

# Using PPP Half–Bridging to Connect Routed and Bridged Networks

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#### Related Information

## Introduction

This document provides a sample configuration for using PPP half–bridging to connect routed and bridged networks.

## Prerequisites

## Requirements

There are no specific requirements for this document.

## Components Used

The information in this document is based on these software and hardware versions:

- Cisco IOS® Software Release 12.2(7b).
- Two Cisco 2500 series routers. Each has at least one ISDN BRI interface.

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.

## Related Products

This configuration can also be used with these hardware and software versions:

- Any serial interface, such as serial, Basic Rate Interface (BRI), Primary Rate Interface (PRI), and so on.
- Cisco IOS Software Release 11.2.
- Any router running Cisco IOS software as mentioned above, and at least one ISDN–BRI port. However, the half–bridge feature can be used on a router with a serial interface.

## Conventions

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

## Background Information

The bridge sends bridge packets to the PPP half–bridge that converts them to routed packets and forwards them to other router processes. Likewise, the PPP half–bridge converts routed packets to Ethernet bridge packets, and sends them to the bridge on the same Ethernet subnetwork.

**Note:** This configuration does not cover a full bridge on both sides. For such a configuration refer to the Bridging Across ISDN document.

Be aware that bridging on an ISDN connection tends to keep the connection active for very long periods, if not permanently. If the Telco charges for ISDN based on connection time, this can result in a very large bill. Consequently, this scenario is recommended for those who have unlimited–usage ISDN lines.

**Note:** An interface cannot function as both a half–bridge and a bridge. Cisco IOS software supports no more than one PPP half–bridge per Ethernet subnetwork.

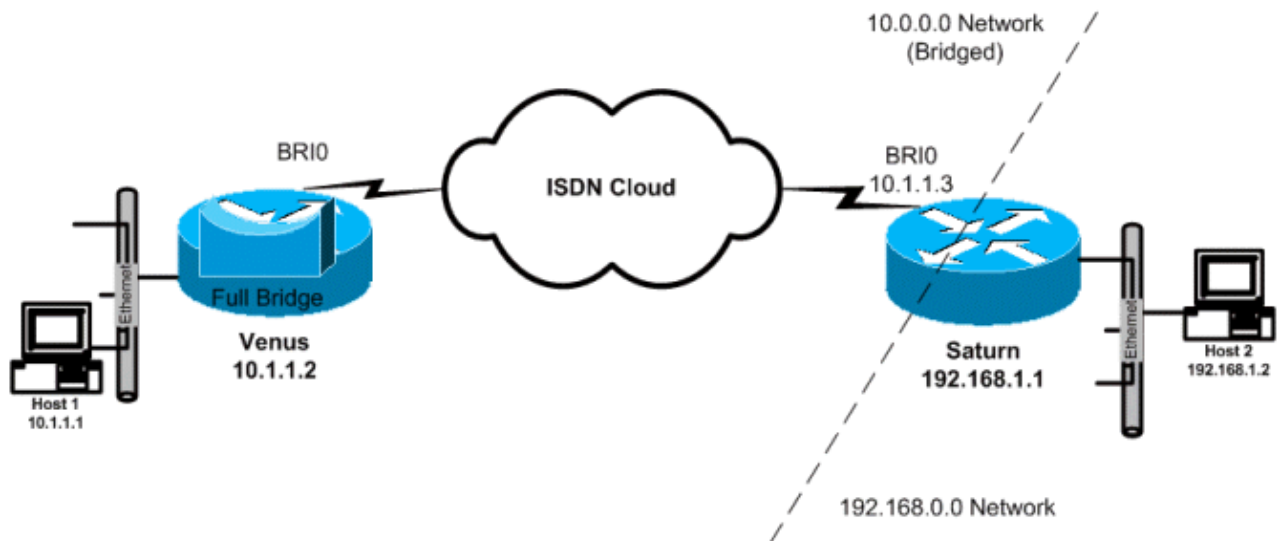
## Configure

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 Command Lookup Tool (registered customers only) .

## Network Diagram

This document uses this network setup:



## Configurations

This document uses these configurations:

- **Venus**

This router is configured as a full bridge with IP routing disabled. The device dials when any bridged traffic arrives.

