

用浮动静态路由配置 ISDN 备份

目录

[简介](#)

[先决条件](#)

[要求](#)

[使用的组件](#)

[规则](#)

[配置](#)

[网络图](#)

[配置](#)

[验证](#)

[故障排除](#)

[故障排除命令](#)

[故障排除输出示例](#)

[相关信息](#)

简介

本文档为使用浮动静态路由实现 ISDN 备份提供了配置示例，并为这类配置提供基本的故障排除信息。

要获得关于最常见的ISDN备份的实施的实施的信息，以及它们之间的比较，请参见以下文件：[Backup Interface、浮动静态路由和拨号程序监视DDR备份。](#)

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。

- 运行 Cisco IOS® 软件版本 12.2(3) 和 12.2(5) 的两个 Cisco 2500 路由器

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。如果您是在真实网络上操作，请确保您在使用任何命令前已经了解其潜在影响。

规则

有关文档规则的详细信息，请参阅 [Cisco 技术提示规则](#)。

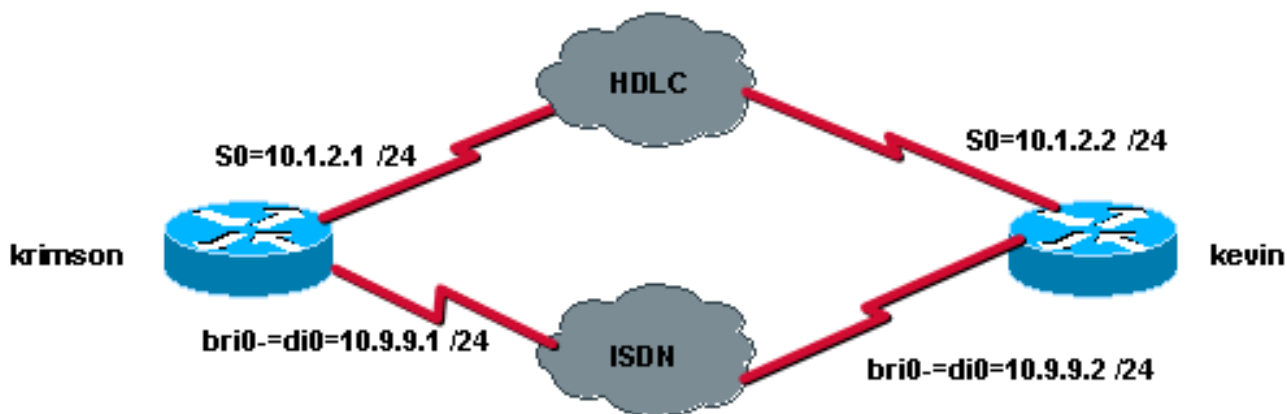
配置

本部分提供有关如何配置本文档所述功能的信息。

注意：要查找有关本文档中所使用命令的其他信息，请使用 [命令查询工具](#)（[仅限注册用户](#)）。

网络图

本文档使用下图所示的网络设置。



配置

本文档使用如下所示的配置。

- [krimson \(Cisco 2500 路由器\)](#)
- [kevin \(Cisco 2500 路由器\)](#)

krimson (Cisco 2500 路由器)

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

!
version 12.2
service timestamps debug datetime msec
service timestamps log datetime msec
!
hostname krimson
!
username kevin password 0 <password>
!
isdn switch-type basic-net3
!
!
interface Loopback0
ip address 10.7.7.1 255.255.255.0
!
interface Serial0
ip address 10.1.2.1 255.255.255.0
```

```
!  
interface BRI0  
no ip address  
encapsulation ppp  
no ip route-cache  
no ip mroute-cache  
load-interval 30  
dialer pool-member 1  
isdn switch-type basic-net3  
no fair-queue  
no cdp enable  
ppp authentication chap  
!  
interface Dialer0  
ip address 10.9.9.1 255.255.255.0  
encapsulation ppp  
no ip route-cache  
no ip mroute-cache  
dialer pool 1  
dialer remote-name kevin  
.  
.  
dialer string 8114  
dialer-group 1  
no cdp enable  
ppp authentication chap  
!  
ip classless  
ip route 10.8.8.0 255.255.255.0 10.1.2.2  
ip route 10.8.8.0 255.255.255.0 10.9.9.2 180  
no ip http server  
!  
dialer-list 1 protocol ip permit  
!  
!  
line con 0  
exec-timeout 0 0  
line aux 0  
line vty 0 4  
exec-timeout 0 0  
password <password> login  
!  
end
```

kevin (Cisco 2500 路由器)

