# Bridging di backup su ISDN

## Sommario

## Introduzione

Questo documento spiega e fornisce un esempio di come configurare il backup bridging con ISDN. Questa configurazione utilizza il metodo dell'interfaccia di backup per riconoscere che il collegamento primario è inattivo. Per ulteriori informazioni sul backup, vedere [Configurazione e risoluzione dei problemi di backup DDR](#).

Negli ambienti con bridging WAN, l'unica soluzione di backup DDR (dial-on-demand routing) disponibile è l'utilizzo di ISDN, in quanto il bridging su asincrono non è supportato.

Tenere presente che il bridging di una connessione ISDN tende a mantenere attiva la connessione per periodi molto lunghi, se non in modo permanente. Se la società telefonica (Telco) addebita i costi della connessione ISDN in base al tempo di connessione e il collegamento seriale rilevato rimane inattivo per un periodo di tempo molto lungo, il costo dell'operazione potrebbe essere molto elevato.

**Nota:** questa configurazione è valida per un sito e un canale B. Per più di un canale B, è necessario utilizzare i profili dialer. Consultare il documento sulla [configurazione dei profili dialer da collegare mediante](#) configurazione [ISDN](#).

Per informazioni sul bridging della configurazione in un ambiente non di backup, vedere [Bridging](#)

[su ISDN](#).

# Prerequisiti

## Requisiti

Prima di provare la configurazione, verificare che siano soddisfatti i seguenti requisiti:

- Possiede una conoscenza base di ISDN.

## Componenti usati

Le informazioni fornite in questo documento si basano sulle seguenti versioni software e hardware:

- Cisco serie 2500 router con un'interfaccia seriale WAN e un'interfaccia BRI ciascuna.
- Software Cisco IOS® versione 12.2(7b).

**Nota:** questa configurazione può essere utilizzata con qualsiasi router dotato di collegamento WAN (seriale) e porta BRI.

Le informazioni discusse in questo documento fanno riferimento a dispositivi usati in uno specifico ambiente di emulazione. Su tutti i dispositivi menzionati nel documento la configurazione è stata ripristinata ai valori predefiniti. Se la rete è operativa, valutare attentamente eventuali conseguenze derivanti dall'uso dei comandi.

## Prodotti correlati

Questa configurazione può essere utilizzata con due router qualsiasi con software Cisco IOS e dotati ciascuno di almeno un'interfaccia seriale WAN e un'interfaccia BRI.

## Convenzioni

Per ulteriori informazioni sulle convenzioni usate, consultare il documento [Cisco sulle convenzioni nei suggerimenti tecnici](#).

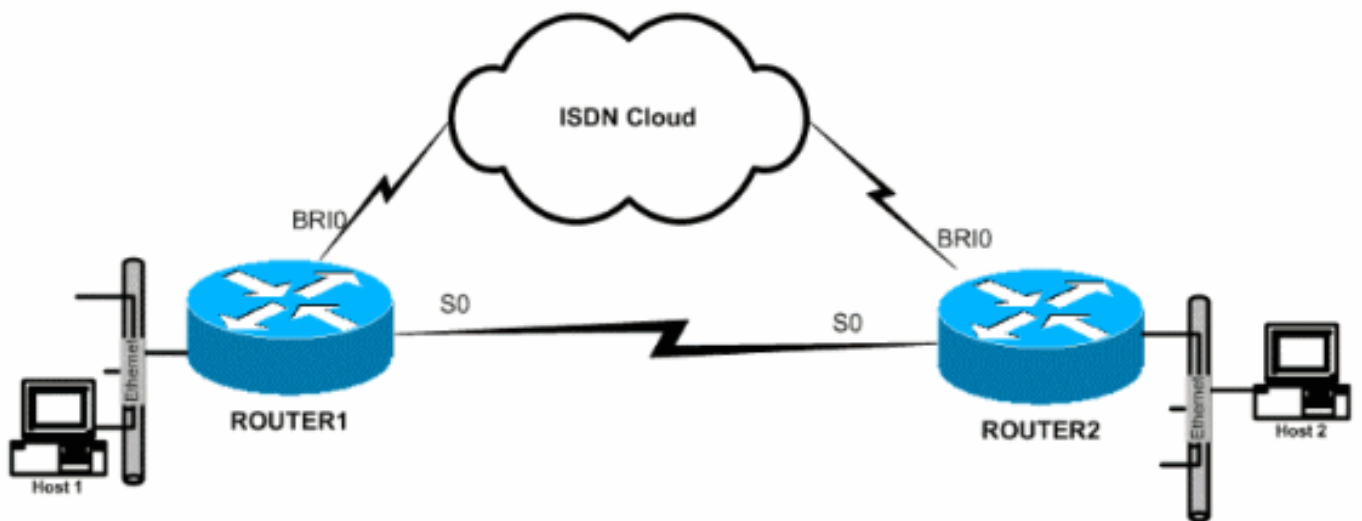# Configurazione

In questa sezione vengono presentate le informazioni necessarie per configurare le funzionalità descritte più avanti nel documento.