- **Saturn**

This router has been configured as a half bridge. Note that the **dialer string**, **dialer group**, and **dialer list** commands are not configured on this side. So this router will never dial, but will accept incoming calls. This prevents the router from dialing the remote router. We have turned IP routing on here. Full bridging software is not configured on this router. PPP half bridge is running on the BRI interface, so commands like **show bridge** and **show spanning-tree** do not yield any output on this router.

### Venus

```
Venus#show running-config
!
version 12.2
!
hostname Venus
!
username Saturn password 0 same

!--- Required for PPP CHAP authentication during dialup

ip subnet-zero
no ip routing

!--- Turn off routing

no ip domain-lookup
!
isdn switch-type basic-5ess

!--- The ISDN switchtype for this circuit. Obtain this information from the
!--- Telco. This ISDN switch type is USA specific and could be changed
```

```

!--- depending on the country and TELCO requirements

!
interface Ethernet0
ip address 10.1.1.2 255.0.0.0

!--- This is for management purpose only

no ip route-cache
no ip mroute-cache
bridge-group 1

!--- Assign this interface to Bridge Group 1
!--- Frames are bridged only among interfaces in the same group
!--- Note: the dialer1 interface is also in this bridge-group 1

interface BRI0
no ip address
no ip route-cache
no ip mroute-cache
dialer pool-member 1

!--- Dialer profiles configured with same dialer pool #
!--- (in this case, dialer1) will bind to this interface

isdn switch-type basic-5ess

!--- Check with your Telco for the correct values

!
interface Dialer1

!--- Configure the Dialer profile

description ISDN to Saturn
ip address 10.1.1.2 255.0.0.0
encapsulation ppp
dialer pool 1

!--- Use physical interfaces configured with same pool #
!--- (in this case, bri0) during dialup

dialer remote-name Saturn

!--- Specifies remote CHAP name

dialer string 5552000

!--- Specifies the number to dial when interesting traffic arrives

dialer-group 1

!--- Defines the interesting traffic as configured in the dialer-list

ppp authentication chap

!--- Use CHAP as the authentication method

bridge-group 1

!--- Assign this interface to Bridge Group 1.
!--- Frames are bridged only among interfaces in the same group.
!--- Note: the Ethernet interface 0 is also in this bridge-group 1

ip default-gateway 10.1.1.3

```

```

!--- All default traffic from Venus should go through Saturn

dialer-list 1 protocol bridge permit

!--- Defines the interesting traffic. In this case, all bridged traffic

bridge 1 protocol ieee

!--- Define the type of Spanning-Tree Protocol used for the interface in
!--- bridge-group 1. Here we use the IEEE spanning tree protocol. The IEEE 802.1D
!--- Spanning-Tree Protocol is the preferred way of running the bridge.

!

```

## Saturn

```

Saturn#show running-config
!
version 12.2
!
hostname Saturn
!
username Venus password 0 same

!--- Required for PPP CHAP authentication during dialup

ip subnet-zero
no ip domain-lookup
!
isdn switch-type basic-5ess

!--- The ISDN switchtype for this circuit. Obtain this information from the
!--- Telco. This ISDN switch type is USA specific and could be changed
!--- depending on the country and Telco requirements

!
interface Ethernet0
ip address 192.168.1.1 255.255.0.0
!
interface BRI0
no ip address
no ip mroute-cache
dialer pool-member 1

!--- Dialer profiles configured with same dialer pool #
!--- (in this case, dialer1) will bind to this interface

isdn switch-type basic-5ess
!
interface Dialer1

!--- Configure the Dialer profile

description ISDN to Venus
ip address 10.1.1.3 255.0.0.0

!--- IP address is required to route the bridged traffic from Venus
!--- This ip address MUST be in the same subnet as the remote bridge network

encapsulation ppp
dialer pool 1

!--- Use physical interfaces configured with same pool #
!--- (in this case, bri0) during dialup

```

```

dialer remote-name Venus
pulse-time 0
ppp bridge ip

!--- Configures half bridge

ppp authentication chap

!--- Use CHAP as the authentication method

!

```

## Verify

This section provides information you can use to confirm your configuration is working properly.