```
kevin#show running-config  
Building configuration...  
.  
Current configuration : 1205 bytes  
!  
version 12.2  
service timestamps debug datetime msec  
service timestamps log datetime msec  
no service password-encryption  
!  
hostname kevin  
!  
username krimson password 0 <password>  
!  
isdn switch-type basic-net3  
!  
!
```

```
!  
interface Loopback0  
ip address 10.8.8.1 255.255.255.0  
!  
interface Serial0  
ip address 10.1.2.2 255.255.255.0  
clockrate 2000000  
!  
interface Serial1  
no ip address  
shutdown  
!  
interface BRI0  
no ip address  
encapsulation ppp  
dialer pool-member 1  
isdn switch-type basic-net3  
no cdp enable  
ppp authentication chap  
!  
interface Dialer0  
ip address 10.9.9.2 255.255.255.0  
encapsulation ppp  
dialer pool 1  
dialer remote-name krimson  
dialer string 8113  
dialer-group 1  
no cdp enable  
ppp authentication chap  
!  
!  
dialer-list 1 protocol ip permit  
!  
!  
line con 0  
exec-timeout 0 0  
line aux 0  
line vty 0 4  
exec-timeout 0 0  
password <password> login  
!  
end
```

验证

本部分所提供的信息可用于确认您的配置是否正常工作。

[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。](#)

- **show ip route** - 显示IP 路由表条目。
- **show interfaces** - 显示在路由器或接入服务器上配置的所有接口的统计信息。

故障排除

本部分提供的信息可用于对配置进行故障排除。

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](#)。

- **debug isdn q931** - 显示关于呼叫建立及拆线、本地路由器(用户端)和网络之间的ISDN网络连接(第三层)断开的信息。
- **debug isdn events** - 显示发生在 ISDN 接口用户端 (在路由器上) 的 ISDN 事件。这些可以显示的 ISDN 事件是 Q.931 事件 (ISDN 网络连接的呼叫建立和断开)。
- **debug dialer** - 显示拨号程序接口上数据包或事件的相关调试信息。
- **debug ppp negotiation** - 导致debug ppp命令显示PPP启动期间传输的PPP信息包，其中PPP选项需要协商。
- **debug ppp authentication** - 致使debug ppp命令显示认证协议消息，包括质询验证协议(CHAP)信息包交换和密码验证协议(PAP)交换。

故障排除输出示例

在此，我们可以通过在远端的串行接口上使用 **shutdown** 和 **no shutdown** 命令来测试备份功能。这会导致相关目标网络中主 IP 路由的消失。

首先让我们看看主接口和 IP 路由表的初始状态：

呼叫端：

```
krimson#show interface serial 0
Serial0 is up, line protocol is up
Hardware is HD64570
Internet address is 10.1.2.1/24
MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation HDLC, loopback not set
Keepalive set (10 sec)
Last input 00:00:07, output 00:00:07, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
Conversations 0/1/256 (active/max active/max total)
Reserved Conversations 0/0 (allocated/max allocated)
Available Bandwidth 1158 kilobits/sec
5 minute input rate 1000 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
92 packets input, 7599 bytes, 0 no buffer
Received 62 broadcasts, 0 runts, 0 giants, 0 throttles
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
99 packets output, 8991 bytes, 0 underruns
0 output errors, 0 collisions, 12 interface resets
0 output buffer failures, 0 output buffers swapped out
4 carrier transitions
DCD=up DSR=up DTR=up RTS=up CTS=up

krimson#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 10.48.74.1 to network 0.0.0.0

10.0.0.0/8 is variably subnetted, 5 subnets, 2 masks
C 10.1.2.0/24 is directly connected, Serial0
S 10.8.8.0/24 [1/0] via 10.1.2.2

