ISDN BRI 链路上第二个 B 通道呼叫失败故障排除

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简介

多链路点对点协议(MPPP)在ISDN BRI连接使您启动两B信道。MPPP提供128k (2 x 64kbps)在ISDN终端设备之间的带宽。然而，而其他B信道逗留虚度光阴，在许多情况下，路由器能只连接一B信道。在这些情况下本文讨论如何排除故障问题。

注意： 此步骤是主要为与一条BRI链路(即两B信道)的连接。如果使用MPPP捆绑两个或多个BRI (即至少三B信道)，参考配置与多个BRI接口的多链路PPP。

先决条件

要求

验证路由器是否能彼此连接一B信道。本文包括与另外的多链路信道关连仅的连接失败。如果无法连接一信道参考的ISDN BRI故障排除流程图。

除非第一个信道成功，连接请勿继续进行在本文的步骤。

Cisco 建议您了解以下主题：

- 常规ISDN和按需拨号路由(DDR)配置概念。参考基本ISDN的培训演示和在学习连接欲知更多信息的思科的DDR配置联机。
- 如何调试ISDN和PPP。您一定能确定路由器是否拨号，连接在ISDN层并且协商PPP。

使用的组件

本文档中的信息基于以下软件和硬件版本：

- Cisco IOS软件版本12.1(2)和12.2(2)TCisco在Cisco IOS软件版本12.1(2)介绍**dialer redial命令**。以后，Cisco在Cisco IOS软件版本12.2(2)T修改了命令包括其它选项。关于此功能的更多信息，参考重新拨号增强功能。
- 居住的两路由器连接BRI电路。

本文档中的信息都是基于特定实验室环境中的设备编写的。本文档中使用的所有设备最初均采用原始（默认）配置。如果您使用的是真实网络，请确保您已经了解所有命令的潜在影响。

规则

有关文档规则的详细信息，请参阅 Cisco 技术提示规则。

问题说明

路由器启动在BRI的两B信道为联络到ISDN对等体。对对等体的连接成功。然而，仅一B信道成功连接。多链路PPP尝试启动另外的B信道，但是呼叫不断地失败。

此图表说明成功的呼叫的呼叫流：

问您必须要求Telco

当您配置并且排除故障多链路时，请询问呼叫的路由器的telco这些问题：

1. **问题：**是否需要拨号一个号码或两个号码连接到两远程B信道？**答案：一个编号：**配置单个**dialer string**或**dialer map**在本地路由器的物理或拨号接口，如适当。参考步骤4欲知更多信息。继续问2。**两个编号：**在本地路由器上，请配置一**dialer map**或**dialer string**每个远端B-信道ISDN号码的。参考步骤4欲知更多信息。
2. **问题：**两个B信道编号在寻找组中配置？**答案：是：**这是只需要一个编号连接到两B信道的电路的预计设置。寻找组绑定两个B信道编号(因而主叫方只需要一个编号呼叫)。在第一B信道连接后，呼叫路由器再拨号同一个号码。在远程终端的交换机，最接近呼叫的路由器认为第一B信道忙碌，并且转移在第二B信道上的呼叫和从而成为捆绑可能。**否：**当第一忙碌时，请求Telco配置两个B信道编号在寻找组中和自动地滚动呼叫到第二个数字。如果telco不配置寻找组，请配置**dialer redial or isdn fast-rollver delay命令**按照Troubleshoot部分的步骤5说明。

故障排除

注意： 在您使用此步骤前，请验证路由器是否用一一B信道彼此连接。如果无法连接一个信道，参考ISDN BRI故障排除流程图。

1. 打开这些调试指令：**debug dialer**、**debug isdn q931**和**debug ppp协商**。
2. 为远程设备注定的启动流量。保证有发起足够的流量另外的呼叫。**提示：** 您能使用扩展的ping工具变化数据包/数据包大小和编号ping。参考使用扩展ping和扩展traceroute命令关于如何使用扩展ping的更多信息。
3. 证实路由器是否尝试第二次呼叫。调试象这样出现：`*Mar 1 01:30:55.295: BRI3/0 DDR: rotor dialout [priority] !--- Use BRI 3/0 to dial out. *Mar 1 01:30:55.295: BRI3/0 DDR: Dialing cause ip (s=10.1.1.1, d=172.22.53.201) !--- DDR dialing cause is a ping to the remote router. *Mar 1 01:30:55.295: BRI3/0 DDR: Attempting to dial 5558888 !--- Dial the remote`

```
number. *Mar 1 01:30:55.295: ISDN BR3/0: TX -> SETUP pd = 8 callref = 0x07 *Mar 1
01:30:55.299: Bearer Capability i = 0x8890218F *Mar 1 01:30:55.299: Channel ID i = 0x83
*Mar 1 01:30:55.299: Keypad Facility i = '5558888'
```