Certain **show** commands are supported by the Output Interpreter Tool (registered customers only) , which allows you to view an analysis of **show** command output.

- **show isdn status** displays the L1, L2, and L3 status of the ISDN interfaces.
- **show dialer** displays the status of the dialer, and the individual status of the ISDN channels.
- **show bridge** displays classes of entries in the bridge forwarding database, in privileged EXEC mode.
- **show interface** displays the status of various interfaces, including the Serial and BRI interfaces.
- **show arp** checks the ARP mapping. ARP is a protocol used to map the Layer 2 address (MAC address) to a Layer 3 address (IP address).
- **show spanning-tree** displays the spanning-tree topology known to the router.

## Show Commands on Venus After Dialing into Saturn

```

Venus#show isdn status
Global ISDN Switchtype = basic-5ess
ISDN BRI0 interface
    dsl 0, interface ISDN Switchtype = basic-5ess
    Layer 1 Status:
        ACTIVE
    Layer 2 Status:
        TEI = 107, Ces = 1, SAPI = 0, State = MULTIPLE_FRAME_ESTABLISHED
    Layer 3 Status:
        1 Active Layer 3 Call(s)
        CCB:callid=800E, sapi=0, ces=1, B-chan=2, calltype=DATA
Active dsl 0 CCBS = 1
    The Free Channel Mask:
    0x80000001
    Number of L2 Discards = 0, L2 Session ID = 17
    Total Allocated ISDN CCBS = 1

```

```

Venus#show dialer
BRI0 - dialer type = ISDN

Dial String Successes Failures Last DNIS Last status
  0 incoming call(s) have been screened.
  0 incoming call(s) rejected for callback.

BRI0:1 - dialer type = ISDN
    Idle timer (120 secs), Fast idle timer (20 secs)
    Wait for carrier (30 secs), Re-enable (15 secs)
    Dialer state is idle

BRI0:2 - dialer type = ISDN
    Idle timer (120 secs), Fast idle timer (20 secs)

```

```
Wait for carrier (30 secs), Re-enable (15 secs)
Dialer state is data link layer up
Dial reason: bridge (0x0800)
Interface bound to profile Di1
Time until disconnect 90 secs
Current call connected 00:00:31
```

```
Dil - dialer type = DIALER PROFILE
Idle timer (120 secs), Fast idle timer (20 secs)
Wait for carrier (30 secs), Re-enable (15 secs)
Dialer state is data link layer up
Number of active calls = 1
Dial String Successes Failures Last DNIS      Last status
5552000  5  1  00:00:34 Successful Default
```

```
Venus#show interface bri0:2
BRI0:2 is up, line protocol is up
Hardware is BRI
MTU 1500 bytes, BW 64 Kbit, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation PPP, loopback not set
Keepalive set (10 sec)
Time to interface disconnect: idle 00:01:18
Interface is bound to Dil (Encapsulation PPP)
LCP Open
Closed: IPCP
Open: BRIDGECP, CDPCP
```

*!--- Bridge Control Protocol is open*

```
Last input 00:00:42, output 00:00:00, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: fifo
Output queue :0/40 (size/max)
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
161 packets input, 9796 bytes, 0 no buffer
Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
328 packets output, 16659 bytes, 0 underruns
0 output errors, 0 collisions, 7 interface resets
0 output buffer failures, 0 output buffers swapped out
16 carrier transitions
```

```
Venus#show bridge
Total of 300 station blocks, 298 free
Codes: P - permanent, S - self
```

Bridge Group 1:

```
Address Action Interface Age RX count TX count
00d0.58ad.ae13 forward Ethernet0 0 74 58
0060.5cf4.a955 forward Dialer1 0 58 72
```

```
Venus#show arp
Protocol Address Age (min) Hardware Addr Type Interface
Internet 10.1.1.2 - 0060.5cf4.a9a8 ARPA Ethernet0
Internet 10.1.1.3 0 0060.5cf4.a955 ARPA Dialer1
```

