

# Configurazione della ridondanza IPSec su ISDN con Dialer Watch

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## [Introduzione](#)

Questo documento offre una configurazione di esempio per crittografare il traffico dalla rete dietro il router 1 alla rete dietro il router 2 (nell'esempio, gli 0 loopback sono usati come reti). Se il collegamento primario (Ethernet) tra il router 1 e il router 2 si interrompe, il traffico IP Security (IPSec) continua a passare attraverso il collegamento secondario (ISDN). Esistono diversi modi per conseguire tale obiettivo; è possibile utilizzare dialer watch, l'interfaccia di backup, il circuito a richiesta e l'interfaccia statica mobile. In questa configurazione di esempio viene illustrato il meccanismo di controllo dialer. Per ulteriori informazioni su altre funzionalità, vedere [Valutazione delle interfacce di backup, route statiche mobili e Dialer Watch per il backup DDR](#).

## [Prerequisiti](#)

### [Requisiti](#)

Nessun requisito specifico previsto per questo documento.

### [Componenti usati](#)

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

- Cisco 2621 e 3640 Router

- Software Cisco IOS® versione 12.3(3)

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.

## Convenzioni

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

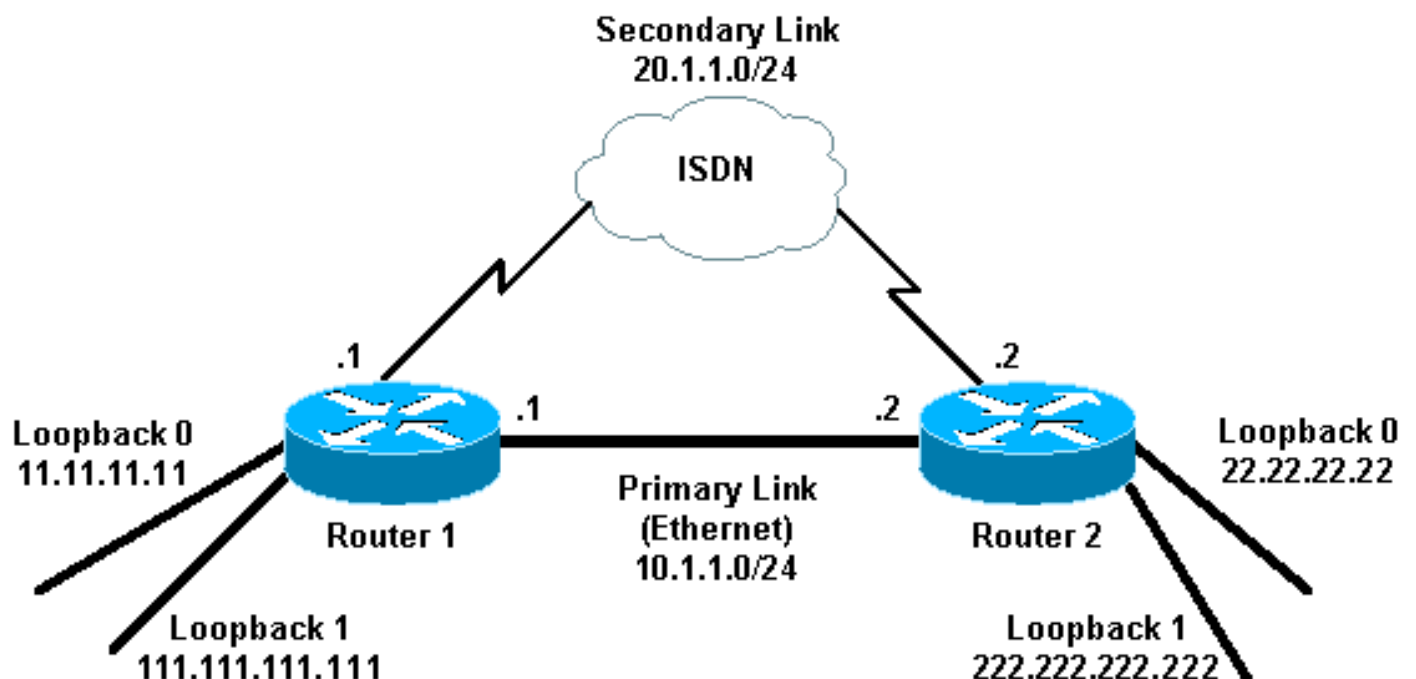
## Configurazione

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

Questo documento utilizza l'impostazione di rete mostrata nel diagramma qui:



## Configurazioni

Questo documento utilizza le configurazioni mostrate di seguito:

- [Router 1 \(2621\)](#)
- [Router 2 \(3640\)](#)

|                 |
|-----------------|
| Router 1 (2621) |
|-----------------|

```
r1#show running-config
Building configuration...

Current configuration : 2244 bytes
!
version 12.3
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname r1
!
boot-start-marker
boot-end-marker
!
!
username r2 password 0 cisco
!--- This is the username for remote router (Router 2)
and shared secret. Shared secret (used for
Challenge Handshake Authentication Protocol [CHAP])
must be the same on both sides.
no aaa new-model
ip subnet-zero
ip tcp synwait-time 5
! ! no ip domain lookup
! ip audit notify log ip audit po max-events 100
ip ssh break-string
no ftp-server write-enable
! ! !
crypto isakmp policy 10
  hash md5
  authentication pre-share
crypto isakmp key cisco address 222.222.222.222
!
!
  crypto ipsec transform-set abc esp-des esp-md5-hmac
!
crypto map cisco local-address Loopback1
crypto map cisco 10 ipsec-isakmp
  set peer 222.222.222.222
!--- Peer address, Loopback 1 of Router 2 set transform-set abc
match address 101
!--- Networks to encrypt (Loopback 0 on both ends) !
isdn switch-type basic-ts013
! ! ! ! ! ! ! ! ! no voice hpi capture buffer
no voice hpi capture destination
! ! ! ! interface Loopback0
!--- Network to encrypt ip address 11.11.11.11 255.255.255.0 !
interface Loopback1
!--- Used for peer address for IPSec ip address 111.111.111.111 255.255.255.0 !
interface FastEthernet0/0
!--- Primary link ip address 10.1.1.1 255.255.255.0
no ip route-cache
!--- Enable process switching
no ip mroute-cache
duplex auto speed auto
crypto map cisco
!--- Apply crypto map on primary interface !
interface BRI0/0
no ip address encapsulation ppp
no ip route-cache
no ip mroute-cache
dialer pool-member 1
isdn switch-type basic-ts013
no cdp enable
! interface Dialer1
!--- Backup link ip address 20.1.1.1 255.255.255.0
encapsulation ppp
no ip route-cache
!--- Enable process switching ip ospf cost 9999
!--- Increase the cost so that when primary comes up again,
!--- Open Shortest Path First (OSPF) routes are
!--- preferred using the primary link (due to better cost).
no ip mroute-cache
dialer idle-timeout 180
dialer pool 1
```

```

dialer string 94134028
dialer watch-group 1
!--- Enable dialer watch on this backup interface. !---
Watch the route specified with the dialer watch-list 1
command.

dialer-group 1
!--- Apply interesting traffic defined in dialer list 1.
no peer neighbor-route ppp authentication chap crypto
map cisco
!--- Apply crypto map on backup interface. ! router ospf
1
!--- OSPF advertising Loopback 0, Loopback 1, !---
primary, and secondary links. log-adjacency-changes
network 10.1.1.0 0.0.0.255 area 0
network 11.11.11.0 0.0.0.255 area 0
network 20.1.1.0 0.0.0.255 area 0
network 111.111.111.0 0.0.0.255 area 0
!
ip http server
no ip http secure-server
ip classless
!
!
access-list 101 permit ip host 11.11.11.11 host
22.22.22.22
!--- Access control list (ACL) 101 is the !--- IPsec
traffic used in match address. access-list 110 deny ip
any any
!--- ACL 110 is for the dialer list to mark !--- all IP
traffic uninteresting. The dialer watch will !---
trigger the ISDN backup when the route is lost. dialer
watch-list 1 ip 222.222.222.222 255.255.255.255
!--- This defines the route(s) to be watched. !--- This
exact route (including subnet mask) !--- must exist in
the routing table. !--- Use the dialer watch-group 1
command to apply this !--- list to the backup interface.

dialer watch-list 1 delay route-check initial 10
dialer-list 1 protocol ip list 110
!--- Interesting traffic is defined by ACL 110. !---
This is applied to Dialer1 using dialer group 1. !!!
dial-peer cor custom ! ! ! ! ! line con 0 exec-timeout 0
0 logging synchronous escape-character 27 line aux 0
line vty 0 4 login ! end

```

## Router 2 (3640)

```

r2#show running-config
Building configuration...

Current configuration : 2311 bytes
!
version 12.3
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname r2
!
boot-start-marker
boot-end-marker
!

