以太网点对点协议(PPPoE)，您必须有ADSL+PLUS特性组。ADSL专用属性集不支持在Cisco 1700的PPPoE。

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。

[规则](#)

有关文档规则的详细信息，请参阅 [Cisco 技术提示规则](#)。

[背景信息](#)

在Cisco IOS软件版本12.1(3)XG，PPPoE客户端功能为Cisco ADSL WIC介绍。此功能允许PPPoE功能被移动到路由器。多台PC可以在Cisco ADSL WIC后安装。在他们的流量发送给PPPoE会话前，可以加密，过滤，等等。并且，网络地址转换(NAT)能运行。

本文显示在异步传输模式(ATM)接口配置的PPPoE客户端(DSL接口) Cisco ADSL WIC。

Cisco 6400节点路由处理器(NRP)的配置也可用在作为带有ATM接口的聚集器的路由器上。

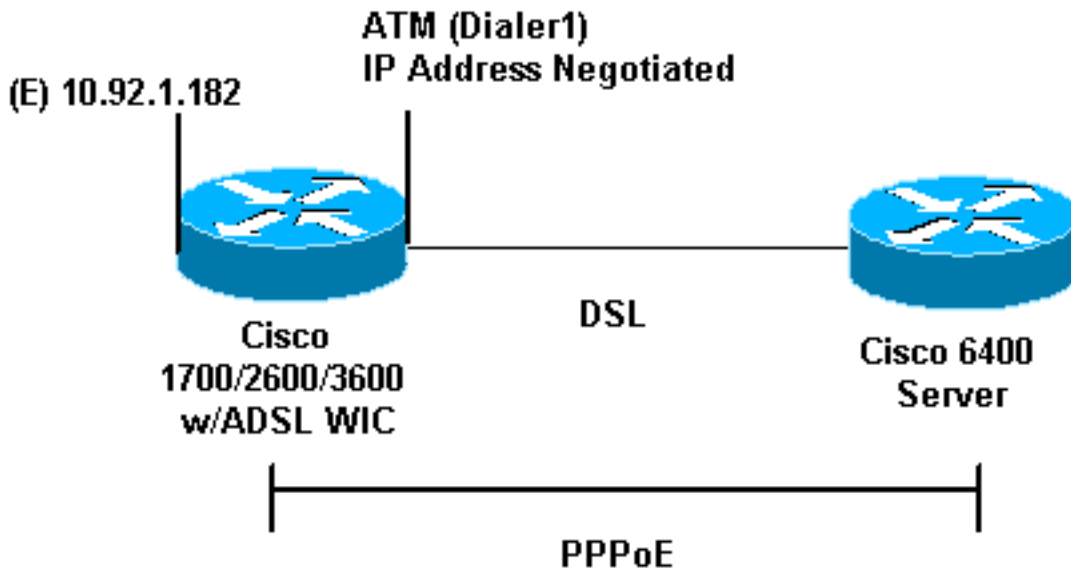
[配置](#)

此部分提供本文描述的功能的配置信息。

注意：要寻找关于本文中指令的其他信息，请使用[命令查找工具\(注册用户\)](#)。

[网络图](#)

本文档使用以下网络设置：



配置

PPPoE在Cisco ADSL WIC配置用虚拟专用拨号网络(VPDN)命令。保证您首先配置这些命令。

注意：关于如何更改最大传输单元(MTU)的大小的信息，参考[在PPPoE拨入连通性的故障排除MTU大小](#)。

本文档使用以下配置：

- [Cisco ADSL WIC](#)
- [Cisco 6400](#)