!--- The IP route for the destination network points to the primary link. C 10.9.9.0/24 is
directly connected, Dialer0 C 10.7.7.0/24 is directly connected, Loopback0 C 10.48.74.0/23 is
directly connected, Ethernet0 S* 0.0.0.0/0 [254/0] via 10.48.74.1

被呼叫端：

kevin#show interface serial 0

Serial0 is up, line protocol is up
Hardware is HD64570
Internet address is 10.1.2.2/24
MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation HDLC, loopback not set
Keepalive set (10 sec)
Last input 00:00:00, output 00:00:08, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
Conversations 0/1/256 (active/max active/max total)
Reserved Conversations 0/0 (allocated/max allocated)
Available Bandwidth 1158 kilobits/sec
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
106 packets input, 9432 bytes, 0 no buffer
Received 71 broadcasts, 0 runts, 0 giants, 0 throttles
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
98 packets output, 8016 bytes, 0 underruns
0 output errors, 0 collisions, 4 interface resets
0 output buffer failures, 0 output buffers swapped out
1 carrier transitions
DCD=up DSR=up DTR=up RTS=up CTS=up

kevin#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 10.48.74.1 to network 0.0.0.0

10.0.0.0/8 is variably subnetted, 4 subnets, 2 masks
C 10.1.2.0/24 is directly connected, Serial0
C 10.9.9.0/24 is directly connected, Dialer0
C 10.8.8.0/24 is directly connected, Loopback0

```
C 10.48.74.0/23 is directly connected, Ethernet0
S* 0.0.0.0/0 [254/0] via 10.48.74.1
kevin#
```

现在，我们可以通过在远程串行接口上使用 **shutdown** 命令来模拟链路故障：

```
kevin#show interface serial 0
Serial0 is up, line protocol is up
Hardware is HD64570
Internet address is 10.1.2.2/24
MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation HDLC, loopback not set
Keepalive set (10 sec)
Last input 00:00:00, output 00:00:08, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
Conversations 0/1/256 (active/max active/max total)
Reserved Conversations 0/0 (allocated/max allocated)
Available Bandwidth 1158 kilobits/sec
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
106 packets input, 9432 bytes, 0 no buffer
Received 71 broadcasts, 0 runts, 0 giants, 0 throttles
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
98 packets output, 8016 bytes, 0 underruns
0 output errors, 0 collisions, 4 interface resets
0 output buffer failures, 0 output buffers swapped out
1 carrier transitions
DCD=up DSR=up DTR=up RTS=up CTS=up
```

```
kevin#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 10.48.74.1 to network 0.0.0.0
```

```
10.0.0.0/8 is variably subnetted, 4 subnets, 2 masks
C 10.1.2.0/24 is directly connected, Serial0
C 10.9.9.0/24 is directly connected, Dialer0
C 10.8.8.0/24 is directly connected, Loopback0
C 10.48.74.0/23 is directly connected, Ethernet0
S* 0.0.0.0/0 [254/0] via 10.48.74.1
kevin#
```

在此，我们可以看到主链路已经断开。

```
krimson#show interface serial 0
Serial0 is down, line protocol is down
Hardware is HD64570
Internet address is 10.1.2.1/24
MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation HDLC, loopback not set
```

```

Keepalive set (10 sec)
Last input 00:00:22, output 00:00:32, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
Conversations 0/1/256 (active/max active/max total)
Reserved Conversations 0/0 (allocated/max allocated)
Available Bandwidth 1158 kilobits/sec
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
108 packets input, 8526 bytes, 0 no buffer
Received 78 broadcasts, 0 runts, 0 giants, 0 throttles
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
114 packets output, 9895 bytes, 0 underruns
0 output errors, 0 collisions, 12 interface resets
0 output buffer failures, 0 output buffers swapped out
5 carrier transitions
DCD=down DSR=down DTR=up RTS=up CTS=down
krimson#

```

路由表详细信息此时显示路由表中已安装浮动静态路由：

```

krimson#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 10.48.74.1 to network 0.0.0.0

10.0.0.0/8 is variably subnetted, 4 subnets, 2 masks
S 10.8.8.0/24 [180/0] via 10.9.9.2
C 10.9.9.0/24 is directly connected, Dialer0
C 10.7.7.0/24 is directly connected, Loopback0
C 10.48.74.0/23 is directly connected, Ethernet0
S* 0.0.0.0/0 [254/0] via 10.48.74.1
krimson#

