Configuración de un Servidor de Acceso con PRIs para Llamadas ISDN y Asíncronas Multilink Entrantes

Contenido

Introducción

En muchos entornos, debe configurar un servidor de acceso que pueda aceptar llamadas entrantes de usuarios asíncronos e ISDN. Estos usuarios pueden conectarse perfectamente con la red como si estuvieran presentes físicamente. Esta configuración se utiliza habitualmente para proporcionar conectividad de red a los usuarios que viajan y son teletrabajadores, así como a los sitios de oficinas pequeñas en casa (SOHO).

Este documento describe cómo configurar un Servidor de Acceso para aceptar llamadas ISDN y asíncronas entrantes en circuitos ISDN T1 PRI. La configuración proporciona la configuración mínima necesaria para que el servidor de acceso a la red (NAS) acepte la llamada. Puede agregar funciones adicionales a esta configuración en función de sus necesidades.

Prerequisites

Requirements

No hay requisitos específicos para este documento.

Componentes Utilizados

La información que contiene este documento se basa en las siguientes versiones de software y hardware.

- Cisco AS5300 con 192 módems MICA y ocho puertos T1 que ejecutan Cisco IOS® Software Release 12.2(5).
- Dos PRI T1.
- PC que ejecuta Microsoft Windows. Este PC tiene un módem analógico y una conexión telefónica a la red telefónica pública del switch. La PC se comunica al T1 PRI que está conectado al AS5300.
- Routers Cisco de las series 800 y 1600 con circuitos ISDN BRI. Estos routers son los clientes de marcado ISDN. Se proporciona la configuración del Cisco 1600. Puede aplicar esta configuración de cliente a cualquier router con una interfaz BRI.
- Autenticación, autorización y contabilidad locales (AAA). Si posee un servidor Radius AAA o Tacacs +, puede utilizar cualquiera de ellos para abastecer al AAA en las llamadas entrantes.

Nota: La configuración del router Cisco 800 es similar a la del router Cisco 1600 y no se incluye en este documento.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Productos Relacionados

Puede utilizar esta configuración con cualquier router que tenga tarjetas T1 o PRI y módems digitales internos (por ejemplo, MICA, NextPort o Microcom). Cualquier router de la serie AS5xxx con una tarjeta T1 o PRI y módems digitales puede usar los conceptos de esta configuración.

Los routers de la serie 2600 de Cisco no admiten módems digitales internos. Puede configurar los Cisco 2600 Series Routers para que acepten solamente llamadas ISDN, siempre que el router tenga un T1 o PRI WIC o un Módulo de red.

Los routers de la serie 3600 de Cisco pueden soportar llamadas ISDN y de módem. Sin embargo, los routers de la serie 3600 de Cisco requieren un T1 o PRI WIC o un módulo de red y el módulo de red de módem digital NM-xDM.

También puede realizar modificaciones para utilizar esta configuración con puertos E1 o PRI. Configure el controlador E1 con la codificación de línea, el entramado y otras características físicas que su compañía telefónica suministra. La configuración del canal D (interfaz Serial x:15 para E1s) es similar a la que se muestra en este documento.

Convenciones

For more information on document conventions, refer to the Cisco Technical Tips Conventions.

