

Puenteo de respaldo sobre ISDN

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Introducción

Este documento explica y proporciona un ejemplo de cómo configurar el puenteo de respaldo con ISDN. Esta configuración usa el método de interfaz de respaldo para identificar que el link principal está desactivado. Para obtener más información sobre la copia de seguridad, vea [Configuración y resolución de problemas de respaldo DDR](#).

En los entornos WAN puenteados, la única solución de respaldo de routing de marcado a petición (DDR) disponible es el uso de ISDN, ya que no se admite la conexión en puente asíncrona.

Tenga en cuenta que la conexión en puente en una conexión ISDN tiende a mantener activa la conexión durante periodos muy largos, si no permanentemente. Si la compañía telefónica (Telco) cobra por ISDN en función del tiempo de conexión y el link serial que se rastrea durante mucho tiempo, esto puede resultar en una factura muy grande.

Nota: Esta configuración es para un sitio y un canal B. Para más de un canal B, debe utilizar perfiles de marcador. (Consulte [Configuración de Perfiles del Marcador para el Puente mediante la configuración ISDN](#)).

Para obtener información sobre la configuración de bridging en un entorno que no es de respaldo, vea [Bridging Across ISDN](#).

Prerequisites

Requirements

Antes de utilizar esta configuración, asegúrese de que cumple con los siguientes requisitos:

- Poseer un conocimiento básico de ISDN.

Componentes Utilizados

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

- Cisco 2500 Series Routers con una interfaz serial WAN y una interfaz BRI cada uno.
- Versión 12.2(7b) del software del IOS® de Cisco.

Nota: Esta configuración se puede utilizar con cualquier router que tenga un link WAN (serial) y un puerto BRI.

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

Esta configuración puede utilizarse con cualquier par de routers que ejecuten el software del IOS de Cisco y cada uno debe tener al menos una interfaz serial WAN y una interfaz BRI.

Convenciones

Para obtener más información sobre las convenciones del documento, consulte [Convenciones de Consejos Técnicos de Cisco](#).

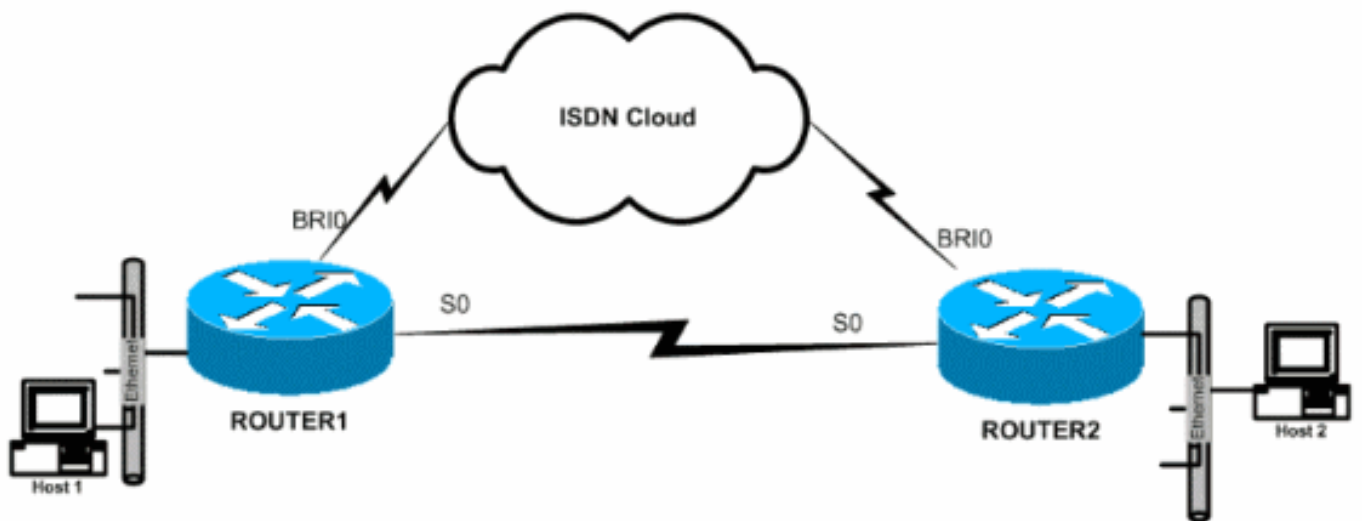
Configurar

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:

- [Router1](#)
- [Router2](#)

