为流入的多链路异步和ISDN呼叫配置带PRI的访问服务器

目录

简介

在许多环境中，您需要配置接入服务器，该服务器可以接受来自异步和ISDN用户的来电。然后，这些用户可以无缝地连接到网络，就像他们实际存在一样。此类设置通常用于为出差和远程工作人员的用户以及小型办公室 — 家庭办公室(SOHO)站点提供网络连接。

本文档介绍如何配置接入服务器以接受ISDN T1 PRI电路上的传入异步和ISDN呼叫。该配置提供了网络接入服务器(NAS)接受呼叫所需的最低设置。您可以根据需要向此配置添加其他功能。

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：

- 带有192个MICA调制解调器和8个运行Cisco IOS®软件版本12.2(5)的T1端口的Cisco AS5300。
- 两个T1 PRI。
- 运行Microsoft Windows的PC。此PC具有模拟调制解调器和到公共交换机电话网络的电话连接。PC拨打连接到AS5300的T1 PRI。
- Cisco 800和1600系列路由器，带ISDN BRI电路。这些路由器是ISDN拨入客户端。提供Cisco 1600的配置。您可以将此客户端配置应用到具有BRI接口的任何路由器。
- 本地身份验证、授权和记帐(AAA)。 如果您有AAA Radius或Tacacs+服务器，则可以使用其中任一服务器为传入呼叫提供AAA。

注意：Cisco 800路由器的配置与Cisco 1600路由器的配置类似，本文档不包括此配置。

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。

相关产品

您可以将此配置与具有T1或PRI卡和内部数字调制解调器（例如MICA、NextPort或Microcom）的任何路由器配合使用。 任何带有T1或PRI卡和数字调制解调器的AS5xxx系列路由器都可以使用此配置中的概念。

Cisco 2600系列路由器不支持内部数字调制解调器。如果路由器具有T1或PRI WIC或网络模块，您可以将Cisco 2600系列路由器配置为仅接受ISDN呼叫。

Cisco 3600系列路由器可同时支持ISDN和调制解调器呼叫。但是，Cisco 3600系列路由器需要T1或PRI WIC或网络模块以及NM-xDM数字调制解调器网络模块。

您还可以修改此配置与E1或PRI端口配合使用。为E1控制器配置Telco提供的线路编码、成帧和其他物理特性。D通道配置（E1的接口Serial x:15）与本文档所示的配置类似。
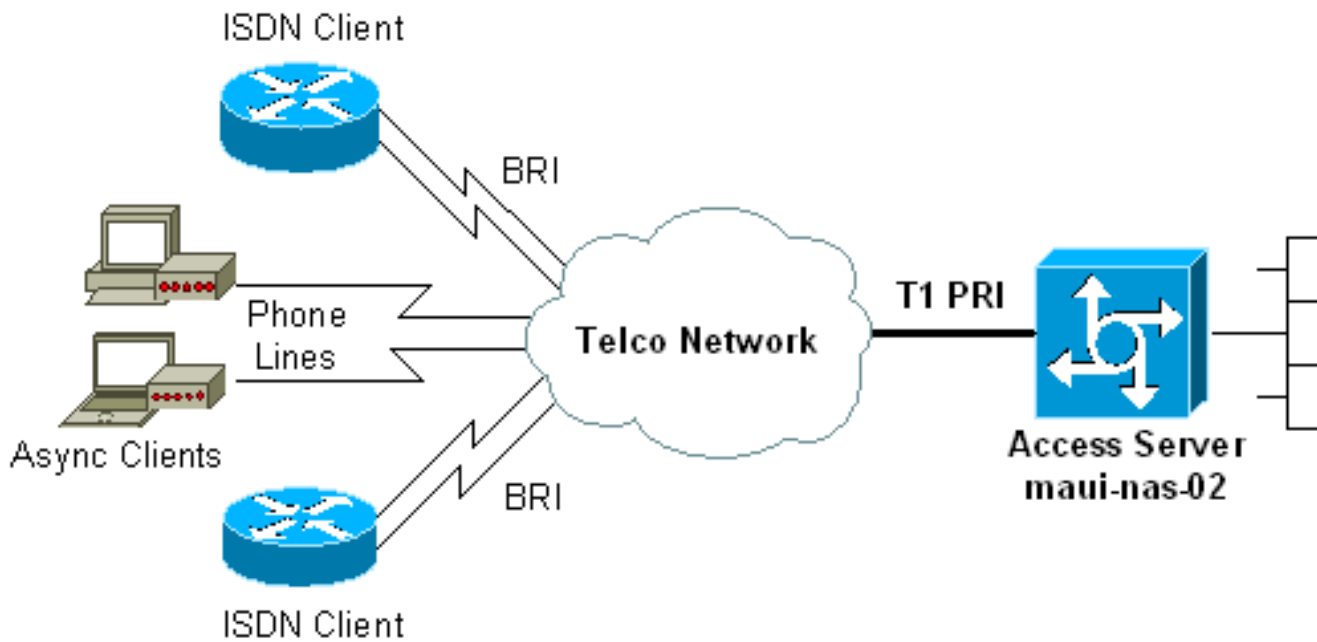
规则

有关文件规则的更多信息请参见"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：要查找有关本文档中使用的命令的其他信息，请使用命令查找工具(仅注册客户)。

网络图

本文档使用以下网络设置：

配置

本文档使用以下配置：

- maui-nas-02 (5300)
- maui-soho-01 (1600)

