

# 配置 Cisco 3600 路由器以支持 T1/E1 及数字调制解调器网络模块

## 目录

[简介](#)

[先决条件](#)

[要求](#)

[使用的组件](#)

[相关产品](#)

[规则](#)

[配置](#)

[网络图](#)

[预配置任务](#)

[配置](#)

[验证](#)

[故障排除](#)

[故障排除资源](#)

[故障排除命令](#)

[相关信息](#)

## 简介

在许多环境中，必需配置一个接入服务器从异步用户和ISDN用户上接收来电。这些用户可以无缝地连接到网络，就好象实际连接到网络一样。因此，此设置通常用于为移动用户、远程办公用户、小型办公室-家庭办公室 (SOHO) 站点提供网络连通性。

本文阐述如何在ISDN T1 ( PRI或随路信令[CAS])电路上配置Cisco 3600系列路由器接收异步呼叫。该配置只包括网络接入服务器接受呼叫所需的最小值(NAS)。您可以根据需要向此配置添加其他功能。

**注意：**此配置不显示如何在3600系列路由器上配置通过BRI的异步拨入。有关详细信息，请参阅文档[配置 Cisco 3640 BRI 的调制解调器连接](#)。

## 先决条件

### 要求

本文档没有任何特定的要求。

### 使用的组件

此配置使用下面软件和硬件版本开发并且被测试。

- Cisco 3640 系列路由器，其中包含一个单端口信道化 T1/ISDN-PRI 网络模块 (NM-1CT1-CSU) 和一个 24 端口数字调制解调器网络模块 (NM-24DM)。
- 运行 Cisco IOS® 软件版本 12.1(5)T9 的 Cisco 3640 路由器。
- 一个 T1 PRI 电路。
- 一个 T1 CAS 电路。

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。如果您是在真实网络上操作，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](#)

此配置可以用在带有 T1/E1 网络模块和数字调制解调器网络模块的任何 Cisco 3600 系列路由器上。

"要获得关于 AS5x00 系列路由器的示例配置，请参见""为流入的异步呼叫和 ISDN 呼叫配置带有 PRI 的接入服务器""文档。"

也可以修改该配置，与 E1 或 PRI 端口结合使用。为 E1 控制器配置 Telco 提供的线性编码、成帧及其他物理特性。PRI 信道配置（E1 的接口 Serial x:15）与此处所示的配置类似。

## [规则](#)

有关文档规则的详细信息，请参阅 [Cisco 技术提示规则](#)。

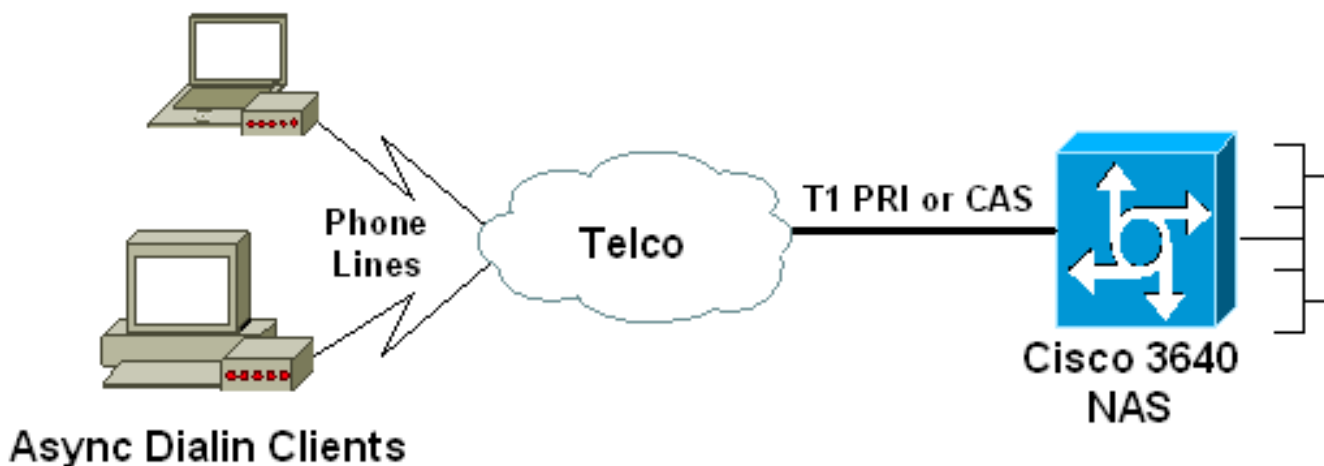
## [配置](#)

本部分提供有关如何配置本文档所述功能的信息。

**注意：**要查找有关本文档中使用的命令的其他信息，请使用 [IOS 命令查找工具](#) (仅限注册客户)。

## [网络图](#)

本文档使用下图所示的网络设置。



## [预配置任务](#)

## 任务 1

确定安装数字调制解调器的插槽编号。使用 **show diag EXEC** 命令来确定安装模块的插槽。下面显示了 **show diag EXEC** 命令的示例输出：

```
acc-3640-6a#show diag
```

```
Slot 0:
```

```
CT1 (CSU) Port adapter, 1 port
```

```
! -- NM-1CT1-CSU is in slot 0. ! -- The T1 interfaces are addressed as controller t1 slot/port.  
! -- In this example, controller t1 0/0. Port adapter is analyzed Port adapter insertion time  
unknown EEPROM contents at hardware discovery: Hardware revision 1.1 Board revision D0 Serial  
number 22677234 Part number 800-01228-04 Test history 0x0 RMA number 00-00-00 EEPROM format  
version 1 EEPROM contents (hex): 0x20: 01 26 01 01 01 5A 06 F2 50 04 CC 04 00 00 00 00 0x30: 68  
00 00 00 00 12 19 00 FF FF FF FF FF FF FF FF Slot 1:
```

```
Digital Modems Port adapter, 24 ports
```

```
! -- Digital modems are in slot 1. Note that there are 24 modems. Port adapter is analyzed Port  
adapter insertion time unknown EEPROM contents at hardware discovery: Hardware revision 0.3  
Board revision UNKNOWN Serial number 0 Part number 00-0000-00 Test history 0x0 RMA number 00-00-  
00 ... .. ! -- Irrelevant Output omitted .....
```