Router1

```

!
hostname ROUTER1
!
!
username ROUTER2 password 0 same
!--- This is required for PPP Challenge Handshake
Authentication Protocol !--- (CHAP) authentication
during dial backup. !! isdn switch-type basic-5ess !---
The ISDN switch type for this circuit. !--- Obtain this
information from the Telco. !--- This ISDN switch type
is specific to the United States, !--- and could change
based on the requirements of the country and Telco. !
interface Ethernet0 ip address 172.16.55.33
255.255.255.240 no ip directed-broadcast 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 that the BRI
interface and serial interface are also !--- in this
bridge-group 1. ! interface Serial0 description Serial
link to ROUTER2 backup interface BRI0 !--- This defines
the backup interface. !--- Cisco IOS Software tracks the
Serial0 interface, and !--- uses BRI0 if Serial0 fails.
ip address 172.16.54.1 255.255.255.0 no ip directed-
broadcast no ip mroute-cache no fair-queue bridge-group
1 !--- Enable bridging on Serial0 for normal operation.
! interface BRI0 description ISDN to ROUTER2 ip address
172.16.53.19 255.255.255.240 no ip directed-broadcast
encapsulation ppp no ip mroute-cache dialer map bridge
name ROUTER2 broadcast 5552000 !--- The broadcast
keyword is required to initiate the ISDN call. !---
Dialer map bridge to the remote router. The statement
includes !--- the name of the remote router and the

```

```

phone number to be dialed. !--- Note that this dialer
map statement includes the keyword bridge, !--- and does
not include the IP address of the peer, as required for
!--- IP routing-based dialer maps.
dialer-group 1
!--- Defines the interesting traffic as configured in
the dialer-list. isdn switch-type basic-5ess !--- Check
with your Telco for the correct values. ppp
authentication chap bridge-group 1 !--- Enable bridging
on BRI0. ! dialer-list 1 protocol bridge permit !---
Defines the interesting traffic. In this case, all
bridged traffic. bridge 1 protocol ieee !--- Defines the
type of Spanning Tree Protocol (STP) used for the !---
interface in bridge-group 1. Here, the IEEE STP is used.
!--- The IEEE 802.1D STP is the preferred way to run the
bridge. !

```

Router2

```

hostname router2
!
!
username ROUTER1 password 0 same
!--- Required for PPP CHAP Authentication during dial
backup. ! isdn switch-type basic-5ess !--- Check with
your Telco at the Router2 side for the correct values. !
interface Ethernet0 ip address 172.16.55.2
255.255.255.240 bridge-group 1 !--- Enable bridging on
Ethernet0. ! interface Serial0 description Serial link
to ROUTER1 !--- The backup interface bri0 command is not
required on this side, !--- because it is sufficient if
one side tracks the serial interface.
ip address 172.16.54.2 255.255.255.0
no fair-queue
bridge-group 1
!--- Enable bridging on Serial0 for normal operation.
interface BRI0 description ISDN to ROUTER1 ip address
172.16.53.17 255.255.255.240 encapsulation ppp no ip
mroute-cache dialer map bridge name ROUTER1 broadcast
5551000 !--- The broadcast keyword is required to
initiate the ISDN call.

dialer-group 1
!--- Defines the interesting traffic as configured in
the dialer-list. isdn switch-type basic-5ess !--- Check
with your Telco at the Router2 side for the correct
values. ppp authentication chap bridge-group 1 !---
Enable bridging on BRI0. ! dialer-list 1 protocol bridge
permit !--- Defines the interesting traffic. In this
case, all bridged traffic. bridge 1 protocol ieee !---
Defines the type of STP used for the interface in !---
bridge-group 1. Here the IEEE STP is used. !--- The IEEE
802.1D STP is the preferred way to run the bridge. !

```

Verificación

En esta sección encontrará información que puede utilizar para comprobar que su configuración funcione 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:** muestra el estado de Capa 1 (L1), Capa 2 (L2) y Capa 3 (L3) de las interfaces ISDN.
- **show dialer:** muestra el estado del marcador y el estado individual de los canales ISDN.
- **show bridge:** muestra clases de entradas en la base de datos de reenvío de puente.
- **show interface:** muestra el estado de las diversas interfaces, como las interfaces serial y BRI.
- **show spanning-tree:** muestra la topología de spanning tree conocida por el router.