---

maui-nas-02 (5300)

```
maui-nas-02#show running-config
 Building configuration...

 Current configuration : 3671 bytes
 !
 ! No configuration change since last restart
 !
 version 12.2
 service timestamps debug datetime msec
 service timestamps log datetime msec
 service password-encryption
 !
 hostname maui-nas-02
 !
 boot system flash:c5300-i-mz.122-5.bin
 aaa new-model
 aaa authentication login default local
 aaa authentication login NO_AUTHEN none
 aaa authentication ppp default local
 aaa authorization network default local
 !--- PPP authentication and network authorization are
local. !--- Replace local with radius or tacacs if you
use an AAA server.

 enable secret 5 <deleted>
 !
 username admin password 7 <deleted>
 username async_user password 7 <deleted>
 username travis_isdn password 7 <deleted>
```

```
 username austin_isdn password 7 <deleted>
  !--- Usernames for local authentication of the call.
!--- The client presents the username/password and the
NAS !--- authenticates the peer. spe 1/0 1/8 firmware
location mica-modem-pw.2.7.3.0.bin spe 2/0 2/7 firmware
location mica-modem-pw.2.7.3.0.bin ! ip subnet-zero ip
domain-name maui-onions.com !--- Tells the NAS how to
qualify DNS lookups. !--- In this example, maui-
onions.com is appended to the end of each !--- looked-up
name. ip name-server 172.22.53.210 !--- Specifies the
primary name server. ! async-bootp dns-server
172.22.53.210 !--- Specifies (for async clients) the IP
address of domain name servers. isdn switch-type
primary-ni !--- Switch-type for this NAS. Obtain this
information from the Telco. ! controller T1 0 !--- First
T1 PRI framing esf !--- Framing for this T1 is Extended
Super Frame (ESF). !--- Obtain this information from the
Telco. clock source line primary !--- T1 0 is the
primary clock source for this NAS. !--- Clock source
must be specified for the timing and synchronization !--
- of the T1 carrier. 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 now automatically creates the !--- corresponding
D-channel: interface Serial 0:23.

 !
 controller T1 1
  !--- Second T1 PRI. framing esf !--- Framing for this
T1 is Extended Super Frame (ESF). !--- Obtain this
information from the Telco. clock source line secondary
1 !--- T1 1 is the first secondary clock source for this
NAS. !--- If the primary clock fails, this secondary
clock takes over. 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 now automatically creates the !--- corresponding
D-channel: interface Serial 1:23.

 !
 controller T1 2
  !--- This T1 is unused. framing sf clock source line
secondary 2 linecode ami ! !--- Unused interface
configuration is omitted here. ! interface Loopback0 ip
address 172.22.60.1 255.255.255.0 !--- The IP pool for
async users is in this subnet. !--- The routes for all
async clients are summarized and !--- propagated to the
backbone instead of 254 routes. ! interface Loopback1 ip
address 172.22.61.1 255.255.255.0 !--- The IP pool for
ISDN users is in this subnet. !--- The routes for all
ISDN clients are summarized and !--- propagated to the
backbone instead of 254 routes. ! interface Ethernet0 ip
address 172.22.53.140 255.255.255.0 ! !--- Unused
interface configuration is omitted here. ! interface
Serial0:23 !--- D-channel configuration for T1 0. no ip
address encapsulation ppp !--- PPP encapsulation on this
interface. dialer rotary-group 10 !--- T1 0 is a member
of rotary group 10. !--- The rotary group configuration
is in interface Dialer 10. isdn switch-type primary-ni
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. no cdp
```

```
enable ppp authentication chap ppp multilink ! interface
Serial1:23 !--- D-channel configuration for T1 1. no ip
address encapsulation ppp !--- PPP encapsulation on this
interface. dialer rotary-group 10 !--- T1 1 is a member
of rotary group 10. !--- The rotary group configuration
is in interface Dialer 10. isdn switch-type primary-ni
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. no cdp
enable ppp authentication chap ppp multilink ! interface
Group-Async0 !--- This group-async interface is the
configuration template for all modems. !--- You need not
configure individual async interfaces because you can !-
-- clone the interfaces from one managed copy. ip
unnumbered Loopback0 !--- A Loopback interface is always
up/up. So, unnumber the loopback interface !--- for
stability. encapsulation ppp dialer in-band dialer idle-
timeout 900 dialer-group 5 !--- Interesting traffic is
defined in dialer-list 5. !--- Note: The specified
dialer-group number must be the same as the !--- dialer-
list number. In this example, the number is defined as
"5".

  async mode interactive
  !--- Users can dial in and get to a shell or PPP
session on that line. !--- You can use this command in
conjunction with autoselect ppp !--- under the line
configuration to automatically detect the connection
type.

  peer default ip address pool ASYNC
 !--- Clients are assigned addresses from the IP address
pool named ASYNC. no fair-queue ppp authentication chap
!--- Use CHAP authentication. ppp multilink group-range
1 192 !--- Modems 1 through 192 are members of this
group async interface. ! interface Dialer10 !---
Configuration for rotary group 10. !--- The Dialer
interface number (10) must exactly match rotary !---
group number configured on the physical interfaces. ip
unnumbered Loopback1 !--- A Loopback interface is always
up/up. So, unnumber the loopback interface !--- for
stability. encapsulation ppp dialer in-band !--- Enable
V.25bis on this interface. dialer idle-timeout 900 !---
Idle timeout for incoming calls is 900 seconds (15
mins). dialer-group 5 !--- Apply interesting traffic
definition from dialer-list 5. !--- Note: The specified
dialer-group number must be the same !--- as the dialer-
list number. !--- In this example, the number is defined
as "5".

  peer default ip address pool ISDN
  !--- Clients are assigned addresses from the IP
address pool named ISDN. ppp authentication chap ppp
multilink ! router eigrp 69 network 172.22.0.0 auto-
summary no eigrp log-neighbor-changes ! ip local pool
ASYNC 172.22.60.2 172.22.60.254 ip local pool ISDN
172.22.61.2 172.22.61.254 !--- IP address pools for
dialin clients. ip classless no ip http server ! access-
list 101 remark Interesting Traffic Definition to be
used in dialer-list 5 access-list 101 deny eigrp any any
access-list 101 permit ip any any dialer-list 5 protocol
ip list 101 !--- Access-list 101 defines interesting
traffic. This definition is applied !--- to interface
Dialer 10 and Group-Async 0 through dialer-group 5. !---
```

Note: The specified **dialer-list** number must be the same as the !--- **dialer-group** number. In this example, the number is defined as "5".

```
 !
 line con 0
  exec-timeout 0 0
  login authentication NO_AUTHEN
```
!--- Apply AAA list NO_AUTHEN configured previously. !--- That list has method "none". !--- There is no authentication on the console port. line 1 192 modem InOut *!--- Support incoming and outgoing modem calls.* transport input all autoselect during-login ! *--- Displays the username:password prompt after modems connect.* autoselect ppp *!--- Automatically launches PPP if the router detects incoming PPP packets. !--- Without this command the dialin client must manually !--- launch PPP (from Exec mode).* line aux 0 line vty 0 4 ! ntp clock-period 17180107 ntp server 172.22.53.1 end

maui-soho-01 (1600)

```
maui-soho-01#show running-config
 Building configuration...

 Current configuration : 1609 bytes
 !
 version 12.1
 no service single-slot-reload-enable
 service timestamps debug datetime msec
 service timestamps log datetime msec
 service password-encryption
 !
 hostname maui-soho-01
 !
 logging rate-limit console 10 except errors
 !
 username admin password 7 <deleted>
 ip subnet-zero
 no ip finger
 !
 isdn switch-type basic-ni
```
!--- Switch-type for the BRI circuit. Obtain this information from the Telco. ! interface Ethernet0 ip address 10.0.0.1 255.255.255.0 no keepalive ! interface Serial0 no ip address shutdown ! interface BRI0 *!--- BRI physical interface configuration.* no ip address *!--- An IP address is not required on the physical BRI interface because !--- this is a dialer pool. !--- The IP addressing functionality is in interface Dialer 1 (dialer pool).* encapsulation ppp dialer pool-member 1 *!--- Places the interface into dialer pool 1 from which Dialer interfaces !--- can draw channels as needed. !--- Links the physical interface with the logical dialer interfaces. !--- Dialer Pool 1 is defined in interface Dialer 1.* isdn switch-type basic-ni isdn spid1 51255511110101 5551111 isdn spid2 51255511120101 5551112 *!--- Service Profile IDentifiers (SPIDs) are found primarily in North America. !--- SPIDs are not required for certain switch types. Confirm with your Telco. !--- If the Telco informs you that you do not need SPIDs, do not use these !--- two SPID commands.* ppp authentication chap callin *!--- Perform one way CHAP authentication.*

```
ppp multilink !--- Permit multilink on this BRI
interface. ! interface Dialer1 !--- This dialer is the
logical interface for the dialer pool. ip address
negotiated !--- IP address for this interface is
obtained from the NAS during !--- IPCP negotiation.
Alternatively, you can also unnumber this interface !---
to a working interface (example, ethernet 0).
encapsulation ppp dialer pool 1 !--- Defines Dialer pool
1. !--- BRI 0 is a member of this pool. dialer idle-
timeout 900 !--- Idle-timout for this link is 900
seconds (15 minutes). !--- The link is disconnected if
there is no interesting traffic for 900 secs. dialer
string 81560 class 56k !--- Dial 81560 and use the map-
class named "56k". dialer load-threshold 1 outbound !---
Sets the outbound load level for traffic at which !---
additional connections are added to the MP bundle load
level. !--- Values range from 1 (unloaded) to 255 (fully
loaded). !--- With a threshold of 1, the additional
links are immediately !--- brought up and added to the
bundle. dialer-group 1 !--- Apply interesting traffic
definition from dialer-list 1. ppp authentication chap
callin !--- Use one way PPP CHAP authentication. ppp
chap hostname austin_isdn !--- Use the CHAP username
austin_isdn to authenticate to the other router. ppp
chap password 7 <deleted> !--- Use this CHAP password to
authenticate to the other router. ppp multilink !---
Allow multilink for the dialer profile. !--- Without
this command multilink is NOT negotiated. ! ! ip
classless ip route 0.0.0.0 0.0.0.0 Dialer1 !--- Set the
default route to be interface Dialer 1 (the dialer
pool). !--- Traffic sent to int Dialer1 causes the
dialer pool member (int BRI 0) !--- to be dialed. no ip
http server ! ! map-class dialer 56k !--- Map-class
named "56k" that you used with the dialer string in int
Dialer1. dialer isdn speed 56 !--- Set the speed of the
call to be 56k (the default speed is 64k). !--- This
setting is optional for your connection. !--- Consult
your Telco to find out if you need to configure the dial
!--- speed to 56k. access-list 101 remark Interesting
traffic for dialer-list 1 access-list 101 deny udp any
any eq ntp access-list 101 permit ip any any !--- Define
NTP traffic as NOT interesting to prevent periodic NTP
traffic !--- from keeping the link up indefinitely. !---
All other IP traffic is interesting. !--- Change this
depending on your traffic needs. dialer-list 1 protocol
ip list 101 !--- Access-list 101 defines interesting
traffic. !--- Apply this to interface Dialer 1 through
the command dialer-group 1. !--- Note: The specified
dialer-list number must be the same as the !--- dialer-
group number. In this example, the number is defined as
"1"

 !
 line con 0
  transport input none
 line vty 0 4
  login
 !
 ntp clock-period 17042429
 ntp server 172.22.53.1
 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交换机正确通信。在输出中，确保1态为`ACTIVE`,2= `MULTIPLE_FRAME_ESTABLISHED`。此指令也显示活动的呼叫的数量。有关详细信息，请参阅使用 show isdn status 用于 BRI 故障排除。
- **show ppp multilink** — 显示有关活动多链路捆绑的信息。使用此指令验证多链路连接。
- **show dialer [interface type number]** — 显示为DDR配置的接口的常规诊断信息。如果拨号器正常运行，则必"运行"消息。如果显示为up，则表明线路协议已启用，但网络控制协议(NCP)没有。启动拨号的数据包的源地址和目标地址显示在 `Dial reason line` 此**show命令也显示计时器的配置和连接超时前的时间。**
- **show caller user** *username* **detail — *显示特定用户的参数，例如分配的IP地址、PPP和PPP捆绑参数。*** 如果您的Cisco IOS软件版本不支持此命令，请使用**show user**命令。
- **show dialer map - 显示已配置的动态和静态 dialer map。** 您可以使用此命令检查是否创建了动态拨号器映射。如果没有 Dialer Map，则无法路由数据包。

show 输出示例

以下是成功**调用**的一些show命令输出。注意输出中提供的粗体部分和注释。将您获得的输出与此处显示的结果进行比较。

一般视图