4. 路由器是否尝试第二次呼叫？**是**：继续执行步骤 5。**否**：暗示是路由器没有为多链路PPP适当地配置。配置这些命令：关于多链路PPP的配置选项的更多信息，参考DDR的多链路PPP -基本配置和验证。
5. 配置这些命令之一在物理或拨号接口下：**拨号程序重拨间隔5尝试3** —在拨号尝试之间的间隔是五秒，最多的三尝试。此间隔允许在重拨尝试前将被切断的完全旧有呼叫。**isdn fast-rollover-delay 5** —设置反转延迟在5秒。提供此延迟允许在新的呼叫尝试前将被切断的完全旧有呼叫。此命令是必要的在一些ISDN交换机，因为新的呼叫尝试能发生，在旧有呼叫完全被切断前。这导致第二次呼叫发生故障。

示例输出

此部分为一成功和一不成功呼叫提供一配置示例和debug输出。请使用此部分作为参考检查调试您是否观察匹配显示的那个此处：

```
interface BRI1/0
 ip address 192.168.1.111 255.255.255.0
 encapsulation ppp
 dialer map ip 192.168.1.1 name asc001 13305551111
 dialer map ip 192.168.1.1 name asc001 13305551112
 !--- Notice that the dialer map statements are identical except for !--- the phone numbers to
dial. !--- The numbers correspond to the ISDN numbers of the remote BRI. !--- This router will
use the first dialer map, then the second dialer map. dialer load-threshold 1 either !--- Set
the load-threshold to the required value and direction dialer-group 1. isdn switch-type basic-ni
isdn spid1 25255588880101 5558888 isdn spid2 25255588890101 5558889 isdn fast-rollover-delay 5
!--- Rollover delay is set to 5 seconds. ppp authentication chap pap callin ppp multilink !---
Enable multilink on the interface.
```