## 任务 2

确定与调制解调器模块关联的线路编号或异步接口范围。

参见“如何在Cisco 3600系列路由器中编号异步线路”文件中的表格，以确定线路范围。

在本示例中，数字调制解调器网络模块位于 Cisco 3640 路由器的插槽 1 中。参照上文，我们确定线路号范围是33到64。但是，由于调制解调器模块只有24个端口，因此范围仅为线路33到56（其余八条线路未使用）。

**提示：**您还可以使用下面显示的公式查找行范围：

```
line number = (<slot> * 32) + <unit> + 1
```

因此，用我们的示例来说，起始线路数量为 $(1 * 32) + 0 + 1 = 33$ ，结束线路数量为56。

## 配置

下面是接受异步呼叫的 Cisco 3640 路由器的示例配置。第一个示例使用T3 CAS电路，而第二个示例使用T1 PRI电路。根据具有的 T1/E1 电路选择相应配置。

### 带有 T1 CAS 的 Cisco 3640

```
acc-3640-6a#show running-config  
Building configuration...  
  
Current configuration : 1137 bytes  
!  
version 12.1  
no service single-slot-reload-enable  
service timestamps debug uptime  
service timestamps log uptime  
no service password-encryption  
service internal
```

```

!
hostname acc-3640-6a
!
logging rate-limit console 10 except errors
!
username dialin password 0 user
! -- Usernames for local authentication of the call. ! -
- The client presents the username/password and the NAS
! -- authenticates the peer. ip subnet-zero ! no ip
finger no ip domain-lookup ! async-bootp dns-server
10.98.1.220 ! -- Specifies (for async clients) the IP
address of domain name server. async-bootp nbns-server
10.98.1.221 ! -- Specifies (for async clients) the IP
address of WINS server. call rsvp-sync ! controller T1
0/0 ! -- T1 Physical interface controller configuration.
! -- Interfaces are addressed as controller slot/port. !
-- In this example, the NM-1CT1-CSU module is in slot 0.
framing esf ! -- Framing for this T1 is Extended Super
Frame (ESF). ! -- Obtain this information from the
telco. linecode b8zs ! -- Linecoding for this T1. Obtain
this information from the telco. ds0-group 0 timeslots
1-24 type e & m-immediate-start; ! -- CAS T1 with E & M
Immediate Start provided by telco. ! -- Verify your
signaling type with your local provider. Prior to Cisco
IOS ! -- Software Release 12.0(5)T, this command was
known as cas-group. ! interface Ethernet2/0 ip address
10.98.1.51 255.255.255.0 half-duplex ! interface Group-
Async1 ! -- This group-async interface is the
configuration template for all modems. ! -- Individual
async interface do not have to be configured since they
! -- can be cloned from one managed copy. ip unnumbered
Ethernet2/0 encapsulation ppp dialer in-band dialer-
group 1 !--- Apply interesting traffic definition from
dialer-list 1. ! -- Note: The specified dialer-group
number must be the same as ! -- the dialer-list number;
in this example, defined to be "1". ! -- Interesting
traffic specifies the packets that should reset the idle
timer.

dialer idle-timeout 600
! -- Sets Idle timer to 600 seconds (10 minutes). async
mode dedicated ! -- Allows only PPP dialup. Prevents
users from establishing ! -- an "EXEC session" to the
router. If the async interface is to answer ! --
different connection types (exec,ppp,slip etc), ! -- use
async mode interactive in conjunction with autoselect
ppp ! -- under the line configuration to auto detect the
connection type. peer default ip address pool dialin ! -
- Clients are assigned addresses from the ip address
pool named "dialin".

ppp authentication chap pap
group-range 33 56
! -- Modems 33 through 56 are members of this group
async interface. ! -- This range was determined in the
section Pre-configuration Tasks. ! ip local pool dialin
10.98.1.15 10.98.1.39 ! -- IP address pool for dialin
clients. ip classless ip route 0.0.0.0 0.0.0.0 10.98.1.1
no ip http server ! dialer-list 1 protocol ip permit ! -
- Specifies all IP traffic as interesting. Interesting
traffic ! -- specifies the packets that should reset the
idle timer. ! -- This is applied to interface Group-
Async 1 using dialer-group 1. ! -- Note: The specified
dialer-list number must be the same as the ! -- dialer-

```

```
group number; in this example, defined to be "1".

!
dial-peer cor custom
!
line con 0
  transport input none
line 33 56
  ! -- TTY lines for the NM-24DM Modems. ! -- This line
  range was determined in the section Pre-configuration
  Tasks. modem InOut ! -- Support incoming and outgoing
  modem calls. transport input all line aux 0 line vty 0 4
login ! end
```

