通过 DDR 拨号映射配置 BRI 之间的拨号

目录

简介

本文档介绍如何使用 BRI 接口来配置两台路由器之间的按需拨号路由 (DDR)。在此配置中，小型办公室、家庭办公室(SOHO)路由器可以拨通中心站点路由器，无论何时需要将数据流传输到中央网络。如果用户定义的一段时期内没有数据流，那么连接就自动地减少了。该网络也可以使用开放式最短路径优先（OSPF）路由协议和**ip ospf demand-circuit**命令，来防止DDR链路断开时远端网络的任何路由被去除。然而，您无需在此链路上运行路由协议。

先决条件

要求

下面几点描述的是您在配置DDR链路前应该确定的几个设计因素。

- DDR 实施：您可以使用 Dialer Map（传统 DDR）或 Dialer Profile。欲知这二种实施方案的区别的更多信息，参见“使用拨号配置文件配置ISDN DDR”。在此配置中，我们使用 Dialer Map。
- 单向或双向拨号：您能配置每个路由器，通过拨打另一端来启动DDR链路，或者您可以只使用一端(通常为SOHO)，来启动拨号连接。在决定使用的哪个拨号方法之前检查您的流量模式并且考虑以下信息(显示如下)：如果两台路由器都拨号：当拥有流向其它路由器网络的数据时，任意一个站点都可以起动链路。两台路由器可同时拨号，这将导致产生一条忙消息。如果将拨号限制到 SOHO 路由器：如果链路不通，从中心站点到SOHO路由器的数据流将无法传输。您将会避免因呼叫“冲突”而产生的忙消息。**注意：** 在本示例中，仅 SOHO 路由器启动 DDR 链路。

- 路由协议：虽然您够能选择链路上运行的某种路由协议，但是您必须保证定期更新，例如hello标签为非触发的，这样链路就不会无限期保持连接。并且，一旦链路断开，路由协议还应该保持路由表完整，而不会丢弃路由。这种情况可通过 **ip ospf demand-circuit** 命令或快照路由来实现。如果您不想使用路由协议，可以在下一跳指向其他路由器的BRI接口的每个路由器上配置静态路由。
- 触发 数据流:在定义 DDR 相关流量时必须要小心。不适当定义任意端的触发数据流，可能阻止链路接通（需要时），链路过早被断开，甚至完全断开。例如，您也许想要将所有路由协议流量标记为非触发数据流，因此定期更新不会使链路保持无限连接。

使用的组件

此配置使用下面软件和硬件版本被开发并且被测试：

- 一台运行 Cisco IOS® 软件版本 12.1(5)T 且带有一个 BRI U 接口的 Cisco 1604 SOHO 路由器
- 一台运行 Cisco IOS 12.1(2) 且带有一个 NM-4B-U（四个 BRI U 接口）的 Cisco 3640 路由器