Comandos show en ROUTER1 cuando Serial0 está activo.

```
ROUTER1# show isdn status
Global ISDN Switchtype = basic-5ess
ISDN BRI0 interface
dsl 0, interface ISDN Switchtype = basic-5ess
Layer 1 Status:
DEACTIVATED
Layer 2 Status:
Layer 2 NOT Activated
Layer 3 Status:
0 Active Layer 3 Call(s)
Activated dsl 0 CCBs = 0
The Free Channel Mask: 0x80000003
Number of L2 Discards = 36, L2D_Task Discards = 35
Total Allocated ISDN CCBs = 0
```

```
ROUTER1# show dialer
```

```
BRI0 - dialer type = ISDN
```

```
Dial String Successes Failures Last DNIS Last status
5552000 29 977 00:45:08 successful
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 shutdown
```

```
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 shutdown
```

```
ROUTER1# 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
0000.0c76.2882 forward Serial0 0 5 4
!--- Bridging traffic goes through Serial0. 00d0.58ad.ae13 forward Ethernet0 0 42 5
```

Comandos show en ROUTER1 cuando Serial0 está inactivo.

```
ROUTER1# 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 = 114, Ces = 1, SAPI = 0, State = MULTIPLE_FRAME_ESTABLISHED
!--- ISDN L1 and L2 will be up (when Serial0 fails) !--- even if interesting traffic is not
present. Layer 3 Status: 1 Active Layer 3 Call(s)
Activated dsl 0 CCBS = 1
CCB:callid=8484, sapi=0, ces=1, B-chan=1, calltype=DATA
The Free Channel Mask: 0x80000002
Total Allocated ISDN CCBS = 1
```

```
ROUTER1# show dialer
```

```
BRI0 - dialer type = ISDN
```

```
Dial String Successes Failures Last DNIS Last status
5552000 30 977 00:00:16 successful
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 data link layer up
Dial reason: bridge (0xFFFF)
Time until disconnect 106 secs
Connected to 5552000 (ROUTER2)
```

```
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 idle
```

```
ROUTER1# 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
0000.0c76.2882 forward BRI0 0 5 4
!--- Bridging traffic now goes through BRI0. 00d0.58ad.ae13 forward Ethernet0 0 5 5
```

[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:

- [Soporte de Tecnología ISDN](#)
- [Resolución de problemas de líneas en serie](#)
- [Conexión adosada HDLC](#)

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:** proporciona información sobre los eventos de la interfaz del marcador.
- **debug isdn event:** muestra los mensajes de depuración relacionados con la actividad ISDN que se producen en el lado del usuario de la interfaz ISDN.
- **debug isdn q931:** proporciona información sobre la configuración de llamadas y la desconexión de conexiones de red ISDN (L3) entre el router local (lado del usuario) y la red.
- **debug isdn q921:** muestra los mensajes de depuración relacionados con los procedimientos de acceso de capa de enlace de datos (L2) que se producen en el router en el canal D (LAPD) de su interfaz ISDN.
- **debug ppp negotiation:** muestra los mensajes de depuración relacionados con la negociación de las opciones PPP y los parámetros del protocolo de control de red (NCP).
- **debug ppp authentication:** muestra los mensajes de depuración relacionados con el intercambio de paquetes CHAP y Password Authentication Protocol (PAP).