Cisco ADSL WIC

```
!vpdn enable
no vpdn logging
!vpdn-group pppoe request-dialin
!--- You are the PPPoE client that asks to establish a session !--- with the aggregation unit (6400 NRP). These VPDN commands !--- are not needed with Cisco IOS Software Release 12.2(13)T !--- or later.
protocol pppoe
!--- Internal Ethernet network.
interface FastEthernet0
ip address 10.92.1.182 255.255.255.0
ip nat inside
!--- DSL interface.
interface ATM0
no ip address
no atm ilmi-keepalive
bundle-enable
dsl operating-mode auto
hold-queue 224 in
!--- All defaults.
!--- PPPoE runs on top of AAL5SNAP. However, the !--- encaps aa15snap command is not used.
interface ATM0.1
point-to-point
pvc 1/1 pppoe-client dial-pool-number 1
!-- pvc 1/1 is an example value that must be changed to match !--- the value used by the ISP. ! !--- The PPPoE client code ties into a dialer interface upon !--- which a virtual-access interface is cloned.
interface Dialer1
ip address negotiated
ip mtu 1492
!--- Ethernet MTU default = 1500 (1492 + PPPoE headers = 1500)
ip nat outside
encapsulation ppp
dialer pool 1
!--- Ties to the ATM interface.
ppp authentication chap callin
ppp chap hostname <username>
ppp chap password <password>
!--- The ISP instructs you about the type of authentication !--- to use. !--- To change from PPP Challenge Handshake Authentication !--- Protocol (CHAP) to PPP Password Authentication Protocol !--- (PAP), replace these three lines: !--- ppp authentication chap callin !--- ppp chap
```

```
hostname <username> !--- ppp chap password <password> !-
-- with these two lines: !--- ppp authentication pap
callin !--- ppp pap sent-username <username> password
<password> !--- For NAT, overload on the Dialer1
interface and add a !--- default route out, because the
dialer IP address can !--- change.ip nat inside source
list 1 interface Dialer1 overload ip classless ip route
0.0.0.0 0.0.0.0 dialer1 no ip http server ! access-list
1 permit 10.92.1.0 0.0.0.255 !--- For NAT. !
```

Cisco 6400

```
Cisco 6400 ***local ppp user!--- You can also use
aaa.username <username> password <password>!--- Begin
with the VPDN commands. Notice that you bind the !---
PPPoE here to a virtual-template, instead of on the ATM
!--- interface. You can not (at this time) use more than
one !--- virtual-template (or VPDN group) for PPPoE
beginning with !--- the VPDN commands.vpdn enableno vpdn
logging!vpdn-group pppoe accept-dialin!--- PPPoE server
mode. protocol pppoe virtual-template 1!!interface
ATM0/0/0 no ip address no atm ilmi-keepalive hold-queue
500 in!--- The binding to the virtual-template interface
is !--- configured in the VPDN group.!interface
ATM0/0/0.182 point-to-point pvc 1/82 encapsulation
aal5snap!--- This needs the command on the server side.
protocol pppoe !!!--- Virtual-template is used instead
of dialer interface.!interface Virtual-Template1 ip
unnumbered Loopback10 ip mtu 1492 peer default ip
address pool ippool ppp authentication chap!!interface
Loopback10 ip address 8.8.8.1 255.255.255.0!ip local
pool ippool 9.9.9.1 9.9.9.5
```

验证

当前没有可用于此配置的验证过程。

故障排除

使用本部分可排除配置故障。

[命令输出解释程序 \(仅限注册用户\)](#) (OIT) 支持某些 **show** 命令。使用 OIT 可查看对 show 命令输出的分析。

注意： 使用 **debug** 命令之前，请参阅[有关 Debug 命令的重要信息](#)。

调试PPPoE客户端

要调试Cisco ADSL WIC或Cisco 6400的PPPoE客户端，您必须考虑协议栈。您能在底部开始排除故障。

1. DSL物理层：确保线路是上和培训。**show interface atm0**ATM0 is up, line protocol is up
Hardware is PQUICC_SAR (with Alcatel ADSL Module)**show dsl interface atm0**!--- Look for
?Showtime? in the first few lines.ATU-R (DS)ATU-C (US)Modem Status: Showtime
(DMTDSL_SHOWTIME)
2. ATM层：如果ATM接口是UP，请发出**debug atm packet**命令发现任何是否自ISP进来。**注意**：
您看不到输出数据包用此命令由于方式数据包处理。您需要发现输出类似于此，与同一个

类型，SAP，CTL，并且显示该流入的ATM信息包的OUI字段是AAL5SNAP：
`debug atm packet`03:21:32: ATM0(I):VCD:0x2 VPI:0x1 VCI:0x1 Type:0x0 SAP:AAAA CTL:03 OUI:0080C2
TYPE:0007 Length:0x3003:21:32: 0000 0050 7359 35B7 0001 96A4 84AC 8864 1100 0001 000E C021
09AB 000C 023503:21:32: 279F 0000 000003:21:32:

3. 以太网层：完整以太网帧在AAL5SNAP数据包。debug ethernet packet命令。然而，您需要执行一些VPDN调试(Cisco IOS软件版本12.2(13)T的PPPoE调试或以上)发现PPPoE帧。供参考，是的以太网帧PPPoE帧包含这两以太网类型之一：0x8863以太网类型= PPPoE控制信息包(处理PPPoE会话)0x8864以太网类型= PPPOE信息包(包含PPP数据包)一重要提示是有PPPoE的两会话。PPPoE会话，是VPDN L2TP类型会话和PPP会话。为了设立PPPoE，您有一个PPPoE会话建立阶段和一个PPP会话建立阶段。终端通常介入一个PPP终止阶段和一个PPPoE终止阶段。PPPoE建立阶段识别PPPoE客户端和服务器的(MAC地址)并且分配会话ID。在那完成后，正常PPP建立出现正如其他PPP连接。调试，使用VPDN PPPoE调试(Cisco IOS软件版本12.2(13)T的PPPoE调试或以上)确定PPPoE连接阶段是否是成功的。
`#debug vpdn pppoe-events (debug pppoe events)`06:17:58: Sending PADI: vc=1/1!--- A broadcast Ethernet frame (in this case encapsulated in ATM) !--- requests a PPPoE server, ?Are there any PPPoE servers out there??06:18:00: PPPOE: we've got our pado and the pado timer went off!--- This is a unicast reply from a PPPoE server !--- (very similar to a DHCP offer).06:18:00: OUT PADR from PPPoE tunnel!--- This is a unicast reply that accepts the offer.06:18:00: IN PADS from PPPoE tunnel!--- This is a confirmation and completes the establishment. PPP建立开始作为其他PPP开始。在PPPoE会话建立后，请发出show vpdn命令(请显示Cisco IOS软件版本12.2(13)T的pppe会话或以后)得到状态。
`# show vpdn (show pppoe session)%No active L2TP tunnels%No active L2F tunnelsPPPoE Tunnel and Session Information Total tunnels 1 sessions 1PPPoE Tunnel InformationSession count: 1PPPoE Session InformationSID RemMAC LocMAC Intf VAST OIntf VC1 0050.7359.35b7 0001.96a4.84ac Vi1 UP AT0 11`通过show vpdn session all (请显示PPPoE会话全部)命令获得信息包计数信息。
`show vpdn session all (show pppoe session all)%No active L2TP tunnels%No active L2F tunnelsPPPoE Session Information Total tunnels 1 sessions 1session id: 1local MAC address: 0001.96a4.84ac, remote MAC address: 0050.7359.35b7virtual access interface: Vi1, outgoing interface: AT0, vc: 1/1 1656 packets sent, 1655 received, 24516 bytes sent, 24486 received`其它调试命令：
`debug vpdn pppoe-data (debug pppoe数据)debug vpdn pppoe-error (debug pppoe错误)debug vpdn pppoe数据包(debug pppoe数据包)`

