

# Configuración de la Redundancia IPSec sobre ISDN mediante el monitoreo del marcador

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## [Introducción](#)

Este documento proporciona una configuración de ejemplo sobre cómo cifrar el tráfico de la red detrás del Router 1 a la red detrás del Router 2 (los Loopback 0 se utilizan como redes en este ejemplo). Si se desactiva el enlace principal (Ethernet) entre el router 1 y el router 2, el tráfico de seguridad IP (IPSec) continúa fluyendo a través del enlace secundario (ISDN). Hay varias maneras de lograr este objetivo; puede utilizar dialer watch, backup interface, demand circuit y flotante static. Este ejemplo de configuración demuestra el mecanismo de vigilancia de marcador. Si desea obtener más información sobre otras características, consulte [Evaluación de interfaces de copia de respaldo, rutas estáticas flotantes y vigilancia del marcador para la copia de respaldo de DDR](#).

## [Prerequisites](#)

## [Requirements](#)

No hay requisitos específicos para este documento.

## [Componentes Utilizados](#)

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

- Routers 2621 y 3640 de Cisco
- Cisco IOS® Software Release 12.3(3)

La información que se presenta en este documento se originó a partir de dispositivos dentro de un ambiente de laboratorio específico. All of the devices used in this document started with a cleared (default) configuration. Si su red está activa, asegúrese de comprender el impacto potencial de cualquier comando antes de utilizarlo.

## Convenciones

For more information on document conventions, refer to the [Cisco Technical Tips Conventions](#).

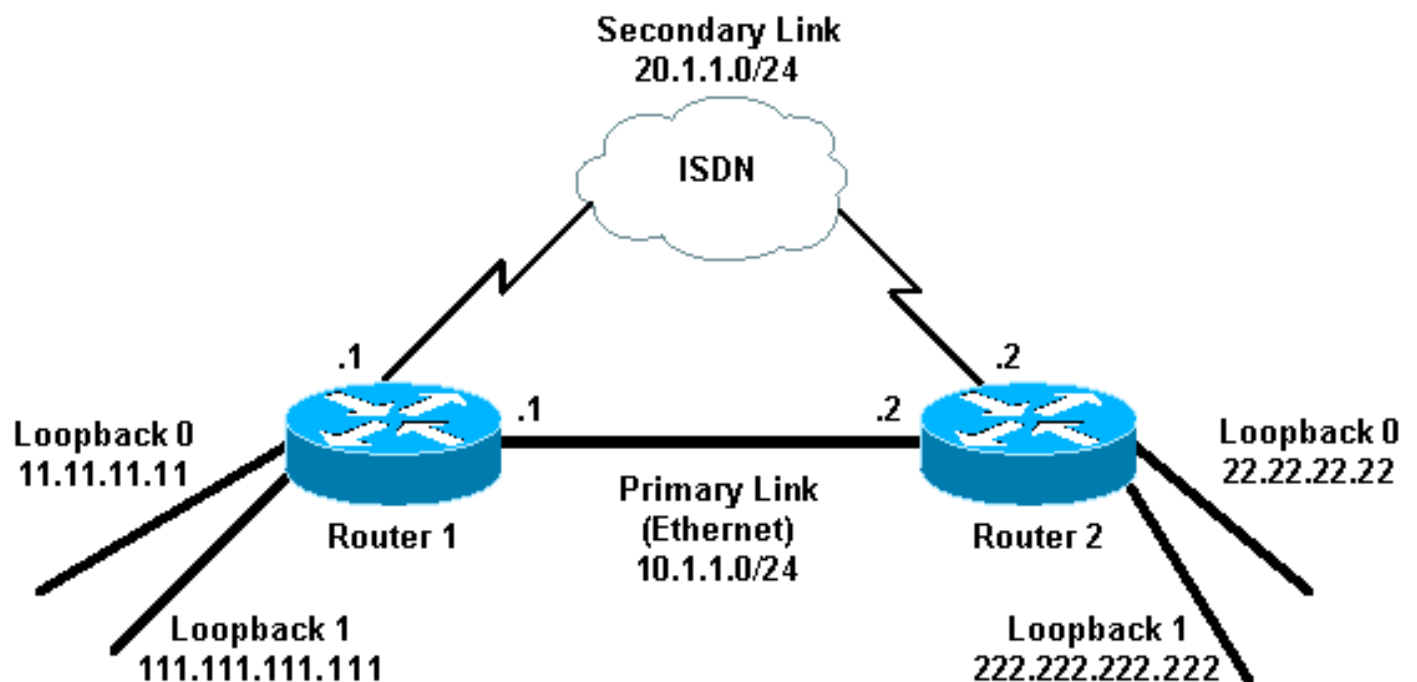
## Configurar

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

Este documento utiliza la configuración de red que se muestra en el diagrama aquí:



## Configuraciones

Este documento usa las configuraciones detalladas aquí:

- [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
```

## Verificación

Esta sección proporciona información que puede utilizar para confirmar si su configuración funciona correctamente.

## Salida de comando de muestra

La herramienta [Output Interpreter](#) (sólo para clientes registrados) permite utilizar algunos comandos “show” y ver un análisis del resultado de estos comandos.

- Tabla de enrutamiento del router 1 (2621): enlace principal activo

```
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
```

- Tabla de enrutamiento del router 2 (3640): enlace principal activo

```
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

```

- Vecino OSPF del router 1 (2621)—link primario activo

```

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

```

- Vecino OSPF del router 2 (3640)—link primario activo

```

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

```

- Tabla de de ruteo del router 1 (2621)—error en el link principal

```

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

```

- Tabla de de ruteo del router 2 (3640)—error en el link principal

```

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

```

- Vecino OSPF del router 1 (2621)—link primario fuera de servicio

```

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    Dialer1

```

- Vecino OSPF del router 2 (3640)—link primario fuera de servicio

```

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    Dialer1

```

Los resultados del comando **debug dialer** y varios resultados del comando **show** mostrados aquí muestran el link primario como fallado, y el monitoreo del marcador reconoce la ruta perdida. Luego, el router inicia el link de respaldo y OSPF converge a través del link secundario. Cada vez que el tiempo de espera ocioso finaliza, el router verifica si el link principal está inactivo. Si se encuentra que el link primario está activo, el monitoreo del marcador desconecta el link de respaldo después de que caduque el temporizador de inhabilitación y desgarrar la llamada, y OSPF converge a través del link primario como siempre.

Estos son los resultados de los comandos **debug** y **show** del Router Uno (2621), cuando el link primario se desactiva y se vuelve a activar.

```

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 Dil  
**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 Dil - 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 Dil  
**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 Dil - 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 Dil  
**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 Dil - 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#

```

## Troubleshoot

En esta sección encontrará información que puede utilizar para solucionar problemas de configuración. Para obtener más información sobre cómo resolver los problemas generales con las capas 1, 2 y 3 ISDN, consulte el [Uso del comando show isdn status para resolución de problemas de BRI](#).

## 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](#).

Estos comandos **debug** se pueden ejecutar en ambos pares IPsec.

- **debug crypto ipsec** — Muestra errores durante la fase 1.
- **debug crypto ipsec** — Muestra errores durante la fase 2.
- **debug crypto engine** — Muestra información del motor de criptografía.

Estos comandos **show** se pueden ejecutar en ambos pares IPsec.

- **show crypto isakmp sa**: muestra todas las asociaciones de seguridad (SA) de Internet Key Exchange (IKE) actuales en un par.
- **show crypto ipsec sa**—Muestra las configuraciones empleadas por las SA [IPsec] actuales.
- **show crypto engine connections active**—Muestra la información y conexiones actuales relacionadas con los paquetes encriptación y desencriptación.

Estos comandos **clear** se pueden utilizar para borrar las SA.

- **clear crypto isakmp**: borra las asociaciones de seguridad de la Fase uno.
- **clear crypto sa**: borra las asociaciones de seguridad de la Fase dos.

## [Información Relacionada](#)

- [Página de soporte de IPsec](#)
- [Configuración y resolución de problemas de respaldo de DDR](#)
- [Evaluación de interfaces de respaldo, rutas estáticas flotantes y monitoreo de marcado para el respaldo de DDR](#)
- [Configuración de respaldo de marcado utilizando vigilancia de programas "Dialer"](#)
- [Uso del comando show isdn status para la resolución de problemas de BRI](#)
- [Soporte Técnico - Cisco Systems](#)