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简介

本文解释如何支持通过以太网接口连接的Cisco IOS路由器的一个以太网点对点协议(PPPoE)客户端对DSL调制解调器或另一个供应商的DSL客户端前置设备(CPE)。

ISP经常为他们的用户提供DSL调制解调器，这种调制解调器有一个以太网接口连接用户以太网段，另外还有一个接口提供DSL线路连接。在这种情况下，如果CPE为任何IP连通性或增强功能不是可配置在DSL，DSL调制解调器只作为网桥。这对一个PPPoE客户端PC只限制您的连接。增加Cisco IOS路由器连接对DSL调制解调器的以太网，您能运行在Cisco路由器的PPPoE客户端IOS功能。这能连接在以太网段的多台PC连接对Cisco IOS路由器。使用使用Cisco IOS路由器，您能提高您的DSL连接和所有IOS功能，例如安全、网络地址转换(NAT)和动态主机配置协议(DHCP)到内部主机。

PPPoE功能允许您在简单桥接以太网连接的客户端上启动PPP会话。会话运输在ATM链路通过压缩的以太网桥接帧。您能终止会话在本地交换运营商中心局或ISP入网点。

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 827-4V CPE IOS软件版本12.1(1)XB
- 运行Cisco IOS软件版本12.2(2)T1镜像的Cisco 2611路由器
- 运行Cisco IOS软件版本12.1(5)dc1镜像的Cisco 6400通用接入集中器(UAC)

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](#)。

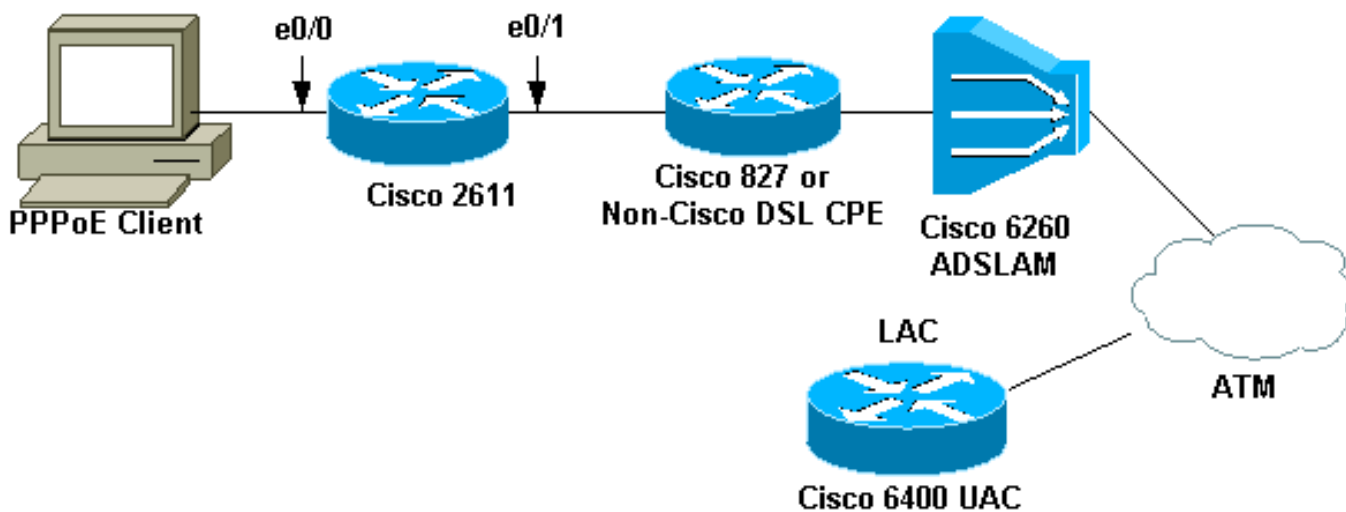
配置

在此部分，您提交与用于的信息为了配置在本文描述的功能。

注意：要查找有关本文档中所使用的命令的详细信息，请使用[命令查找工具](#)（[仅限注册用户](#)）。

网络图

本文档使用此图所示的网络设置。



注意：在本文中，PPPoE客户端连接从Cisco路由器首次。这是Cisco 2611路由器在此配置方面。Cisco 827路由器在图表中代表非Cisco的DSL CPE。

配置

本文档使用以下配置。

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

2611 路由器

Cisco DSL 827路由器

Cisco 6400路由器

验证

本部分提供了可用于确认您的配置是否正常运行的信息。

[命令输出解释程序工具](#) ([仅限注册用户](#)) 支持某些 **show** 命令，使用此工具可以查看对 **show** 命令输出的分析。

- **show vpdn session all ?** 显示VPDN会话信息。此信息包括接口、通道、用户名、数据包、状态和窗口统计信息。
- 关于以太网接口的**show interface ethernet 0/1?**Displays信息在路由器。
- 关于拨号程序的**show interfaces dialer 1?**Displays信息在路由器。
- 关于ip local pool的**show ip local pool nrp1?**Displays信息。
- **show ip route ?** 显示关于Ip route的信息在路由器。