4. PPP层：在PPPoE会话建立后，PPP调试是相同的为其他PPP建立。使用同样debug ppp negotiation和debug ppp authentication指令。以下是示例输出。注意：在此示例，主机名是? client1。? 远程Cisco 6400的名称是? nrp-b。?
06:36:03: Vi1 PPP: Treating connection as a callout06:36:03: Vi1 PPP: Phase is ESTABLISHING, Active Open [0 sess, 1 load]06:36:03: Vi1 PPP: No remote authentication for call-out06:36:03: Vi1 LCP: O CONFREQ [Closed] id 1 len 1006:36:03: Vi1 LCP: MagicNumber 0x03013D43 (0x050603013D43)06:36:03: Vi1 LCP: I CONFACK [REQsent] id 1 len 1006:36:03: Vi1 LCP: MagicNumber 0x03013D43 (0x050603013D43)06:36:05: Vi1 LCP: I CONFREQ [ACKrcvd] id 2 len 1506:36:05: Vi1 LCP: AuthProto CHAP (0x0305C22305)06:36:05: Vi1 LCP: MagicNumber 0x65E315E5 (0x050665E315E5)06:36:05: Vi1 LCP: O CONFACK [ACKrcvd] id 2 len 1506:36:05: Vi1 LCP: AuthProto CHAP (0x0305C22305)06:36:05: Vi1 LCP: MagicNumber 0x65E315E5 (0x050665E315E5)06:36:05: Vi1 LCP: State is Open06:36:05: Vi1 PPP: Phase is AUTHENTICATING, by the peer [0 sess, 1 load]06:36:05: Vi1 CHAP: I CHALLENGE id 9 len 26 from "nrp-b"06:36:05: Vi1 CHAP: Using alternate hostname client106:36:05: Vi1 CHAP: Username nrp-b not found06:36:05: Vi1 CHAP: Using default password06:36:05: Vi1 CHAP: O RESPONSE id 9 len 28 from "client1"06:36:05: Vi1 CHAP: I SUCCESS id 9 len 406:36:05: Vi1 PPP: Phase is FORWARDING [0 sess, 1 load]06:36:05: Vi1 PPP: Phase is AUTHENTICATING [0 sess, 1 load]06:36:05: Vi1 PPP: Phase is UP [0 sess, 1 load]06:36:05: Vi1 IPCP: O CONFREQ [Closed] id 1 len 1006:36:05: Vi1 IPCP: Address 0.0.0.0 (0x030600000000)06:36:05: Vi1 CDPCP: O CONFREQ [Closed] id 1 len 406:36:05: Vi1 IPCP: I CONFREQ [REQsent] id 1 len 1006:36:05: Vi1 IPCP: Address 8.8.8.1 (0x030608080801)06:36:05: Vi1 IPCP: Address 8.8.8.1 (0x030608080801)06:36:05: Vi1 IPCP: Address 9.9.9.2 (0x030609090902)06:36:05: Vi1 IPCP: O CONFREQ [ACKsent] id 2 len 1006:36:05: Vi1 IPCP: Address 9.9.9.2 (0x030609090902)06:36:05: Vi1 LCP: I PROTREJ [Open] id 3 len 10 protocol CDPCP (0x820701010004)06:36:05: Vi1 CDPCP: State is Closed06:36:05: Vi1 IPCP: I CONFACK [ACKsent] id 2 len 1006:36:05: Vi1 IPCP: Address 9.9.9.2 (0x030609090902)06:36:05: Vi1 IPCP: State

```
is Open06:36:05: Di1 IPCP: Install negotiated IP interface address 9.9.9.206:36:05: Di1
IPCP: Install route to 8.8.8.106:36:06: %LINEPROTO-5-UPDOWN: Line protocol onInterface
Virtual-Access1, changed state to up
```

调试PPPoE服务器

要调试Cisco 6400 (PPPoE服务器), 请使用使用Cisco ADSL WIC的同一个自上而上的过程(客户端)。差异在DSL物理层, 您需要检查DSLAM。

1. DSL物理层: 检查DSL物理层, 您需要查看DSLAM上的DSL统计数据。对于Cisco DSLAMs, 请发出**show dsl interface**命令。
2. ATM层: 在Cisco 6400侧, 您能也发出**debug atm packet**命令。启用特定PVC的Cisco 6400。

```
debug atm packet interface atm 0/0/0.182 vc 1/82 您需要发现输出类似于此, 与同一个类型,
SAP, CTL, 并且显示该流入的ATM信息包的OUI字段是AAL5SNAP : 4d04h:
ATM0/0/0.182(I):VCD:0x3 VPI:0x1 VCI:0x52 Type:0x900 SAP:AAAA CTL:03 OUI:0080C2 TYPE:0007
Length:0x304d04h: 0000 0001 96A4 84AC 0050 7359 35B7 8864 1100 0001 000E C021 0A2E 000C
65E34d04h: 15E5 0000 0000 注意: 您看不到输出数据包用此命令由于方式数据包处理。
```

3. 以太网层: 同样VPDN显示命令, 并且在Cisco ADSL WIC使用的调试在Cisco 6400可以用于查看PPPoE建立。# **debug vpdn pppoe-events (debug pppoe events)**4d04h: IN PADI from PPPoE tunnel4d04h: OUT PADO from PPPoE tunnel4d04h: IN PADR from PPPoE tunnel4d04h: PPPoE: Create session4d04h: PPPoE: VPN session created.4d04h: OUT PADS from PPPoE tunnel# **show vpdn**%No active L2TP tunnels%No active L2F tunnels**PPPoE Tunnel and Session Information Total tunnels 1 sessions 1PPPoE Tunnel Information**Session count: 1**PPPoE Session Information**SID RemMAC LocMAC Intf VASt OIntf VC1 0001.96a4.84ac 0050.7359.35b7 Vi4 UP AT0/0/0 1 82# **show vpdn session all**nrp-b# **show vpdn session all**%No active L2TP tunnels%No active L2F tunnels**PPPoE Session Information Total tunnels 1 sessions 1**session id: 1**local MAC address: 0050.7359.35b7, remote MAC address: 0001.96a4.84ac**virtual access interface: Vi4, outgoing interface: AT0/0/0, vc: 1/82 30 packets sent, 28 received, 422 bytes sent, 395 received 其它调试命令: **debug vpdn pppoe-data (debug pppoe数据)****debug vpdn pppoe-error (debug pppoe错误)****debug vpdn pppoe数据包(debug pppoe数据包)**

