

使用 Dialer Watch 配置 ISDN 上的 IPSec 冗余

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简介

本文档提供了如何加密从路由器1后的网络到路由器2后网络的流量的示例配置（本例中使用环回0作为网络）。如果路由器1和路由器2之间的链路（以太网）断开，IP安全(IPSec)流量将继续通过辅助链路(ISDN)。实现这一目标有多种方法；您可以使用拨号器监视、备份接口、需求电路和浮动静态。此示例配置演示了拨号器监视机制。有关其他功能的详细信息，请[参阅评估备份接口、浮动静态路由和DDR备份拨号器监视](#)。

先决条件

要求

本文档没有任何特定的要求。

使用的组件

本文档中的信息基于以下软件和硬件版本：

- Cisco 2621和3640个路由器
- Cisco IOS® 软件版本 12.3(3)

本文档中的信息都是基于特定实验室环境中的设备创建的。本文档中使用的所有设备最初均采用原始（默认）配置。如果您的网络是活的，在您使用指令前请切记您了解所有指令潜在影响。

规则

有关文件规则的更多信息请参见“Cisco技术提示规则”。

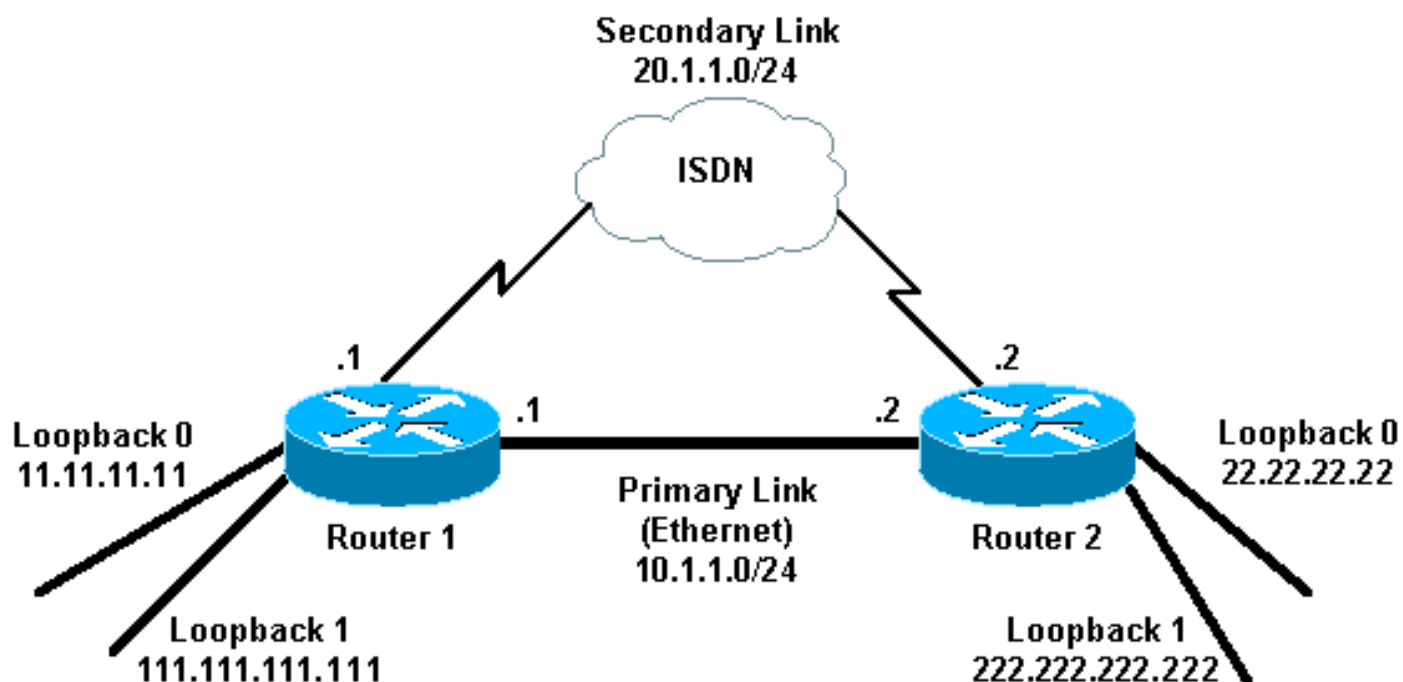
配置

本部分提供有关如何配置本文档所述功能的信息。

注：要查找有关本文档中使用的命令的其他信息，请使用[命令查找工具](#)([仅注册客户](#))。

网络图

本文使用此图中的网络设置：



配置

本文档使用此处所示的配置：

- [路由器1\(2621\)](#)
- [路由器2\(3640\)](#)

路由器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

```

路由器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

```

验证

本部分提供可用于确认配置是否正常运行的信息。

命令输出示例

[命令输出解释程序工具 \(仅限注册用户 \) 支持某些 show 命令](#)，使用此工具可以查看对 show 命令输出的分析。

- 路由器1的路由表(2621) — 主链路打开

```
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
```

- 路由器2(3640)的路由表 — 主链路打开

```
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
```

- 路由器1的OSPF邻居(2621) — 主链路打开

```
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 |

- 路由器2的OSPF邻居(3640) — 主链路打开

```
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 |

• 路由器1的路由表(2621) — 主链路关闭

```
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

• 路由器2的路由表(3640) — 主链路关闭

```
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**

• 路由器1的OSPF邻居(2621) — 主链路关闭

```
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 |

- 路由器2的OSPF邻居(3640) — 主链路关闭

```
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
```

此处显示的debug dialer和多个show命令输出显示主链路发生故障，而dialer watch则识别丢失的路由。然后，路由器启动备用链路，OSPF通过辅助链路收敛。每次空闲超时到期时，路由器都会检查主链路是否关闭。如果发现主链路为up状态，则在禁用计时器到期并断开呼叫后，Dialer Watch会断开备用链路，OSPF会像往常一样通过主链路收敛。

这些是主链路断开并再次启动时路由器1(2621)的debug和show命令输出。

```
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 Di1
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#

```

故障排除

本部分提供的信息可用于对配置进行故障排除。有关排除ISDN第1层、第2层和第3层一般问题的信息，请参阅[使用show isdn status命令进行BRI故障排除](#)。

故障排除命令

[命令输出解释程序工具（仅限注册用户）支持某些 show 命令](#)，使用此工具可以查看对 show 命令输出的分析。

注意：在发出debug命令之前，请参阅[有关debug命令的重要信息](#)。

这些debug命令可在两个IPSec对等体上运行。

- debug crypto isakmp -显示在阶段1期间的错误。
- debug crypto ipsec -显示在阶段2期间的错误。
- debug crypto engine - 显示来自加密引擎的信息。

这些show命令可在两个IPSec对等体上运行。

- show crypto isakmp sa -显示所有当前在对等端的互联网密钥交换(IKE)安全关联(SAs)。
- show crypto ipsec sa — 显示当前[IPSec] SA使用的设置。
- show crypto engine connections active — 显示当前连接和有关加密和解密数据包的信息。

这些clear命令可用于清除SA。

- clear crypto isakmp — 清除第1阶段安全关联。
- clear crypto sa — 清除阶段2安全关联。

相关信息

- [IPSec 支持页面](#)
- [DDR 备份的配置与故障排除](#)

- [用于 DDR 备份的备份接口、浮动静态路由与 Dialer Watch 的比较](#)
- [使用 Dialer Watch 配置拨号备份](#)
- [使用 show isdn status 命令用于 BRI 故障排除](#)
- [技术支持 - Cisco Systems](#)