Configurar

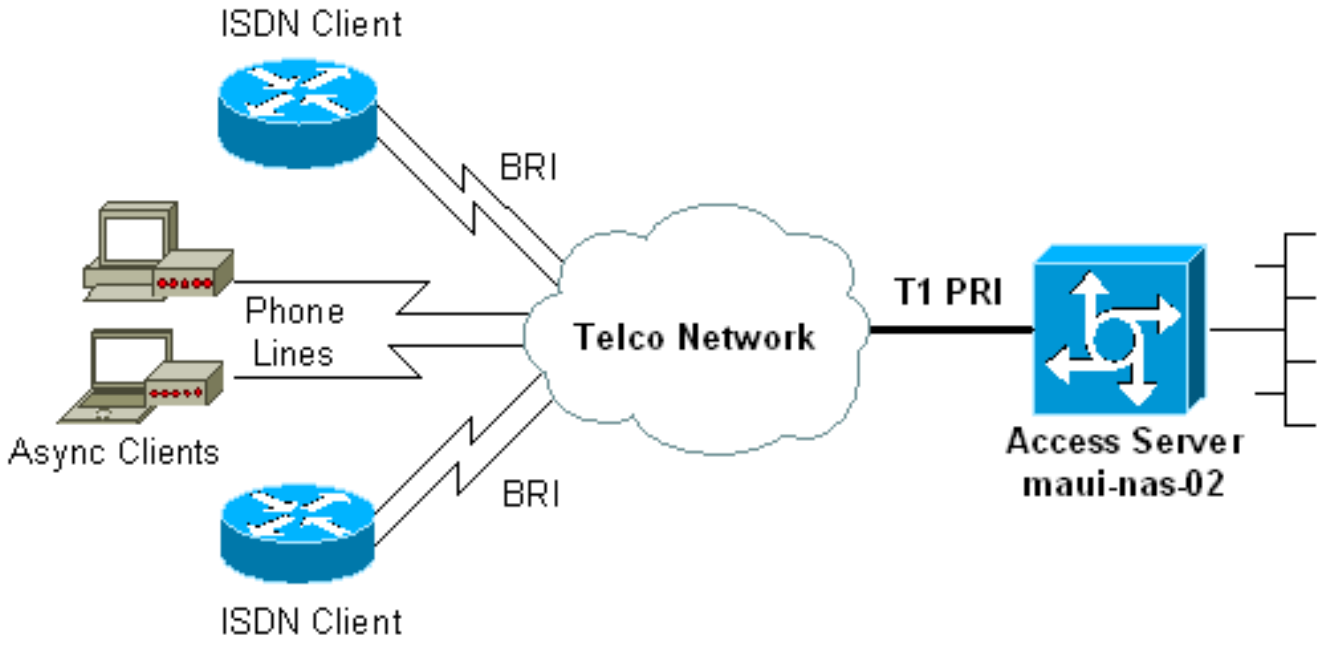
En esta sección encontrará la información para configurar las funciones descritas en este

documento.

Nota: Para encontrar información adicional sobre los comandos usados en este documento, utilice la Command Lookup Tool (sólo clientes registrados) .

Diagrama de la red

En este documento, se utiliza esta configuración de red:



Configuraciones

En este documento, se utilizan estas configuraciones:

- maui-nas-02 (5300)
- maui-slt-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-slt-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
```

Verificación

En esta sección encontrará información que puede utilizar para confirmar que su configuración esté funcionando correctamente.

La herramienta Output Interpreter (sólo para clientes registrados) permite utilizar algunos comandos “show” y ver un análisis del resultado de estos comandos.

- **show isdn status**: garantiza que el router se comunica correctamente con el switch ISDN. En el resultado, asegúrese de que `Estado de Capa 1` sea `ACTIVO` y que aparezca el `Estado de Capa 2 = MULTIPLE_FRAME_ESTABLISHED`. Este comando muestra también el número de llamadas activas. Refiérase a Uso del Comando **show isdn status** para Troubleshooting de BRI para obtener más información.
- **show ppp multilink**: muestra información sobre paquetes multilink activos. Utilice este comando para verificar la conexión multilink.
- **show dialer [interface *type number*]**—muestra información de diagnóstico general para las interfaces configuradas para DDR Si el marcador aparece correctamente, el mensaje `Dialer state is data link layer up` debe aparecer. Si aparece `capa física arriba`, la implicancia es que el protocolo de línea surgió, pero el protocolo de control de red (NCP) no lo hizo. Las direcciones de origen y destino del paquete que inició el marcado se ven en la línea de motivo del marcado. Este **comando show** también muestra la configuración del temporizador y el tiempo antes de que la conexión se agote.
- **show caller user *username* detail*: muestra los parámetros para el usuario en particular, por ejemplo, la dirección IP asignada, los parámetros PPP y PPP bundle.*** Si su versión del software Cisco IOS no es compatible con este comando, utilice el comando show user.
- **show dialer map**: muestra mapas de marcador dinámicos y estáticos configurados. Puede utilizar este comando para verificar si se crea un mapa de marcador dinámico. No puede rutear paquetes sin un asociador del marcador.

Ejemplo de resultado del comando show

A continuación se muestran algunos resultados del comando **show** para llamadas exitosas. Preste atención a las secciones en negrita y a los comentarios proporcionados en el resultado. Compare la salida que obtiene con los resultados que se muestran aquí.

Panorama general