depurar salida en ENRUTADOR1 cuando serial0 desciende e ISDN se levanta

```
ROUTER1# show debug
Dial on demand:
Dial on demand events debugging is on
PPP:
PPP authentication debugging is on
PPP protocol negotiation debugging is on
ISDN:
ISDN events debugging is on
ISDN Q921 packets debugging is on
ISDN Q931 packets debugging is on
```

```
ROUTER1#
!--- Interface serial0 goes down. ROUTER1# 00:56:53: %LINK-3-UPDOWN: Interface Serial0, changed
state to down *Mar 1 00:56:53.103: ISDN BR0 EVENT: isdn_sw_cstate: State = 0, Old State = 6
00:56:53: %LINK-3-UPDOWN: Interface BRI0:1, changed state to down *Mar 1 00:56:53.107: BR0:1
LCP: State is Closed *Mar 1 00:56:53.111: BR0:1 DDR: disconnecting call 00:56:53: %LINK-3-
UPDOWN: Interface BRI0:2, changed state to down *Mar 1 00:56:53.119: BR0:2 LCP: State is Closed
*Mar 1 00:56:53.119: BR0:2 DDR: disconnecting call *Mar 1 00:56:53.127: ISDN BR0 EVENT:
isdn_sw_cstate: State = 4, Old State = 6 *Mar 1 00:56:53.135: ISDN BR0 EVENT: isdn_sw_cstate:
State = 4, Old State = 6 *Mar 1 00:56:53.567: ISDN BR0: RX <- IDCKRQ ri=0 ai=127 *Mar 1
00:56:53.567: ISDN Recvd L1 prim 3 dsl 0 state 3 ctrl_state 0 *Mar 1 00:56:53.571: ISDN BR0: L1
persistent Deactivated *Mar 1 00:56:53.571: ISDN Recvd L1 prim 7 dsl 0 state 3 ctrl_state 0 *Mar
1 00:56:53.575: ISDN BR0: Recvd MPH_IIC_IND from L1 *Mar 1 00:56:53.575: ISDN Recvd L1 prim 7
dsl 0 state 3 ctrl_state 0 *Mar 1 00:56:53.579: ISDN BR0: Recvd MPH_IIC_IND from L1 *Mar 1
00:56:53.579: ISDN Recvd L1 prim 1 dsl 0 state 3 ctrl_state 0 *Mar 1 00:56:53.583: ISDN BR0: L1
is IF_ACTIVE *Mar 1 00:56:53.583: ISDN BR0 EVENT: isdn_sw_cstate: State = 4, Old State = 6 *Mar
1 00:56:53.587: ISDN BR0: L2-TERM: ces/tei=1/0 AWAIT_ESTABLISH->TERM_DOWN *Mar 1 00:56:53.591:
ISDN BR0: Incoming call id = 0x0010, dsl 0 *Mar 1 00:56:53.595: ISDN BR0: L2-TERM: ces/tei=1/0
TERM_DOWN->AWAIT_ESTABLISH 00:56:53: %LINK-3-UPDOWN: Interface BRI0, changed state to up *Mar 1
00:56:53.631: ISDN BR0 EVENT: isdn_sw_cstate: State = 4, Old State = 6 *Mar 1 00:56:53.655: ISDN
BR0: TX -> IDREQ ri=48769 ai=127 00:56:54: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Serial0, changed state to down *Mar 1 00:56:54.387: ISDN BR0: RX <- IDCKRQ ri=0 ai=127 *Mar 1
```

```

00:56:55.655: ISDN BR0: TX -> IDREQ ri=42642 ai=127 *Mar 1 00:56:55.699: ISDN BR0: RX <- IDASSN
ri=42642 ai=68 *Mar 1 00:56:55.791: ISDN BR0: TX -> SABMEp c/r=0 sapi=0 tei=68 *Mar 1
00:56:55.823: ISDN BR0: RX <- Uaf c/r=0 sapi=0 tei=68 00:56:55: %ISDN-6-LAYER2UP: Layer 2 for
Interface BR0, TEI 68 changed to up *Mar 1 00:56:55.831: ISDN BR0: L2-TERM: ces/tei=1/68
AWAIT_ESTABLISH->ESTABLISHED !--- Interesting traffic has not arrived yet from Host1, !--- but
ISDN L1 and L2 are up now. ROUTER1# show isdn stat
Global ISDN Switchtype = basic-5ess
ISDN BRI0 interface
    dsl 0, interface ISDN Switchtype = basic-5ess
Layer 1 Status:
    ACTIVE
Layer 2 Status:
    TEI = 68, Ces = 1, SAPI = 0, State = MULTIPLE_FRAME_ESTABLISHED
    I_Queue_Len 0, UI_Queue_Len 0
Layer 3 Status:
    0 Active Layer 3 Call(s)
Active dsl 0 CCBs = 0
The Free Channel Mask: 0x80000003
Number of L2 Discards = 0, L2 Session ID = 34
Total Allocated ISDN CCBs = 0
ROUTER1#
*Mar 1 00:57:25.839: ISDN BR0: TX -> RRp sapi=0 tei=68 nr=0
*Mar 1 00:57:25.871: ISDN BR0: RX <- RRf sapi=0 tei=68 nr=0
ROUTER1#

!--- Interesting traffic arrives now, !--- which triggers ISDN Dialup (see below). *Mar 1
00:57:32.519: BR0 DDR: Dialing cause bridge (0xFFFF)
*Mar 1 00:57:32.519: BR0 DDR: Attempting to dial 5552000
*Mar 1 00:57:32.523: ISDN BR0: Outgoing call id = 0x800E, dsl 0
*Mar 1 00:57:32.527: ISDN BR0: Event: Call to 5552000 at 64 Kb/s
*Mar 1 00:57:32.527: ISDN BR0: process_bri_call(): call id 0x800E,
called_number 5552000, speed 64, call type DATA
*Mar 1 00:57:32.531: CCBRI_Go Fr Host InPkgInfo (Len=22) :
*Mar 1 00:57:32.535: 1 0 1 80 E 0 4 2 88 90 18
1 83 2C 7 35 35 35 32 30 30 30
*Mar 1 00:57:32.543:
*Mar 1 00:57:32.547: CC_CHAN_GetIdleChanbri: dsl 0
*Mar 1 00:57:32.547: Found idle channel B1
*Mar 1 00:57:32.563: ISDN BR0: TX -> INFOc sapi=0 tei=68 ns=0 nr=0
i=0x08010E05040288901801832C0735353532303030
*Mar 1 00:57:32.583: SETUP pd = 8 callref = 0x0E
*Mar 1 00:57:32.591: Bearer Capability i = 0x8890
*Mar 1 00:57:32.599: Channel ID i = 0x83
*Mar 1 00:57:32.603: Keypad Facility i = '5552000'
*Mar 1 00:57:32.867: ISDN BR0: RX <- INFOc sapi=0 tei=68 ns=0 nr=1
i=0x08018E02180189
*Mar 1 00:57:32.875: CALL_PROC pd = 8 callref = 0x8E
*Mar 1 00:57:32.883: Channel ID i = 0x89
*Mar 1 00:57:32.899: ISDN BR0: TX -> RRr sapi=0 tei=68 nr=1
*Mar 1 00:57:32.907: CCBRI_Go Fr L3 pkt (Len=7) :
*Mar 1 00:57:32.907: 2 1 E 98 18 1 89
*Mar 1 00:57:32.911:
*Mar 1 00:57:32.915: ISDN BR0: LIF_EVENT: ces/callid 1/0x800E
HOST_PROCEEDING
*Mar 1 00:57:32.919: ISDN BR0: HOST_PROCEEDING
*Mar 1 00:57:32.919: ISDN BR0: HOST_MORE_INFO
*Mar 1 00:57:33.159: ISDN BR0: RX <- INFOc sapi=0 tei=68 ns=1
nr=1 i=0x08018E07
*Mar 1 00:57:33.167: CONNECT pd = 8 callref = 0x8E
*Mar 1 00:57:33.183: ISDN BR0: TX -> RRr sapi=0 tei=68 nr=2
*Mar 1 00:57:33.191: CCBRI_Go Fr L3 pkt (Len=4) :
*Mar 1 00:57:33.191: 7 1 E 91
*Mar 1 00:57:33.195:
*Mar 1 00:57:33.199: ISDN BR0: LIF_EVENT: ces/callid 1/0x800E