Venus#show spanning-tree

```
Bridge group 1 is executing the ieee compatible Spanning Tree protocol
Bridge Identifier has priority 32768, address 0060.5cf4.a9a8
Configured hello time 2, max age 20, forward delay 15
```

```
Current root has priority 32768, address 0009.7c2e.ba00
Root port is 2 (Ethernet0), cost of root path is 100
Topology change flag not set, detected flag not set
Number of topology changes 1 last change occurred 22:09:28 ago
from Ethernet0
Times: hold 1, topology change 35, notification 2
hello 2, max age 20, forward delay 15
Timers: hello 0, topology change 0, notification 0, aging 300
```

```
Port 2 (Ethernet0) of Bridge group 1 is forwarding
Port path cost 100, Port priority 128, Port Identifier 128.2.
Designated root has priority 32768, address 0009.7c2e.ba00
Designated bridge has priority 32768, address 0009.7c2e.ba00
Designated port id is 128.13, designated path cost 0
Timers: message age 2, forward delay 0, hold 0
Number of transitions to forwarding state: 1
BPDU: sent 1, received 39911
```

```
Port 8 (Dialer1) of Bridge group 1 is forwarding
Port path cost 17857, Port priority 128, Port Identifier 128.8.
Designated root has priority 32768, address 0009.7c2e.ba00
Designated bridge has priority 32768, address 0060.5cf4.a9a8
Designated port id is 128.8, designated path cost 100
Timers: message age 0, forward delay 0, hold 0
Number of transitions to forwarding state: 1
BPDU: sent 39879, received 0
```

## Show Commands on Saturn After Venus Dials In

```
Saturn#show dialer
BRI0 - dialer type = ISDN
Dial String Successes Failures Last DNIS Last status
  0 incoming call(s) have been screened.

  0 incoming call(s) rejected for callback.

BRI0:1 - dialer type = ISDN
Idle timer (120 secs), Fast idle timer (20 secs)
Wait for carrier (30 secs), Re-enable (15 secs)
Dialer state is idle

BRI0:2 - dialer type = ISDN
Idle timer (120 secs), Fast idle timer (20 secs)
Wait for carrier (30 secs), Re-enable (15 secs)
Dialer state is data link layer up
Interface bound to profile Dil
Time until disconnect 45 secs
Connected to <unknown phone number> (Venus)

Dil - dialer type = DIALER PROFILE
Idle timer (120 secs), Fast idle timer (20 secs)
Wait for carrier (30 secs), Re-enable (15 secs)
Dialer state is data link layer up  Number of active calls = 1

Dial String Successes Failures Last DNIS Last status

Saturn#show isdn status
Global ISDN Switchtype = basic-5ess
ISDN BRI0 interface
dsl 0, interface ISDN Switchtype = basic-5ess
Layer 1 Status:
ACTIVE
Layer 2 Status:
TEI = 105, Ces = 1, SAPI = 0, State = MULTIPLE_FRAME_ESTABLISHED
I_Queue_Len 0, UI_Queue_Len 0
```



```
Layer 3 Status:
1 Active Layer 3 Call(s)
CCB:callid=2B, sapi=0, ces=1, B-chan=2, calltype=DATA
Active dsl 0 CCBs = 1
The Free Channel Mask: 0x80000001
Number of L2 Discards = 0, L2 Session ID = 37
Total Allocated ISDN CCBs = 1
```

```
Saturn#show arp
```

```
Protocol Address Age (min) Hardware Addr Type Interface
Internet 10.1.1.2 27 0060.5cf4.a9a8 ARPA Dialer1
Internet 10.1.1.1 63 00d0.58ad.ae13 ARPA Dialer1
Internet 192.168.1.1 - 0060.5cf4.a955 ARPA Ethernet0
Internet 192.168.1.2 53 0000.0c76.2882 ARPA Ethernet0
```

```
Saturn#show spanning-tree
```

```
No spanning tree instances exist.
```

```
!--- This router does not run full bridge,
!--- so spanning tree does not run on this router
```

```
Saturn#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 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route
Gateway of last resort is not set
C 10.0.0.0/8 is directly connected, Dialer1
C 192.168.0.0/16 is directly connected, Ethernet0
```

## Troubleshoot

This section provides information you can use to troubleshoot your configuration.

## Troubleshooting Resources

Troubleshooting procedures for incoming and outgoing ISDN calls are explained in the Dialup Technology: Troubleshooting Techniques document. Additional information on how to troubleshoot ISDN layer 1, layer 2 and layer 3 issues are given in Using the show isdn status Command for BRI Troubleshooting and Troubleshooting ISDN BRI Layer 3 using the debug isdn q931 Command.