## 带有 T1 PRI 的 Cisco 3640

```
acc-3640-6a#show running-config
Building configuration...

Current configuration : 1200 bytes
!
version 12.1
no service single-slot-reload-enable
service timestamps debug datetime msec
service timestamps log uptime
no service password-encryption
!
hostname acc-3640-6a
!
logging rate-limit console 10 except errors
!
username dialin password 0 user

! -- Usernames for local authentication of the call. The
client ! -- presents the username/password and the NAS
authenticates the peer. ! -- To use AAA with RADIUS or
TACACS+ refer to the document ! -- Implementing the
Server-Based AAA Subsystem ip subnet-zero !! no ip
finger no ip domain-lookup ! async-bootp dns-server
10.98.1.220! -- Specifies (for async clients) the IP
address of domain name server. async-bootp nbns-server
10.98.1.221 ! -- Specifies (for async clients) the IP
address of WINS server. isdn switch-type primary-5ess
call rsvp-sync ! controller T1 0/0 ! -- T1 Physical
interface controller configuration. ! -- Interfaces are
addressed as controller slot/port. ! -- In this example,
the NM-1CT1-CSU module is in slot 0. framing esf ! --
Framing for this T1 is Extended Super Frame (ESF). ! --
Obtain this information from the telco. linecode b8zs !
-- Linecoding for this T1. Obtain this information from
the telco. pri-group timeslots 1-24 ! -- For T1 PRI
scenarios, all 24 T1 timeslots are assigned as ! -- ISDN
PRI channels. The router will now automatically create !
-- the corresponding D-channel: interface Serial 0/0:23.

!
interface Serial0/0:23
! -- D-channel configuration for T1 0/0. no ip address
encapsulation ppp isdn switch-type primary-5ess isdn
incoming-voice modem ! -- All incoming voice calls on
this T1 are sent to the modems. ! -- This command is
required if this T1 is to accept async calls. ! -- The
controller will now pass voice calls (bearer cap
```

```

0x9090A2) to the modem bank. ! interface Ethernet2/0 ip
address 10.98.1.51 255.255.255.0 half-duplex ! interface
Group-Async1 ! -- This group-async interface is the
configuration template for all modems. ! -- Individual
async interface do not have to be configured since they
can ! -- be cloned from one managed copy. ip unnumbered
Ethernet2/0 encapsulation ppp dialer in-band dialer-
group 1 !--- Apply interesting traffic definition from
dialer-list 1. ! -- Note: The specified dialer-group
number must be the same as ! -- the dialer-list number;
in this example, defined to be "1". ! -- Interesting
traffic specifies the packets that should reset the idle
timer.

dialer idle-timeout 600
async mode dedicated
! -- Allows only PPP dialup. Prevents users from
establishing an ! -- "EXEC session" to the router. If
the async interface is to answer different ! --
connection types(exec,ppp,slip etc), use async mode
interactive in ! -- conjunction with autoselect ppp
under the line configuration ! -- to auto detect the
connection type. peer default ip address pool dialin ! -
- Clients are assigned addresses from the ip address
pool named "dialin". ppp authentication chap pap group-
range 33 56 ! -- Modems 33 through 56 are members of
this group async interface. ! -- This range was
determined in the section Pre-configuration
Tasks. ! ip
local pool dialin 10.98.1.15 10.98.1.39 ! -- IP address
pool for dialin clients. ip classless ip route 0.0.0.0
0.0.0.0 10.98.1.1 no ip http server ! dialer-list 1
protocol ip permit ! -- Specifies all IP traffic as
interesting. ! -- Interesting traffic specifies the
packets that should reset the idle timer. ! -- This is
applied to interface Group-Async 1 using dialer-group 1.
! -- Note: The specified dialer-list number must be the
same as the ! -- dialer-group number; in this example,
defined to be "1".

dial-peer cor custom
!
line con 0
transport input none
line 33 56
! -- TTY lines for the NM-24DM Modems. ! -- This line
range was determined in the section Pre-configuration
Tasks. modem InOut ! -- Support incoming and outgoing
modem calls. transport input all line aux 0 line vty 0 4
login ! end

```

## 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 isdn status - 确保路由器与 ISDN 交换机正常通信。** 在输出中，验证第1层状态是否为活跃状态，是否第2层状态=MULTIPLE\_FRAME\_ESTABLISHED出现。此指令也显示活动的呼叫的数量。

- **show caller user username detail** -显示特定用户参数，如分配的IP地址、PPP和PPP捆绑参数等。如果您的Cisco IOS版本软件不支持此指令，请使用**show users**命令。
- **show dialer map** - 显示已配置的动态和静态 Dialer Maps。此指令可以被用于发现动态拨号映射是否被创建了。没有dialer map，您不能路由数据包。

## 故障排除

本部分提供的信息可用于对配置进行故障排除。

### 故障排除资源

按照需要使用下列故障排除资源：

- [传入调制解调器呼叫的故障排除](#) - 用于模拟呼叫故障排除。
- [PRI 异步调制解调器呼入 - 有关对模拟呼叫故障进行故障排除的其他信息。](#)
- [T1故障排除流程图——如果怀疑T1电路没有正常运行，则使用此流程图。](#)
- [T1/56K 线路的环回测试 - 用于验证路由器上的 T1 端口是否正常运行。](#)