```


HOST_CONNECT

```
00:57:33: %LINK-3-UPDOWN: Interface BRI0:1, changed state to up
*Mar 1 00:57:33.215: ISDN: get_isdn_service_state():
idb 0x19F4D8 bchan 2 is_isdn 1 Not a Pri
*Mar 1 00:57:33.215: BR0:1 PPP: Treating connection as a callout
*Mar 1 00:57:33.219: BR0:1 PPP: Phase is ESTABLISHING,
Active Open [0 sess, 1 load]
*Mar 1 00:57:33.223: BR0:1 LCP: O CONFREQ [Closed] id 27 len 15
*Mar 1 00:57:33.227: BR0:1 LCP: AuthProto CHAP
(0x0305C22305)
*Mar 1 00:57:33.231: BR0:1 LCP: MagicNumber 0x6091A5F6
(0x05066091A5F6)
*Mar 1 00:57:33.235: ISDN BR0: Event: Connected to 5552000
on B1 at 64 Kb/s
*Mar 1 00:57:33.247: ISDN BR0: TX -> INFOc sapi=0 tei=68 ns=1 nr=2
i=0x08010E0F
*Mar 1 00:57:33.251: CONNECT_ACK pd = 8 callref = 0x0E
*Mar 1 00:57:33.267: BR0:1 LCP: I CONFREQ [REQsent] id 4 len 15
*Mar 1 00:57:33.271: BR0:1 LCP: AuthProto CHAP
(0x0305C22305)
*Mar 1 00:57:33.275: BR0:1 LCP: MagicNumber 0x6062D6EA
(0x05066062D6EA)
*Mar 1 00:57:33.279: BR0:1 LCP: O CONFACK [REQsent] id 4 len 15
*Mar 1 00:57:33.283: BR0:1 LCP: AuthProto CHAP
(0x0305C22305)
*Mar 1 00:57:33.287: BR0:1 LCP: MagicNumber 0x6062D6EA
(0x05066062D6EA)
*Mar 1 00:57:33.291: BR0:1 LCP: I CONFACK [ACKsent] id 27 len 15
*Mar 1 00:57:33.291: BR0:1 LCP: AuthProto CHAP
(0x0305C22305)
*Mar 1 00:57:33.295: BR0:1 LCP: MagicNumber 0x6091A5F6
(0x05066091A5F6)
*Mar 1 00:57:33.299: BR0:1 LCP: State is Open
*Mar 1 00:57:33.303: BR0:1 PPP: Phase is AUTHENTICATING,
by both [0 sess, 1 load]
*Mar 1 00:57:33.307: BR0:1 CHAP: O CHALLENGE id 14
len 28 from "ROUTER1"
*Mar 1 00:57:33.319: BR0:1 CHAP: I CHALLENGE id 4
len 28 from "ROUTER2"
*Mar 1 00:57:33.327: BR0:1 CHAP: O RESPONSE id 4
len 28 from "ROUTER1"
*Mar 1 00:57:33.335: ISDN BR0: RX <- RRr sapi=0
tei=68 nr=2
*Mar 1 00:57:33.351: BR0:1 CHAP: I SUCCESS id 4
len 4
*Mar 1 00:57:33.367: BR0:1 CHAP: I RESPONSE id 14
len 28 from "ROUTER2"
*Mar 1 00:57:33.371: BR0:1 CHAP: O SUCCESS id 14
len 4
*Mar 1 00:57:33.375: BR0:1 PPP: Phase is UP [0 sess, 0 load]
*Mar 1 00:57:33.379: BR0:1 BNCP: O CONFREQ [Closed] id 14
len 4
*Mar 1 00:57:33.387: BR0:1 CDPCP: O CONFREQ [Closed] id 14
len 4
*Mar 1 00:57:33.395: BR0:1 BNCP: I CONFREQ [REQsent] id 4
len 4
*Mar 1 00:57:33.399: BR0:1 BNCP: O CONFACK [REQsent] id 4
len 4
*Mar 1 00:57:33.403: BR0:1 IPCP: I CONFREQ [Not negotiated] id 4
len 10
*Mar 1 00:57:33.407: BR0:1 IPCP: Address 172.16.53.17
(0x0306AC103511)
*Mar 1 00:57:33.415: BR0:1 LCP: O PROTREJ [Open] id 28
len 16 protocol IPCP
```