这是在Cisco 2611的**show vpdn session all**命令输出。

```
pooh#show vpdn session all%No active L2TP tunnels%No active L2F tunnels%No active PPTP tunnels
PPPoE Session Information Total tunnels 1 sessions 1session id: 1!--- Local MAC address.local MAC address: 0030.9424.af21, remote MAC address: 0050.736f.4c37virtual access interface: Vi1, outgoing interface: Et0/1599 packets sent, 599 received9202 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.
```

这是在Cisco 2611的**show interface ethernet 0/1**命令输出。

```
pooh#show interface ethernet 0/1Ethernet0/1 is up, line protocol is upHardware is AmdP2, address is 0030.9424.af21 (bia 0030.9424.af21MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec, reliability 255/255, txload 1/255, rxload 1/255Encapsulation ARPA, loopback not setKeepalive set (10 sec)ARP type: ARPA, ARP Timeout 04:00:00Last input 00:00:40, output 00:00:01, output hang neverLast clearing of "show interface" counters neverQueueing strategy: fifoOutput queue 0/40, 0 drops; input queue 0/75, 0 drops5 minute input rate 0 bits/sec, 0 packets/sec5 minute output rate 0 bits/sec, 0 packets/sec739 packets input, 64127 bytes, 0 no bufferReceived 57 broadcasts, 0 runts, 0 giants, 0 throttles0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored0 input packets with dribble condition detected1153 packets output, 89766 bytes, 0 underruns(1/0/0)0 output errors, 1 collisions, 1 interface resets0 babbles, 0 late collision, 2 deferred0 lost carrier, 0 no carrier0 output buffer failures, 0 output buffers swapped out
```

这是在Cisco 2611的**show interfaces dialer 1**命令输出。

```
pooh#show interfaces dialer 1Dialer1 is up, line protocol is up (spoofing)Hardware is UnknownInternet address is 212.93.198.1/32MTU 1500 bytes, BW 56 Kbit, DLY 20000 usec, reliability 255/255, txload 1/255, rxload 1/255Encapsulation PPP, loopback not setDTR is pulsed for 1 seconds on resetInterface is bound to Vi1Last input never, output never, output hang neverLast clearing of "show interface" counters 01:38:43Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0Queueing strategy: weighted fairOutput 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/sec5 minute input rate 0 bits/sec, 0 packets/sec5 minute output rate 0 bits/sec, 0 packets/sec403 packets input, 6082 bytes403 packets output, 6978 bytesBound to:Virtual-Access1 is up, line protocol is upHardware is Virtual Access interfaceMTU 1500 bytes, BW 100000 Kbit, DLY 100000 usec, reliability 255/255, txload 1/255, rxload 1/255Encapsulation PPP, loopback not setKeepalive set (10 sec)Interface is bound to Di1 (Encapsulation PPP)LCP OpenListen: CDPCPOpen: IPCPLast input 00:00:09, output never, output hang neverLast clearing of "show interface" counters 00:35:16Queueing strategy: fifoOutput queue 0/40, 0 drops; input queue 0/75, 0 drops5 minute input rate 0 bits/sec, 0 packets/sec5 minute output rate 0 bits/sec, 0 packets/sec430 packets input, 6453 bytes, 0 no bufferReceived 0 broadcasts, 0 runts, 0 giants, 0 throttles0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort430 packets output, 7400 bytes, 0 underruns0 output errors, 0 collisions, 0 interface resets0 output buffer failures, 0 output buffers swapped out0 carrier transitions
```

这是在Cisco 6400的**show vpdn session all**命令输出。

```
alysa_nrpl#show vpdn session all%No active L2TP tunnels%No active L2F tunnels%No active PPTP tunnels
PPPoE Session Information Total tunnels 1 sessions 1session id: 1local MAC address: 0050.736f.4c37, remote MAC address: 0030.9424.af21virtual access interface: Vi3, outgoing interface: AT0/0/0, vc: 6/60495 packets sent, 494 received7369 bytes sent, 7346 received
```

这是在Cisco 6400的show ip local pool nrp1命令输出。

```
alysa_nrpl#show ip local pool nrp1Pool          Begin          End          Free
In usenrp1          212.93.198.1    212.93.198.1    0          1Available
addresses:NoneInuse addresses:212.93.198.1    Vi3          nrp1
```