## Troubleshooting Commands

Certain **show** commands are supported by the Output Interpreter Tool (registered customers only) , which allows you to view an analysis of **show** command output.

**Note:** Before issuing **debug** commands, refer to Important Information on Debug Commands.

- **debug dialer** indicates when interesting traffic has been detected, and when dialing is initiated.
- **debug isdn event** indicates ISDN activity occurring on the user side of the ISDN interface, and is similar to **debug isdn q931**.
- **debug isdn q931** provides information about call setup and teardown of ISDN network connections (Layer 3), between the local router (user side) and the network.
- **debug isdn q921** displays the data link layer (Layer 2) access procedures that are taking place at the router on the D-channel (LAPD) of its ISDN interface.

- **debug ppp negotiation** performs negotiation of PPP options and Network Control Protocol (NCP) parameters.
- **debug ppp authentication** allows the exchange of Challenge Authentication Protocol (CHAP) and Password Authentication Protocol (PAP) packets.

## Debug Commands on Venus when Interesting Traffic Arrives

```

Venus#
*Mar 1 22:00:14.838: BR0 DDR: rotor dialout [priority]
*Mar 1 22:00:14.838: BR0 DDR: Dialing cause bridge (0x0800)
*Mar 1 22:00:14.842: BR0 DDR: Attempting to dial 5552000
*Mar 1 22:00:14.846: ISDN BR0: Outgoing call id = 0x8006, dsl 0
*Mar 1 22:00:14.846: ISDN BR0: Event: Call to 5552000 at 64 Kb/s
*Mar 1 22:00:14.850: ISDN BR0: process_bri_call(): call id 0x8006,
called_number 5552000, speed 64, call type DATA
*Mar 1 22:00:14.854: CCBRI_Go Fr Host InPkgInfo (Len=22) :
*Mar 1 22:00:14.858: 1 0 1 80 6 0 4 2 88 90 18 1 83 2C 7 35 35 35 32 30 30 30
*Mar 1 22:00:14.866:
*Mar 1 22:00:14.870: CC_CHAN_GetIdleChanbri: dsl 0
*Mar 1 22:00:14.870: Found idle channel B1
*Mar 1 22:00:14.886: ISDN BR0: TX -> INFOc sapi=0 tei=106 ns=0 nr=0
i=0x08010605040288901801832C0735353532303030
*Mar 1 22:00:14.906: SETUP pd = 8 callref = 0x06
*Mar 1 22:00:14.914: Bearer Capability i = 0x8890
*Mar 1 22:00:14.918: Channel ID i = 0x83
*Mar 1 22:00:14.92Venus#6: Keypad Facility i = '5552000'
*Mar 1 22:00:15.190: ISDN BR0: RX <- INFOc sapi=0 tei=106 ns=0 nr=1
i=0x0801860218018A
*Mar 1 22:00:15.198: CALL_PROC pd = 8 callref = 0x86
*Mar 1 22:00:15.206: Channel ID i = 0x8A
*Mar 1 22:00:15.222: ISDN BR0: TX -> RRr sapi=0 tei=106 nr=1
*Mar 1 22:00:15.230: CCBRI_Go Fr L3 pkt (Len=7) :
*Mar 1 22:00:15.230: 2 1 6 98 18 1 8A
*Mar 1 22:00:15.234:
*Mar 1 22:00:15.238: ISDN BR0: LIF_EVENT: ces/callid 1/0x8006
HOST_PROCEEDING
*Mar 1 22:00:15.238: ISDN BR0: HOST_PROCEEDING
*Mar 1 22:00:15.242: ISDN BR0: HOST_MORE_INFO
*Mar 1 22:00:15.658: ISDN BR0: RX <- INFOc sapi=0 tei=106 ns=1
nr=1 i=0x08018607
*Mar 1 22:00:15.666: CONNECT pd = 8 callref = 0x86
*Mar 1 22:00:15.678: ISDN BR0: TX -> RRr sapi=0 tei=106 nr=2
*Mar 1 22:00:15.686: CCBRI_Go Fr L3 pkt (Len=4) :
*Mar 1 22:00:15.690: 7 1 6 91
*Mar 1 22:00:15.690:
*Mar 1 22:00:15.694: ISDN BR0: LIF_EVENT: ces/callid 1/0x8006 HOST_CONNECT
22:00:15: %LINK-3-UPDOWN: Interface BRI0:2, changed state to up
*Mar 1 22:00:15.702: BR0:2 PPP: Phase is DOWN, Setup [0 sess, 0 load]
*Mar 1 22:00:15.706: BR0:2 PPP: No remote authentication for call-out
*Mar 1 22:00:15.710: BR0:2 PPP: Phase is ESTABLISHING [0 sess, 0 load]
*Mar 1 22:00:15.710: BR0:2 PPP: Treating connection as a callout
*Mar 1 22:00:15.714: BR0:2 PPP: No remote authentication for call-out
*Mar 1 22:00:15.718: BR0:2 LCP: O CONFREQ [Closed] id 1 len 10
*Mar 1 22:00:15.722: BR0:2 LCP: MagicNumber 0x6515B12A (0x05066515B12A)
*Mar 1 22:00:15.722: BR0:2: interface must be fifo queue, force fifo
22:00:15: %DIALER-6-BIND: Interface BR0:2 bound to profile D11
*Mar 1 22:00:15.742: ISDN: get_isdn_service_state(): idb 0x1A2DBC bchan 3
is_isdn 1 Not a Pri
*Mar 1 22:00:15.746: BR0:2 PPP: Treating connection as a callout
*Mar 1 22:00:15.746: ISDN BR0: Event: Connected to 5552000 on B2 at 64 Kb/s
*Mar 1 22:00:15.762: ISDN BR0: TX -> INFOc sapi=0 tei=106 ns=1 nr=2 i=0x0801060F
*Mar 1 22:00:15.766: CONNECT_ACK pd = 8 callref = 0x06
*Mar 1 22:00:15.774: BR0:2 LCP: I CONFREQ [REQsent] id 1 len 15
*Mar 1 22:00:15.778: BR0:2 LCP: AuthProto CHAP (0x0305C22305)