(0x80210104000A0306AC103511)

```
*Mar 1 00:57:33.419: BR0:1 CDPCP: I CONFREQ [REQsent] id 4
len 4
*Mar 1 00:57:33.423: BR0:1 CDPCP: O CONFACK [REQsent] id 4
len 4
*Mar 1 00:57:33.427: BR0:1 BNCP: I CONFACK [ACKsent] id 14
len 4
*Mar 1 00:57:33.431: BR0:1 BNCP: State is Open
*Mar 1 00:57:33.435: BR0:1 CDPCP: I CONFACK [ACKsent] id 14
len 4
*Mar 1 00:57:33.439: BR0:1 CDPCP: State is Open
*Mar 1 00:57:33.443: BR0:1 DDR: dialer protocol up
00:57:34: %LINEPROTO-5-UPDOWN:
Line protocol on Interface BRI0:1, changed state to up
00:57:39: %ISDN-6-CONNECT: Interface BRI0:1 is now connected
to 5552000 ROUTER2
ROUTER1#
```

ROUTER1# **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 = 68, 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=800E, sapi=0, ces=1, B-chan=1, calltype=DATA
Active dsl 0 CCBs = 1
The Free Channel Mask: 0x80000002
Number of L2 Discards = 0, L2 Session ID = 34
Total Allocated ISDN CCBs = 1
*Mar 1 00:58:03.343: ISDN BR0: TX -> RRp sapi=0 tei=68 nr=2
*Mar 1 00:58:03.379: ISDN BR0: RX <- RRf sapi=0 tei=68 nr=2pann
ROUTER1# 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 0060.5cf4.a955
Root port is 3 (BRI0), cost of root path is 15625
Topology change flag set, detected flag not set
Number of topology changes 10 last change occurred 00:01:15 ago
from Serial0
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 15
```

```
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 0060.5cf4.a955
Designated bridge has priority 32768, address 0060.5cf4.a9a8
Designated port id is 128.2, designated path cost 15625
Timers: message age 0, forward delay 0, hold 0
Number of transitions to forwarding state: 2
BPDU: sent 751, received 0
```

Port 3 (BRI0) of Bridge group 1 is forwarding

```
!--- BRI Interface forwards the bridged traffic now. Port path cost 15625, Port priority 128,
Port Identifier 128.3. Designated root has priority 32768, address 0060.5cf4.a955 Designated
bridge has priority 32768, address 0060.5cf4.a955 Designated port id is 128.3, designated path
cost 0 Timers: message age 2, forward delay 0, hold 0 Number of transitions to forwarding state:
```