这是在Cisco 6400的show ip route命令输出。

```
alysa_nrpl#show ip routeCodes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGPD - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter areaN1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGpi - 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 - ODRP - periodic downloaded static routeGateway of last resort is 0.0.0.0 to network 0.0.0.0212.93.198.0/32 is subnetted, 1 subnetsC          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, Loopback510.0.0.0/8 is variably subnetted, 3 subnets, 2 masksC 10.200.56.0/24 is directly connected, Ethernet0/0/0
```

故障排除

本部分提供的信息可用于对配置进行故障排除。

故障排除命令

[命令输出解释程序工具 \(仅限注册用户 \)](#) 支持某些 show 命令，使用此工具可以查看对 show 命令输出的分析。

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

- show debugging ? 显示关于路由器的调试信息。

这是在Cisco 2611的show debugging命令输出。

```
pooh#show debuggingPPP:PPP protocol negotiation debugging is onVPN:PPPoE protocol events debugging is onPPPoE control packets debugging is on01:54:21: Sending PADI: Interface = Ethernet0/101:54:21: pppoe_send_padi:FF FF FF FF FF FF 00 30 94 24 AF 21 88 63 11 0900 00 00 0C 01 01 00 00 01 03 00 04 82 2E 39 F000 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 Et0/100 30 94 24 AF 21 00 50 73 6F 4C 37 88 63 11 0700 00 00 2F 01 01 00 00 01 03 00 04 82 2E 39 F001 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 off01:54:23: OUT PADR from PPPoE tunnel00 50 73 6F 4C 37 00 30 94 24 AF 21 88 63 11 1900 00 00 2F 01 01 00 00 01 03 00 04 82 2E 39 F001 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 Et0/100 30 94 24 AF 21 00 50 73 6F 4C 37 88 63 11 6500 01 00 2F 01 01 00 00 01 03 00 04 82 2E 39 F001 02 00 0B 61 6C 79 73 73 61 5F 6E 72 70 31 ...01:54:23: IN PADS from PPPoE tunnel01:54:23: Vi1 Debug: Condition 1, interface Di1 triggered, count 101:54:23: %DIALER-6-BIND: Interface Vi1 bound to profile Di101:54:23: PPPoE: Virtual Access interface obtained.01:54:23: %LINK-3-UPDOWN: Interface Virtual-Access1, changed state to up01:54:23: Vi1 PPP: Treating connection as a callout01:54:23: Vi1 PPP: Phase is ESTABLISHING, Active Open [0 sess, 0 load]01:54:23: Vi1 PPP: No remote authentication for call-out01:54:23: Vi1 LCP: O CONFREQ [Closed] id 1 len 1001:54:23: Vi1 LCP: MagicNumber 0x30FCDE42 (0x050630FCDE42)01:54:23: Vi1 LCP: I CONFACK [REQsent] id 1 len 1001:54:23: Vi1 LCP: MagicNumber 0x30FCDE42 (0x050630FCDE42)01:54:25: Vi1 LCP: I CONFREQ [ACKrcvd] id 2 len 1801:54:25: 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 801:54:25: Vi1 LCP: MRU 1500 (0x010405DC)01:54:25: Vi1 LCP: TIMEout: State ACKrcvd01:54:25: Vi1 LCP: O CONFREQ [ACKrcvd] id 2 len 1001:54:25: Vi1 LCP: MagicNumber 0x30FCDE42 (0x050630FCDE42)01:54:25: Vi1 LCP: I CONFREQ [REQsent] id 3 len
```

```

1801:54:25: 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 1801:54:25: 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 1001:54:25: Vi1 LCP: MagicNumber 0x30FCDE42
(0x050630FCDE42)01:54:25: Vi1 LCP: State is Open01:54:25: 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 501:54:25: Vi1 PPP: Phase is UP [0 sess, 0 load]01:54:25: Vi1 IPCP: O
CONFREQ [Closed] id 1 len 1001:54:25: Vi1 IPCP: Address 0.0.0.0 (0x030600000000)01:54:25: Vi1
CDPCP: O CONFREQ [Closed] id 1 len 401:54:25: Vi1 IPCP: I CONFREQ [REQsent] id 1 len 1001:54:25:
Vi1 IPCP: Address 212.93.195.100 (0x0306D45DC364)01:54:25: Vi1 IPCP: O CONFACK [REQsent] id 1
len 1001:54:25: Vi1 IPCP: Address 212.93.195.100 (0x0306D45DC364)01:54:25: Vi1 IPCP: I
CONFNAK [ACKsent] id 1 len 1001:54:25: Vi1 IPCP: Address 212.93.198.1
(0x0306D45DC601)01:54:25: Vi1 IPCP: O CONFREQ [ACKsent] id 2 len 1001:54:25: 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 Closed01:54:25: Vi1 IPCP: I CONFACK [ACKsent]
id 2 len 1001:54:25: Vi1 IPCP: Address 212.93.198.1 (0x0306D45DC601)01:54:25: Vi1 IPCP: State
is Open01:54:25: Di1 IPCP: Install negotiated IP interface address 212.93.198.101:54:25: Di1
IPCP: Install route to 212.93.195.10001:54:26: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Virtual-Access1,changed state to up