```
maui-nas-02#show users
  Line       User       Host(s)            Idle       Location
* 0 con 0               idle               00:00:00
  97 tty 97   async_user Async interface    00:06:36   PPP: 172.22.60.2
```
!--- Async User. The IP address of the peer is indicated. Interface User Mode Idle Peer Address
Vi1   austin_isd Virtual PPP (Bundle) 00:03:35 172.22.61.2
**   Vi2   travis_isd Virtual PPP (Bundle) 00:00:20 172.22.61.3**
!--- Virtual-Access Interface for the two multilink PPP users. **Se0:1   austin_isd Sync PPP**
-   Bundle: Vi1
**   Se0:2   austin_isd Sync PPP   -   Bundle: Vi1**
!--- User austin_isdn is connected through two B-channels(Multilink PPP). !--- Interface Virtual-Access 1 (Vi1) controls the two B-channels. **Se0:3   travis_isd Sync PPP**
-   Bundle: Vi2
**   Se0:4   travis_isd Sync PPP   -   Bundle: Vi2**
!--- User travis_isdn is connected through two B-channels (Multilink PPP). !--- Interface Virtual-Access 2 (Vi2) controls the two B-channels. maui-nas-02#**show dialer map**
!--- Observe the Dynamic Dialer Maps created for each dialin client. Dynamic dialer map ip 172.22.60.2 name async_user () on As97 Dynamic dialer map ip 172.22.61.2 name austin_isdn () on Di10 Dynamic dialer map ip 172.22.61.3 name travis_isdn () on Di10

```
maui-nas-02#show users
  Line       User       Host(s)            Idle       Location
* 0 con 0               idle               00:00:00
  97 tty 97   async_user Async interface    00:06:36   PPP: 172.22.60.2
```
!--- Async User. The IP address of the peer is indicated. Interface User Mode Idle Peer Address
Vi1   austin_isd Virtual PPP (Bundle) 00:03:35 172.22.61.2

```
  Vi2           travis_isd Virtual PPP (Bundle) 00:00:20 172.22.61.3
```
!--- Virtual-Access Interface for the two multilink PPP users. **Se0:1   austin_isd Sync PPP**
-   Bundle: Vi1
```
  Se0:2        austin_isd Sync PPP                 -     Bundle: Vi1
```
!--- User austin_isdn is connected through two B-channels(Multilink PPP). !--- Interface
Virtual-Access 1 (Vi1) controls the two B-channels. **Se0:3   travis_isd Sync PPP**
-   Bundle: Vi2
```
 Se0:4         travis_isd Sync PPP                -    Bundle: Vi2
```

!--- User travis_isdn is connected through two B-channels (Multilink PPP). !--- Interface
Virtual-Access 2 (Vi2) controls the two B-channels. maui-nas-02#**show dialer map**
!--- Observe the Dynamic Dialer Maps created for each dialin client. Dynamic dialer map ip
172.22.60.2 name async_user () on As97 Dynamic dialer map ip 172.22.61.2 name austin_isdn () on
Di10 Dynamic dialer map ip 172.22.61.3 name travis_isdn () on Di10

```
maui-nas-02#show users
  Line       User       Host(s)              Idle       Location
* 0 con 0               idle                 00:00:00
  97 tty 97   async_user Async interface     00:06:36   PPP: 172.22.60.2
```
!--- Async User. The IP address of the peer is indicated. Interface User Mode Idle Peer Address
Vi1   austin_isd Virtual PPP (Bundle) 00:03:35 172.22.61.2
      Vi2   travis_isd Virtual PPP (Bundle) 00:00:20 172.22.61.3
    !--- Virtual-Access Interface for the two multilink PPP users. **Se0:1   austin_isd Sync**
PPP   -   Bundle: Vi1
      Se0:2   austin_isd Sync PPP   -   Bundle: Vi1
    !--- User austin_isdn is connected through two B-channels(Multilink PPP). !--- Interface
Virtual-Access 1 (Vi1) controls the two B-channels. **Se0:3   travis_isd Sync PPP**
-   Bundle: Vi2
      Se0:4   travis_isd Sync PPP   -   Bundle: Vi2
    !--- User travis_isdn is connected through two B-channels (Multilink PPP). !--- Interface
Virtual-Access 2 (Vi2) controls the two B-channels. maui-nas-02#**show dialer map**
    !--- Observe the Dynamic Dialer Maps created for each dialin client. Dynamic dialer map ip
172.22.60.2 name async_user () on As97 Dynamic dialer map ip 172.22.61.2 name austin_isdn () on
Di10 Dynamic dialer map ip 172.22.61.3 name travis_isdn () on Di10

模拟呼叫

maui-nas-02#**show caller user async_user detail**

        User: async_user, line tty 97, service Async
    !--- Shows hardware-level settings for the user named async_user. Active time 00:00:34,
Idle time 00:00:16 Timeouts: Absolute Idle Idle Session Exec Limits: - - 00:10:00 Disconnect in:
- - - TTY: Line 97, **running PPP on As97**
    !--- The call is terminated on interface Async 97. !--- This interface is included in the
Group-Async configuration. Location: **PPP: 172.22.60.2**
    !--- IP address for the peer. This address is obtained from the IP pool "ASYNC". **DS0:**
(slot/unit/channel)=0/0/2
    !--- T1 channel on which the call arrived. !--- The call arrived on channel 0 in T1 0.
Line: Baud rate (TX/RX) is 115200/115200, no parity, 1 stopbits, 8 databits Status: Ready,
Active, No Exit Banner, Async Interface Active HW PPP Support Active Capabilities: Hardware
Flowcontrol In, Hardware Flowcontrol Out Modem Callout, Modem RI is CD, Line usable as async
interface, Integrated Modem Modem State: Ready **User: async_user, line As97, service PPP**
    !--- PPP setting for the user named async_user. !--- Notice that the call is terminated on
int Async97. Active time 00:00:32, Idle time 00:00:30 Timeouts: Absolute Idle Limits: - 00:15:00
Disconnect in: - 00:14:28 PPP: **LCP Open**, multilink Closed, CHAP (<- AAA), IPCP
     !--- LCP state is OPEN. If LCP state is not OPEN, !--- use **debug ppp negotiation** to
isolate LCP issues.

        LCP: -> peer, ACCM, AuthProto, MagicNumber, PCompression, ACCompression
            <- peer, ACCM, MagicNumber, PCompression, ACCompression
      NCP: Open IPCP
    !--- IPCP state is open. If IPCP state is not OPEN, !--- use **debug ppp negotiation** to
```