### 故障排除命令

输出解释器工具支持某些 show 命令（只限于注册用户），通过它可以查看 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 dialer** -关于在拨号接口收到数据包的显示DDR调试信息。此信息有助于保证具有可以使用拨号程序接口的触发数据流。
- **debug isdn q931** -显示呼叫建立和拆卸ISDN网络连接(第3层)。
- **debug modem** - 显示接入服务器上的调制解调器线路活动情况。该输出显示出调制解调器线路何时改变状态。
- **debug modem csm** - EXEC 命令，用于诊断带有内部数字调制解调器的路由器上的呼叫交换模块 (CSM) 问题。使用该指令，您能跟踪呼入和呼出的呼叫交换排序的完成情况。
- **debug ppp negotiation** -显示协商链路控制协议(LCP)、认证和网络控制协议(NCP)时的 PPP数据流量和交换的信息。一个成功的PPP协商协议首先开启LCP状态，然后是鉴权，最后协商NCP。在 LCP 协商期间建立多链路参数，如最大接收重建单元 (MRRU)。
- **debug ppp authentication** - 显示 PPP 认证协议消息，包括 CHAP 数据包交换和口令身份验证协议 (PAP) 交换。
- **debug ppp error** -显示与PPP连接协商和运行有关的协议错误和错误统计数据。

下面是成功呼叫（使用 T1 CAS）的一些调试输出。注意在输出和备注中的粗体部分。比较您得到与如下所示的结果的输出。

```
acc-3640-6a#show debug
CSM Modem Management:
  Modem Management Call Switching Module debugging is on
PPP:
  PPP authentication debugging is on
  PPP protocol negotiation debugging is on
! -- Only debug modem csm, debug ppp authentication and ! -- debug ppp negotiation were
activated.
```



acc-3640-6a#

00:13:42: Modem 255/255 CSM: received EVENT\_CALL\_DIAL\_IN with call\_id 0000

00:13:42: src 0/0/0 dest 255/0/255 cause 512

00:13:42: CSM: Next free modem = 1/0; statbits = 10020

00:13:42: Modem 1/0 CSM: **modem is allocated, modems free=23**

*! -- The Call Switch Module (CSM) is informed of the call. ! -- The CSM allocates modem 1/0 to the incoming call.* 00:13:42: Modem 1/0 CSM: (CSM\_PROC\_IDLE)<--DSX0\_CALL 00:13:42: Modem 1/0 CSM: (CSM\_PROC\_IC\_CAS\_CHANNEL\_LOCKED)<--CSM\_EVENT\_MODEM\_SETUP 00:13:42: Modem 1/0 CSM: received EVENT\_START\_RX\_TONE with call\_id 0000 00:13:42: src 0/0/0 dest 1/0/0 cause 0 00:13:42: Modem 1/0 CSM: (CSM\_PROC\_IC\_CAS\_ANSWER\_CALL)<--DSX0\_START\_RX\_TONE 00:13:42: Modem 1/0 CSM: received EVENT\_CHANNEL\_CONNECTED with call\_id 0000 00:13:42: src 0/0/0 dest 1/0/0 cause 0 00:13:42: Modem 1/0 CSM: (CSM\_PROC\_IC\_CAS\_ANSWER\_CALL)<--DSX0\_CONNECTED 00:14:04: **Modem 1/0 CSM: (CSM\_PROC\_CAS\_WAIT\_FOR\_CARRIER)<--MODEM\_CONNECTED**

*! -- Modem 1/0 is Connected.* 00:14:07: %LINK-3-UPDOWN: Interface Async33, changed state to up

*! -- Modem 1/0 corresponds to int async 33 (and line 33).* 00:14:07: As33 PPP: Treating connection as a callin 00:14:07: As33 PPP: Phase is ESTABLISHING, Passive Open [0 sess, 0 load]

00:14:07: As33 **LCP: State is Listen**

*! -- LCP negotiation begins.* 00:14:08: As33 LCP: I CONFREQ [Listen] id 2 len 23 *! -- Incoming*

*LCP CONFREQ. ! -- For more information on interpreting PPP debugs refer to the document ! --*

*Dialup Technology: Troubleshooting Techniques.* 00:14:08: As33 LCP: ACCM 0x000A0000

(0x0206000A0000) 00:14:08: As33 LCP: MagicNumber 0x00ADDA8E (0x050600ADDA8E) 00:14:08: As33 LCP:

PFC (0x0702) 00:14:08: As33 LCP: ACFC (0x0802) 00:14:08: As33 LCP: Callback 6 (0x0D0306)

00:14:08: As33 LCP: O CONFREQ [Listen] id 12 len 25 00:14:08: As33 LCP: ACCM 0x000A0000

(0x0206000A0000) 00:14:08: As33 LCP: AuthProto CHAP (0x0305C22305) 00:14:08: As33 LCP:

MagicNumber 0xD0653B57 (0x0506D0653B57) 00:14:08: As33 LCP: PFC (0x0702) 00:14:08: As33 LCP:

ACFC (0x0802) 00:14:08: As33 LCP: O CONFREQ [Listen] id 2 len 7 00:14:08: As33 LCP: Callback 6

(0x0D0306) 00:14:08: As33 LCP: I CONFACK [REQsent] id 12 len 25 00:14:08: As33 LCP: ACCM

0x000A0000 (0x0206000A0000) 00:14:08: As33 LCP: AuthProto CHAP (0x0305C22305) 00:14:08: As33

LCP: MagicNumber 0xD0653B57 (0x0506D0653B57) 00:14:08: As33 LCP: PFC (0x0702) 00:14:08: As33