```

```

username r1 password 0 cisco
!--- This is the username for remote router (Router 1)
!--- and shared secret. Shared secret (used for CHAP) !-
-- must be the same on both sides. no aaa new-model ip
subnet-zero ip tcp synwait-time 5 ! ! no ip domain
lookup ! ip audit notify log ip audit po max-events 100
ip ssh break-string no ftp-server write-enable ! ! !
crypto isakmp policy 10
  hash md5
  authentication pre-share
crypto isakmp key cisco address 111.111.111.111
!
!
  crypto ipsec transform-set abc esp-des esp-md5-hmac
!
!
crypto map cisco local-address Loopback1
crypto map cisco 10 ipsec-isakmp
  set peer 111.111.111.111
!--- Peer address, Loopback 1 of Router 1 set
transform-set abc
  match address 101
!--- Networks to encrypt (Loopback 0 on both ends) !
isdn switch-type basic-ts013 ! ! ! ! ! ! ! ! ! no voice
hpi capture buffer no voice hpi capture destination ! !
! ! ! ! interface Loopback0 ip address 22.22.22.22
255.255.255.0 !--- Network to encrypt ! interface
Loopback1 ip address 222.222.222.222 255.255.255.0 !---
Used for peer address for IPSec. ! interface BRI0/0 no
ip address encapsulation ppp no ip route-cache no ip
mroute-cache dialer pool-member 1 isdn switch-type
basic-ts013 ! interface Ethernet0/0 !--- Primary link ip
address 10.1.1.2 255.255.255.0 no ip route-cache
!--- Enable process switching. no ip mroute-cache half-
duplex crypto map cisco
!--- Apply crypto map on primary interface. ! interface
Dialer1 ip address 20.1.1.2 255.255.255.0 encapsulation
ppp no ip route-cache ip ospf cost 9999
no ip mroute-cache
dialer pool 1
dialer idle-timeout 600
dialer remote-name r1
!--- Dialer for the BRI interface of the remote router
!--- without a dial string. dialer-group 1 !--- Apply
interesting traffic defined in dialer list 1. ppp
authentication chap crypto map cisco
!--- Apply crypto map on backup interface. ! router ospf
1
  log-adjacency-changes
  network 10.1.1.0 0.0.0.255 area 0
  network 20.1.1.0 0.0.0.255 area 0
  network 22.22.22.0 0.0.0.255 area 0
  network 222.222.222.0 0.0.0.255 area 0
!
no ip http server
no ip http secure-server
ip classless
!
!
access-list 101 permit ip host 22.22.22.22 host
11.11.11.11
access-list 110 deny ospf any any
!--- Mark OSPF as uninteresting. !--- This will not
allow OSPF hellos !--- to try to bring the link up.

```

```
access-list 110 permit ip any any
dialer-list 1 protocol ip list 110
!--- Interesting traffic is defined by ACL 110. !---
This is applied to Dialer1 using dialer group 1. ! line
con 0 exec-timeout 0 0 logging synchronous escape-
character 27 line aux 0 line vty 0 4 login ! end
```

## Verifica

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

## Output di esempio del comando

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

- Tabella di routing del router 1 (2621) - collegamento principale attivo

```
r1#show ip route
```

```
Codes: C - connected, S - static, 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
       I - IS-IS, su - IS-IS summary, 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
```

```
    222.222.222.0/32 is subnetted, 1 subnets
O       222.222.222.222 [110/2] via 10.1.1.2, 00:00:25, FastEthernet0/0
    20.0.0.0/24 is subnetted, 1 subnets
C       20.1.1.0 is directly connected, Dialer1
    22.0.0.0/32 is subnetted, 1 subnets
O       22.22.22.22 [110/2] via 10.1.1.2, 00:00:25, FastEthernet0/0
    111.0.0.0/24 is subnetted, 1 subnets
C       111.111.111.0 is directly connected, Loopback1
    10.0.0.0/24 is subnetted, 1 subnets
C       10.1.1.0 is directly connected, FastEthernet0/0
    11.0.0.0/24 is subnetted, 1 subnets
C       11.11.11.0 is directly connected, Loopback0
```

