

# 配置使用外部调制解调器的 PPP 拨入

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## 简介

使用外置调制解调器，本文说明点对点协议(PPP)拨入配置。

## 先决条件

### 要求

您需要配置您要能拨号的每个用户的一个用户名和密码，因为此配置没有一个终端接入控制器访问控制器系统(TACACS+)或远程验证拨入用户服务(RADIUS)服务器。所有IP地址被递交给从池的客户端。

对于此配置，您需要以下：

- 用户名和密码您希望客户端使用(即使您是去的后添加TACACS+或的RADIUS，添加一些名称到路由器测试线路)。
- IP编址方案创建的池和静态路由的。

### 使用的组件

本文档中的信息基于以下软件和硬件版本。

- 在清除配置实验室环境的一Cisco2511。

- 在路由器的Cisco IOS版本12.2(10b)。
- 外部异步调制解调器四个编号。

本文档中的信息都是基于特定实验室环境中的设备创建的。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，请确保您在使用任何命令前已经了解其潜在影响。

## 相关产品

此配置还可用于以下硬件和软件版本：

- 有异步接口和serial interfaces的路由器能够配置异步接口。
- 可以使用WIC-2A/S，8或者16异步端口serial interfaces。

## 规则

有关文档规则的详细信息，请参阅 [Cisco 技术提示规则](#)。

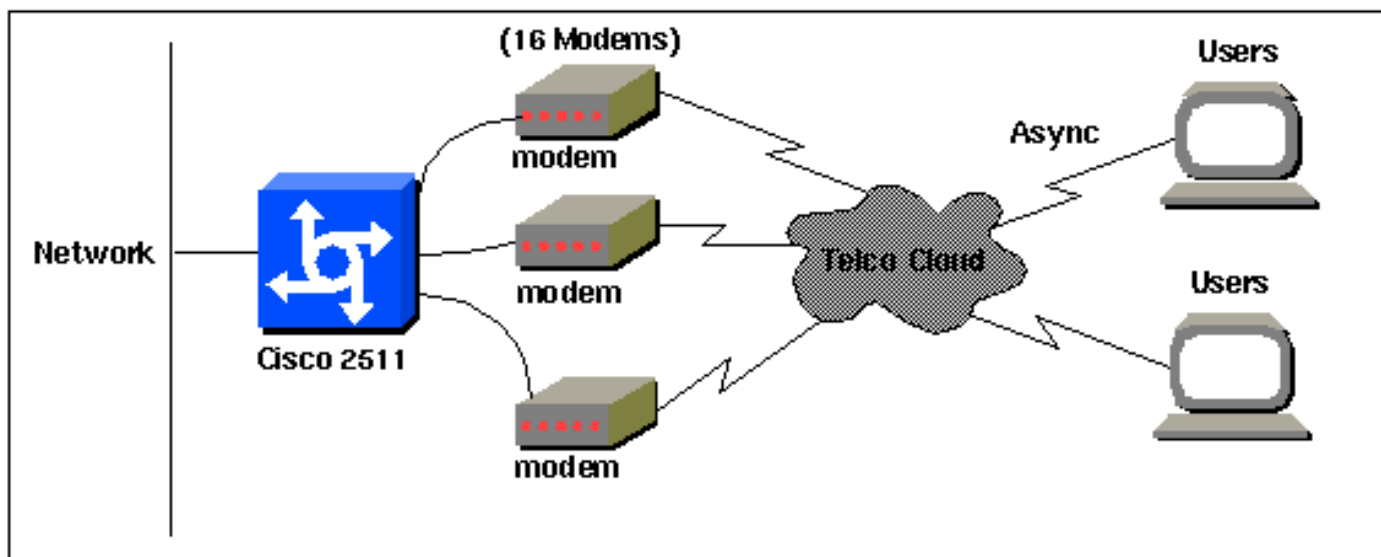
## 配置

本部分提供有关如何配置本文档所述功能的信息。

**注意：**要查找本文档所用命令的其他信息，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。



## 配置

本文档使用如下所示的配置。

此配置是在一个2511系列路由器的测试的使用Cisco IOS软件版本12.2(10b)。相同的配置概念将适用于一个相似的路由器结构或其他Cisco IOS版本从11.0(3)开始或以后。