激活**debug isdn q931**和**debug ppp协商**并且启动ping对远程终端IP地址。

```
asc011#ping 192.168.1.1 Type escape sequence to abort. Sending 5, 100-byte ICMP Echos to
192.168.1.1, timeout is 2 seconds: Aug 24 16:30:35.651 est: ISDN BR1/0: TX -> SETUP pd = 8
callref = 0x3B Aug 24 16:30:35.655 EST: Bearer Capability i = 0x8890218F Aug 24 16:30:35.655
EST: Channel ID i = 0x83 Aug 24 16:30:35.659 EST: Keypad Facility i = '13305551111' !--- Calling
out with the number specified in the first dialer map. Aug 24 16:30:35.896 EST: ISDN BR1/0: RX
<- CALL_PROC pd = 8 callref = 0xBB Aug 24 16:30:35.896 EST: Channel ID i = 0x89 Aug 24
16:30:35.900 EST: Locking Shift to Codeset 5 Aug 24 16:30:35.900 EST: Codeset 5 IE 0x2A i =
0x80880B,'13305551111', 0x800109800114800114800114.. Aug 24 16:30:38.877 EST: ISDN BR1/0: RX <-
ALERTING pd = 8 callref = 0xBB Aug 24 16:30:38.881 EST: Signal i = 0x01 - Ring back tone on Aug
24 16:30:38.929 EST: ISDN BR1/0: RX <- CONNECT pd = 8 callref =0xBB Aug 24 16:30:38.929 EST:
Signal i = 0x3F - Tones off Aug 24 16:30:38.937 EST: %LINK-3-UPDOWN: Interface BRI1/0:1, changed
state to up Aug 24 16:30:38.941 EST: BR1/0:1 PPP: Treating connection as a callout Aug 24
16:30:38.945 EST: BR1/0:1 PPP: Phase is ESTABLISHING, Active Open [0 sess , 0 load] Aug 24
16:30:38.945 EST: BR1/0:1 PPP: No remote authentication for call-out Aug 24 16:30:38.945 EST:
BR1/0:1 LCP: O CONFREQ [Closed] id 5 len 23 Aug 24 16:30:38.945 EST: BR1/0:1 LCP: MagicNumber
0x55EE5FC7 (0x050655EE5FC7) Aug 24 16:30:38.945 EST: BR1/0:1 LCP: MRRU 1524 (0x110405F4) Aug 24
16:30:38.949 EST: BR1/0:1 LCP: EndpointDisc 1 Local (0x130901617363303131) Aug 24 16:30:38.949
EST: ISDN BR1/0: TX -> CONNECT_ACK pd = 8 callref = 0x3B ... !--- Output omitted. ... Aug 24
16:30:39.009 EST: BR1/0:1 LCP: I CONFACK [ACKsent] id 5 Len 23 Aug 24 16:30:39.009 EST: BR1/0:1
LCP: MagicNumber 0x55EE5FC7(0x050655EE5FC7) Aug 24 16:30:39.009 EST: BR1/0:1 LCP: MRRU 1524
(0x110405F4) Aug 24 16:30:39.009 EST: BR1/0:1 LCP: EndpointDisc 1 Local (0x130901617363303131)
Aug 24 16:30:39.013 EST: BR1/0:1 LCP: State is Open Aug 24 16:30:39.013 EST: BR1/0:1 PPP:Phase
is AUTHENTICATING, by the peer [0 sess, 0 load] Aug 24 16:30:39.057 EST: BR1/0:1 CHAP: I
CHALLENGE id 151 Len 27 from "asc001" Aug 24 16:30:39.061 EST: BR1/0:1 CHAP: O RESPONSE id 151
Len 27 from "asc011" Aug 24 16:30:39.109 EST: BR1/0:1 CHAP: I SUCCESS id 151 Len 4 !---
Authentication is successful. Aug 24 16:30:39.109 EST: BR1/0:1 PPP: Phase is VIRTUALIZED [0
sess, 0 load] Aug 24 16:30:39.113 EST: Vi1 PPP: Phase is DOWN, Setup [0 sess, 0 load] Aug 24
```