isolate IPCP issues.

```
        IPCP: <- peer, Address
              -> peer, Address
        Dialer: Connected, inbound
                Idle timer 900 secs, idle 31 secs
                Type is IN-BAND ASYNC, group As97
        IP: Local 172.22.60.1, remote 172.22.60.2
```
*!--- NAS IP address and the IP address assigned to the peer.* Counts: **27 packets input, 1545 bytes,** 0 no buffer
```
                1 input errors, 1 CRC, 0 frame, 0 overrun
                14 packets output, 347 bytes, 0 underruns
                0 output errors, 0 collisions, 0 interface resets
```
*!--- Packets pass through the connection.*

# 对于ISDN呼叫

maui-nas-02#**show caller user austin_isdn detail**
*!--- The user named austin_isdn has two PPP links, !--- and one virtual interface bundle.*
**User: austin_isdn, line Se0:3, service PPP**
*!--- Shows PPP layer settings for the first channel !--- that belongs to the user named austin_isdn.* Active time 00:04:01, Idle time 00:00:00 Timeouts: Absolute Idle Limits: - - Disconnect in: - - PPP: **LCP Open**, multilink Open, CHAP (<- AAA)
*!--- LCP state is OPEN. If LCP state is not OPEN, !--- use* **debug ppp negotiation** to isolate LCP issues.

```
        LCP: -> peer, AuthProto, MagicNumber, MRRU, EndpointDisc
             <- peer, MagicNumber, MRRU, EndpointDisc
        Dialer: Connected, inbound
                Type is ISDN, group Di10
```
*!--- Incoming call used rotary group of int Dialer 10.* IP: **Local 172.22.61.1**
*!--- IP address of the int Loopback 1. !--- Remember that int Dialer 1 was unnumbered to Loop 1. !--- The remote IP address is indicated under the virtual-interface.* Bundle: Member of austin_isdn, last input 00:00:00 Counts: 55 packets input, 1635 bytes, 0 no buffer 0 input errors, 0 CRC, 0 frame, 0 overrun 82 packets output, 3479 bytes, 0 underruns 0 output errors, 0 collisions, 0 interface resets **User: austin_isdn, line Se0:4, service PPP**
*!--- Shows PPP layer settings for the second channel !--- that belongs to the user named austin_isdn.* Active time 00:03:59, Idle time 00:00:00 Timeouts: Absolute Idle Limits: - - Disconnect in: - - PPP: LCP Open, multilink Open, CHAP (<- AAA) LCP: -> peer, AuthProto, MagicNumber, MRRU, EndpointDisc <- peer, MagicNumber, MRRU, EndpointDisc Dialer: Connected to , inbound Type is ISDN, group Di10 IP: Local 172.22.61.1 Bundle: Member of austin_isdn, last input 00:00:00 Counts: 50 packets input, 1589 bytes, 0 no buffer 0 input errors, 0 CRC, 0 frame, 0 overrun 77 packets output, 3429 bytes, 0 underruns 0 output errors, 0 collisions, 0 interface resets **User: austin_isdn, line Vi1, service PPP Bundle**
*!--- Shows Virtual-Access Interface Bundle that controls the connections.* Active time 00:04:02, Idle time 00:04:01 Timeouts: Absolute Idle Limits: - 00:15:00 Disconnect in: - 00:10:58 PPP: LCP Open, multilink Open, IPCP, CDPCP LCP: -> peer, MagicNumber, MRRU, EndpointDisc <- peer NCP: **Open IPCP**, CDPCP
*!--- IPCP State is open. If IPCP state is not OPEN, !--- use* **debug ppp negotiation** to isolate IPCP issues.

```
        IPCP: <- peer, Address
              -> peer, Address
        Dialer: Connected, inbound
                Idle timer 900 secs, idle 1 secs
                Type is IN-BAND SYNC, group Di10
        IP: Local 172.22.61.1, remote 172.22.61.2
```
*!--- Dialer interface (Local) IP address !--- and the IP address assigned to the peer.* Bundle: First link of austin_isdn, 2 links, last input 00:00:01 Counts: 12 packets input, 1712 bytes, 0 no buffer 0 input errors, 0 CRC, 0 frame, 0 overrun 67 packets output, 5030 bytes, 0 underruns 0 output errors, 0 collisions, 0 interface resets

# 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

根据需要使用以下资源：

- 传入调制解调器呼叫故障排除 — 使用本文档对模拟呼叫故障进行故障排除。
- PRI异步调制解调器呼叫 — 使用本文档了解其他信息以排除模拟呼叫故障。
- 传入ISDN呼叫故障排除 — 使用本文档排除ISDN呼叫故障。
- PRI ISDN呼叫 — 使用本文档了解其他信息以排除ISDN呼叫故障。
- T1故障排除流程图 — 如果怀疑T1电路不能正常工作，请使用此流程图。
- T1/56K线路的环回测试 — 使用本文档确认路由器上的T1端口是否正常工作。

## 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 dialer** — 显示有关拨号器接口上接收的数据包的DDR调试信息。此信息有助于确保存在使用拨号器接口的相关流量。
- **debug isdn q931** — 显示ISDN网络连接（第3层）的呼叫建立和断开。
- **debug modem - 显示接入服务器上的调制解调器线路活动情况。**当调制解调器线路更改状态时，将显示输出。
- **debug modem csm** — 使您能够排除带有内置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** — 显示有关PPP流量和交换的信息，并协商链路控制协议(LCP)、身份验证和网络控制协议(NCP)。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身份验证协议消息，包括CHAP数据包交换和密码身份验证协议(PAP)交换。
- **debug ppp error - 显示与 PPP 连接协商和操作关联的协议错误和错误统计数据。**

## 调试输出示例

下面是成功呼叫的一些调试输出。注意在输出和备注中的粗体部分。将您获得的输出与此处显示的结果进行比较。

## 模拟呼叫

```
maui-nas-02#debug isdn q931
    ISDN Q931 packets debugging is on
    maui-nas-02#debug modem
    Modem control/process activation debugging is on
    maui-nas-02#debug modem csm
    Modem Management Call Switching Module debugging is on
    maui-nas-02#debug ppp negotiation
    PPP protocol negotiation debugging is on
```

```
maui-nas-02#debug ppp authentication
PPP authentication debugging is on

maui-nas-02#
Sep 28 13:13:28.369: ISDN Se0:23: RX <-  SETUP pd = 8  callref = 0x5285
```