规则

有关文档规则的详细信息，请参阅 Cisco 技术提示规则。

配置

本部分提供有关如何配置本文档所述功能的信息。

注意： 要查找本文档中使用的命令的其他相关信息，请使用 IOS 命令查找工具

网络图

本文档使用下图所示的网络设置。

配置

本文档使用如下所示的配置。

注意： 本文档中的信息是从一个隔离实验室环境中获取的。在使用任何命令之前，请确保已了解该命令对您的网络可能产生的影响。

maui-soho-01 (1600)

```
maui-soho-01#show running-config Building
configuration... Current configuration : 1656 bytes !
version 12.1 no service single-slot-reload-enable
service timestamps debug datetime msec service
timestamps log datetime msec ! hostname maui-soho-01 !
logging rate-limit console 10 except errors aaa new-
model aaa authentication login default local aaa
authentication login NO_AUTHEN none aaa authentication
ppp default local !--- basic AAA configuration for PPP
calls enable secret 5 <deleted> ! username admin
password <deleted> username maui-nas-05 password cisco
!--- username for remote router (maui-nas-05) and shared
secret !--- (used for CHAP authentication) !--- Shared
```

```
secret must be the same on both sides. ip subnet-zero ! isdn switch-type basic-ni ! interface Loopback0 ip address 172.17.1.1 255.255.255.0 !--- The loopback address will be used by OSPF for the router ID. ! interface Ethernet0 ip address 172.16.1.1 255.255.255.0 ! interface Serial0 no ip address shutdown no fair-queue ! interface BRI0 !--- BRI interface used for DDR dialout ip address 172.20.10.2 255.255.255.0 !--- IP address !--- The remote address is in the same subnet. encapsulation ppp ip ospf demand-circuit !--- This forces OSPF to keep the routing table intact when the DDR link !--- is down. This should only be configured on one router for a !--- point-to-point circuit. dialer idle-timeout 900 !--- Idle timeout is set to 900 seconds (15 minutes). !--- The link will be disconnected if there is no interesting traffic !--- for 900 secs. dialer map ip 172.20.10.1 name maui-nas-05 broadcast 5551111 dialer map ip 172.20.10.1 name maui-nas-05 broadcast 5551112 !--- dialer map statements for the remote router !--- The name must match the one used by the remote router to identify !--- itself. The broadcast keyword is required to send broadcast traffic !--- over the link(for OSPF). The two different phone numbers correspond !--- to the b-channels of the remote side. The multiple statements allow !--- the router to dial the second number if the first number is busy. dialer load-threshold 80 outbound !--- This set the load level for traffic at which additional connections !--- will be added to the Multilink PPP bundle. !--- Load level values range from 1 (unloaded) to 255 (fully loaded). !--- The threshold in this case is 80/255 = 32%. dialer-group 1 !--- apply interesting traffic definition from dialer-list 1 isdn switch-type basic-ni isdn spid1 51255522220101 5552222 isdn spid2 51255522230101 5552223 ppp authentication chap !--- Use chap authentication. ppp multilink !--- Use multilink to bring up both BRI channels. ! router ospf 5 log-adjacency-changes network 172.16.1.0 0.0.0.255 area 0 network 172.17.1.0 0.0.0.255 area 0 network 172.20.10.0 0.0.0.255 area 0 ! ip classless ip route 172.20.0.0 255.255.0.0 172.20.10.0 no ip http server ! access-list 101 remark Define Interesting Traffic access-list 101 deny ospf any any !--- mark OSPF as uninteresting !--- This will prevent OSPF hellos from keeping the link up. access-list 101 permit ip any any dialer-list 1 protocol ip list 101 !--- Interesting traffic is defined by access-list 101. !--- This is applied to BRI0 using dialer-group 1. ! line con 0 exec-timeout 0 0 login authentication NO_AUTHEN transport input none line vty 0 4 ! end
```

maui-nas-05 (3640)

```
maui-nas-05#show running-config Building configuration... Current configuration: ! version 12.1 service timestamps debug datetime msec service timestamps log datetime msec ! hostname maui-nas-05 ! aaa new-model aaa authentication login default local aaa authentication login NO_AUTHEN none aaa authentication ppp default local !--- basic AAA configuration for PPP calls enable secret 5 <deleted> ! username admin password 7 <deleted> username maui-soho-01 password 7 cisco !--- username for remote router (maui-soho-01) and shared secret !--- (used for CHAP authentication) !--- Shared secret must be the same on both sides. ip subnet-zero ! isdn switch-type basic-ni ! interface Loopback0
```

```
ip address 172.22.1.1 255.255.255.0 !--- The loopback
address is used by OSPF for the router ID. ! interface
Ethernet0/0 ip address 172.22.53.105 255.255.255.0 !
interface Ethernet0/1 no ip address shutdown ! interface
BRI1/0 !--- BRI interface used to accept dialin ip
address 172.20.10.1 255.255.255.0 !--- IP address !---
The remote address is in the same subnet. encapsulation
ppp dialer idle-timeout 900 !--- Idle timeout is set to
900 seconds (15 minutes). !--- Set this value to be
equal to or higher than the idle-timeout on the !---
client side. A higher idle-timeout permits the client
side to !--- determine when to bring down the link. !
dialer map ip 172.20.10.2 name maui-soho-01 broadcast !-
-- dialer map statement for the BRI interface of the
remote router !--- The name must be the one used by the
remote router to identify !--- itself. The broadcast
keyword is required to send broadcast traffic !--- over
the link(for OSPF). Note: There is no phone number, as
we are !--- not configuring this side to dial. If you
want this router to dial, !--- add the remote side phone
number to the dialer map statement dialer-group 1 !---
apply interesting traffic definition from dialer-list 1
isdn switch-type basic-ni isdn spid1 51255511110101
5551111 isdn spid2 51255511120101 5551112 ppp
authentication chap ppp multilink !--- allow multilink
connections ! ! <<--unused interface configurations have
been removed. ! router ospf 5 network 172.20.10.0
0.0.0.255 area 0 network 172.22.1.0 0.0.0.255 area 0
network 172.22.53.0 0.0.0.255 area 0 default-information
originate always !--- transmit OSPF default information
!--- This may be required for remote router to use the
BRI DDR link. ! ip classless ip route 0.0.0.0 0.0.0.0
Ethernet0/0 ip route 172.22.0.0 255.255.0.0 172.22.53.0
no ip http server ! dialer-list 1 protocol ip permit !--
- All IP traffic is defined interesting. !--- This is
applied to BRI0 using dialer-group 1. ! line con 0 login
authentication NO_AUTHEN transport input none line 97
102 line aux 0 line vty 0 4 ! end
```