```

```
*Mar 1 22:00:15.782: BR0:2 LCP: MagicNumber 0x788C6F8F (0x0506788C6F8F)
*Mar 1 22:00:15.786: BR0:2 LCP: O CONFACK [REQsent] id 1 len 15
*Mar 1 22:00:15.790: BR0:2 LCP: AuthProto CHAP (0x0305C22305)
*Mar 1 22:00:15.790: BR0:2 LCP: MagicNumber 0x788C6F8F (0x0506788C6F8F)
*Mar 1 22:00:15.798: BR0:2 LCP: I CONFACK [ACKsent] id 1 len 10
*Mar 1 22:00:15.798: BR0:2 LCP: MagicNumber 0x6515B12A (0x05066515B12A)
*Mar 1 22:00:15.802: BR0:2 LCP: State is Open
*Mar 1 22:00:15.806: BR0:2 PPP: Phase is AUTHENTICATING, by the peer
[0 sess, 1 load]
*Mar 1 22:00:15.870: ISDN BR0: RX <- RRr sapi=0 tei=106 nr=2
*Mar 1 22:00:15.882: BR0:2 CHAP: I CHALLENGE id 31 len 27 from "Saturn"
*Mar 1 22:00:15.890: BR0:2 CHAP: O RESPONSE id 31 len 26 from "Venus"
*Mar 1 22:00:15.914: BR0:2 CHAP: I SUCCESS id 31 len 4
*Mar 1 22:00:15.918: BR0:2 PPP: Phase is UP [0 sess, 1 load]
*Mar 1 22:00:15.922: BR0:2 BNCP: O CONFREQ [Closed] id 1 len 4
*Mar 1 22:00:15.926: BR0:2 IPCP: O CONFREQ [Closed] id 1 len 10
*Mar 1 22:00:15.930: BR0:2 IPCP: Address 10.1.1.2 (0x03060A010102)
*Mar 1 22:00:15.934: BR0:2 CDPCP: O CONFREQ [Closed] id 1 len 4
*Mar 1 22:00:15.942: BR0:2 BNCP: I CONFREQ [REQsent] id 1 len 4
*Mar 1 22:00:15.946: BR0:2 BNCP: O CONFACK [REQsent] id 1 len 4
*Mar 1 22:00:15.950: BR0:2 CDPCP: I CONFREQ [REQsent] id 1 len 4
*Mar 1 22:00:15.954: BR0:2 CDPCP: O CONFACK [REQsent] id 1 len 4
*Mar 1 22:00:15.958: BR0:2 BNCP: I CONFACK [ACKsent] id 1 len 4
*Mar 1 22:00:15.958: BR0:2 BNCP: State is Open
*Mar 1 22:00:15.966: BR0:2 LCP: I PROTREJ [Open] id 2 len 16 protocol IPCP
(0x80210101000A03060A010102)
*Mar 1 22:00:15.970: BR0:2 IPCP: State is Closed
*Mar 1 22:00:15.974: BR0:2 CDPCP: I CONFACK [ACKsent] id 1 len 4
*Mar 1 22:00:15.978: BR0:2 CDPCP: State is Open
*Mar 1 22:00:15.978: BR0:2 DDR: dialer protocol up
22:00:16: %LINEPROTO-5-UPDOWN: Line protocol on Interface BRI0:2,
changed state to up
22:00:21: %ISDN-6-CONNECT: Interface BRI0:2 is now connected to 5552000
Venus#
```