```
3 BPDU: sent 1014, received 608 Port 6 (Serial0) of Bridge group 1 is down
Port path cost 647, Port priority 128, Port Identifier 128.6.
Designated root has priority 32768, address 0060.5cf4.a955
Designated bridge has priority 32768, address 0060.5cf4.a9a8
Designated port id is 128.6, designated path cost 15625
Timers: message age 0, forward delay 0, hold 0
Number of transitions to forwarding state: 1
BPDU: sent 15, received 27
```

ROUTER1#

```
*Mar 1 00:58:33.387: ISDN BR0: TX -> RRp sapi=0 tei=68 nr=2
*Mar 1 00:58:33.423: ISDN BR0: RX <- RRf sapi=0 tei=68 nr=2
```

depurar salida en ENRUTADOR 1 cuando Serial0 regrese e ISDN interrumpe la llamada

```
00:58:37: %LINK-3-UPDOWN: Interface Serial0, changed state to up
*Mar 1 00:58:37.671: BR0:1 DDR: disconnecting call
*Mar 1 00:58:37.675: BR0:2 DDR: disconnecting call
*Mar 1 00:58:37.675: ISDN BR0: Event: Hangup call to call id 0x800E
*Mar 1 00:58:37.679: ISDN BR0: process_disconnect(): call id 0x800E,
call type is DATA, b_idb 0x19F4D8, ces 1, cause Normal call
clearing(0x10)
00:58:37: %ISDN-6-DISCONNECT: Interface BRI0:1 disconnected from
5552000 ROUTER2, call lasted 64 seconds
*Mar 1 00:58:37.691: ISDN: get_isdn_service_state(): idb 0x19F4D8
bchan 2 is_isdn 1 Not a Pri
*Mar 1 00:58:37.695: CCBRI_Go Fr Host InPkgInfo (Len=13) :
*Mar 1 00:58:37.699: 5 0 1 80 E 3 8 1 90 8 2 80 90
*Mar 1 00:58:37.703:
*Mar 1 00:58:37.719: ISDN BR0: TX -> INFOc sapi=0 tei=68 ns=2 nr=2
i=0x08010E4508028090
*Mar 1 00:58:37.727: DISCONNECT pd = 8 callref = 0x0E
*Mar 1 00:58:37.735: Cause i = 0x8090 - Normal call clearing
*Mar 1 00:58:37.743: ISDN BR0 EVENT: isdn_sw_cs!!!!!!!!!!!!!!!!!!!!tate:
State = 6, Old State = 4
00:58:37: %LINK-3-UPDOWN: Interface BRI0:1, changed state to down
*Mar 1 00:58:37.751: BR0:1 BNCP: State is Closed
*Mar 1 00:58:37.755: BR0:1 CDPCP: State is Closed
*Mar 1 00:58:37.755: BR0:1 PPP: Phase is TERMINATING [0 sess, 1 load]
*Mar 1 00:58:37.759: BR0:1 LCP: State is Closed
*Mar 1 00:58:37.763: BR0:1 PPP: Phase is DOWN [0 sess, 1 load]
*Mar 1 00:58:37.763: BR0:1 DDR: disconnecting call
*Mar 1 00:58:37.775: ISDN Recvd L1 prim 3 dsl 0 state 1 ctrl_state 0
*Mar 1 00:58:37.779: ISDN BR0: Physical layer is IF_DOWN
*Mar 1 00:58:37.783: ISDN BR0: Shutting down ME
00:58:37: %ISDN-6-LAYER2DOWN: Layer 2 for Interface BRI0,
TEI 68 changed to down
*Mar 1 00:58:37.791: ISDN BR0: L2-TERM: ces/tei=1/68
ESTABLISHED->TERM_DOWN
*Mar 1 00:58:37.795: ISDN BR0: LIF_EVENT: ces/callid 1/0x800E
HOST_DISCONNECT_ACK
*Mar 1 00:58:37.803: ISDN: get_isdn_service_state(): idb 0x19F4D8
bchan 2 is_isdn 1 Not a Pri
*Mar 1 00:58:37.807: ISDN BR0: HOST_DISCONNECT_ACK: call type is DATA
00:58:37: %LINK-3-UPDOWN: Interface BRI0:1, changed state to down
*Mar 1 00:58:37.815: BR0:1 LCP: State is Closed
*Mar 1 00:58:37.815: BR0:1 DDR: disconnecting call
*Mar 1 00:58:37.819: ISDN BR0: Shutting down ISDN Layer 3
00:58:37: %ISDN-6-LAYER2DOWN: Layer 2 for Interface BR0,
TEI 68 changed to down
00:58:37: %LINK-5-CHANGED: Interface BRI0, changed state to standby mode
```