- Tabella di routing del router 2 (3640) - collegamento principale attivo

```
r2#show ip route
```

```
Codes: C - connected, S - static, 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
       I - IS-IS, su - IS-IS summary, 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       222.222.222.0/24 is directly connected, Loopback1
    20.0.0.0/24 is subnetted, 1 subnets
```

```

C      20.1.1.0 is directly connected, Dialer1
      22.0.0.0/24 is subnetted, 1 subnets
C      22.22.22.0 is directly connected, Loopback0
111.0.0.0/32 is subnetted, 1 subnets
O      111.111.111.111 [110/11] via 10.1.1.1, 00:06:22, Ethernet0/0
      10.0.0.0/24 is subnetted, 1 subnets
C      10.1.1.0 is directly connected, Ethernet0/0
11.0.0.0/32 is subnetted, 1 subnets
O      11.11.11.11 [110/11] via 10.1.1.1, 00:06:23, Ethernet0/0

```

- Router adiacente OSPF del router 1 (2621): collegamento primario attivo

```
r1#show ip ospf neighbor
```

| Neighbor ID     | Pri | State   | Dead Time | Address  | Interface       |
|-----------------|-----|---------|-----------|----------|-----------------|
| 222.222.222.222 | 1   | FULL/DR | 00:00:33  | 10.1.1.2 | FastEthernet0/0 |

- Router adiacente OSPF del router 2 (3640): collegamento primario attivo

```
r2#show ip ospf neighbor
```

| Neighbor ID     | Pri | State    | Dead Time | Address  | Interface   |
|-----------------|-----|----------|-----------|----------|-------------|
| 111.111.111.111 | 1   | FULL/BDR | 00:00:31  | 10.1.1.1 | Ethernet0/0 |

- Tabella di routing del router 1 (2621) - collegamento principale non attivo

```
r1#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.

```

222.222.222.0/32 is subnetted, 1 subnets
O      222.222.222.222 [110/10000] via 20.1.1.2, 00:00:09, Dialer1
      20.0.0.0/24 is subnetted, 1 subnets
C      20.1.1.0 is directly connected, BRI0/0
      20.0.0.0/24 is subnetted, 1 subnets
C      20.1.1.0 is directly connected, Dialer1
22.0.0.0/32 is subnetted, 1 subnets
O      22.22.22.22 [110/10000] via 20.1.1.2, 00:00:09, Dialer1
      111.0.0.0/24 is subnetted, 1 subnets
C      111.111.111.0 is directly connected, Loopback1
      10.0.0.0/24 is subnetted, 1 subnets
O      10.1.1.0 [110/10009] via 20.1.1.2, 00:00:09, Dialer1
      11.0.0.0/24 is subnetted, 1 subnets
C      11.11.11.0 is directly connected, Loopback0

```

- Tabella di routing del router 2 (3640) - collegamento principale non disponibile

```
r2#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    222.222.222.0/24 is directly connected, Loopback1
    20.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C    20.1.1.0/24 is directly connected, Dialer1
C    20.1.1.1/32 is directly connected, Dialer1
    22.0.0.0/24 is subnetted, 1 subnets
C    22.22.22.0 is directly connected, Loopback0
111.0.0.0/32 is subnetted, 1 subnets
O    111.111.111.111 [110/10000] via 20.1.1.1, 00:00:07, Dialer1
    10.0.0.0/24 is subnetted, 1 subnets
C    10.1.1.0 is directly connected, Ethernet0/0
11.0.0.0/32 is subnetted, 1 subnets
O    11.11.11.11 [110/10000] via 20.1.1.1, 00:00:08, Dialer1

```

- Router adiacente OSPF del router 1 (2621): collegamento primario non attivo

```
r1#show ip ospf neighbor
```

| Neighbor ID     | Pri | State   | Dead Time | Address  | Interface      |
|-----------------|-----|---------|-----------|----------|----------------|
| 222.222.222.222 | 0   | FULL/ - | 00:00:32  | 20.1.1.2 | <b>Dialer1</b> |

- Router adiacente OSPF del router 2 (3640): collegamento primario non attivo