注意： 如果路由器是OSPF点到点拓扑(2个路由器)的组成部分，则只有需求电路的一端必须使用**ip ospf demand-circuit**命令配置。然而，所有路由器必须在区域之内装载了此功能，并且必须支持**ip ospf demand-circuit**命令。如果路由器是OSPF点对多点拓扑的组成部分(如星型网)，则只有多点终端必须使用该命令配置。

show 输出示例

显示命令

输出解释器工具支持某些 **show** 命令（只限于注册用户），通过它可以查看 show 命令输出的分析。

- **show dialer interface [type number]**---显示DDR配置接口的一般诊断信息，并在连接超时之前显示计时器的配置和时间。您应验证以下消息：“Dialer state is data link layer up”- 拨号程序正常启动。“Physical layer up”- 线路协议启动，但网络控制协议 (NCP) 没有启动。“Dial reason”- 显示启动了拨号的数据包的源地址和目标地址。
- **show isdn status** - 确保路由器与 ISDN 交换机正常通信。此命令还会显示活动呼叫的数目。您应验证以下消息：“Layer 1 Status is ACTIVE”，“Layer 2 Status state =

MULTIPLE_FRAME_ESTABLISHED”**注意：** 有关详细信息，请参阅“使用 show isdn status 命令用于 BRI 故障排除”。

- **show caller user username detail** - 显示详细的 LCP 协商参数。

show 输出示例

show ip route 命令在 DDR 链路建立后显示 SOHO 上的路由表。请注意，已安装远程站点的 OSPF 路由。

```
maui-soho-01#show ip route Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B -
BGP D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area N1 - OSPF NSSA external type
1, N2 - OSPF NSSA external type 2 E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - ISIS level-1, L2 - ISIS level-2, ia - ISIS inter area * - candidate default, U -
per-user static route, o - ODR P - periodic downloaded static route Gateway of last resort is
172.20.10.1 to network 0.0.0.0 172.17.0.0/24 is subnetted, 1 subnets C 172.17.1.0 is directly
connected, Loopback0 172.16.0.0/24 is subnetted, 1 subnets C 172.16.1.0 is directly connected,
Ethernet0 172.20.0.0/16 is variably subnetted, 3 subnets, 3 masks C 172.20.10.0/24 is directly
connected, BRI0 C 172.20.10.1/32 is directly connected, BRI0 S 172.20.0.0/16 [1/0] via
172.20.10.0 172.22.0.0/16 is variably subnetted, 2 subnets, 2 masks O 172.22.53.0/24 [110/1572]
via 172.20.10.1, 00:01:37, BRI0 O 172.22.1.1/32 [110/1563] via 172.20.10.1, 00:01:37, BRI0 O*E2
0.0.0.0/0 [110/1] via 172.20.10.1, 00:01:37, BRI0
```

注意： 远端的OSPF路由(特别是默认路由)被添加到路由表。这允许客户端(maui-soho-01)拨打BRI链路，在何时需要在链路上发送数据流的时候。因为这是OSPF需求电路，因此路由表中不会去除(更新)OSPF条目，即使当拨号程序空闲超时引起链路中断时。