16:30:39.121 EST: %LINK-3-UPDOWN: Interface Virtual-Access1, changed state to up Aug 24 16:30:39.121 EST: Vi1 PPP: Treating connection as a callout Aug 24 16:30:39.121 EST: Vi1 PPP: Phase is ESTABLISHING, Active Open [0sess, 0load] Aug 24 16:30:39.125 EST: Vi1 PPP: No remote authentication for call-out Aug 24 16:30:39.125 EST: Vi1 LCP: O CONFREQ [Closed] id 1 Len 23 Aug 24 16:30:39.125 EST: Vi1 LCP: MagicNumber 0x55EE6079(0x050655EE6079) Aug 24 16:30:39.125 EST: Vi1 LCP: MRRU 1524 (0x110405F4) Aug 24 16:30:39.125 EST: Vi1 LCP: EndpointDisc 1 Local (0x130901617363303131) Aug 24 16:30:39.129 EST: Vi1 PPP: Phase is UP [0 sess, 0 load] Aug 24 16:30:39.129 EST: Vi1 IPCP: O CONFREQ [Closed] id 1 Len 10 Aug 24 16:30:39.129 EST: Vi1 IPCP: Address 192.168.1.111(0x0306C0A8016F) Aug 24 16:30:39.137 EST: Vi1 IPCP: I CONFREQ [REQsent] id 1 Len 10 Aug 24 16:30:39.137 EST: Vi1 IPCP: Address 192.168.1.1 (0x0306C0A80101) Aug 24 16:30:39.137 EST: Vi1 IPCP: O CONFACK [REQsent] id 1 Len 10 Aug 24 16:30:39.137 EST: Vi1 IPCP: Address 192.168.1.1 (0x0306C0A80101) Aug 24 16:30:39.177 EST: Vi1 IPCP: I CONFACK [ACKsent] id 1 Len 10 Aug 24 16:30:39.177 EST: Vi1 IPCP: Address 192.168.1.111 (0x0306C0A8016F) Aug 24 16:30:39.181 EST: Vi1 IPCP: State is Open Aug 24 16:30:39.185 EST: **BR1/0 IPCP: Install route to 192.168.1.1** *!--- First call is successful. We will now initiate the additional call.* Aug 24 16:30:39.754 EST: ISDN BR1/0: TX -> SETUP pd = 8 callref = 0x3C Aug 24 16:30:39.754 EST: Bearer Capability i = 0x8890218F Aug 24 16:30:39.758 EST: Channel ID i = 0x83 Aug 24 16:30:39.762 EST: Keypad Facility i = '**13305551111**' *!--- We once again dial out with the first dialer map (the expected behavior). !--- This call fails and router rolls over to use the second dialer map.* Aug 24 16:30:39.995 EST: ISDN BR1/0: RX <- CALL_PROC pd = 8 callref = 0xBC Aug 24 16:30:39.995 EST: Channel ID i = 0x8A Aug 24 16:30:39.999 EST: Locking Shift to Codeset 5 Aug 24 16:30:39.999 EST: Codeset 5 IE 0x2A i = 0x80880B,'13305551111',0x800109800114800114800114 Aug 24 16:30:40.111 EST: %LINEPROTO-5-UPDOWN: Line protocol on Interface BRI1/0:1, changed state to up Aug 24 16:30:40.131 EST: %LINEPROTO-5-UPDOWN: Line protocol on Interface Virtual-Access1, changed state to up Aug 24 16:30:41.209 EST: BR1/0:1 LCP: I ECHOREQ [Open] id 1 Len 12 magic 0x8EFDDF16 Aug 24 16:30:41.209 EST: BR1/0:1 LCP: O ECHOREP [Open] id 1 Len 12 magic 0x55EE5FC7 Aug 24 16:30:42.779 EST: ISDN BR1/0: **RX <- DISCONNECT** pd = 8 callref = 0xBC Aug 24 16:30:42.783 EST: Cause i = 0x8291 - **User busy** Aug 24 16:30:42.783 EST: Signal i = 0x04 - Busy tone on *!