

使用ISDN的備份橋接

目錄

[簡介](#)

[必要條件](#)

[需求](#)

[採用元件](#)

[相關產品](#)

[慣例](#)

[設定](#)

[網路圖表](#)

[組態](#)

[驗證](#)

[Serial0啟動時ROUTER1上的show命令](#)

[Serial0關閉時ROUTER1上的show命令](#)

[疑難排解](#)

[疑難排解資源](#)

[疑難排解指令](#)

[serial0關閉且ISDN接聽時ROUTER1上的調試輸出](#)

[當Serial0再次返回且ISDN丟棄呼叫時，ROUTER1上的調試輸出](#)

[相關資訊](#)

簡介

本文檔解釋並提供如何使用ISDN配置備份橋接的示例。此配置使用備份介面方法識別主鏈路已關閉。有關備份的詳細資訊，請參閱[DDR備份的配置與故障排除](#)。

在橋接WAN環境中，唯一可用的按需撥號路由(DDR)備份解決方案是使用ISDN，因為不支援非同步橋接。

請注意，在ISDN連線上進行橋接往往會長時間保持連線處於活動狀態（如果不是永久性的）。如果電話公司(Telco)根據連線時間對ISDN收費，並且被跟蹤的串列鏈路中斷了很長時間，則可能會導致非常高的費用。

注意：此配置用於一個站點和一個B通道。對於多個B通道，必須使用撥號器配置檔案。(請參閱[使用ISDN配置將撥號器配置檔案配置為網橋](#)。)

有關非備份環境中橋接配置的資訊，請參閱[跨ISDN橋接](#)。

必要條件

需求

嘗試此組態之前，請確保符合以下要求：

- 具有ISDN基礎知識。

採用元件

本文中的資訊係根據以下軟體和硬體版本：

- Cisco 2500系列路由器各有一個WAN串列介面和一個BRI介面。
- Cisco IOS®軟體版本12.2(7b)。

注意：此配置可用於具有WAN (串列) 鏈路和BRI埠的任何路由器。

本文中的資訊是根據特定實驗室環境內的裝置所建立。文中使用到的所有裝置皆從已清除 (預設) 的組態來啟動。如果您的網路正在作用，請確保您已瞭解任何指令可能造成的影響。