LCP: ACFC (0x0802) 00:14:08: As33 LCP: I CONFREQ [ACKrcvd] id 3 len 20 00:14:08: As33 LCP: ACCM

0x000A0000 (0x0206000A0000) 00:14:08: As33 LCP: MagicNumber 0x00ADDA8E (0x050600ADDA8E)

00:14:08: As33 LCP: PFC (0x0702) 00:14:08: As33 LCP: ACFC (0x0802) 00:14:08: As33 LCP: O CONFACK

[ACKrcvd] id 3 len 20 00:14:08: As33 LCP: ACCM 0x000A0000 (0x0206000A0000) 00:14:08: As33 LCP:

MagicNumber 0x00ADDA8E (0x050600ADDA8E) 00:14:08: As33 LCP: PFC (0x0702) 00:14:08: As33 LCP:

ACFC (0x0802) 00:14:08: **As33 LCP: State is Open**

*! --- LCP negotiation is complete.* 00:14:08: As33 PPP: Phase is AUTHENTICATING, by this end [0

sess, 0 load] 00:14:08: As33 CHAP: O CHALLENGE id 1 len 32 from "acc-3640-6a" 00:14:08: As33

AUTH: Started process 0 pid 94 00:14:08: As33 CHAP: I RESPONSE id 1 len 27 from "dialin"

00:14:08: **As33 CHAP: O SUCCESS** id 1 len 4

*! -- CHAP authentication is successful. ! -- If this fails verify that the username and password are correct. ! -- Refer to [Dialup Technology: Troubleshooting Techniques](#).* 00:14:08: As33 **PPP:**

**Phase is UP** [0 sess, 0 load]

*! -- IPCP negotiation begins.* 00:14:08: As33 IPCP: O CONFREQ [Closed] id 1 len 10 00:14:08: As33

IPCP: Address 10.98.1.51 (0x03060A620133) 00:14:08: As33 IPCP: I CONFREQ [REQsent] id 1 len 40

00:14:08: As33 IPCP: CompressType VJ 15 slots CompressSlotID (0x0206002D0F01) 00:14:08: As33

IPCP: Address 0.0.0.0 (0x030600000000) 00:14:08: As33 IPCP: PrimaryDNS 0.0.0.0 (0x810600000000)

00:14:08: As33 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000) 00:14:08: As33 IPCP: SecondaryDNS

0.0.0.0 (0x830600000000) 00:14:08: As33 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000) 00:14:08:

As33 IPCP: Pool returned 10.98.1.15 *! -- The IP Address Pool "dialin" provides the address for*

*the client* 00:14:08: As33 IPCP: O CONFREQ [REQsent] id 1 len 22 00:14:08: As33 IPCP:

CompressType VJ 15 slots CompressSlotID (0x0206002D0F01) 00:14:08: As33 IPCP: SecondaryDNS

0.0.0.0 (0x830600000000) 00:14:08: As33 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000) 00:14:08:

As33 CCP: I CONFREQ [Not negotiated] id 1 len 15 00:14:08: As33 CCP: MS-PPC supported bits

0x00000001 (0x120600000001) 00:14:08: As33 CCP: Stacker history 1 check mode EXTENDED

(0x1105000104) 00:14:08: As33 LCP: O PROTREQ [Open] id 13 len 21 protocol CCP 00:14:08: As33

LCP: (0x80FD0101000F12060000000111050001) 00:14:08: As33 LCP: (0x04) 00:14:08: As33 IPCP: I

CONFACK [REQsent] id 1 len 10 00:14:08: As33 IPCP: Address 10.98.1.51 (0x03060A620133) 00:14:10:

As33 IPCP: TIMEOUT: State ACKrcvd 00:14:10: As33 IPCP: O CONFREQ [ACKrcvd] id 2 len 10 00:14:10:

As33 IPCP: Address 10.98.1.51 (0x03060A620133) 00:14:10: As33 IPCP: I CONFACK [REQsent] id 2 len

10 00:14:10: As33 IPCP: Address 10.98.1.51 (0x03060A620133) 00:14:11: As33 IPCP: I CONFREQ

[ACKrcvd] id 2 len 34 00:14:11: As33 IPCP: Address 0.0.0.0 (0x030600000000) 00:14:11: As33 IPCP:

PrimaryDNS 0.0.0.0 (0x810600000000) 00:14:11: As33 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000)

00:14:11: As33 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000) 00:14:11: As33 IPCP: SecondaryWINS



```

0.0.0.0 (0x840600000000) 00:14:11: As33 IPCP: O CONFREQ [ACKrcvd] id 2 len 16 00:14:11: As33
IPCP: SecondaryDNS 0.0.0.0 (0x830600000000) 00:14:11: As33 IPCP: SecondaryWINS 0.0.0.0
(0x840600000000) 00:14:11: As33 IPCP: I CONFREQ [ACKrcvd] id 3 len 22 00:14:11: As33 IPCP:
Address 0.0.0.0 (0x030600000000) 00:14:11: As33 IPCP: PrimaryDNS 0.0.0.0 (0x810600000000)
00:14:11: As33 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000) 00:14:11: As33 IPCP: O CONFNAK
[ACKrcvd] id 3 len 22 00:14:11: As33 IPCP: Address 10.98.1.15 (0x03060A62010F) 00:14:11: As33
IPCP: PrimaryDNS 10.98.1.220 (0x81060A6201DC) 00:14:11: As33 IPCP: PrimaryWINS 10.98.1.221
(0x82060A6201DD) 00:14:11: As33 IPCP: I CONFREQ [ACKrcvd] id 4 len 22 00:14:11: As33 IPCP:
Address 10.98.1.15 (0x03060A62010F) 00:14:11: As33 IPCP: PrimaryDNS 10.98.1.220 (0x81060A6201DC)
00:14:11: As33 IPCP: PrimaryWINS 10.98.1.221 (0x82060A6201DD) 00:14:11: As33 IPCP: O CONFACK
[ACKrcvd] id 4 len 22 00:14:11: As33 IPCP: Address 10.98.1.15 (0x03060A62010F) 00:14:11: As33
IPCP: PrimaryDNS 10.98.1.220 (0x81060A6201DC)
! -- The Primary DNS server is agreed upon. ! -- This was configured using the async bootp
commands. 00:14:11: As33 IPCP: PrimaryWINS 10.98.1.221 (0x82060A6201DD)
! -- The Primary WINS server is agreed upon. ! -- This was configured using the async bootp
commands. 00:14:11: As33 IPCP: State is Open
! -- IPCP negotiation is complete. The user is now connected. 00:14:11: As33 IPCP: Install route
to 10.98.1.15
! -- The NAS installs a route to the client.