--- The call fails. The remote switch sends a message that the B-channel is busy. !--- Upon receipt of this disconnect, the router dials the second dialer map. !--- If you do not receive this Disconnect within a certain timeframe, the router !--- does not attempt another call. The* ***dialer redial*** *or* ***isdn fast-rollover*** *!--- commands can fix this issue.* Aug 24 16:30:42.795 EST: %ISDN-6-CONNECT: Interface BRI1/0:1 is now connected to 13305551111 asc001 Aug 24 16:30:42.807 EST: ISDN BR1/0: TX -> RELEASE pd = 8 callref = 0x3C Aug 24 16:30:42.831 EST: ISDN BR1/0: TX -> SETUP pd = 8 callref = 0x3D Aug 24 16:30:42.835 EST: Bearer Capability i = 0x8890218F Aug 24 16:30:42.835 EST: Channel ID i = 0x83 Aug 24 16:30:42.839 EST: Keypad Facility i = '**13305551112**' *!--- Dial with the second dialer map.* Aug 24 16:30:42.927 EST: ISDN BR1/0: RX <- RELEASE_COMP pd = 8 callref = 0xBC Aug 24 16:30:42.931 EST: Signal i = 0x3F - Tones off Aug 24 16:30:43.096 EST: ISDN BR1/0: RX <- CALL_PROC pd = 8 callref = 0xBD Aug 24 16:30:43.096 EST: Channel ID i = 0x8A Aug 24 16:30:43.100 EST: Locking Shift to Codeset 5 asc011# Aug 24 16:30:43.100 EST: Codeset 5 IE 0x2A i = 0x80880B, '13305551112' ,0x800109800114800114800114 Aug 24 16:30:46.329 EST: ISDN BR1/0: RX <- ALERTING pd = 8 callref = 0xBD Aug 24 16:30:46.329 EST: Signal i = 0x01 - Ring back tone on Aug 24 16:30:46.361 EST: ISDN BR1/0: RX <- CONNECT pd = 8 callref = 0xBD Aug 24 16:30:46.361 EST: Signal i = 0x3F - Tones off Aug 24 16:30:46.373 EST: %LINK-3-UPDOWN: Interface BRI1/0:2, changed state to up Aug 24 16:30:46.373 EST: BR1/0:2 PPP: Treating connection as a callout ... *!--- Output omitted.* ... Aug 24 16:30:46.445 EST: BR1/0:2 LCP: State is Open Aug 24 16:30:46.445 EST: BR1/0:2 PPP: Phase is AUTHENTICATING, by the peer [0 sess, 1 load] Aug 24 16:30:46.489 EST: BR1/0:2 CHAP: I CHALLENGE id 31 Len 27 from "asc001" Aug 24 16:30:46.493 EST: BR1/0:2 CHAP: O RESPONSE id 31 Len 27 from "asc011" Aug 24 16:30:46.542 EST: BR1/0:2 CHAP: I SUCCESS id 31 Len 4 Aug 24 16:30:46.542 EST: BR1/0:2 PPP: Phase is VIRTUALIZED [0 sess, 1 load] Aug 24 16:30:46.546 EST: BR1/0:2 MLP: asc001, multilink up Aug 24 16:30:47.343 EST: BR1/0:1 LCP: I ECHOREP [Open] id 1 Len 12 magic 0x8EFDDF16 Aug 24 16:30:47.343 EST: BR1/0:1 LCP: Received id 1, sent id 1, line up Aug 24 16:30:47.343 EST: BR1/0:2 LCP: I ECHOREP [Open] id 1 Len 12 magic 0x8EFDFC22 Aug 24 16:30:47.347 EST: BR1/0:2 LCP: Received id 1, sent id 1, line up Aug 24 16:30:47.543 EST: %LINEPROTO-5-UPDOWN: Line protocol on Interface BRI1/0:2, changed state to up *!--- The 2 B-channel Call connects.* asc011#