Saturn#

```
4d16h: ISDN BR0: RX <- UI c/r=1 sapi=0 tei=127
i=0x080141050402889018018A7008C135353532303030
4d16h: SETUP pd = 8 callref = 0x41
4d16h: Bearer Capability i = 0x8890
4d16h: Channel ID i = 0x8A
4d16h: Called Party Number i = 0xC1, '5552000', Plan:ISDN,
Type:Subscriber(local)
4d16h: CCBRI_Go Fr L3 pkt (Len=21) :
4d16h: 5 1 C1 90 4 2 88 90 18 1 8A 70 8 C1 35 35 35 32 30 30 30
4d16h:
4d16h: ISDN BR0: Incoming call id = 0x002B, dsl 0
4d16h: ISDN BR0: LIF_EVENT: ces/callid 1/0x2B HOST_INCOMING_CALL
4d16h: ISDN BR0: HOST_INCOMING_CALL: (non-POTS) DATA
4d16h: ISDN BR0: HOST_INCOMING_CALL: (1) call_type = DATA
4d16h: ISDN BR0: HOST_INCOMING_CALL: voice_answer_data = FALSE call type is DATA
4d16h: ISDN BR0: Event: Received a DATA call from <unknown> on B2 at 64 Kb/s
4d16h: ISDN BR0: Event: Accepting the call id 0x2B
4d16h: BR0:2 PPP: Phase is DOWN, Setup [0 sess, 1 load]
4d16h: BR0:2 PPP: Phase is ESTABLISHING [0 sess, 1 load]
4d16h: BR0:2: inteSarface must be fifo queue, force fifo
4d16h: %DIALER-6-BIND: Interface BR0:2 bound to profile Di1
4d16h: ISDN BR0: RM returned call_type 0 resource type 0 response 1
4d16h: CCBRI_Go Fr Host InPkgInfo (Len=9) :
4d16h: 7 0 1 0 2B 3 18 1 8A
4d16h:
4d16h: ISDN BR0: isdn_send_connect(): msg 4, call id 0x2B, ces 1 bchan 1, c
all type DATA
4d16h: %LINK-3-UPDOWN: Interface BRI0:2, changed state to up
4d16h: ISDN: get_isdn_service_state(): idb 0x1A2EAC bchan 3 is_isdn 1 Not a Pri
4d16h: BR0:2 PPP: Treating connection as a callin
```

```

4d16h: BR0:2 LCP: State is Listen
4d16h: CCBRI_Go Fr Host InPkgInfo (Len=6) :
4d16h: 4 0 1 0 2B 0
4d16h:
4d16h: ISDN BR0: TX -> INFOc sapi=0 tei=105 ns=7 nr=5 i=0x0801C10218018A
4d16h:     CALL_PROC pd = 8   callref = 0xC1
4d16h:     Channel ID i = 0x8A
4d16h: ISDN BR0: RX <- RRr sapi=0 tei=105 nr=8
4d16h: ISDN BR0: TX -> INFOc sapi=0 tei=105 ns=8 nr=5 i=0x0801C107
4d16h:     CONNECT pd = 8   callref = 0xC1
4d16h: ISDN BR0: RX <- INFOc sapi=0 tei=105 ns=5 nr=9 i=0x0801410F
4d16h:     CONNECT_ACK pd = 8   callref = 0x41
4d16h: ISDN BR0: TX -> RRr sapi=0 tei=105 nr=6
4d16h: CCBRI_Go Fr L3 pkt (Len=4) :
4d16h: F 1 C1 92
4d16h:
4d16h: ISDN BR0: LIF_EVENT: ces/callid 1/0x2B HOST_CONNECT