**Nota:** per ulteriori informazioni sui comandi menzionati in questo documento, usare lo [strumento di ricerca dei comandi](#) (solo utenti [registrati](#)).

## Esempio di rete

Nel documento viene usata questa impostazione di rete:

## Configurazioni

Nel documento vengono usate queste configurazioni:

- 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. !
```

# Verifica

Le informazioni contenute in questa sezione permettono di verificare che la configurazione funzioni correttamente.

Alcuni comandi **show sono supportati dallo** [strumento Output Interpreter (solo utenti registrati); lo strumento permette di visualizzare un'analisi dell'output del comando](#) **show.**

- **show isdn status**: visualizza lo stato di layer 1 (L1), layer 2 (L2) e layer 3 (L3) delle interfacce ISDN.
- **show dialer**: visualizza lo stato della connessione e lo stato dei singoli canali ISDN.
- **show bridge**: visualizza le classi di voci nel database di inoltro bridge.
- **show interface**: visualizza lo stato delle diverse interfacce, ad esempio le interfacce seriale e BRI.
- **show spanning-tree**: visualizza la topologia dello spanning tree nota al router.

## show Commands su ROUTER1 quando Serial0 è attivo

```
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
```

## show Commands su ROUTER1 quando Serial0 è inattivo

```
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

# Risoluzione dei problemi

Le informazioni contenute in questa sezione permettono di risolvere i problemi relativi alla configurazione.

## Risorse per la risoluzione dei problemi

Utilizzare le seguenti risorse come richiesto:

- Supporto tecnologia ISDN
- Risoluzione dei problemi relativi alle linee seriali
- Connessioni back-to-back HDLC

# Comandi per la risoluzione dei problemi

Alcuni comandi **show sono supportati dallo** strumento Output Interpreter (solo utenti registrati); lo strumento permette di visualizzare un'analisi dell'output del comando **show.**

**Nota:** prima di usare i comandi di **debug**, consultare le informazioni importanti sui comandi di debug.

- **debug dialer**: fornisce informazioni sugli eventi dell'interfaccia dialer.
- **debug isdn event**: visualizza i messaggi di debug relativi all'attività ISDN che si verifica sul lato utente dell'interfaccia ISDN.
- **debug isdn q931**: fornisce informazioni sulla configurazione delle chiamate e sulla disinstallazione delle connessioni di rete ISDN (L3) tra il router locale (lato utente) e la rete.
- **debug isdn q921**: visualizza i messaggi di debug relativi alle procedure di accesso a data link layer (L2) che hanno luogo sul router sul canale D (LAPD) dell'interfaccia ISDN.
- **debug ppp negotiation**: visualizza i messaggi di debug relativi alla negoziazione delle opzioni PPP e dei parametri NCP (Network Control Protocol).
- **debug ppp authentication**: visualizza i messaggi di debug correlati allo scambio dei pacchetti CHAP e PAP (Password Authentication Protocol).

# output di debug sul ROUTER1 quando Serial0 si spegne e ISDN riprende

```
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
```

## output di debug sul ROUTER1 quando Serial0 ritorna e ISDN rifiuta la chiamata

```
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#

# Informazioni correlate

- [Bridging su ISDN](#)
- [BRI ISDN Backup con interfaccia di backup](#)
- [Configurazione del backup ISDN multilink BRI con Dialer Watch](#)
- [Configurazione del backup ISDN BRI con Dialer Watch](#)
- [Configurazione del backup ISDN con route statiche mobili](#)
- [Backup DDR mediante BRI e il comando dell'interfaccia di backup](#)
- [Configurazione dell'interfaccia di backup BRI con i profili dialer](#)
- [Configurazione del backup DDR mediante BRI e Dialer Watch](#)
- [Configurazione del backup ISDN per i collegamenti WAN con route statiche mobili](#)
- [Configurazione del backup Frame Relay](#)
- [Configurazione di Dial Backup per linee seriali](#)
- [Comandi di Cisco IOS Dial Services](#)
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- [Documentazione e supporto tecnico – Cisco Systems](#)