## Cisco 2511

```
Current configuration:
!
version 12.2

service timestamps debug datetime msec
no service password-encryption
no service udp-small-servers
no service tcp-small-servers
!
hostname router1
!
enable secret <deleted>
!
username jason password foo
username laura password letmein
username russ password opensesame
username syed password bar
username tito password knockknock
  !--- Usernames and passwords for clients making
incoming calls. modemcap entry default !--- Modemcap
named "default" is applied to the line 2 and line 3 !---
of Serial interfaces. Refer to the Modem-Router
Connection Guide !--- and modemcap entry for more
information. ! interface Ethernet0 ip address
192.168.39.1 255.255.255.0 ! interface Serial0 no ip
address ! interface Serial1 no ip address ! interface
Group-Async1 !--- Async configuration for the external
modems. ip unnumbered ethernet0 encapsulation ppp async
mode interactive peer default ip address pool dialup !--
- Assigns ip address for incoming calls !--- from the
"dialup" pool. no cdp enable ppp authentication chap
group-range 1 16 !--- Includes lines 1 through 16 in the
group-async1 interface. ! ip local pool dialup
192.168.39.239 192.168.39.254 !--- Defines the range of
ip addresses available !--- to the "dialup" pool. ! line
con 0 login line 1 16 !--- Line configuration for the
external modems. login local !--- Authenticate incoming
calls locally with username and password !--- configured
on the router. autoselect during-login autoselect ppp !-
-- Launch PPP when PPP packets are received from the
client. modem InOut !--- Allow incoming and outgoing
calls. transport input all modem autoconfigure type
default !--- Apply the modemcap "default" (configured
previously) to initialize !--- the modem. Refer to the
link Modem-Router Connection Guide !--- for more
information. stopbits 1 flowcontrol hardware line aux 0
line vty 0 4 exec-timeout 20 0 password letmein login !
end
```

对于远程用户要随机连接到他们的短长时间的中心局间隔，此种拨号连接提供一更加便宜的解决方案。在上述配置中用户拨号从他的在调制解调器的桌面和设立一PPP连接到中心局通过PSTN网络。

要实施此配置，您必须进行以下配置：

- 异步接口。
- 异步线路。

- IP地址的池在全局配置模式的。
- 调制解调器参数- [modemcap项](#)和[调制解调器-路由器连接指南](#)。
- 拨号网络在主机必须配置。

## 验证

本部分所提供的信息可用于确认您的配置是否正常工作。

[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 users**
- **show interface**
- **show line**
- **show ip route**

```
router1#show users
Line      User      Host(s)      Idle      Location
*  0 con 0          idle          00:00:00
1 tty 1      jason      Async interface  00:00:34  PPP: 192.168.39.240
3 tty 3          Modem Autoconfigure 00:00:00
4 tty 4          Modem Autoconfigure 00:00:00
5 tty 5          Modem Autoconfigure 00:00:00
6 tty 6          Modem Autoconfigure 00:00:01
7 tty 7          Modem Autoconfigure 00:00:01
8 tty 8          Modem Autoconfigure 00:00:01
9 tty 9          Modem Autoconfigure 00:00:01
10 tty 10         Modem Autoconfigure 00:00:01
11 tty 11         Modem Autoconfigure 00:00:01
12 tty 12         Modem Autoconfigure 00:00:00
13 tty 13         Modem Autoconfigure 00:00:00
14 tty 14         Modem Autoconfigure 00:00:01
15 tty 15         Modem Autoconfigure 00:00:01
16 tty 16         Modem Autoconfigure 00:00:00
```

```
Interface User Mode Idle Peer Address
```

```
router1#show interface asynchronous 1
Asyncl is up, line protocol is up
Hardware is Async Serial
Interface is unnumbered. Using address of Ethernet0 (192.168.39.1)
MTU 1500 bytes, BW 115 Kbit, DLY 100000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
Encapsulation PPP, loopback not set  Keepalive not set
DTR is pulsed for 5 seconds on reset
LCP Open
Open: IPCP
Last input 00:00:28, output 00:00:43, output hang never
Last clearing of "show interface" counters 00:29:49
Input queue: 1/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
    Conversations 0/1/16 (active/max active/max total )
    Reserved Conversations 0/0 (allocated/max allocated)
    Available Bandwidth 86 kilobits/sec
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
```