4d16h: ISDN BR0: Event: Connected to <unknown> on B2 at 64 Kb/s
4d16h: BR0:2 LCP: I CONFREQ [Listen] id 1 len 10
4d16h: BR0:2 LCP:     MagicNumber 0x6515B12A (0x05066515B12A)
4d16h: BR0:2 LCP: O CONFREQ [Listen] id 1 len 15
4d16h: BR0:2 LCP:     AuthProto CHAP (0x0305C22305)
4d16h: BR0:2 LCP:     MagicNumber 0x788C6F8F (0x0506788C6F8F)
4d16h: BR0:2 LCP: O CONFACK [Listen] id 1 len 10
4d16h: BR0:2 LCP:     MagicNumber 0x6515B12A (0x05066515B12A)
4d16h: BR0:2 LCP: I CONFACK [ACKsent] id 1 len 15
4d16h: BR0:2 LCP:     AuthProto CHAP (0x0305C22305)
4d16h: BR0:2 LCP:     MagicNumber 0x788C6F8F (0x0506788C6F8F)
4d16h: BR0:2 LCP: State is Open
4d16h: BR0:2 PPP: Phase is AUTHENTICATING, by this end [0 sess, 0 load]
4d16h: BR0:2 CHAP: O CHALLENGE id 31 len 27 from "Saturn"
4d16h: BR0:2 CHAP: I RESPONSE id 31 len 26 from "Venus"
4d16h: BR0:2 CHAP: O SUCCESS id 31 len 4
4d16h: BR0:2 PPP: Phase is UP [0 sess, 0 load]
4d16h: BR0:2 BNCP: O CONFREQ [Closed] id 1 len 4
4d16h: BR0:2 CDPCP: O CONFREQ [Closed] id 1 len 4
4d16h: BR0:2 BNCP: I CONFREQ [REQsent] id 1 len 4
4d16h: BR0:2 BNCP: O CONFACK [REQsent] id 1 len 4: BR0:2 IPCP: I CONFREQ
[Not negotiated] id 1 len 10
4d16h: BR0:2 IPCP:     Address 10.1.1.2 (0x03060A010102)
4d16h: BR0:2 LCP: O PROTREJ [Open] id 2 len 16 protocol IPCP
(0x80210101000A03060A010102)
4d16h: BR0:2 CDPCP: I
4d16h CONFREQ [REQsent] id 1 len 4
4d16h: BR0:2 CDPCP: O CONFACK [REQsent] id 1 len 4
4d16h: BR0:2 BNCP: I CONFACK [ACKsent] id 1 len 4
4d16h: BR0:2 BNCP: State is Open
4d16h: BR0:2 CDPCP: I CONFACK [ACKsent] id 1 len 4
4d16h: BR0:2 CDPCP: State is Open
4d16h: BR0:2 DDR: dialer protocol up
4d16h: %LINEPROTO-5-UPDOWN: Line protocol on Interface BRI0:2, changed state to up
4d16h: %ISDN-6-CONNECT: Interface BRI0:2 is now connected to
<unknown phone number> Venus

```

*!--- Unknown phone number because of no dialer string on Saturn*

Saturn#

## Related Information

- **Bridging Across ISDN**
- **Backup Bridging over ISDN**
- **Configuring Transparent Bridging**
- **Understanding the Ping and Traceroute Commands**

- **More Information on Dial-Backup Commands**
  - **Cisco Technology Support – Dial**
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