!--- Incoming Q.931 SETUP message. This indicates an incoming call. !--- For more information on Q.931 refer to !--- Troubleshooting ISDN BRI Layer 3 using the **debug isdn q931** Command.

```
Sep 28 13:13:28.369:    Bearer Capability i = 0x9090A2
Sep 28 13:13:28.369:    Channel ID i = 0xA18383
Sep 28 13:13:28.369:    Progress Ind i = 0x8183 - Origination address is non-ISDN
Sep 28 13:13:28.369:    Called Party Number i = 0xA1, '81560', Plan:ISDN, Type:National
Sep 28 13:13:28.373: VDEV_ALLOCATE: 2/0 is allocated
```
!--- The Call Switch Module (CSM) is informed about the call. !--- The CSM allocates modem 2/0 to the incoming call. Sep 28 13:13:28.373: EVENT_FROM_ISDN::dchan_idb=0x618569F4, call_id=0x28, ces=0x0 bchan=0x2, event=0x1, cause=0x0 Sep 28 13:13:28.373: dev in call to isdn : set dnis_collected & fap_notify Sep 28 13:13:28.373: EVENT_FROM_ISDN:(0028): DEV_INCALL at slot 2 and port 0 Sep 28 13:13:28.373: EVENT_FROM_ISDN: decode:calling 0ct3 0x0, called oct3 0xA1, oct3a 0x0,mask 0x3C Sep 28 13:13:28.373: EVENT_FROM_ISDN: csm_call_info:calling 0ct3 0x0, called oct3 0xA1, oct3a 0x0,mask 0x3C Sep 28 13:13:28.377: CSM_PROC_IDLE: CSM_EVENT_ISDN_CALL at slot 2, port 0 Sep 28 13:13:28.377: Mica Modem(2/0): Configure(0x1 = 0x0) Sep 28 13:13:28.377: Mica Modem(2/0): Configure(0x23 = 0x0) Sep 28 13:13:28.377: **Mica Modem(2/0): Call Setup**

!--- CSM sends the Call Setup Message to Modem 2/0. !--- The modem must now go off-hook. Sep 28 13:13:28.377: csm_connect_pri_vdev: TS allocated at bp_stream 0, bp_Ch 0,vdev_common 0x6141BB68 Sep 28 13:13:28.377: ISDN Se0:23: **TX -> CALL_PROC** pd = 8 callref = 0xD285
```
Sep 28 13:13:28.377:        Channel ID i = 0xA98383
```
!--- The Call Proceeding Message is sent through the D-channel. Sep 28 13:13:28.377: ISDN Se0:23: TX -> ALERTING pd = 8 callref = 0xD285 Sep 28 13:13:28.445: **Mica Modem(2/0): State Transition to Call Setup**

!--- Modem transitions to state Call Setup. !--- For more information on MICA Modem States refer to MICA Modem States. Sep 28 13:13:28.445: **Mica Modem(2/0): Went offhook**

!--- Modem informs the CSM that it went offhook. Sep 28 13:13:28.445: CSM_PROC_IC2_RING: CSM_EVENT_MODEM_OFFHOOK at slot 2, port 0 Sep 28 13:13:28.445: ISDN Se0:23: **TX -> CONNECT** pd = 8 callref = 0xD285

!--- D-channel transmits a CONNECT. Sep 28 13:13:28.461: ISDN Se0:23: **RX <- CONNECT_ACK** pd = 8 callref = 0x5285

!--- The Q.931 CONNECT_ACK message is received. Sep 28 13:13:28.461: ISDN Se0:23: CALL_PROGRESS: CALL_CONNECTED call id 0x28, bchan 2, dsl 0 Sep 28 13:13:28.461: EVENT_FROM_ISDN::dchan_idb=0x618569F4, call_id=0x28, ces=0x0 bchan=0x2, event=0x4, cause=0x0 Sep 28 13:13:28.461: EVENT_FROM_ISDN:(0028): DEV_CONNECTED at slot 2 and port 0 Sep 28 13:13:28.461: CSM_PROC_IC6_WAIT_FOR_CONNECT: CSM_EVENT_ISDN_CONNECTED at slot 2, port 0 Sep 28 13:13:28.465: **Mica Modem(2/0): Link Initiate**

!--- When the Q.931 CONNECT_ACK message is received, the Link initiate message !--- is sent to the MICA modem, and negotiation with remote modem occurs. Sep 28 13:13:28.465: %ISDN-6-CONNECT: Interface Serial0:2 is now connected to N/A N/A Sep 28 13:13:29.557: **Mica Modem(2/0): State Transition to Connect**

!--- Modem moves to the Connect state. Sep 28 13:13:34.073: Mica Modem(2/0): State Transition to Link Sep 28 13:13:45.478: Mica Modem(2/0): State Transition to Trainup Sep 28 13:13:53.642: Mica Modem(2/0): State Transition to EC Negotiating Sep 28 13:13:54.122: **Mica Modem(2/0): State Transition to Steady State**

!--- Modem tranistions to the Steady state. Sep 28 13:13:54.266: TTY97: DSR came up *!--- Indicates that the modem trainup is complete.* Sep 28 13:13:54.266: tty97: Modem: IDLE->(unknown) Sep 28 13:13:54.266: TTY97: EXEC creation Sep 28 13:13:54.266: TTY97: set timer type 10, 30 seconds Sep 28 13:13:57.202: TTY97: Autoselect(2) sample 7E Sep 28 13:13:57.202: TTY97: Autoselect(2) sample 7EFF Sep 28 13:13:57.202: TTY97: Autoselect(2) sample 7EFF7D Sep 28 13:13:57.202: TTY97: Autoselect(2) sample 7EFF7D23 Sep 28 13:13:57.202: TTY97 Autoselect cmd: ppp negotiate *!--- The router detects PPP packets and automatically launches PPP.* Sep 28 13:13:57.206: TTY97: EXEC creation Sep 28 13:13:57.206: TTY97: create timer type 1, 600 seconds Sep 28 13:13:57.334: TTY97: destroy timer type 1 Sep 28 13:13:57.334: TTY97: no timer type 0 to destroy Sep 28 13:13:57.334: As97 IPCP: Install route to 172.22.60.2 Sep 28 13:13:59.334: %LINK-3-UPDOWN: Interface Async97, changed state to up Sep 28 13:13:59.334: As97 PPP: Treating connection as a callin Sep 28 13:13:59.334: As97 PPP: Phase is ESTABLISHING, Passive Open [0