```
r2#show ip ospf neighbor
```

| Neighbor ID     | Pri | State   | Dead Time | Address  | Interface      |
|-----------------|-----|---------|-----------|----------|----------------|
| 111.111.111.111 | 0   | FULL/ - | 00:00:31  | 20.1.1.1 | <b>Dialer1</b> |

Il comando **debug dialer** e diversi output del comando **show** visualizzati qui mostrano che il collegamento primario ha avuto esito negativo e il dialer watch riconosce la route persa. Il router avvia quindi il collegamento di backup e l'OSPF converge attraverso il collegamento secondario. Ogni volta che scade il timeout di inattività, il router controlla se il collegamento primario è inattivo. Se il collegamento primario risulta attivo, dialer watch disconnette il collegamento di backup dopo la scadenza del timer di disattivazione e interrompe la chiamata e OSPF converge tramite il collegamento primario come di consueto.

Di seguito vengono riportati gli output dei comandi **debug** e **show** del router 1 (2621) quando il collegamento primario diventa inattivo e viene riattivato.

```
r1#show debug
```

```
Dial on demand:
```

```
Dial on demand events debugging is on
```

```

r1#
03:00:21: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0,
changed state to down
!--- Primary link was brought down manually when you disable the switch ports. 03:00:21: %OSPF-
5-ADJCHG: Process 1, Nbr 222.222.222.222 on FastEthernet0/0
from FULL to DOWN, Neighbor Down: Interface down or detached
!--- Primary link goes down. !--- OSPF loses neighbor adjacency. r1# !--- Dialer watch kicks in.
03:00:21: DDR: Dialer Watch: watch-group = 1
03:00:21: DDR: network 222.222.222.222/255.255.255.255 DOWN,
03:00:21: DDR: primary DOWN
03:00:21: DDR: Dialer Watch: Dial Reason: Primary of group 1 DOWN
03:00:21: DDR: Dialer Watch: watch-group = 1,
03:00:21: BR0/0 DDR: rotor dialout [best]
least recent failure is also most recent failure
03:00:21: BR0/0 DDR: rotor dialout [best] also has most recent failure
03:00:21: BR0/0 DDR: rotor dialout [best]
03:00:21: DDR: dialing secondary by dialer string 94134028 on Di1
03:00:21: BR0/0 DDR: Attempting to dial 94134028
03:00:21: DDR: Dialer Watch: watch-group = 1
r1#

```



```

03:00:21: DDR: network 222.222.222.222/255.255.255.255 DOWN,
03:00:21: DDR: primary DOWN
03:00:21: DDR: Dialer Watch: Dial Reason: Secondary of group 1 AVAILABLE
03:00:21: DDR: Dialer Watch: watch-group = 1,
03:00:21: DDR: Dialer Watch: watch-group = 1
03:00:21: DDR: network 222.222.222.222/255.255.255.255 DOWN,
03:00:21: DDR: primary DOWN
03:00:21: DDR: Dialer Watch: Dial Reason: Secondary of group 1 AVAILABLE
03:00:21: DDR: Dialer Watch: watch-group = 1,
03:00:21: %ISDN-6-LAYER2UP: Layer 2 for Interface BR0/0, TEI 82 changed to up
03:00:94489280514: %LINK-3-UPDOWN: Interface BRI0/0:1, changed state to up
03:00:94489280516: BR0/0:1 DDR: Dialer Watch: resetting call in progress
03:00:94489280512: BR0/0:1: interface must be fifo queue, force fifo
03:00:94489280512: %DIALER-6-BIND: Interface BR0/0:1 bound to profile Di1
r1#
03:00:22: BR0/0:1 DDR: Remote name for r2
03:00:22: BR0/0:1 DDR: dialer protocol up
03:00:23: %LINEPROTO-5-UPDOWN: Line protocol on Interface BRI0/0:1,
changed state to up
r1#
03:00:28: %ISDN-6-CONNECT: Interface BRI0/0:1 is now connected to 94134028 r2
!--- Backup link is now connected to Router 2. r1# 03:00:31: %OSPF-5-ADJCHG: Process 1, Nbr
222.222.222.222 on Dialer1
from LOADING to FULL, Loading Done
!--- OSPF converges over the backup link. r1# r1#show dialer

```

BRI0/0 - 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.