```

对远端对等体的 ICMP ping 操作成功 :

```
acc-3640-6a#ping 10.98.1.15
```

```

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.98.1.15, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 124/138/148 ms
acc-3640-6a#

```

下面是成功呼叫 ( 使用 T1 PRI ) 的一些调试输出。 注意在输出和备注中的粗体部分。 比较您得到与如下所示的结果的输出。

```

acc-3640-6a#show debug
CSM Modem Management:
  Modem Management Call Switching Module debugging is on
PPP:
  PPP authentication debugging is on
  PPP protocol negotiation debugging is on
ISDN:
  ISDN Q931 packets debugging is on
  ISDN Q931 packets debug DSLs. (On/Off/No DSL:1/0/-)
  DSL  0 --> 31
  1 - - - - -
! -- Only debug modem csm, debug ppp authentication, debug ppp negotiation and ! -- debug isdn
q931 were activated.

acc-3640-6a#
*Mar  1 00:22:43.743: ISDN Se0/0:23: RX <- SETUP pd = 8  callref = 0x32
! -- Incoming Q.931 SETUP message. Indicates an incoming call. ! -- For more information on
Q.931 refer to the document. ! -- Troubleshooting ISDN Layer 3 using the debug isdn q931
Command. *Mar  1 00:22:43.747: Bearer Capability i = 0x9090A2 *Mar  1 00:22:43.747: Channel ID i =
0xA98393 *Mar  1 00:22:43.747: Calling Party Number i = 0x2183, '9194722001', Plan:ISDN,
Type:National *Mar  1 00:22:43.747: Called Party Number i = 0xC1, '9194724137', Plan:ISDN,
Type:Subscriber(local) *Mar  1 00:22:43.755: CSM: MODEM_REPORT from 0/0:18, call_id=0x4,
event=0x1, cause=0x0, dchan_idb=0x62442AB8 *Mar  1 00:22:43.755: CSM: Next free modem = 1/3;
statbits = 10020 ! -- The Call Switch Module (CSM) is informed of the call. !-- The CSM
allocates modem 2/0 to the incoming call. *Mar  1 00:22:43.755: Modem 1/3 CSM: modem is
allocated, modems free=23 *Mar  1 00:22:43.755: Modem 1/3 CSM: Incoming call from 9194722001 to
9194724137, id 0x4 *Mar  1 00:22:43.755: Modem 1/3 CSM: (CSM_PROC_IDLE)<--ISDN_CALL *Mar  1
00:22:43.803: ISDN Se0/0:23: TX -> CALL_PROC pd = 8  callref = 0x8032