相關產品

此配置可用於運行Cisco IOS軟體且每台路由器至少有一個WAN串列介面和一個BRI介面的任何兩台路由器。

慣例

如需文件慣例的詳細資訊，請參閱[思科技術提示慣例](#)。

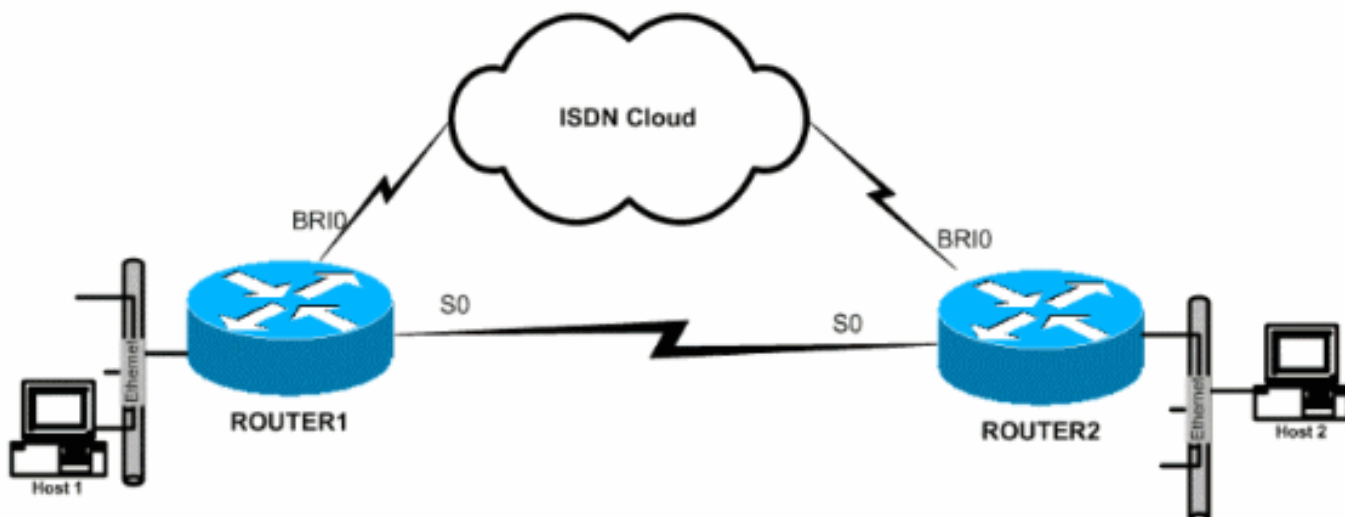
設定

本節提供用於設定本文件中所述功能的資訊。

注意：要查詢有關本文檔中使用的命令的其他資訊，請使用[命令查詢工具](#)([僅限註冊客戶](#))。

網路圖表

本檔案會使用以下網路設定：



組態

本檔案會使用以下設定：

- [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. !

```

驗證

本節提供的資訊可用於確認您的組態是否正常運作。

[輸出直譯器工具](#)(僅供註冊客戶使用)支援某些show命令，此工具可讓您檢視show命令輸出的分析。

- **show isdn status** — 顯示ISDN介面的第1層(L1)、第2層(L2)和第3層(L3)狀態。
- **show dialer** — 顯示撥號器的狀態和ISDN通道的單獨狀態。
- **show bridge** — 顯示網橋轉發資料庫中的條目類。
- **show interface** — 顯示各種介面的狀態，例如串列介面和BRI介面。
- **show spanning-tree** — 顯示路由器已知的生成樹拓撲。

[Serial0啟動時ROUTER1上的show命令](#)

```

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
```

[Serial0關閉時ROUTER1上的show命令](#)

```
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
```

[疑難排解](#)

本節提供的資訊可用於對組態進行疑難排解。

[疑難排解資源](#)

根據需要使用這些資源：

- [ISDN技術支援](#)
- [串列線路故障排除](#)
- [HDLC背對背連線](#)

[疑難排解指令](#)

[輸出直譯器工具](#)(僅供註冊客戶使用)支援某些show命令，此工具可讓您檢視show命令輸出的分析。

注意：發出debug指令之前，請參閱[有關Debug指令的重要資訊](#)。

- **debug dialer** — 提供有關撥號器介面事件的資訊。
- **debug isdn event** — 顯示與ISDN介面的使用者端發生的ISDN活動相關的調試消息。
- **debug isdn q931** — 提供有關本地路由器（使用者端）與網路之間的ISDN網路連線(L3)的呼叫建立和拆除的資訊。
- **debug isdn q921** — 顯示與資料鏈路層(L2)訪問過程相關的調試消息，該過程在路由器的ISDN介面的D通道(LAPD)上發生。
- **debug ppp negotiation** — 顯示與PPP選項和網路控制協定(NCP)引數協商相關的調試消息。
- **debug ppp authentication** — 顯示與CHAP和密碼身份驗證協定(PAP)資料包交換相關的調試消息。

[serial0關閉且ISDN接聽時ROUTER1上的調試輸出](#)

```
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
```

當Serial0再次返回且ISDN丟棄呼叫時，ROUTER1上的調試輸出

```
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#
```

[相關資訊](#)

- [跨ISDN橋接](#)
- [含備份介面的BRI ISDN備份](#)
- [使用撥號器監視配置BRI多鏈路ISDN備份](#)
- [使用撥號器監視配置BRI ISDN備份](#)
- [使用浮動靜態路由配置ISDN備份](#)
- [使用BRI和備份介面命令進行DDR備份](#)
- [使用撥號程式配置檔案配置BRI備份介面](#)
- [使用BRI和Dialer Watch配置DDR備份](#)
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