```

这是在Cisco 6400的show debugging命令输出。

```

pooh#show debuggingPPP:PPP protocol negotiation debugging is onVPN:PPPoE protocol events
debugging is onPPPoE control packets debugging is on01:54:21: Sending PADI: Interface =
Ethernet0/101:54:21: pppoe_send_padi:FF FF FF FF FF FF 00 30 94 24 AF 21 88 63 11 0900 00 00 0C
01 01 00 00 01 03 00 04 82 2E 39 F000 00 00 00 00 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 Et0/100 30 94 24 AF 21 00 50 73 6F 4C 37 88 63
11 0700 00 00 2F 01 01 00 00 01 03 00 04 82 2E 39 F001 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 off01:54:23: OUT PADR from PPPoE
tunnel00 50 73 6F 4C 37 00 30 94 24 AF 21 88 63 11 1900 00 00 2F 01 01 00 00 01 03 00 04 82 2E
39 F001 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 Et0/100 30 94 24 AF 21 00 50 73 6F 4C 37 88 63 11 6500 01 00 2F 01 01 00 00 01
03 00 04 82 2E 39 F001 02 00 0B 61 6C 79 73 73 61 5F 6E 72 70 31 ...01:54:23: IN PADS from PPPoE
tunnel01:54:23: Vi1 Debug: Condition 1, interface Di1 triggered, count 101:54:23: %DIALER-6-
BIND: Interface Vi1 bound to profile Di101:54:23: PPPoE: Virtual Access interface
obtained.01:54:23: %LINK-3-UPDOWN: Interface Virtual-Access1, changed state to up01:54:23: Vi1
PPP: Treating connection as a callout01:54:23: Vi1 PPP: Phase is ESTABLISHING, Active Open [0
sess, 0 load]01:54:23: Vi1 PPP: No remote authentication for call-out01:54:23: Vi1 LCP: O
CONFREQ [Closed] id 1 len 1001:54:23: Vi1 LCP: MagicNumber 0x30FCDE42
(0x050630FCDE42)01:54:23: Vi1 LCP: I CONFACK [REQsent] id 1 len 1001:54:23: Vi1 LCP:
MagicNumber 0x30FCDE42 (0x050630FCDE42)01:54:25: Vi1 LCP: I CONFREQ [ACKrcvd] id 2 len
1801:54:25: 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 801:54:25: Vi1 LCP: MRU 1500 (0x010405DC)01:54:25: Vi1 LCP:
TIMEout: State ACKrcvd01:54:25: Vi1 LCP: O CONFREQ [ACKrcvd] id 2 len 1001:54:25: Vi1 LCP:
MagicNumber 0x30FCDE42 (0x050630FCDE42)01:54:25: Vi1 LCP: I CONFREQ [REQsent] id 3 len
1801:54:25: 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 1801:54:25: 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 1001:54:25: Vi1 LCP: MagicNumber 0x30FCDE42
(0x050630FCDE42)01:54:25: Vi1 LCP: State is Open01:54:25: 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 501:54:25: Vi1 PPP: Phase is UP [0 sess, 0 load]01:54:25: Vi1 IPCP: O
CONFREQ [Closed] id 1 len 1001:54:25: Vi1 IPCP: Address 0.0.0.0 (0x030600000000)01:54:25: Vi1
CDPCP: O CONFREQ [Closed] id 1 len 401:54:25: Vi1 IPCP: I CONFREQ [REQsent] id 1 len 1001:54:25:
Vi1 IPCP: Address 212.93.195.100 (0x0306D45DC364)01:54:25: Vi1 IPCP: O CONFACK [REQsent] id 1
len 1001:54:25: Vi1 IPCP: Address 212.93.195.100 (0x0306D45DC364)01:54:25: Vi1 IPCP: I
CONFNAK [ACKsent] id 1 len 1001:54:25: Vi1 IPCP: Address 212.93.198.1
(0x0306D45DC601)01:54:25: Vi1 IPCP: O CONFREQ [ACKsent] id 2 len 1001:54:25: 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 Closed01:54:25: Vi1 IPCP: I CONFACK [ACKsent]
id 2 len 1001:54:25: Vi1 IPCP: Address 212.93.198.1 (0x0306D45DC601)01:54:25: Vi1 IPCP: State

```

is Open01:54:25: Di1 IPCP: Install negotiated IP interface address 212.93.198.101:54:25: Di1
IPCP: Install route to 212.93.195.10001:54:26: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Virtual-Access1,changed state to up

[相关信息](#)

- [配置Cisco 827路由器](#)
- [Cisco DSL技术支持信息](#)
- [技术支持 - Cisco Systems](#)