在 **show caller user username detail** 输出中，注意该连接的空闲超时。

```
maui-soho-01#show caller user maui-nas-05 detail User: maui-nas-05, line BR0:1, service PPP
Active time 00:02:33, Idle time 00:00:00 Timeouts: Absolute Idle Limits: - - Disconnect in: - -
PPP: LCP Open, multilink Open, CHAP (AAA <--> AAA) LCP: -> peer, AuthProto, MagicNumber, MRRU,
EndpointDisc <- peer, AuthProto, MagicNumber, MRRU, EndpointDisc NCP: Closed IPCP, CDPCP Dialer:
Connected to 5551111, outbound Type is ISDN, group BR0 Cause: ip (s=172.20.10.2, d=172.20.10.1)
IP: Local 172.20.10.2/24 Bundle: Member of maui-nas-05, last input 00:00:00 Counts: 945 packets
input, 147302 bytes, 0 no buffer 0 input errors, 0 CRC, 0 frame, 0 overrun 972 packets output,
150964 bytes, 0 underruns 0 output errors, 0 collisions, 0 interface resets User: maui-nas-05,
line Vi1, service PPP Bundle Active time 00:02:32, Idle time 00:02:32 Timeouts: Absolute Idle
Limits: - 00:15:00 Disconnect in: - 00:12:26 !--- time after which this call will be
disconnected unless it receives !--- interesting traffic PPP: LCP Open, multilink Open, IPCP,
CDPCP LCP: -> peer, MagicNumber, MRRU, EndpointDisc <- peer NCP: Open IPCP, CDPCP IPCP: <- peer,
Address -> peer, Address Dialer: Connected to 5551111, outbound Idle timer 900 secs, idle 153
secs Type is IN-BAND SYNC, group BR0 IP: Local 172.20.10.2/24, remote 172.20.10.1 Bundle: First
link of maui-nas-05, 1 link, last input 00:02:33 Counts: 20 packets input, 2916 bytes, 0 no
buffer 0 input errors, 0 CRC, 0 frame, 0 overrun 23 packets output, 2683 bytes, 0 underruns 0
output errors, 0 collisions, 0 interface resets
```

故障排除

debug 命令

注意： 在发出 **debug** 命令之前，请参阅有关 Debug 命令的重要信息。

- **debug isdn q931** -显示呼叫建立和拆卸ISDN网络连接(第3层)。
- **debug isdn q921** - 显示路由器和 ISDN 交换机之间的 D 信道上的数据链路层消息（第 2 层）。如果**show isdn status**命令不显示第1层和第2层，请使用此debug。
- **debug dialer [events|packets]** - 显示与在拨号程序接口上收到的数据包有关的 DDR 调试信息。
- **debug ppp negotiation** - 在协商 PPP 组件（包括链路控制协议 (LCP)、认证和 NCP）时显示有

关 PPP 流量和交换的信息。成功的PPP协商将首先打开LCP状态，然后进行认证，最终协商 NCP (通常为IPCP)。

- **debug ppp authentication** -显示PPP认证协议消息，包括质询验证协议(CHAP)信息包交换和密码认证协议(PAP)交换。
- **debug ppp error** -显示与PPP连接协商和运行有关的协议错误和错误统计数据。