```

\*Mar 1 00:22:43.803: Channel ID i = 0xA98393  
! -- The Call Proceeding Message is sent through the D-channel. \*Mar 1 00:22:43.807: ISDN Se0/0:23: TX -> ALERTING pd = 8 callref = 0x8032 \*Mar 1 00:22:43.807: ISDN Se0/0:23: TX -> CONNECT pd = 8 callref = 0x8032  
! -- D-channel transmits a CONNECT. \*Mar 1 00:22:43.907: ISDN Se0/0:23: RX <- CONNECT\_ACK pd = 8 callref = 0x32  
! -- Received the Q.931 CONNECT\_ACK. \*Mar 1 00:22:43.911: ISDN Se0/0:23: CALL\_PROGRESS: CALL\_CONNECTED call id 0x4, bchan 18, dsl 0 \*Mar 1 00:22:43.911: CSM: MODEM\_REPORT from 0/0:18, call\_id=0x4, event=0x4, cause=0x0, dchan\_idb=0x62442AB8 \*Mar 1 00:22:43.911: Modem 1/3 CSM: MODEM\_REPORT rcvd DEV\_CONNECTED for call\_id 0x4 \*Mar 1 00:22:43.911: Modem 1/3 CSM: (CSM\_PROC\_MODEM\_RESERVED)<--ISDN\_CONNECTED 00:22:43: %ISDN-6-CONNECT: Interface Serial0/0:18 is now connected to 9194722001 \*Mar 1 00:23:06.291: Modem 1/3 CSM: (CSM\_PROC\_WAIT\_FOR\_CARRIER)<-- MODEM\_CONNECTED  
! -- Modem is connected. 00:23:08: %LINK-3-UPDOWN: Interface Async36, changed state to up  
! -- Modem 1/3 corresponds to int async 36 (and line 36). \*Mar 1 00:23:08.755: As36 PPP: Treating connection as a callin \*Mar 1 00:23:08.755: As36 PPP: Phase is ESTABLISHING, Passive Open [0 sess, 0 load] \*Mar 1 00:23:08.755: As36 LCP: State is Listen  
! -- LCP negotiation begins. \*Mar 1 00:23:09.399: As36 LCP: I CONFREQ [Listen] id 2 len 23  
! -- Incoming LCP CONFREQ. ! -- For more information on interpreting PPP debugs refer to the document ! -- Dialup Technology: Troubleshooting Techniques. \*Mar 1 00:23:09.399: As36 LCP: ACCM 0x000A0000 (0x0206000A0000) \*Mar 1 00:23:09.399: As36 LCP: MagicNumber 0x009B41FA (0x0506009B41FA) \*Mar 1 00:23:09.399: As36 LCP: PFC (0x0702) \*Mar 1 00:23:09.399: As36 LCP: ACFC (0x0802) \*Mar 1 00:23:09.399: As36 LCP: Callback 6 (0x0D0306) \*Mar 1 00:23:09.399: As36 LCP: O CONFREQ [Listen] id 1 len 25 \*Mar 1 00:23:09.399: As36 LCP: ACCM 0x000A0000 (0x0206000A0000) \*Mar 1 00:23:09.399: As36 LCP: AuthProto CHAP (0x0305C22305) \*Mar 1 00:23:09.403: As36 LCP: MagicNumber 0xD06D7DF1 (0x0506D06D7DF1) \*Mar 1 00:23:09.403: As36 LCP: PFC (0x0702) \*Mar 1 00:23:09.403: As36 LCP: ACFC (0x0802) \*Mar 1 00:23:09.403: As36 LCP: O CONFREQ [Listen] id 2 len 7 \*Mar 1 00:23:09.403: As36 LCP: Callback 6 (0x0D0306) \*Mar 1 00:23:09.523: As36 LCP: I CONFACK [REQsent] id 1 len 25 \*Mar 1 00:23:09.523: As36 LCP: ACCM 0x000A0000 (0x0206000A0000) \*Mar 1 00:23:09.523: As36 LCP: AuthProto CHAP (0x0305C22305) \*Mar 1 00:23:09.523: As36 LCP: MagicNumber 0xD06D7DF1 (0x0506D06D7DF1) \*Mar 1 00:23:09.523: As36 LCP: PFC (0x0702) \*Mar 1 00:23:09.523: As36 LCP: ACFC (0x0802) \*Mar 1 00:23:09.527: As36 LCP: I CONFREQ [ACKrcvd] id 3 len 20 \*Mar 1 00:23:09.531: As36 LCP: ACCM 0x000A0000 (0x0206000A0000) \*Mar 1 00:23:09.531: As36 LCP: MagicNumber 0x009B41FA (0x0506009B41FA) \*Mar 1 00:23:09.531: As36 LCP: PFC (0x0702) \*Mar 1 00:23:09.531: As36 LCP: ACFC (0x0802) \*Mar 1 00:23:09.531: As36 LCP: O CONFACK [ACKrcvd] id 3 len 20 \*Mar 1 00:23:09.531: As36 LCP: ACCM 0x000A0000 (0x0206000A0000) \*Mar 1 00:23:09.531: As36 LCP: MagicNumber 0x009B41FA (0x0506009B41FA) \*Mar 1 00:23:09.531: As36 LCP: PFC (0x0702) \*Mar 1 00:23:09.531: As36 LCP: ACFC (0x0802) \*Mar 1 00:23:09.531: As36 LCP: State is Open  
! --- LCP negotiation is complete. \*Mar 1 00:23:09.531: As36 PPP: Phase is AUTHENTICATING, by this end [0 sess, 0 load] \*Mar 1 00:23:09.531: As36 CHAP: O CHALLENGE id 1 len 32 from "acc-3640-6a" \*Mar 1 00:23:09.651: As36 CHAP: I RESPONSE id 1 len 27 from "dialin" \*Mar 1 00:23:09.655: As36 CHAP: O SUCCESS id 1 len 4  
! -- CHAP authentication is successful. ! -- If this fails verify that the username and password are correct. ! -- Refer to Dialup Technology: Troubleshooting Techniques. \*Mar 1 00:23:09.655: As36 PPP: Phase is UP [0 sess, 0 load] \*Mar 1 00:23:09.655: As36 IPCP: O CONFREQ [Closed] id 1 len 10 \*Mar 1 00:23:09.655: As36 IPCP: Address 10.98.1.51 (0x03060A620133) \*Mar 1 00:23:09.771: As36 IPCP: I CONFREQ [REQsent] id 1 len 40 \*Mar 1 00:23:09.771: As36 IPCP: CompressType VJ 15 slots CompressSlotID (0x0206002D0F01) \*Mar 1 00:23:09.771: As36 IPCP: Address 0.0.0.0 (0x030600000000) \*Mar 1 00:23:09.771: As36 IPCP: PrimaryDNS 0.0.0.0 (0x810600000000) \*Mar 1 00:23:09.771: As36 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000) \*Mar 1 00:23:09.771: As36 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000) \*Mar 1 00:23:09.771: As36 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000) \*Mar 1 00:23:09.771: As36 IPCP: Pool returned 10.98.1.15  