```

在被叫路由器上，我们可以通过在本地串行 0 接口上使用 **shutdown** 命令来模拟主链路故障：

```

kevin#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
kevin(config)#interface serial 0
kevin(config-if)#shutdown

*Mar 4 15:32:00.250: %LINK-5-CHANGED: Interface Serial0, changed state to
administratively down
*Mar 4 15:32:01.250: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Serial0, changed state to down
*Mar 4 15:32:03.742: %SYS-5-CONFIG_I: Configured from console by console

```

现在，我们可以看到主链路已经断开：

```

kevin#show interface serial 0
Serial0 is administratively down, line protocol is down
Hardware is HD64570

```



```
Internet address is 10.1.2.2/24
MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation HDLC, loopback not set
Keepalive set (10 sec)
Last input 00:01:28, output 00:01:18, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
Conversations 0/1/256 (active/max active/max total)
Reserved Conversations 0/0 (allocated/max allocated)
Available Bandwidth 1158 kilobits/sec
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
114 packets input, 9895 bytes, 0 no buffer
Received 79 broadcasts, 0 runts, 0 giants, 0 throttles
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
108 packets output, 8526 bytes, 0 underruns
0 output errors, 0 collisions, 4 interface resets
0 output buffer failures, 0 output buffers swapped out
1 carrier transitions
DCD=down DSR=down DTR=up RTS=up CTS=down
```