请参阅拨号技术：故障排除技术以获取有关对此 DDR 连接进行故障排除的详细信息。

调试输出示例

该调试输出显示了由对远程路由器 BRI 接口执行的 ICMP ping 触发的 DDR 呼叫。调试显示SOHO路由器拨号，连接到中心站点，协商ppp和执行CHAP认证。

```
maui-soho-01#debug dialer Dial on demand events debugging is on maui-soho-01#debug ppp
negotiation PPP protocol negotiation debugging is on maui-soho-01#debug ppp authentication PPP
authentication debugging is on maui-soho-01#debug isdn q931 ISDN Q931 packets debugging is on
maui-soho-01# maui-soho-01# maui-soho-01# maui-soho-01#ping 172.20.10.1 Type escape sequence to
abort. Sending 5, 100-byte ICMP Echos to 172.20.10.1, timeout is 2 seconds: *Mar 1 21:57:42.625:
BR0 DDR: Dialing cause ip (s=172.20.10.2, d=172.20.10.1) !--- The ping destined for 172.20.10.1
dials the BRI. *Mar 1 21:57:42.629: BR0 DDR: Attempting to dial 5551111 !--- phone number of the
remote router that is dialed *Mar 1 21:57:42.653: ISDN BR0: TX -> SETUP pd = 8 callref = 0x09
*Mar 1 21:57:42.661: Bearer Capability i = 0x8890 *Mar 1 21:57:42.669: Channel ID i = 0x83 *Mar
1 21:57:42.677: Keypad Facility i = '5551111' *Mar 1 21:57:43.002: ISDN BR0: RX <- CALL_PROC pd
= 8 callref = 0x89 *Mar 1 21:57:43.010: Channel ID i = 0x89 *Mar 1 21:57:43.189: ISDN BR0: RX <-
CONNECT pd = 8 callref = 0x89 *Mar 1 21:57:43.216: %LINK-3-UPDOWN: Interface BRI0:1, changed
state to up *Mar 1 21:57:43.236: BR0:1 PPP: Treating connection as a callout !--- PPP
negotiation begins. *Mar 1 21:57:43.236: BR0:1 PPP: Phase is ESTABLISHING, Active Open [0 sess,
1 load] *Mar 1 21:57:43.248: BR0:1 LCP: O CONFREQ [Closed] id 10 len 34 *Mar 1 21:57:43.252:
BR0:1 LCP: AuthProto CHAP (0x0305C22305) *Mar 1 21:57:43.256: BR0:1 LCP: MagicNumber 0x153BEFE7
(0x0506153BEFE7) *Mar 1 21:57:43.260: BR0:1 LCP: MRRU 1524 (0x110405F4) *Mar 1 21:57:43.268:
BR0:1 LCP: EndpointDisc 1 Local (0x130F016D6175692D736F686F2D3031) *Mar 1 21:57:43.280: ISDN
BR0: TX -> CONNECT_ACK pd = 8 callref = 0x09 *Mar 1 21:57:43.300: BR0:1 LCP: I CONFREQ [REQsent]
id 7 Len 33 *Mar 1 21:57:43.304: BR0:1 LCP: AuthProto CHAP (0x0305C22305) *Mar 1 21:57:43.308:
BR0:1 LCP: MagicNumber 0x354AAC53 (0x0506354AAC53) *Mar 1 21:57:43.312: BR0:1 LCP: MRRU 1524
(0x110405F4) *Mar 1 21:57:43.320: BR0:1 LCP: EndpointDisc 1 Local
(0x130E016D6175692D6E61732D3035) *Mar 1 21:57:43.327: BR0:1 LCP: O CONFACK [REQsent] id 7 Len 33
*Mar 1 21:57:43.331: BR0:1 LCP: AuthProto CHAP (0x0305C22305) *Mar 1 21:57:43.335: BR0:1 LCP:
MagicNumber 0x354AAC53 (0x0506354AAC53) *Mar 1 21:57:43.339: BR0:1 LCP: MRRU 1524 (0x110405F4)
*Mar 1 21:57:43.347: BR0:1 LCP: EndpointDisc 1 Local (0x130E016D6175692D6E61732D3035) *Mar 1
21:57:43.359: BR0:1 LCP: I CONFACK [ACKsent] id 10 Len 34 *Mar 1 21:57:43.363: BR0:1 LCP:
AuthProto CHAP (0x0305C22305) *Mar 1 21:57:43.367: BR0:1 LCP: MagicNumber 0x153BEFE7
(0x0506153BEFE7) *Mar 1 21:57:43.371: BR0:1 LCP: MRRU 1524 (0x110405F4) *Mar 1 21:57:43.379:
BR0:1 LCP: EndpointDisc 1 Local (0x130F016D6175692D736F686F2D3031) *Mar 1 21:57:43.383: BR0:1
LCP: State is Open *Mar 1 21:57:43.383: BR0:1 PPP: Phase is AUTHENTICATING, by both [0 sess, 1
load] !--- PPP Authentication begins. *Mar 1 21:57:43.391: BR0:1 CHAP: O CHALLENGE id 6 Len 33
from "maui-soho-01" !--- outgoing challenge for the remote router !--- This username should be
configured in the dialer map statement !--- at the remote router. *Mar 1 21:57:43.399: BR0:1