34 packets input, 3147 bytes, 0 no buffer  
Received 0 broadcasts, 0 runts, 0 giants, 0 throttles  
2 input errors, 2 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort  
16 packets output, 383 bytes, 0 underruns  
0 output errors, 0 collisions, 1 interface resets  
0 output buffer failures, 0 output buffers swapped out  
0 carrier transitions

router1#show line

Tty	Typ	Tx/Rx	A	Modem	Roty	AccO	AccI	Uses	Noise	Overruns	Int	
*	0	CTY	-	-	-	-	-	-	0	0	0/0	-
A	1	TTY 115200/115200-	inout	-	-	-	-	-	1	1	0/0	-
*	2	TTY 38400/38400	-	inout	-	-	-	-	0	0	0/0	-
*	3	TTY 300/300	-	inout	-	-	-	-	0	0	0/0	-
*	4	TTY 300/300	-	inout	-	-	-	-	0	0	0/0	-
*	5	TTY 1200/1200	-	inout	-	-	-	-	0	0	0/0	-
*	6	TTY 300/300	-	inout	-	-	-	-	0	0	0/0	-
*	7	TTY 300/300	-	inout	-	-	-	-	0	0	0/0	-
*	8	TTY 300/300	-	inout	-	-	-	-	0	0	0/0	-
*	9	TTY 1200/1200	-	inout	-	-	-	-	0	0	0/0	-
*	10	TTY 300/300	-	inout	-	-	-	-	0	0	0/0	-
*	11	TTY 300/300	-	inout	-	-	-	-	0	0	0/0	-
*	12	TTY 115200/115200-	inout	-	-	-	-	-	0	0	0/0	-
*	13	TTY 115200/115200-	inout	-	-	-	-	-	0	0	0/0	-
*	14	TTY 300/300	-	inout	-	-	-	-	0	0	0/0	-
*	15	TTY 300/300	-	inout	-	-	-	-	0	0	0/0	-
*	16	TTY 300/300	-	inout	-	-	-	-	0	0	0/0	-
	17	AUX 9600/9600	-	-	-	-	-	-	0	0	0/0	-
	18	VTY	-	-	-	-	-	-	0	0	0/0	-
	19	VTY	-	-	-	-	-	-	0	0	0/0	-
	20	VTY	-	-	-	-	-	-	0	0	0/0	-
	21	VTY	-	-	-	-	-	-	0	0	0/0	-

router1#show line 1

Tty	Typ	Tx/Rx	A	Modem	Roty	AccO	AccI	Uses	Noise	Overruns	Int	
A	1	TTY 115200/115200-	inout	-	-	-	-	-	1	1	0/0	-

Line 1, Location: "PPP: 192.168.39.240", Type: ""

Length: 24 lines, Width: 80 columns

Baud rate (TX/RX) is 115200/115200, no parity, 1 stopbits, 8 databits

Status: Ready, Active, No Exit Banner, Async Interface Active

Modem Detected, CTS Raised

Capabilities: Hardware Flowcontrol In, Hardware Flowcontrol Out

Modem Callout, Modem RI is CD, Line usable as async interface

Modem Autoconfigure

Modem state: Ready

Group codes: 0

Line is running PPP for address 192.168.39.240.

0 output packets queued, 1 input packets.