被定义为相关流量的 ping 流量会通过备份拨号程序 0 接口启动呼出呼叫。

```
krimson#ping 10.8.8.1
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 10.8.8.1, timeout is 2 seconds:
```

```
*Mar 4 15:27:39.618: BR0 DDR: rotor dialout [priority]
*Mar 4 15:27:39.622: BR0 DDR: Dialing cause ip (s=10.9.9.1, d=10.8.8.1)
*Mar 4 15:27:39.626: BR0 DDR: Attempting to dial 8114
*Mar 4 15:27:39.642: ISDN BR0: TX -> SETUP pd = 8 callref = 0x09
*Mar 4 15:27:39.646: Bearer Capability i = 0x8890
*Mar 4 15:27:39.654: Channel ID i = 0x83
*Mar 4 15:27:39.658: Called Party Number i = 0x80, '8114',
Plan:Unknown, Type:Unknown
*Mar 4 15:27:39.718: ISDN BR0: RX <- CALL_PROC pd = 8 callref = 0x89
*Mar 4 15:27:39.722: Channel ID i = 0x89
*Mar 4 15:27:39.974: ISDN BR0: RX <- CONNECT pd = 8 callref = 0x89
*Mar 4 15:27:39.990: %LINK-3-UPDOWN: Interface BRI0:1, changed state to up
*Mar 4 15:27:39.998: %DIALER-6-BIND: Interface BR0:1 bound to profile Di0
*Mar 4 15:27:40.010: BR0:1 PPP: Treating connection as a callout
*Mar 4 15:27:40.010: BR0:1 PPP: Phase is ESTABLISHING, Active Open [0 sess, 0 load]
*Mar 4 15:27:40.014: BR0:1 LCP: O .!!!CONFREQ [Closed] id 19 len 15
*Mar 4 15:27:40.018: BR0:1 LCP: AuthProto CHAP (0x0305C22305)
*Mar 4 15:27:40.022: BR0:1 LCP: MagicNumber 0x12D0A490 (0x050612D0A490)
*Mar 4 15:27:40.030: ISDN BR0: TX -> CONNECT_ACK pd = 8 callref = 0x09
*Mar 4 15:27:40.054: BR0:1 LCP: I CONFREQ [REQsent] id 9 len 15
*Mar 4 15:27:40.058: BR0:1 LCP: AuthProto CHAP (0x0305C22305)
*Mar 4 15:27:40.062: BR0:1 LCP: MagicNumber 0x12D6B638 (0x050612D6B638)
*Mar 4 15:27:40.066: BR0:1 LCP: O CONFACK [REQsent] id 9 len 15
*Mar 4 15:27:40.066: BR0:1 LCP: AuthProto CHAP (0x0305C22305)
*Mar 4 15:27:40.070: BR0:1 LCP: MagicNumber 0x12D6B638 (0x050612D6B638)
*Mar 4 15:27:40.074: BR0:1 LCP: I CONFACK [ACKsent] id 19 len 15
*Mar 4 15:27:40.078: BR0:1 LCP: AuthProto CHAP (0x0305C22305)
*Mar 4 15:27:40.082: BR0:1 LCP: MagicNumber 0x12D0A490 (0x050612D0A490)
*Mar 4 15:27:40.082: BR0:1 LCP: State is Open
*Mar 4 15:27:40.086: BR0:1 PPP: Phase is AUTHENTICATING, by both [0 sess, 0 load]
*Mar 4 !
Suc15:27:40.090: BR0:1 CHAP: O CHALLENGE id 7 len 28 from "krimson"
```

```

*Mar 4 15:27:40.106: BR0:1 CHAP: I CHALLENGE id 7 len 26 from "kevin"
*Mar 4 15:27:40.110: BR0:1 CHAP: O RESPONSE id 7 len 28 from "krimson"
*Mar 4 15:27:40.138: BR0:1 CHAP: I SUCCESS id 7 len 4
*Mar 4 15:27:40.150: BR0:1 CHAP: I RESPONSE id 7 len 26 from "kevin"
*Mar 4 15:27:40.158: BR0:1 CHAP: O SUCCESS id 7 len 4
*Mar 4 15:27:40.162: BR0:1 PPP: Phase is UP [0 sess, 0 load]
*Mar 4 15:27:40.166: BR0:1 IPCP: O CONFREQ [Not negotiated] id 2 len 10
*Mar 4 15:27:40.170: BR0:1 IPCP: Address 10.9.9.1 (0x03060A090901)
*Mar 4 15:27:40.186: BR0:1 IPCP: I CONFREQ [REQsent] id 2 len 10
*Mar 4 15:27:40.190: BR0:1 IPCP: Address 10.9.9.2 (0x03060A090902)
*Mar 4 15:27:40.190: BR0:1 IPCP: O CONFACK [REQsent] id 2 len 10
*Mar 4 15:27:40.194: BR0:1 IPCP: Address 10.9.9.2 (0x03060A090902)
*Mar 4 15:27:40.202: BR0:1 IPCP: I CONFACK [ACKsent] id 2 len 10
*Mar 4 15:27:40.206: BR0:1 IPCP: Address 10.9.9.1 (0x03060A090901)
*Mar 4 15:27:40.206: BR0:1 IPCP: State is Open
*Mar 4 15:27:40.214: BR0:1 DDR: dialer protocol up
*Mar 4 15:27:40.218: Di0 IPCP: Install route to 10.9.9.2
*Mar 4 15:27:41.162: %LINEPROTO-5-UPDOWN: Line protocol on Interface BRI0:1,
changed state to upcess rate is 80 percent (4/5), round-trip min/avg/max =
36/47/76 ms
krimson#