```

BRI0/0:1 - dialer type = ISDN

```

Idle timer (180 secs), Fast idle timer (20 secs)
Wait for carrier (30 secs), Re-enable (15 secs)
Dialer state is data link layer up

```

**Dial reason: Dialing on watched route loss**

**!--- Dial reason is the lost route. Interface bound to profile Di1 Time until disconnect 154 secs**

**!--- Idle timeout is ticking. Current call connected 00:00:25 Connected to 94134028 (r2)**

```

BRI0/0:2 - 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 Di1 - dialer type = DIALER PROFILE Idle
timer (180 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 94134028 45 24 00:00:27 successful Default r1#show isdn active

```

-----  
ISDN ACTIVE CALLS  
-----

| Call Type | Calling Number | Called Number | Remote Name | Seconds Used | Seconds Left | Seconds Idle | Charges Units/Currency |
|-----------|----------------|---------------|-------------|--------------|--------------|--------------|------------------------|
| Out       | ---N/A---      | 94134028      | r2          | 37           | 142          | 37           | 0                      |

r1#show dialer

BRI0/0 - 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.

```

BRI0/0:1 - dialer type = ISDN

```

Idle timer (180 secs), Fast idle timer (20 secs)
Wait for carrier (30 secs), Re-enable (15 secs)

```

```

Dialer state is data link layer up
Dial reason: Dialing on watched route loss
Interface bound to profile Di1
Time until disconnect 47 secs
!--- Idle timeout is ticking. Current call connected 00:02:12 Connected to 94134028 (r2)
BRI0/0:2 - 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 Di1 - dialer type = DIALER PROFILE Idle
timer (180 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 94134028 45 24 00:02:14 successful Default r1#show dialer

BRI0/0 - 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.

BRI0/0:1 - dialer type = ISDN
Idle timer (180 secs), Fast idle timer (20 secs)
Wait for carrier (30 secs), Re-enable (15 secs)
Dialer state is data link layer up
Dial reason: Dialing on watched route loss
Interface bound to profile Di1
Time until disconnect 0 secs
!--- Idle timeout is ticking. Current call connected 00:02:59 Connected to 94134028 (r2)
BRI0/0:2 - 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 Di1 - dialer type = DIALER PROFILE Idle
timer (180 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 94134028 45 24 00:03:05 successful Default r1# 03:03:22: BR0/0:1 DDR: idle
timeout
!--- Idle timed out. !--- Dialer watch checks lost routes !--- again and reset the idle time
since primary is not up yet. 03:03:22: DDR: Dialer Watch: watch-group = 1 03:03:22: DDR: network
222.222.222.222/255.255.255.255 UP, 03:03:22: DDR: primary DOWN
!--- Primary link is still down. r1# r1#show dialer

BRI0/0 - 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.

BRI0/0:1 - dialer type = ISDN
Idle timer (180 secs), Fast idle timer (20 secs)
Wait for carrier (30 secs), Re-enable (15 secs)
Dialer state is data link layer up
Dial reason: Dialing on watched route loss
Interface bound to profile Di1
Time until disconnect 154 secs
!--- Idle timeout was reset by dialer watch. Current call connected 00:03:25 Connected to
94134028 (r2) BRI0/0:2 - 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 Di1 - dialer type = DIALER
PROFILE Idle timer (180 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 94134028 45 24 00:03:28 successful Default r1# 03:04:59:
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0,
changed state to up
!--- Primary link was brought up manually when the switch ports are enabled. r1# r1# 03:05:50:
%OSPF-5-ADJCHG: Process 1, Nbr 222.222.222.222 on FastEthernet0/0
from LOADING to FULL, Loading Done
r1#
r1#show ip ospf neigh

