Configuring BRI−to−BRI Dialup with DDR Dialer Maps

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Contents

Introduction

This document describes how to configure dial−on−demand routing (DDR) between two routers with BRI interfaces. In this configuration, a small office, home office (SOHO) router dials the central site router whenever it needs to pass traffic to the central network. The connection is then automatically brought down if there is no traffic for a user−defined period of time. This network also uses the Open Shortest Path First (OSPF) routing protocol with the **ip ospf demand−circuit** command to prevent any routes for the remote side network from being removed when the DDR link is brought down. However, you do not require a routing protocol to run over this link.

Prerequisites

Requirements

The following points describe several design factors you should decide on before configuring a DDR link.

- DDR Implementation: You can use dialer maps (legacy DDR) or dialer profiles. For more information on the differences between these two implementations, refer to Configuring ISDN DDR with Dialer Profiles . In this configuration we use dialer maps.
- Single or Bi−directional Dialing: You can configure each router to initiate the DDR link by dialing the other side, or you can have only side (normally the SOHO) initiate the dial connection. Examine your traffic patterns and consider the information shown below before deciding which dial method to use:

    - If both routers dial:

        - Either site can initiate a link when there is traffic destined for the other router's network.

◊ Both routers could dial at the same time, which would result in a busy message.
♦ If dialing is restricted to the SOHO router:

◊ Traffic from the central site destined for the SOHO router would fail if the link is not up.
◊ You will avoid busy messages due to "colliding" calls.
  Note: In this example, only the SOHO router initiates the DDR link.
• Routing protocol: You can choose to run a routing protocol over the link, but you must ensure that periodic updates such as hellos are tagged uninteresting, so that the link will not stay up indefinitely. Also, the routing protocol should keep the routing table intact and not discard the routes once the link goes down. This can be done with the **ip ospf demand−circuit** command or snapshot routing. If you do not want to use a routing protocol, a static route can be configured on each router where the next−hop points to the other router's BRI interface.
• Interesting traffic: You must be careful when defining the DDR interesting traffic. Improperly defined interesting traffic on either side can prevent the link from coming up when desired, being disconnected prematurely, or even not being disconnected at all. For example, you may want to mark all routing protocol traffic as uninteresting, so the periodic updates do not keep the link up indefinitely.

Components Used

This configuration was developed and tested using the software and hardware versions below:

• A Cisco 1604 SOHO router with one BRI U interface running Cisco IOS® Software Release 12.1(5)T
• A Cisco 3640 router with a NM−4B−U (four BRI U Interfaces) running Cisco IOS 12.1(2)

Conventions

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

Configure

In this section, you are presented with the information to configure the features described in this document.

Note: To find additional information on the commands used in this document, use the IOS Command Lookup tool

Network Diagram

This document uses the network setup shown in the diagram below.

Configurations

This document uses the configurations shown below.

Note: The information in this document was taken from an isolated lab environment. Ensure that you understand the potential impact of any command on your network before using it.

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
```

Note: If the router is part of a OSPF point–to–point topology (2 routers), then only one end of the demand circuit must be configured with the **ip ospf demand–circuit** command. However, all routers must have this feature loaded within the area and must support the **ip ospf demand–circuit** command. If the router is part of a OSPF point–to–multipoint topology (for example, hub and spoke), only the multipoint end must be configured with this command.

Sample Show Output

show Commands

Certain **show** commands are supported by the Output Interpreter tool, which allows you to view an analysis of **show** command output.

- **show dialer interface [** *type number* **]** – Displays general diagnostic information for interfaces configured for DDR and displays the timer's configuration and the time before the connection times out. You should verify the following messages:

  - ♦ "Dialer state is data link layer up" – The dialer came up properly.
  - ♦ "Physical layer up" – The line protocol came up, but the Network Control Protocol (NCP) did not.
  - ♦ "Dial reason" This displays the source and destination addresses of the packet that initiated the dialing.
- **show isdn status** – Ensure that the router is properly communicating with the ISDN switch. This command also displays the number of active calls You should verify the following messages:

  - ♦ "Layer 1 Status is ACTIVE",
  - ♦ "Layer 2 Status state = MULTIPLE_FRAME_ESTABLISHED"
  Note: For more information, refer to Using the show isdn status Command for BRI Troubleshooting.
- **show caller user** *username* **detail** – This displays detailed LCP negotiated parameters.

Sample Show Output

The **show ip route** command displays the routing table on the soho after the DDR link is up. Notice that OSPF routes from the remote site are installed.

```
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
```

Note: the OSPF routes (especially the default route) from the remote side are added to the routing table. This permits the client (maui−soho−01) to dial the BRI link whenever it needs to send traffic across the link. Since this is an OSPF demand−circuit, the OSPF entries in the routing table are not removed (aged) when the link goes down due to the expired **dialer idle−timeout**.

In the **show caller user** *username* **detail** output notice the idle timeout for the connection.

```
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
```

Troubleshoot

debug Commands

Note: Before issuing **debug** commands, please see Important Information on Debug Commands.

- **debug isdn q931** – Shows call setup and tear down of the ISDN network connection (Layer 3).

- **debug isdn q921** – Shows data link layer messages (Layer 2) on the D channel between the router and the ISDN switch. Use this debug if the **show isdn status** command does not display Layer 1 and Layer 2 up.
- **debug dialer [events | packets]** – Displays DDR debugging information about the packets received on a dialer interface.
- **debug ppp negotiation** – Displays information on PPP traffic and exchanges while negotiating the PPP components including Link Control Protocol (LCP), Authentication, and NCP. A successful PPP negotiation will first open the LCP state, then authenticate, and finally negotiate NCP (usually IPCP).
- **debug ppp authentication** – Displays the PPP authentication protocol messages, including Challenge Authentication Protocol (CHAP) packet exchanges and Password Authentication Protocol (PAP) exchanges.
- **debug ppp error** – Displays protocol errors and error statistics associated with PPP connection negotiation and operation.

Refer to Dialup Technology: Troubleshooting Techniques for further information on troubleshooting this DDR connection.

Sample Debug Output

The debug output shows the DDR call triggered by an ICMP ping to the remote routers BRI interface. The debugs show the soho router dialing, connecting to the central site , negotiating ppp, and performing CHAP authentication.

```
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#
```

Related Information

- **Using the show isdn status Command for BRI Troubleshooting**
- **Setting Up Basic ISDN Service**
- **Technical Support – Cisco Systems**