CHAP: I CHALLENGE id 6 Len 32 from "maui-nas-05" !--- incoming challenge from remote router !---
This username should be configured in the dialer map statement. *Mar 1 21:57:43.415: BR0:1 CHAP:
O RESPONSE id 6 Len 33 from "maui-soho-01" *Mar 1 21:57:43.443: BR0:1 CHAP: I SUCCESS id 6 Len 4
!--- Incoming CHAP Authentication is successful. *Mar 1 21:57:43.450: BR0:1 CHAP: I RESPONSE id
6 Len 32 from "maui-nas-05" *Mar 1 21:57:43.466: BR0:1 CHAP: O SUCCESS id 6 Len 4 !--- Outgoing
CHAP Authentication is successful. *Mar 1 21:57:43.474: BR0:1 PPP: Phase is VIRTUALIZED [0 sess,
1 load] *Mar 1 21:57:43.581: Vi1 PPP: Phase is DOWN, Setup [0 sess, 1 load] *Mar 1 21:57:43.601:
BR0:1 IPCP: Packet buffered while building MLP bundle interface *Mar 1 21:57:43.605: BR0:1
CDPCP: Packet buffered while building MLP bundle interface *Mar 1 21:57:43.609: %LINK-3-UPDOWN:
Interface Virtual-Access1, changed state to up !--- Virtual access interface is automatically
created (needed for multilink). *Mar 1 21:57:43.613: Vi1 DDR: Dialer statechange to up *Mar 1
21:57:43.617: Vi1 DDR: Dialer call has been placed *Mar 1 21:57:43.625: Vi1 PPP: Treating
connection as a callout *Mar 1 21:57:43.625: Vi1 PPP: Phase is ESTABLISHING, Active Open [0
sess, 1 load] *Mar 1 21:57:43.637: Vi1 LCP: O CONFREQ [Closed] id 1 Len 34 *Mar 1 21:57:43.641:
```

```
Vi1 LCP: AuthProto CHAP (0x0305C22305) *Mar 1 21:57:43.645: Vi1 LCP: MagicNumber 0x153BF171
(0x0506153BF171) *Mar 1 21:57:43.649: Vi1 LCP: MRRU 1524 (0x110405F4) *Mar 1 21:57:43.653: Vi1
LCP: EndpointDisc 1 Local (0x130F016D6175692D736F686F2D3031) *Mar 1 21:57:43.665: Vi1 PPP: Phase
is UP [0 sess, 1 load] *Mar 1 21:57:43.677: Vi1 IPCP: O CONFREQ [Closed] id 1 Len 10 *Mar 1
21:57:43.681: Vi1 IPCP: Address 172.20.10.2 (0x0306AC140A02) *Mar 1 21:57:43.693: Vi1 CDPCP: O
CONFREQ [Closed] id 1 Len 4 *Mar 1 21:57:43.697: BR0:1 MLP: maui-nas-05, multilink up, first
link *Mar 1 21:57:43.700: Vi1 PPP: Pending ncpQ size is 2 *Mar 1 21:57:43.700: BR0:1 IPCP:
Redirect packet to Vi1 *Mar 1 21:57:43.708: Vi1 IPCP: I CONFREQ [REQsent] id 1 Len 10 *Mar 1
21:57:43.712: Vi1 IPCP: Address 172.20.10.1 (0x0306AC140A01) *Mar 1 21:57:43.716: Vi1 IPCP: O
CONFACK [REQsent] id 1 Len 10 *Mar 1 21:57:43.724: Vi1 IPCP: Address 172.20.10.1
(0x0306AC140A01) *Mar 1 21:57:43.728: BR0:1 CDPCP: Redirect packet to Vi1 *Mar 1 21:57:43.732:
Vi1 CDPCP: I CONFREQ [REQsent] id 1 Len 4 *Mar 1 21:57:43.736: Vi1 CDPCP: O CONFACK [REQsent] id
1 Len 4 *Mar 1 21:57:43.744: Vi1 IPCP: I CONFACK [ACKsent] id 1 Len 10 *Mar 1 21:57:43.752: Vi1
IPCP: Address 172.20.10.2 (0x0306AC140A02) *Mar 1 21:57:43.756: Vi1 IPCP: State is Open !---
IPCP state is open. *Mar 1 21:57:43.764: Vi1 CDPCP: I CONFACK [ACKsent] id 1 Len 4 *Mar 1
21:57:43.768: Vi1 CDPCP: State is Open *Mar 1 21:57:43.772: Vi1 DDR: dialer protocol up *Mar 1
21:57:43.784: BR0 IPCP: Install route to 172.20.10.1 !--- Install route to remote side. *Mar 1
21:57:44.462: %LINEPROTO-5-UPDOWN: Line protocol on Interface BRI0:1, changed state to up *Mar 1
21:57:44.657: %LINEPROTO-5-UPDOWN: Line protocol on Interface Virtual-Access1, changed state to
up *Mar 1 21:57:49.180: %ISDN-6-CONNECT: Interface BRI0:1 is now connected to 5551111 maui-nas-
05 !--- BRI Dial on Demand Routing (DDR) Link is operational. maui-soho-01#
```

相关信息

- 使用 show isdn status 命令用于 BRI 故障排除
- 设置基本 ISDN 服务
- 技术支持 - Cisco Systems