Async Escape map is 00000000000000000000000000000000

Modem hardware state: CTS DSR DTR RTS, Modem Configured

Special Chars: Escape Hold Stop Start Disconnect Activation

^^x none - - none

Timeouts: Idle EXEC Idle Session Modem Answer Session Dispatch

00:10:00 never none not set

Idle Session Disconnect Warning

never

router1#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 not set

C 192.168.39.0/24 is directly connected, Ethernet0

## 在Windows 2000服务器主机上

设置在Windows 2000主机的拨号连接。配置用户名、密码和电话号码并且拨号连接。



在拨号连接建立后，IP地址从在路由器配置的拨号池分配。我们能通过发出在主机上的ipconfig命令验证那。它显示作为在主机的一台PPP适配器。

```
C:\Documents and Settings\Administrator>ipconfig
Windows 2000 IP Configuration
Ethernet adapter Local Area Connection:
    Media State . . . . . : Cable Disconnected
PPP adapter Dial-up Connection:
    Connection-specific DNS Suffix . :
    IP Address. . . . . : 192.168.39.240
    Subnet Mask . . . . . : 255.255.255.255
    Default Gateway . . . . . : 192.168.39.240
```

要验证从Windows 2000服务器主机的连接建立到Cisco 2511路由器，您能从主机ping到路由器以太网端口和验证连接建立。这里，**192.168.39.1**是路由器的以太网端口IP地址。

```
C:\Documents and Settings\Administrator>ping 192.168.39.1
Pinging 192.168.39.1 with 32 bytes of data:
Reply from 192.168.39.1: bytes=32 time=170ms TTL=255
    Reply from 192.168.39.1: bytes=32 time=111ms TTL=255
    Reply from 192.168.39.1: bytes=32 time=110ms TTL=255
    Reply from 192.168.39.1: bytes=32 time=100ms TTL=255
Ping statistics for 192.168.39.1:
```

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
Approximate round trip times in milli-seconds:  
Minimum = 100ms, Maximum = 170ms, Average = 122ms

## 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](#)。

- **debug ppp negotiation** - 用于查看客户端是否通过 PPP 协商。这是您检查地址协商的时候。
- **debug ppp authentication** - 看见客户端是否可以是否通过认证。
- **debug ppp error** - 显示和PPP连接协商与操作相关的协议错误以及统计错误。
- **debug modem** - 用于查看路由器从调制解调器接收的信号是否正确。
- **show line [- tty line]** - 正在寻找调制解调器硬件状态。

以下输出从Cisco 2511路由器得到了。显示Windows 2000服务器拨号对PSTN Cisco2511的链路和建立PPP连接的他们。

```
router1#debug ppp negotiation
PPP protocol negotiation debugging is on
router1#debug vtemplate
Virtual Template debugging is on
router1#show debug
PPP:
  PPP protocol negotiation debugging is on
Dec 10 18:43:59.079: As1 LCP: I CONFREQ [Closed] id 1 len 50
Dec 10 18:43:59.083: As1 LCP:   ACCM 0x00000000 (0x020600000000)
Dec 10 18:43:59.087: As1 LCP:   MagicNumber 0x59F402A1 (0x050659F402A1)
Dec 10 18:43:59.087: As1 LCP:   PFC (0x0702)
Dec 10 18:43:59.091: As1 LCP:   ACFC (0x0802)
Dec 10 18:43:59.091: As1 LCP:   Callback 6 (0x0D0306)
Dec 10 18:43:59.095: As1 LCP:   MRRU 1614 (0x1104064E)
Dec 10 18:43:59.099: As1 LCP:   EndpointDisc 1 Local
Dec 10 18:43:59.099: As1 LCP:   (0x131701714C44F0EC8F45BABDC596D14B)
Dec 10 18:43:59.103: As1 LCP:   (0x79DB5300000000)
Dec 10 18:43:59.107: As1 LCP: Lower layer not up, Fast Starting
Dec 10 18:43:59.107: As1 PPP: Treating connection as a dedicated line
Dec 10 18:43:59.111: As1 PPP: Phase is ESTABLISHING,
Active Open [0 sess, 0 load]
Dec 10 18:43:59.115: As1 LCP: O CONFREQ [Closed] id 3 len 25
Dec 10 18:43:59.119: As1 LCP:   ACCM 0x000A0000 (0x0206000A0000)
Dec 10 18:43:59.123: As1 LCP:   AuthProto CHAP (0x0305C22305)
Dec 10 18:43:59.127: As1 LCP:   MagicNumber 0x002AF05C (0x0506002AF05C)
Dec 10 18:43:59.127: As1 LCP:   PFC (0x0702)
Dec 10 18:43:59.131: As1 LCP:   ACFC (0x0802)
Dec 10 18:43:59.135: As1 LCP: O CONFREQ [REQsent] id 1 len 11
Dec 10 18:43:59.139: As1 LCP:   Callback 6 (0x0D0306)
Dec 10 18:43:59.139: As1 LCP:   MRRU 1614 (0x1104064E)
Dec 10 18:43:59.155: %LINK-3-UPDOWN: Interface Async1,
changed state to up
```