```
*Mar 1 00:58:37.847: ISDN BR0 EVENT: isdn_sw_cstate: State = 6,
Old State = 4
00:58:37: %LINK-3-UPDOWN: Interface BRI0:2, changed state to down
*Mar 1 00:58:37.855: BR0:2 LCP: State is Closed
*Mar 1 00:58:37.855: BR0:2 DDR: disconnecting call
*Mar 1 00:58:37.895: ISDN BR0: Incoming call id = 0x0011, dsl 0
*Mar 1 00:58:37.895: ISDN BR0: L2-TERM: ces/tei=1/0
  TERM_DOWN->AWAIT_ESTABLISH
*Mar 1 00:58:37.935: ISDN BR0: Activating
00:58:38: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0,
changed state to up
00:58:38: %LINEPROTO-5-UPDOWN: Line protocol on Interface BRI0:1,
changed state to down
*Mar 1 00:58:39.939: ISDN BR0: Could not bring up interface
*Mar 1 00:58:39.943: ISDN BR0: Shutting down ISDN Layer 3
*Mar 1 00:58:39.963: ISDN BR0: Activating
*Mar 1 00:58:41.943: ISDN BR0: Could not bring up interface
*Mar 1 00:58:41.947: ISDN BR0: Shutting down ISDN Layer 3
*Mar 1 00:58:41.947: ISDN BR0: Activating
ROUTER1#
```

```
ROUTER1# show isdn status
```

```
Global ISDN Switchtype = basic-5ess
ISDN BRI0 interface
dsl 0, interface ISDN Switchtype = basic-5ess
Layer 1 Status:
DEACTIVATED
Layer 2 Status:
Layer 2 NOT Activated
```

```
!--- ISDN L1 and L2 are back to the deactivated state. Layer 3 Status: 0 Active Layer 3 Call(s)
Active dsl 0 CCBs = 0 The Free Channel Mask: 0x80000003 Number of L2 Discards = 0, L2 Session ID
= 39 Total Allocated ISDN CCBs = 0 ROUTER1# *Mar 1 00:58:49.951: ISDN BR0: Could not bring up
interface *Mar 1 00:58:49.951: ISDN BR0: Shutting down ISDN Layer 3 ROUTER1# ROUTER1# 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 0060.5cf4.a955
Root port is 6 (Serial0), cost of root path is 647
Topology change flag not set, detected flag not set
Number of topology changes 13 last change occurred 00:28:23 ago
from Serial0
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 0060.5cf4.a955
Designated bridge has priority 32768, address 0060.5cf4.a9a8
Designated port id is 128.2, designated path cost 647
Timers: message age 0, forward delay 0, hold 0
Number of transitions to forwarding state: 2
BPDU: sent 1633, received 0
```

```
Port 3 (BRI0) of Bridge group 1 is down
```

```
!--- BRI0 is in the down state when Serial 0 is up. Port path cost 15625, Port priority 128,
Port Identifier 128.3. Designated root has priority 32768, address 0060.5cf4.a955 Designated
bridge has priority 32768, address 0060.5cf4.a9a8 Designated port id is 128.3, designated path
cost 647 Timers: message age 0, forward delay 0, hold 0 Number of transitions to forwarding
state: 3 BPDU: sent 1014, received 622 Port 6 (Serial0) of Bridge group 1 is forwarding
!--- Serial0 forwards the bridged traffic now. Port path cost 647, Port priority 128, Port
Identifier 128.6. Designated root has priority 32768, address 0060.5cf4.a955 Designated bridge
```

has priority 32768, address 0060.5cf4.a955 Designated port id is 128.6, designated path cost 0
Timers: message age 1, forward delay 0, hold 0 Number of transitions to forwarding state: 2
BPDU: sent 18, received 896 ROUTER1#

Información Relacionada

- [Conexión mediante puentes a través de ISDN](#)
- [Copia de seguridad de BRI ISDN con interfaz de copia de seguridad](#)
- [Configuración de respaldo ISDA multilink BRI con vigilancia de marcador](#)
- [Configuración de respaldo BRI ISDN con vigilancia de programas dialer](#)
- [Configuración de respaldo ISDN con rutas estáticas flotantes](#)
- [DDR de respaldo mediante BRI y el comando backup interface](#)
- [Configuración de la interfaz de respaldo BRI con perfiles de marcado](#)
- [Configuración de respaldo DDR mediante BRI y la función de control de discado](#)
- [Configuración de respaldo ISDN para links WAN mediante el uso de rutas flotantes](#)
- [Configuración de respaldo para Frame Relay](#)
- [Configuración de Dial Backup para Líneas Seriales](#)
- [Comandos de Servicios de Marcado de Cisco IOS](#)
- [Soporte de Tecnología de Discado y Acceso](#)
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