sess, 0 load] Sep 28 13:13:59.334: As97 LCP: State is Listen *!--- LCP negotiation begins.* Sep 28 13:14:00.214: As97 LCP: I CONFREQ [Listen] id 3 len 23 *!--- Incoming LCP CONFREQ. !--- For more information on how to interpret PPP debugs, refer to !--- [Dialup Technology: Troubleshooting Techniques](#).* Sep 28 13:14:00.214: As97 LCP: ACCM 0x000A0000 (0x0206000A0000) Sep 28 13:14:00.214: As97 LCP: MagicNumber 0x0F7CD34A (0x05060F7CD34A) Sep 28 13:14:00.214: As97 LCP: PFC (0x0702) Sep 28 13:14:00.214: As97 LCP: ACFC (0x0802) Sep 28 13:14:00.214: As97 LCP: Callback 6 (0x0D0306) Sep 28 13:14:00.214: Unthrottle 97 Sep 28 13:14:00.214: As97 LCP: O CONFREQ [Listen] id 1 len 43 Sep 28 13:14:00.214: As97 LCP: ACCM 0x000A0000 (0x0206000A0000) Sep 28 13:14:00.214: As97 LCP: AuthProto CHAP (0x0305C22305) Sep 28 13:14:00.214: As97 LCP: MagicNumber 0x3090DE31 (0x05063090DE31) Sep 28 13:14:00.214: As97 LCP: PFC (0x0702) Sep 28 13:14:00.214: As97 LCP: ACFC (0x0802) Sep 28 13:14:00.214: As97 LCP: MRRU 1524 (0x110405F4) Sep 28 13:14:00.214: As97 LCP: EndpointDisc 1 Local (0x130E016D6175692D6E61732D3032) Sep 28 13:14:00.214: As97 LCP: O CONFREJ [Listen] id 3 len 7 Sep 28 13:14:00.214: As97 LCP: Callback 6 (0x0D0306) Sep 28 13:14:00.342: As97 LCP: I CONFREQ [REQsent] id 4 len 20 Sep 28 13:14:00.342: As97 LCP: ACCM 0x000A0000 (0x0206000A0000) Sep 28 13:14:00.342: As97 LCP: MagicNumber 0x0F7CD34A (0x05060F7CD34A) Sep 28 13:14:00.342: As97 LCP: PFC (0x0702) Sep 28 13:14:00.342: As97 LCP: ACFC (0x0802) Sep 28 13:14:00.342: As97 LCP: O CONFACK [REQsent] id 4 len 20 Sep 28 13:14:00.342: As97 LCP: ACCM 0x000A0000 (0x0206000A0000) Sep 28 13:14:00.342: As97 LCP: MagicNumber 0x0F7CD34A (0x05060F7CD34A) Sep 28 13:14:00.342: As97 LCP: PFC (0x0702) Sep 28 13:14:00.342: As97 LCP: ACFC (0x0802) Sep 28 13:14:02.214: As97 LCP: TIMEout: State ACKsent Sep 28 13:14:02.214: As97 LCP: O CONFREQ [ACKsent] id 2 len 43 Sep 28 13:14:02.214: As97 LCP: ACCM 0x000A0000 (0x0206000A0000) Sep 28 13:14:02.214: As97 LCP: AuthProto CHAP (0x0305C22305) Sep 28 13:14:02.214: As97 LCP: MagicNumber 0x3090DE31 (0x05063090DE31) Sep 28 13:14:02.214: As97 LCP: PFC (0x0702) Sep 28 13:14:02.214: As97 LCP: ACFC (0x0802) Sep 28 13:14:02.214: As97 LCP: MRRU 1524 (0x110405F4) Sep 28 13:14:02.214: As97 LCP: EndpointDisc 1 Local (0x130E016D6175692D6E61732D3032) Sep 28 13:14:02.326: As97 LCP: I CONFREJ [ACKsent] id 2 len 22 Sep 28 13:14:02.326: As97 LCP: MRRU 1524 (0x110405F4) Sep 28 13:14:02.326: As97 LCP: EndpointDisc 1 Local (0x130E016D6175692D6E61732D3032) Sep 28 13:14:02.326: As97 LCP: O CONFREQ [ACKsent] id 3 len 25 Sep 28 13:14:02.326: As97 LCP: ACCM 0x000A0000 (0x0206000A0000) Sep 28 13:14:02.326: As97 LCP: AuthProto CHAP (0x0305C22305) Sep 28 13:14:02.326: As97 LCP: MagicNumber 0x3090DE31 (0x05063090DE31) Sep 28 13:14:02.326: As97 LCP: PFC (0x0702) Sep 28 13:14:02.326: As97 LCP: ACFC (0x0802) Sep 28 13:14:02.518: As97 LCP: I CONFACK [ACKsent] id 3 len 25 Sep 28 13:14:02.518: As97 LCP: ACCM 0x000A0000 (0x0206000A0000) Sep 28 13:14:02.518: As97 LCP: AuthProto CHAP (0x0305C22305) Sep 28 13:14:02.518: As97 LCP: MagicNumber 0x3090DE31 (0x05063090DE31) Sep 28 13:14:02.518: As97 LCP: PFC (0x0702) Sep 28 13:14:02.518: As97 LCP: ACFC (0x0802) Sep 28 13:14:02.518: **As97 LCP: State is Open**

!--- LCP negotiation is complete. Sep 28 13:14:02.518: As97 PPP: Phase is AUTHENTICATING, by this end [0 sess, 0 load] Sep 28 13:14:02.518: As97 CHAP: O CHALLENGE id 1 len 32 from "maui-nas-02" Sep 28 13:14:02.646: As97 CHAP: I RESPONSE id 1 len 31 from "async_user" Sep 28 13:14:02.646: As97 AUTH: Started process 0 pid 34 Sep 28 13:14:02.650: **As97 CHAP: O SUCCESS** id 1 len 4

!--- CHAP authentication is successful. !--- If authentication fails, check the username and password. !--- Refer to [Dialup Technology: Troubleshooting Techniques](#) . Sep 28 13:14:02.650: As97 PPP: Phase is UP [0 sess, 0 load] Sep 28 13:14:02.650: As97 **IPCP: O CONFREQ** [Closed] id 1 len 10

!--- IPCP negotiation begins. Sep 28 13:14:02.650: As97 IPCP: Address 172.22.60.1 (0x0306AC163C01) Sep 28 13:14:02.758: As97 IPCP: I CONFREQ [REQsent] id 1 len 40 Sep 28 13:14:02.758: As97 IPCP: CompressType VJ 15 slots CompressSlotID (0x0206002D0F01) Sep 28 13:14:02.758: As97 IPCP: Address 0.0.0.0 (0x030600000000) Sep 28 13:14:02.758: As97 IPCP: PrimaryDNS 172.22.53.210 (0x8106AC1635D2) Sep 28 13:14:02.758: As97 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000) Sep 28 13:14:02.758: As97 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000) Sep 28 13:14:02.758: As97 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000) Sep 28 13:14:02.758: As97 AAA/AUTHOR/IPCP: Start. Her address 0.0.0.0, we want 172.22.60.2 Sep 28 13:14:02.758: As97 **AAA/AUTHOR/IPCP: Done.**

Her address 0.0.0.0, we want 172.22.60.2

!--- Address is obtained from the Address Pool named "Async". Sep 28 13:14:02.758: As97 IPCP: O CONFREJ [REQsent] id 1 len 28 Sep 28 13:14:02.758: As97 IPCP: CompressType VJ 15 slots CompressSlotID (0x0206002D0F01) Sep 28 13:14:02.758: As97 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000) Sep 28 13:14:02.758: As97 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000) Sep 28 13:14:02.758: As97 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000) Sep 28 13:14:02.802: As97 CCP: I CONFREQ [Not negotiated] id 1 len 15 Sep 28 13:14:02.802: As97 CCP: MS-PPC supported bits 0x00000001 (0x120600000001) Sep 28 13:14:02.802: As97 CCP: Stacker history 1 check mode EXTENDED (0x1105000104) Sep 28 13:14:02.802: As97 LCP: O PROTREJ [Open] id 4 len 21 protocol CCP Sep 28 13:14:02.802: As97 LCP: (0x80FD0101000F12060000000111050001) Sep 28 13:14:02.802: As97 LCP:

(0x04) Sep 28 13:14:02.802: As97 IPCP: I CONFACK [REQsent] id 1 len 10 Sep 28 13:14:02.802: As97 IPCP: Address 172.22.60.1 (0x0306AC163C01) Sep 28 13:14:04.650: As97 IPCP: TIMEout: State ACKrcvd Sep 28 13:14:04.650: As97 IPCP: O CONFREQ [ACKrcvd] id 2 len 10 Sep 28 13:14:04.650: As97 IPCP: Address 172.22.60.1 (0x0306AC163C01) Sep 28 13:14:04.758: As97 IPCP: I CONFACK [REQsent] id 2 len 10 Sep 28 13:14:04.758: As97 IPCP: Address 172.22.60.1 (0x0306AC163C01) Sep 28 13:14:05.750: As97 IPCP: I CONFREQ [ACKrcvd] id 2 len 34 Sep 28 13:14:05.750: As97 IPCP: Address 0.0.0.0 (0x030600000000) Sep 28 13:14:05.750: As97 IPCP: PrimaryDNS 172.22.53.210 (0x8106AC1635D2) Sep 28 13:14:05.750: As97 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000) Sep 28 13:14:05.750: As97 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000) Sep 28 13:14:05.750: As97 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000) Sep 28 13:14:05.750: As97 AAA/AUTHOR/IPCP: Start. Her address 0.0.0.0, we want 172.22.60.2 Sep 28 13:14:05.750: As97 AAA/AUTHOR/IPCP: Done. Her address 0.0.0.0, we want 172.22.60.2 Sep 28 13:14:05.750: As97 IPCP: O CONFREJ [ACKrcvd] id 2 len 22 Sep 28 13:14:05.750: As97 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000) Sep 28 13:14:05.754: As97 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000) Sep 28 13:14:05.754: As97 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000) Sep 28 13:14:05.878: As97 IPCP: I CONFREQ [ACKrcvd] id 3 len 16 Sep 28 13:14:05.878: As97 IPCP: Address 0.0.0.0 (0x030600000000) Sep 28 13:14:05.878: As97 IPCP: PrimaryDNS 172.22.53.210 (0x8106AC1635D2) Sep 28 13:14:05.878: As97 AAA/AUTHOR/IPCP: Start. Her address 0.0.0.0, we want 172.22.60.2 Sep 28 13:14:05.878: As97 AAA/AUTHOR/IPCP: Done. Her address 0.0.0.0, we want 172.22.60.2 Sep 28 13:14:05.878: As97 IPCP: O CONFNAK [ACKrcvd] id 3 len 10 Sep 28 13:14:05.878: As97 IPCP: Address 172.22.60.2 (0x0306AC163C02) Sep 28 13:14:05.990: As97 IPCP: I CONFREQ [ACKrcvd] id 4 len 16 Sep 28 13:14:05.990: As97 IPCP: Address 172.22.60.2 (0x0306AC163C02) Sep 28 13:14:05.990: As97 IPCP: PrimaryDNS 172.22.53.210 (0x8106AC1635D2) Sep 28 13:14:05.990: As97 AAA/AUTHOR/IPCP: Start. Her address 172.22.60.2, we want 172.22.60.2 Sep 28 13:14:05.990: As97 AAA/AUTHOR/IPCP: Reject 172.22.60.2, using 172.22.60.2 Sep 28 13:14:05.990: As97 AAA/AUTHOR/IPCP: Done. Her address 172.22.60.2, we want 172.22.60.2 Sep 28 13:14:05.994: As97 IPCP: O CONFACK [ACKrcvd] id 4 len 16 Sep 28 13:14:05.994: As97 IPCP: Address 172.22.60.2 (0x0306AC163C02) Sep 28 13:14:05.994: As97 IPCP: PrimaryDNS 172.22.53.210 (0x8106AC1635D2) Sep 28 13:14:05.994: **As97 IPCP: State is Open**

!--- IPCP negotiation is complete. The user is now connected.

对于ISDN呼叫

maui-nas-02#**debug isdn q931**
ISDN Q931 packets debugging is on
maui-nas-02#**debug ppp negotiation**
PPP protocol negotiation debugging is on
maui-nas-02#**debug ppp authentication**
PPP authentication debugging is on

Sep 28 13:25:02.630: ISDN Se0:23: **RX <- SETUP** pd = 8 callref = 0x5346
!--- Incoming Q.931 Setup message. Sep 28 13:25:02.630: Bearer Capability i = 0x8890218F Sep 28 13:25:02.630: Channel ID i = 0xA18384 Sep 28 13:25:02.630: Called Party Number i = 0xA1, '81560', Plan:ISDN, Type:National Sep 28 13:25:02.634: %LINK-3-UPDOWN: Interface Serial0:3, changed state to up Sep 28 13:25:02.638: Se0:3 PPP: Treating connection as a callin Sep 28 13:25:02.638: Se0:3 PPP: Phase is ESTABLISHING, Passive Open [0 sess, 1 load] Sep 28 13:25:02.638: Se0:3 LCP: State is Listen Sep 28 13:25:02.638: ISDN Se0:23: TX -> CALL_PROC pd = 8 callref = 0xD346 Sep 28 13:25:02.638: Channel ID i = 0xA98384 Sep 28 13:25:02.638: ISDN Se0:23: TX -> CONNECT pd = 8 callref = 0xD346 Sep 28 13:25:02.638: Channel ID i = 0xA98384 Sep 28 13:25:02.658: ISDN Se0:23: RX <- CONNECT_ACK pd = 8 callref = 0x5346 Sep 28 13:25:02.658: ISDN Se0:23: CALL_PROGRESS: **CALL_CONNECTED** call id 0x2B, bchan 3, dsl 0
!--- Call is connected. Sep 28 13:25:02.886: Se0:3 LCP: I CONFREQ [Listen] id 61 len 28 Sep 28 13:25:02.886: Se0:3 LCP: MagicNumber 0x1EB88B1C (0x05061EB88B1C) Sep 28 13:25:02.886: Se0:3 LCP: MRRU 1524 (0x110405F4) Sep 28 13:25:02.886: Se0:3 LCP: EndpointDisc 1 Local (0x130E0161757374696E5F6973646E) Sep 28 13:25:02.886: Se0:3 LCP: O CONFREQ [Listen] id 1 len 33 Sep 28 13:25:02.886: Se0:3 LCP: AuthProto CHAP (0x0305C22305) Sep 28 13:25:02.886: Se0:3 LCP: MagicNumber 0x309AFABD (0x0506309AFABD) Sep 28 13:25:02.886: Se0:3 LCP: MRRU 1524 (0x110405F4) Sep 28 13:25:02.886: Se0:3 LCP: EndpointDisc 1 Local (0x130E016D6175692D6E61732D3032) Sep 28 13:25:02.886: Se0:3 LCP: O CONFACK [Listen] id 61 len 28 Sep 28 13:25:02.886: Se0:3 LCP: MagicNumber 0x1EB88B1C (0x05061EB88B1C) Sep 28 13:25:02.886: Se0:3 LCP: MRRU 1524 (0x110405F4) Sep 28 13:25:02.886: Se0:3 LCP: EndpointDisc 1 Local (0x130E0161757374696E5F6973646E) Sep 28 13:25:02.922: Se0:3 LCP: I CONFACK [ACKsent] id 1 len 33 Sep 28 13:25:02.922: Se0:3 LCP: AuthProto CHAP (0x0305C22305) Sep 28 13:25:02.922: Se0:3 LCP: MagicNumber 0x309AFABD (0x0506309AFABD) Sep 28 13:25:02.922: Se0:3 LCP: MRRU 1524 (0x110405F4) Sep 28 13:25:02.922:

Se0:3 LCP: EndpointDisc 1 Local (0x130E016D6175692D6E61732D3032) Sep 28 13:25:02.922: Se0:3 **LCP: State is Open**

!--- LCP negotiation is complete. Sep 28 13:25:02.922: Se0:3 PPP: Phase is AUTHENTICATING, by this end [0 sess, 1 load] Sep 28 13:25:02.922: Se0:3 CHAP: O CHALLENGE id 1 len 32 from "maui-nas-02" Sep 28 13:25:02.954: Se0:3 CHAP: I RESPONSE id 1 len 32 from "austin_isdn" Sep 28 13:25:02.954: Se0:3 **CHAP: O SUCCESS** id 1 len 4