Dec 10 18:43:59.263: As1 LCP: I CONFACK [REQsent] id 3 len 25  
Dec 10 18:43:59.267: As1 LCP: ACCM 0x000A0000 (0x0206000A0000)  
Dec 10 18:43:59.267: As1 LCP: AuthProto CHAP (0x0305C22305)  
Dec 10 18:43:59.271: As1 LCP: MagicNumber 0x002AF05C (0x0506002AF05C)  
Dec 10 18:43:59.275: As1 LCP: PFC (0x0702)  
Dec 10 18:43:59.275: As1 LCP: ACFC (0x0802)  
Dec 10 18:43:59.279: As1 LCP: I CONFREQ [ACKrcvd] id 2 len 43  
Dec 10 18:43:59.283: As1 LCP: ACCM 0x00000000 (0x020600000000)  
Dec 10 18:43:59.287: As1 LCP: MagicNumber 0x59F402A1 (0x050659F402A1)  
Dec 10 18:43:59.287: As1 LCP: PFC (0x0702)  
Dec 10 18:43:59.291: As1 LCP: ACFC (0x0802)  
Dec 10 18:43:59.291: As1 LCP: EndpointDisc 1 Local  
Dec 10 18:43:59.295: As1 LCP: (0x131701714C44F0EC8F45BABDC596D14B)  
Dec 10 18:43:59.299: As1 LCP: (0x79DB5300000000)  
Dec 10 18:43:59.303: As1 LCP: O CONFACK [ACKrcvd] id 2 len 43  
Dec 10 18:43:59.307: As1 LCP: ACCM 0x00000000 (0x020600000000)  
Dec 10 18:43:59.311: As1 LCP: MagicNumber 0x59F402A1 (0x050659F402A1)  
Dec 10 18:43:59.311: As1 LCP: PFC (0x0702)  
Dec 10 18:43:59.315: As1 LCP: ACFC (0x0802)  
Dec 10 18:43:59.315: As1 LCP: EndpointDisc 1 Local  
Dec 10 18:43:59.319: As1 LCP: (0x131701714C44F0EC8F45BABDC596D14B)  
Dec 10 18:43:59.323: As1 LCP: (0x79DB5300000000)  
Dec 10 18:43:59.327: **As1 LCP: State is Open**  
Dec 10 18:43:59.327: **As1 PPP: Phase is AUTHENTICATING,**  
**by this end [0 sess, 1 load]**  
Dec 10 18:43:59.331: As1 CHAP: O CHALLENGE id 2 len 25 from "**router1**"  
Dec 10 18:43:59.459: As1 LCP: I IDENTIFY [Open] id 3 len 18 magic  
0x59F402A1 MSRASV5.00  
Dec 10 18:43:59.463: As1 LCP: I IDENTIFY [Open] id 4 len 28 magic  
0x59F402A1  
MSRAS-1-LAB-WIN2K-PC  
Dec 10 18:43:59.467: As1 CHAP: I RESPONSE id 2 len 26 from "**jason**"  
Dec 10 18:43:59.479: As1 CHAP: O SUCCESS id 2 len 4  
Dec 10 18:43:59.483: As1 PPP: Phase is UP [0 sess, 1 load]  
Dec 10 18:43:59.487: As1 IPCP: O CONFREQ [Closed] id 1 len 10  
Dec 10 18:43:59.491: **As1 IPCP: Address 192.168.39.1**  
(0x0306C0A82701)  
Dec 10 18:43:59.567: As1 CCP: I CONFREQ [Not negotiated] id 5 len 10  
Dec 10 18:43:59.571: As1 CCP: MS-PPC supported bits 0x00000001  