! -- The IP Address Pool "dialin" provides the address for the client. \*Mar 1 00:23:09.771: As36 IPCP: O CONFREQ [REQsent] id 1 len 22 \*Mar 1 00:23:09.771: As36 IPCP: CompressType VJ 15 slots CompressSlotID (0x0206002D0F01) \*Mar 1 00:23:09.771: As36 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000) \*Mar 1 00:23:09.771: As36 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000) \*Mar 1 00:23:09.779: As36 CCP: I CONFREQ [Not negotiated] id 1 len 15 \*Mar 1 00:23:09.779: As36 CCP: MS-PPC supported bits 0x00000001 (0x120600000001) \*Mar 1 00:23:09.779: As36 CCP: Stacker history 1 check mode EXTENDED (0x1105000104) \*Mar 1 00:23:09.779: As36 LCP: O PROTREQ [Open] id 2 len 21 protocol CCP \*Mar 1 00:23:09.779: As36 LCP: (0x80FD0101000F12060000000111050001) \*Mar 1 00:23:09.779: As36 LCP: (0x04) \*Mar 1 00:23:09.783: As36 IPCP: I CONFACK [REQsent] id 1 len 10 \*Mar 1 00:23:09.783: As36 IPCP: Address 10.98.1.51 (0x03060A620133) \*Mar 1 00:23:11.655: As36 IPCP: TIMEOUT: State ACKrcvd \*Mar 1 00:23:11.655: As36 IPCP: O CONFREQ [ACKrcvd] id 2 len 10 \*Mar 1 00:23:11.655: As36 IPCP: Address 10.98.1.51 (0x03060A620133) \*Mar 1 00:23:11.759: As36

```
IPCP: I CONFACK [REQsent] id 2 len 10 *Mar 1 00:23:11.759: As36 IPCP: Address 10.98.1.51
(0x03060A620133) *Mar 1 00:23:12.759: As36 IPCP: I CONFREQ [ACKrcvd] id 2 len 34 *Mar 1
00:23:12.763: As36 IPCP: Address 0.0.0.0 (0x030600000000) *Mar 1 00:23:12.763: As36 IPCP:
PrimaryDNS 0.0.0.0 (0x810600000000) *Mar 1 00:23:12.763: As36 IPCP: PrimaryWINS 0.0.0.0
(0x820600000000) *Mar 1 00:23:12.763: As36 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000) *Mar 1
00:23:12.763: As36 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000) *Mar 1 00:23:12.763: As36 IPCP:
O CONFREJ [ACKrcvd] id 2 len 16 *Mar 1 00:23:12.763: As36 IPCP: SecondaryDNS 0.0.0.0
(0x830600000000) *Mar 1 00:23:12.763: As36 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000) *Mar 1
00:23:12.871: As36 IPCP: I CONFREQ [ACKrcvd] id 3 len 22 *Mar 1 00:23:12.871: As36 IPCP: Address
0.0.0.0 (0x030600000000) *Mar 1 00:23:12.871: As36 IPCP: PrimaryDNS 0.0.0.0 (0x810600000000)
*Mar 1 00:23:12.871: As36 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000) *Mar 1 00:23:12.871: As36
IPCP: O CONFNAK [ACKrcvd] id 3 len 22 *Mar 1 00:23:12.871: As36 IPCP: Address 10.98.1.15
(0x03060A62010F) *Mar 1 00:23:12.871: As36 IPCP: PrimaryDNS 10.98.1.220 (0x81060A6201DC) *Mar 1
00:23:12.871: As36 IPCP: PrimaryWINS 10.98.1.221 (0x82060A6201DD) *Mar 1 00:23:12.979: As36
IPCP: I CONFREQ [ACKrcvd] id 4 len 22 *Mar 1 00:23:12.979: As36 IPCP: Address 10.98.1.15
(0x03060A62010F) *Mar 1 00:23:12.979: As36 IPCP: PrimaryDNS 10.98.1.220 (0x81060A6201DC) *Mar 1
00:23:12.983: As36 IPCP: PrimaryWINS 10.98.1.221 (0x82060A6201DD) *Mar 1 00:23:12.983: As36
IPCP: O CONFACK [ACKrcvd] id 4 len 22 *Mar 1 00:23:12.983: As36 IPCP: Address 10.98.1.15
(0x03060A62010F) *Mar 1 00:23:12.983: As36 IPCP: PrimaryDNS 10.98.1.220 (0x81060A6201DC)
! -- The Primary DNS server is agreed upon. ! -- This was configured using the async bootp
commands. *Mar 1 00:23:12.983: As36 IPCP: PrimaryWINS 10.98.1.221 (0x82060A6201DD)
! -- The Primary WINS server is agreed upon. ! -- This was configured using the async bootp
commands. *Mar 1 00:23:12.983: As36 IPCP: State is Open
! -- IPCP negotiation is complete. The user is now connected. *Mar 1 00:23:12.983: As36 IPCP:
Install route to 10.98.1.15
! -- The NAS installs a route to the client.
```

对远端对等体的 ICMP ping 操作成功：

```
acc-3640-6a#ping 10.98.1.15
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 10.98.1.15, timeout is 2 seconds:
```

```
!!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 124/132/140 ms
```

```
acc-3640-6a#
```

## 相关信息

- [Cisco 3640 的数字调制解调器网络模块](#)
- [Cisco 3640 数字调制解调器网络模块的 T1 CAS 支持](#)
- [在 E1 和 T1 线路上配置 ISDN PRI 及其他信令](#)
- [用于拨号接入的接口、控制器和线路概述](#)
- [技术支持 - Cisco Systems](#)