!--- PPP CHAP authentication is successful. Sep 28 13:25:02.958: Se0:3 PPP: Phase is VIRTUALIZED [0 sess, 1 load] Sep 28 13:25:02.958: Vi1 PPP: Phase is DOWN, Setup [0 sess, 1 load] Sep 28 13:25:02.982: Vi1 PPP: Phase is DOWN, Setup [0 sess, 1 load] Sep 28 13:25:02.982: Se0:3 IPCP: Packet buffered while building MLP bundle interface Sep 28 13:25:02.986: **%LINK-3-UPDOWN: Interface Virtual-Access1,**

changed state to up

!--- Virtual-Access Interface is up. !--- This interface controls the incoming call. Sep 28 13:25:02.986: Vi1 PPP: Treating connection as a callin Sep 28 13:25:02.986: Vi1 PPP: Phase is ESTABLISHING, Passive Open [0 sess, 1 load] Sep 28 13:25:02.986: Vi1 LCP: State is Listen Sep 28 13:25:02.986: Vi1 PPP: Phase is UP [0 sess, 1 load] Sep 28 13:25:02.986: Vi1 IPCP: O CONFREQ [Closed] id 1 len 10 Sep 28 13:25:02.986: Vi1 IPCP: Address 172.22.61.1 (0x0306AC163D01) Sep 28 13:25:02.990: Vi1 MLP: Added first link Se0:3 to bundle austin_isdn Sep 28 13:25:02.990: Vi1 PPP: Pending ncpQ size is 1 Sep 28 13:25:02.990: Se0:3 IPCP: Redirect packet to Vi1 Sep 28 13:25:02.990: Vi1 IPCP: I CONFREQ [REQsent] id 45 len 10 Sep 28 13:25:02.990: Vi1 IPCP: Address 10.0.0.1 (0x03060A000001) Sep 28 13:25:02.990: Vi1 AAA/AUTHOR/IPCP: Start. Her address 10.0.0.1, we want 0.0.0.0 Sep 28 13:25:02.990: Vi1 AAA/AUTHOR/IPCP: Reject 10.0.0.1, using 0.0.0.0 Sep 28 13:25:02.990: Vi1 AAA/AUTHOR/IPCP: Done. Her address 10.0.0.1, we want 0.0.0.0 Sep 28 13:25:02.990: Vi1 IPCP: O CONFNAK [REQsent] id 45 len 10 Sep 28 13:25:02.990: Vi1 IPCP: **Address 172.22.61.2** (0x0306AC163D02)

!--- Peer IP address is assigned from IP Pool named "ISDN". Sep 28 13:25:02.990: Se0:3 CDPCP: MLP bundle interface is built, process packets now Sep 28 13:25:02.990: Se0:3 CDPCP: Redirect packet to Vi1 Sep 28 13:25:02.990: Vi1 CDPCP: I CONFREQ [Not negotiated] id 23 len 4 Sep 28 13:25:02.990: Vi1 LCP: O PROTREJ [Open] id 1 len 10 protocol CDPCP (0x820701170004) Sep 28 13:25:03.010: Vi1 IPCP: I CONFACK [REQsent] id 1 len 10 Sep 28 13:25:03.010: Vi1 IPCP: Address 172.22.61.1 (0x0306AC163D01) Sep 28 13:25:03.010: Vi1 IPCP: I CONFREQ [ACKrcvd] id 46 len 4 Sep 28 13:25:03.010: Vi1 IPCP: O CONFACK [ACKrcvd] id 46 len 4 Sep 28 13:25:03.010: **Vi1 IPCP: State is Open**

!--- IPCP negotiation is complete. The call is now connected. Sep 28 13:25:03.014: Di10 IPCP: Install route to 172.22.61.2 Sep 28 13:25:03.958: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0:3, changed state to up Sep 28 13:25:03.986: %LINEPROTO-5-UPDOWN: Line protocol on Interface Virtual-Access1, changed state to up Sep 28 13:25:04.146: ISDN Se0:23: **RX <- SETUP** pd = 8 callref = 0x5409

!--- The second link in the multilink connection arrives. Sep 28 13:25:04.150: Bearer Capability i = 0x8890218F Sep 28 13:25:04.150: Channel ID i = 0xA18385 Sep 28 13:25:04.150: Called Party Number i = 0xA1, '81560', Plan:ISDN, Type:National Sep 28 13:25:04.154: %LINK-3-UPDOWN: Interface Serial0:4, changed state to up Sep 28 13:25:04.154: %ISDN-6-CONNECT: Interface Serial0:3 is now connected to austin_isdn Sep 28 13:25:04.154: Se0:4 PPP: Treating connection as a callin Sep 28 13:25:04.154: Se0:4 PPP: Phase is ESTABLISHING, Passive Open [0 sess, 1 load] Sep 28 13:25:04.154: Se0:4 LCP: State is Listen Sep 28 13:25:04.158: ISDN Se0:23: TX -> CALL_PROC pd = 8 callref = 0xD409 Sep 28 13:25:04.158: Channel ID i = 0xA98385 Sep 28 13:25:04.158: ISDN Se0:23: TX -> CONNECT pd = 8 callref = 0xD409 Sep 28 13:25:04.158: Channel ID i = 0xA98385 Sep 28 13:25:04.178: ISDN Se0:23: RX <- CONNECT_ACK pd = 8 callref = 0x5409 Sep 28 13:25:04.178: ISDN Se0:23: CALL_PROGRESS: CALL_CONNECTED call id 0x2C, bchan 4, dsl 0 Sep 28 13:25:04.394: Se0:4 LCP: I CONFREQ [Listen] id 51 len 28 Sep 28 13:25:04.394: Se0:4 LCP: MagicNumber 0x1EB8910D (0x05061EB8910D) Sep 28 13:25:04.394: Se0:4 LCP: MRRU 1524 (0x110405F4) Sep 28 13:25:04.394: Se0:4 LCP: EndpointDisc 1 Local (0x130E0161757374696E5F6973646E) Sep 28 13:25:04.394: Se0:4 LCP: O CONFREQ [Listen] id 1 len 33 Sep 28 13:25:04.394: Se0:4 LCP: AuthProto CHAP (0x0305C22305) Sep 28 13:25:04.394: Se0:4 LCP: MagicNumber 0x309B00A6 (0x0506309B00A6) Sep 28 13:25:04.394: Se0:4 LCP: MRRU 1524 (0x110405F4) Sep 28 13:25:04.394: Se0:4 LCP: EndpointDisc 1 Local (0x130E016D6175692D6E61732D3032) Sep 28 13:25:04.394: Se0:4 LCP: O CONFACK [Listen] id 51 len 28 Sep 28 13:25:04.394: Se0:4 LCP: MagicNumber 0x1EB8910D (0x05061EB8910D) Sep 28 13:25:04.394: Se0:4 LCP: MRRU 1524 (0x110405F4) Sep 28 13:25:04.394: Se0:4 LCP: EndpointDisc 1 Local (0x130E0161757374696E5F6973646E) Sep 28 13:25:04.430: Se0:4 LCP: I CONFACK [ACKsent] id 1 len 33 Sep 28 13:25:04.430: Se0:4 LCP: AuthProto CHAP (0x0305C22305) Sep 28 13:25:04.430: Se0:4 LCP: MagicNumber 0x309B00A6 (0x0506309B00A6) Sep 28 13:25:04.430: Se0:4 LCP: MRRU 1524 (0x110405F4) Sep 28 13:25:04.430: Se0:4 LCP: EndpointDisc 1 Local (0x130E016D6175692D6E61732D3032) Sep 28 13:25:04.430: Se0:4 LCP: State is Open Sep 28 13:25:04.430: Se0:4 PPP: Phase is AUTHENTICATING, by this end [0 sess, 1 load] Sep 28

13:25:04.430: Se0:4 CHAP: O CHALLENGE id 1 len 32 from "maui-nas-02" Sep 28 13:25:04.462: Se0:4 CHAP: I RESPONSE id 1 len 32 from "austin_isdn" Sep 28 13:25:04.466: Se0:4 CHAP: O SUCCESS id 1 len 4 Sep 28 13:25:04.466: Se0:4 PPP: Phase is VIRTUALIZED [0 sess, 1 load] Sep 28 13:25:04.466: **Vi1 MLP: Added link Se0:4 to bundle austin_isdn**

!--- An additional Link is now added to exiting Virtual Interface Bundle. Sep 28 13:25:05.466: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0:4, changed state to up Sep 28 13:25:10.154: **%ISDN-6-CONNECT:**

Interface Serial0:4 is now connected to austin_isdn

!--- The second call is connected. The multilink Bundle is complete. maui-nas-02#

相关信息

- 拨号和接入技术支持页
- 技术支持和文档 - Cisco Systems