4. PPP层: 这是对应于从Cisco ADSL WIC的更早的调试从Cisco 6400的PPP debug输出: **debug ppp negotiation and debug ppp authentication**4d04h: Vi2 PPP: Treating connection as a dedicated line4d04h: Vi2 PPP: Phase is ESTABLISHING, Active Open [0 sess, 1 load]4d04h: Vi2 LCP: O CONFREQ [Closed] id 1 len 154d04h: Vi2 LCP: AuthProto CHAP (0x0305C22305)4d04h: Vi2 LCP: MagicNumber 0x65F62814 (0x050665F62814)4d04h: Vi2 LCP: I CONFREQ [REQsent] id 1 len 104d04h: Vi2 LCP: MagicNumber 0x03144FF9 (0x050603144FF9)4d04h: Vi2 LCP: O CONFACK [REQsent] id 1 len 104d04h: Vi2 LCP: MagicNumber 0x03144FF9 (0x050603144FF9)4d04h: Vi3 LCP: I ECHOREQ [Open] id 60 len 8 magic 0xA60C00004d04h: Vi3 LCP: O ECHOREP [Open] id 60 len 8 magic 0x51A0BEF64d04h: Vi2 LCP: TIMEOUT: State ACKsent4d04h: Vi2 LCP: O CONFREQ [ACKsent] id 2 len 154d04h: Vi2 LCP: AuthProto CHAP (0x0305C22305)4d04h: Vi2 LCP: MagicNumber 0x65F62814 (0x050665F62814)4d04h: Vi2 LCP: I CONFACK [ACKsent] id 2 len 154d04h: Vi2 LCP: AuthProto CHAP (0x0305C22305)4d04h: Vi2 LCP: MagicNumber 0x65F62814 (0x050665F62814)4d04h: Vi2 LCP: State is Open4d04h: Vi2 PPP: Phase is AUTHENTICATING, by this end [0 sess, 1 load]4d04h: Vi2 CHAP: O CHALLENGE id 10 len 26 from "nrp-b"4d04h: Vi2 CHAP: I RESPONSE id 10 len 28 from "client1"4d04h: Vi2 PPP: Phase is FORWARDING [0 sess, 1 load]4d04h: Vi2 PPP: Phase is AUTHENTICATING [0 sess, 1 load]4d04h: Vi2 CHAP: O SUCCESS id 10 len 44d04h: Vi2 PPP: Phase is UP [0 sess, 1 load]4d04h: Vi2 IPCP: O CONFREQ [Closed] id 1 len 104d04h: Vi2 IPCP: Address 8.8.8.1 (0x030608080801)4d04h: Vi2 IPCP: I CONFREQ [REQsent] id 1 len 104d04h: Vi2 IPCP: Address 0.0.0.0 (0x030600000000)4d04h: Vi2 IPCP: Pool returned 9.9.9.24d04h: Vi2 IPCP: O CONFNAK [REQsent] id 1 len 104d04h: Vi2 IPCP: Address 9.9.9.2 (0x030609090902)4d04h: Vi2 CDPCP: I CONFREQ [Not negotiated] id 1 len 44d04h: Vi2 LCP: O PROTREJ [Open] id 3 len 10 protocol CDPCP (0x820701010004)4d04h: Vi2 IPCP: I CONFACK [REQsent] id 1 len 104d04h: Vi2 IPCP: Address 8.8.8.1 (0x030608080801)4d04h: Vi2 IPCP: I CONFREQ [ACKrcvd] id 2 len 104d04h: Vi2 IPCP: Address 9.9.9.2 (0x030609090902)4d04h: Vi2 IPCP: O CONFACK [ACKrcvd] id 2 len 104d04h: Vi2 IPCP: Address 9.9.9.2 (0x030609090902)4d04h: Vi2 IPCP: State is Open4d04h: Vi2 IPCP: Install route to 9.9.9.24d04h: %LINEPROTO-5-UPDOWN: Line protocol on InterfaceVirtual-Access2, changed state to up

相关信息

- [长距离以太网\(LRE\)和数字用户线\(xDSL\)技术支持](#)
- [LRE和xDSL产品支持](#)
- [技术支持和文档 - Cisco Systems](#)