```
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
```

Para una llamada analógica

```
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.

Para una llamada ISDN

```
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
```

Troubleshoot

En esta sección encontrará información que puede utilizar para solucionar problemas de configuración.

Recursos de resolución de problemas

Utilice estos recursos según sea necesario:

- Resolución de problemas de llamadas del módem entrante: utilice este documento para resolver problemas de falla de llamada analógica.
- Llamada del módem asíncrono PRI: utilice este documento para obtener información adicional para solucionar problemas de fallas de llamadas analógicas.
- Troubleshooting de Llamada ISDN Entrante: Utilice este documento para resolver problemas de falla de llamada ISDN.
- Llamada ISDN PRI: utilice este documento para obtener información adicional para resolver problemas de fallas de llamadas ISDN.
- Diagrama de flujo de resolución de problemas T1: utilice este diagrama de flujo si sospecha que el circuito T1 no funciona correctamente.
- Pruebas de loopback para líneas T1/56K: utilice este documento para confirmar que el puerto T1 del router funciona correctamente.

Comandos para resolución de problemas

La herramienta Output Interpreter (sólo para clientes registrados) permite utilizar algunos comandos “show” y ver un análisis del resultado de estos comandos.

Nota: Antes de ejecutar **comandos debug**, consulte Información Importante sobre Comandos Debug.

- **debug dialer**: muestra información de depuración DDR sobre los paquetes recibidos en una interfaz de marcador. Esta información puede ayudar a asegurar que hay tráfico interesante que utiliza la interfaz del marcador.

- **debug isdn q931**: muestra la configuración de la llamada y el desmontaje de la conexión de red ISDN (Capa 3).
- **debug modem**: muestra la actividad de la línea del módem en un servidor de acceso. El resultado se muestra cuando la línea del módem cambia de estado.
- **debug modem csm**: permite resolver problemas de Call Switching Module (CSM) en routers con módems digitales internos. Con este comando puede realizar un seguimiento de la secuencia completa de la switching de las llamadas entrantes y salientes.
- **debug ppp negotiation**: muestra información sobre el tráfico PPP y los intercambios, y negocia el protocolo de control de enlaces (LCP), la autenticación y el protocolo de control de red (NCP). Una negociación PPP exitosa abre primero el estado LCP, luego realiza la autenticación y por último negocia el NCP. Los parámetros de links múltiples como el Maximum Receive Reconstructed Unit (MRRU) se establecen durante la negociación LCP (protocolo de control de links)
- **debug ppp authentication**: muestra los mensajes del protocolo de autenticación PPP, incluidos los intercambios de paquetes CHAP y los intercambios del protocolo de autenticación de contraseña (PAP).
- **debug ppp error — Muestra los errores de protocolo y las estadísticas de error relacionadas con la negociación y operación de conexiones PPP.**

Ejemplo de resultado del comando debug

A continuación se muestran algunos resultados **de depuración** para llamadas exitosas. Preste atención a las secciones en negrita y a los comentarios proporcionados en los resultados. Compare la salida que obtiene con el resultado que se muestra aquí.

Para una llamada analógica

```
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: (0x80FD0101000F1206000000000111050001) 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.

Para una llamada ISDN

```
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#

Información Relacionada

- Páginas de soporte de la tecnología de marcado y acceso
- Soporte Técnico y Documentación - Cisco Systems