Neighbor ID      Pri   State   Dead Time   Address      Interface

```

```

222.222.222.222 0 FULL/ - 00:00:02 20.1.1.2 Dialer1
!--- OSPF over secondary link is still up because !--- the call is not terminated yet, waiting
for idle timeout. 222.222.222.222 1 FULL/DR 00:00:38 10.1.1.2 FastEthernet0/0 !--- OSPF is now
starts to converge over primary link. r1# r1#show ip route 222.222.222.222
!--- The watched route is now learned through the primary link. !--- Check the cost. Routing
entry for 222.222.222.222/32
  Known via "ospf 1", distance 110, metric 2, type intra area
  Last update from 10.1.1.2 on FastEthernet0/0, 00:00:16 ago
  Routing Descriptor Blocks:
    * 10.1.1.2, from 222.222.222.222, 00:00:16 ago, via FastEthernet0/0
      Route metric is 2, traffic share count is
r1#
03:06:22: BR0/0:1 DDR: idle timeout
!--- Idle timed out. !--- Dialer watch checks lost routes. Since primary is up, !--- it tears
down the call. 03:06:22: DDR: Dialer Watch: watch-group = 1 03:06:22: DDR: network
222.222.222.222/255.255.255.255 UP, 03:06:22: DDR: primary UP
03:06:22: BR0/0:1 DDR: disconnecting call
03:06:22: BR0/0:1 DDR: Dialer Watch: resetting call in progress
03:06:22: DDR: Dialer Watch: watch-group = 1
03:06:22: DDR: network 222.222.222.222/255.255.255.255 UP,
03:06:22: DDR: primary UP
03:06:22: %ISDN-6-DISCONNECT: Interface BRI0/0:1
disconnected from 94134028 r2,
  call lasted 360 seconds
03:06:96677768412: %LINK-3-UPDOWN: Interface BRI0/0:1, changed state to down
03:06:94489281195: BR0/0 DDR: has total 0 call(s), dial_out 0, dial_in 0
r1#
03:06:94489280544: %DIALER-6-UNBIND: Interface BR0/0:1
  unbound from profile Dil
03:06:23: %LINEPROTO-5-UPDOWN: Line protocol on Interface BRI0/0:1,
  changed state to down
r1#
03:06:37: %ISDN-6-LAYER2DOWN: Layer 2 for Interface BR0/0,
  TEI 82 changed to down
r1#
03:07:01: %OSPF-5-ADJCHG: Process 1, Nbr 222.222.222.222 on Dialer1
from FULL to DOWN, Neighbor Down: Dead timer expired
!--- OSPF neighbor is down because the secondary link is down. !--- Dead timer has expired. r1#
r1#show ip ospf neigh

```

```

Neighbor ID      Pri   State           Dead Time   Address        Interface
222.222.222.222  1    FULL/DR         00:00:38   10.1.1.2      FastEthernet0/0
!--- OSPF neighbor is through the primary link only. r1#u all
All possible debugging has been turned off
r1#

```

## Risoluzione dei problemi

Le informazioni contenute in questa sezione permettono di risolvere i problemi relativi alla configurazione. Per informazioni sulla risoluzione dei problemi generali con i livelli ISDN 1, 2 e 3, consultare il documento sull'[uso del comando show isdn status per la risoluzione dei problemi BRI](#).

## 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](#).

I comandi di **debug** possono essere eseguiti su entrambi i peer IPsec.

- **debug crypto isakmp**: visualizza gli errori durante la fase 1.
- **debug crypto ipsec**: visualizza gli errori durante la fase 2.
- **debug crypto engine**: visualizza le informazioni provenienti dal crypto engine.

I comandi **show** possono essere eseguiti su entrambi i peer IPsec.

- **show crypto isakmp sa**: visualizza tutte le associazioni di sicurezza (SA) IKE (Internet Key Exchange) correnti in un peer.
- **show crypto ipsec sa**: visualizza le impostazioni utilizzate dalle associazioni di protezione [IPsec] correnti.
- **show crypto engine connections active**: visualizza le connessioni correnti e le informazioni relative ai pacchetti crittografati e decrittografati.

I comandi **clear** possono essere utilizzati per cancellare le associazioni di protezione.

- **clear crypto isakmp**: cancella le associazioni di sicurezza della fase uno.
- **clear crypto sa**: cancella le associazioni di sicurezza della fase due.

## [Informazioni correlate](#)

- [Pagina di supporto per IPsec](#)
- [Configurazione e risoluzione dei problemi di backup DDR](#)
- [Valutazione delle interfacce di backup, percorsi statici mobili e Dialer Watch per il backup DDR](#)
- [Configurazione di Dial Backup con Dialer Watch](#)
- [Uso del comando show isdn status per la risoluzione dei problemi BRI](#)
- [Supporto tecnico – Cisco Systems](#)