请使用show isdn active命令检查连接。注释每呼出的被叫号码。

```
--------------------------------------------------------------------------------
ISDN ACTIVE CALLS
--------------------------------------------------------------------------------
Call    Calling    Called  Remote   Seconds  Seconds    Seconds  Charges
Type     Number    Number  Name       Used     Left       Idle     Units/Currency
```

```
--------------------------------------------------------------------------------
Out          +3305551111 asc001          55 Unavail    0          0
Out          +3305551112 asc001          48 Unavail    0          0
--------------------------------------------------------------------------------
```

此示例显示失败呼叫。若干毫不相关的输出省略。

asc008#**ping 192.168.1.1** Type escape sequence to abort. Sending 5, 100-byte ICMP Echos to 192.168.1.1, timeout is 2 seconds: Aug 21 09:33:17.627 EST: BR1/0 DDR: Dialing cause ip (s=192.168.1.108,d=192.168.1.1) Aug 21 09:33:17.627 EST: BR1/0 DDR: Attempting to dial 13305551111 Aug 21 09:33:17.635 EST: ISDN BR1/0: TX -> SETUP pd = 8 callref = 0x0C Aug 21 09:33:17.639 EST: Bearer Capability i = 0x8890 Aug 21 09:33:17.639 EST: Channel ID i = 0x83 Aug 21 09:33:17.639 EST: Keypad Facility i = '**13305551111**' *!--- Calling out with the number specified in the first dialer map.* Aug 21 09:33:18.184 EST: ISDN BR1/0: RX <- CALL_PROC pd = 8 callref = 0x8C Aug 21 09:33:18.184 EST: Channel ID i = 0x89. Aug 21 09:33:20.532 EST: ISDN BR1/0: RX <- ALERTING pd = 8 callref =0x8C Aug 21 09:33:20.536 EST: Signal i = 0x01 - Ring back tone on Aug 21 09:33:20.564 EST: ISDN BR1/0: RX <- CONNECT pd = 8 callref =0x8C Aug 21 09:33:20.568 EST: Signal i = 0x3F - Tones off Aug 21 09:33:20.572 EST: %LINK-3-UPDOWN: Interface BRI1/0:1, changed state to up Aug 21 09:33:20.576 EST: BR1/0:1 PPP: Treating connection as a callout Aug 21 09:33:20.580 EST: BR1/0:1 PPP: Phase is ESTABLISHING, Active Open [0 sess, 1 load] ... *! --Output omitted.* ... Aug 21 09:33:20.660 EST: BR1/0:1 LCP: State is Open Aug 21 09:33:20.660 EST: BR1/0:1 PPP: Phase is AUTHENTICATING, by the peer [0 sess, 1 load] Aug 21 09:33:20.720 EST: BR1/0:1 CHAP: I CHALLENGE id 127 Len 27 from "asc001" Aug 21 09:33:20.720 EST: BR1/0:1 CHAP: O RESPONSE id 127 Len 27 from "asc008" Aug 21 09:33:20.784 EST: BR1/0:1 **CHAP: I SUCCESS** id 127 Len 4 *!--- Authentication is successful.* Aug 21 09:33:20.784 EST: BR1/0:1 PPP: Phase is VIRTUALIZED [0 sess, 1 load] Aug 21 09:33:20.784 EST: Vi1 PPP: Phase is DOWN, Setup [0 sess, 1 load] Aug 21 09:33:20.792 EST: %LINK-3-UPDOWN: Interface Virtual-Access1, changed state to up ... *!--- Output omitted.* ... Aug 21 09:33:20.864 EST: Vi1 IPCP: Address 192.168.1.108(0x0306C0A8016C) Aug 21 09:33:20.864 EST: Vi1 IPCP: State is Open Aug 21 09:33:20.868 EST: Vi1 DDR: dialer protocol up Aug 21 09:33:20.868 EST: BR1/0 IPCP: Install route to 192.168.1.1 Aug 21 09:33:21.089 EST: BR1/0 DDR: Attempting to dial 13305551111 Aug 21 09:33:21.093 EST: ISDN BR1/0: TX -> SETUP pd = 8 callref = 0x0D Aug 21 09:33:21.097 EST: Bearer Capability i = 0x8890 Aug 21 09:33:21.097 EST: Channel ID i = 0x83 Aug 21 09:33:21.101 EST: Keypad Facility i = '**13305551111**' *!--- The second call is dialed out with the first dialer map. !--- The first B-channel on the remote BRI is in use. You must receive a !--- Disconnect(cause code:busy).* Aug 21 09:33:21.581 EST: ISDN BR1/0: RX <- CALL_PROC pd = 8 callref =0x8D Aug 21 09:33:21.581 EST: Channel ID i = 0x8A Aug 21 09:33:21.786 EST: %LINEPROTO-5-UPDOWN: Line protocol on InterfaceBRI1/0:1, changed state to up Aug 21 09:33:21.802 EST: %LINEPROTO-5-UPDOWN: Line protocol on Interface Virtual -Access1, changed state to up Aug 21 09:33:23.577 EST: ISDN BR1/0: **RX <- PROGRESS** pd = 8 callref = 0x8D Aug 21 09:33:23.577 EST: Cause i = 0x8491 - User busy Aug 21 09:33:23.581 EST: Progress Ind i = 0x8488 - In-band info or appropriate now available *!--- In this case, the "Rx <- PROGRESS" is returned, the CALLED !--- router does not even try to call out on the second number because the router !--- assumes the call is in progress. You must receive a DISCONNECT for the router !--- to dial the second number.* Aug 21 09:33:26.578 EST: %ISDN-6-CONNECT: Interface BRI1/0:1 is now connected to 13305551111 asc001 Aug 21 09:33:51.091 EST: BRI1/0: wait for isdn carrier timeout, call nbid=0x8010 Aug 21 09:33:51.091 EST: BR1/0 DDR: Attempting to dial 13305551112 Aug 21 09:33:51.099 EST: ISDN BR1/0: **TX -> DISCONNECT** pd = 8 callref = 0x0D Aug 21 09:33:51.103 EST: Cause i = 0x8090 - Normal call clearing Aug 21 09:33:51.147 EST: ISDN BR1/0: RX <- RELEASE pd = 8 callref = 0x8D Aug 21 09:33:51.155 EST: ISDN BR1/0: TX -> RELEASE_COMP pd = 8 callref = 0x0Di *!--- No CONNECT follows the PROGRESS, and so the ISDN carrier times out. !--- Interestingly the ISDN dialer calls out, but the IOS !--- disconnects the same (due to the expiry of certain dialer timers).*

请使用**show isdn active**命令检查连接。注意仅一连接是活跃的。

```
--------------------------------------------------------------------------------
ISDN ACTIVE CALLS
--------------------------------------------------------------------------------
Call      Calling     Called     Remote     Seconds     Seconds   Seconds     Charges
Type      Number      Number      Name       Used       Left       Idle
Units/Currency
--------------------------------------------------------------------------------
Out              +3305551111  asc001       25       Unavail       0          0
```

相关信息

- DDR 多链路 PPP - 基本配置和验证
- ISDN BRI 故障排除流程图
- 排除故障ISDN BRI第3层使用debug isdn q931命令
- 如何提高添加 ISDN B 信道到多链路 PPP 捆绑的速度
- 技术支持和文档 - Cisco Systems