(0x120600000001)  
Dec 10 18:43:59.575: As1 LCP: O PROTREJ [Open] id 4 len 16 protocol CCP  
(0x80FD0105000A120600000001)  
Dec 10 18:43:59.599: As1 IPCP: I CONFREQ [REQsent] id 6 len 40  
Dec 10 18:43:59.603: As1 IPCP: CompressType VJ 15 slots CompressSlotID  
(0x0206002D0F01)  
Dec 10 18:43:59.607: As1 IPCP: Address 0.0.0.0 (0x030600000000)  
Dec 10 18:43:59.611: As1 IPCP: PrimaryDNS 0.0.0.0 (0x810600000000)  
Dec 10 18:43:59.615: As1 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000)  
Dec 10 18:43:59.615: As1 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000)  
Dec 10 18:43:59.619: As1 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000)  
Dec 10 18:43:59.623: As1 IPCP: O CONFREQ [REQsent] id 6 len 34  
Dec 10 18:43:59.627: As1 IPCP: CompressType VJ 15 slots CompressSlotID  
(0x0206002D0F01)  
Dec 10 18:43:59.631: As1 IPCP: PrimaryDNS 0.0.0.0 (0x810600000000)  
Dec 10 18:43:59.635: As1 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000)  
Dec 10 18:43:59.639: As1 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000)  
Dec 10 18:43:59.643: As1 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000)  
Dec 10 18:43:59.647: As1 IPCP: I CONFACK [REQsent] id 1 len 10  
Dec 10 18:43:59.651: As1 IPCP: Address 192.168.39.1 (0x0306C0A82701)  
Dec 10 18:43:59.735: As1 IPCP: I CONFREQ [ACKrcvd] id 7 len 10  
Dec 10 18:43:59.739: As1 IPCP: Address 0.0.0.0 (0x030600000000)  
Dec 10 18:43:59.743: As1 IPCP: O CONFNAK [ACKrcvd] id 7 len 10  
Dec 10 18:43:59.747: **As1 IPCP: Address 192.168.39.240**  
(0x0306C0A827F0)



```
Dec 10 18:43:59.835: As1 IPCP: I CONFREQ [ACKrcvd] id 8 len 10
Dec 10 18:43:59.839: As1 IPCP:   Address 192.168.39.240 (0x0306C0A827F0)
Dec 10 18:43:59.843: As1 IPCP: O CONFACK [ACKrcvd] id 8 len 10
Dec 10 18:43:59.847: As1 IPCP:   Address 192.168.39.240 (0x0306C0A827F0)
Dec 10 18:43:59.851: As1 IPCP: State is Open
Dec 10 18:43:59.863: As1 IPCP: Install route to 192.168.39.240
Dec 10 18:44:00.483: %LINEPROTO-5-UPDOWN:
Line protocol on Interface Async1, changed state to up
```

## [相关信息](#)

- [接入拨号技术支持页](#)
- [modemcap项](#)
- [调制解调器与路由器连接指南](#)
- [技术支持 - Cisco Systems](#)