```

同时，在被呼叫端运行的 debug 会显示此同一呼叫的以下输出：

```

krimson#ping 10.8.8.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.8.8.1, timeout is 2 seconds:

*Mar 4 15:27:39.618: BR0 DDR: rotor dialout [priority]
*Mar 4 15:27:39.622: BR0 DDR: Dialing cause ip (s=10.9.9.1, d=10.8.8.1)
*Mar 4 15:27:39.626: BR0 DDR: Attempting to dial 8114
*Mar 4 15:27:39.642: ISDN BR0: TX -> SETUP pd = 8 callref = 0x09
*Mar 4 15:27:39.646: Bearer Capability i = 0x8890
*Mar 4 15:27:39.654: Channel ID i = 0x83
*Mar 4 15:27:39.658: Called Party Number i = 0x80, '8114',
Plan:Unknown, Type:Unknown
*Mar 4 15:27:39.718: ISDN BR0: RX <- CALL_PROC pd = 8 callref = 0x89
*Mar 4 15:27:39.722: Channel ID i = 0x89
*Mar 4 15:27:39.974: ISDN BR0: RX <- CONNECT pd = 8 callref = 0x89
*Mar 4 15:27:39.990: %LINK-3-UPDOWN: Interface BRI0:1, changed state to up
*Mar 4 15:27:39.998: %DIALER-6-BIND: Interface BR0:1 bound to profile Di0
*Mar 4 15:27:40.010: BR0:1 PPP: Treating connection as a callout
*Mar 4 15:27:40.010: BR0:1 PPP: Phase is ESTABLISHING, Active Open [0 sess, 0 load]
*Mar 4 15:27:40.014: BR0:1 LCP: O .!!!CONFREQ [Closed] id 19 len 15
*Mar 4 15:27:40.018: BR0:1 LCP: AuthProto CHAP (0x0305C22305)
*Mar 4 15:27:40.022: BR0:1 LCP: MagicNumber 0x12D0A490 (0x050612D0A490)
*Mar 4 15:27:40.030: ISDN BR0: TX -> CONNECT_ACK pd = 8 callref = 0x09
*Mar 4 15:27:40.054: BR0:1 LCP: I CONFREQ [REQsent] id 9 len 15
*Mar 4 15:27:40.058: BR0:1 LCP: AuthProto CHAP (0x0305C22305)
*Mar 4 15:27:40.062: BR0:1 LCP: MagicNumber 0x12D6B638 (0x050612D6B638)
*Mar 4 15:27:40.066: BR0:1 LCP: O CONFACK [REQsent] id 9 len 15
*Mar 4 15:27:40.066: BR0:1 LCP: AuthProto CHAP (0x0305C22305)
*Mar 4 15:27:40.070: BR0:1 LCP: MagicNumber 0x12D6B638 (0x050612D6B638)
*Mar 4 15:27:40.074: BR0:1 LCP: I CONFACK [ACKsent] id 19 len 15
*Mar 4 15:27:40.078: BR0:1 LCP: AuthProto CHAP (0x0305C22305)
*Mar 4 15:27:40.082: BR0:1 LCP: MagicNumber 0x12D0A490 (0x050612D0A490)
*Mar 4 15:27:40.082: BR0:1 LCP: State is Open
*Mar 4 15:27:40.086: BR0:1 PPP: Phase is AUTHENTICATING, by both [0 sess, 0 load]
*Mar 4 !
Suc15:27:40.090: BR0:1 CHAP: O CHALLENGE id 7 len 28 from "krimson"
*Mar 4 15:27:40.106: BR0:1 CHAP: I CHALLENGE id 7 len 26 from "kevin"
*Mar 4 15:27:40.110: BR0:1 CHAP: O RESPONSE id 7 len 28 from "krimson"

```

```

*Mar 4 15:27:40.138: BR0:1 CHAP: I SUCCESS id 7 len 4
*Mar 4 15:27:40.150: BR0:1 CHAP: I RESPONSE id 7 len 26 from "kevin"
*Mar 4 15:27:40.158: BR0:1 CHAP: O SUCCESS id 7 len 4
*Mar 4 15:27:40.162: BR0:1 PPP: Phase is UP [0 sess, 0 load]
*Mar 4 15:27:40.166: BR0:1 IPCP: O CONFREQ [Not negotiated] id 2 len 10
*Mar 4 15:27:40.170: BR0:1 IPCP: Address 10.9.9.1 (0x03060A090901)
*Mar 4 15:27:40.186: BR0:1 IPCP: I CONFREQ [REQsent] id 2 len 10
*Mar 4 15:27:40.190: BR0:1 IPCP: Address 10.9.9.2 (0x03060A090902)
*Mar 4 15:27:40.190: BR0:1 IPCP: O CONFACK [REQsent] id 2 len 10
*Mar 4 15:27:40.194: BR0:1 IPCP: Address 10.9.9.2 (0x03060A090902)
*Mar 4 15:27:40.202: BR0:1 IPCP: I CONFACK [ACKsent] id 2 len 10
*Mar 4 15:27:40.206: BR0:1 IPCP: Address 10.9.9.1 (0x03060A090901)
*Mar 4 15:27:40.206: BR0:1 IPCP: State is Open
*Mar 4 15:27:40.214: BR0:1 DDR: dialer protocol up
*Mar 4 15:27:40.218: Di0 IPCP: Install route to 10.9.9.2
*Mar 4 15:27:41.162: %LINEPROTO-5-UPDOWN: Line protocol on Interface BRI0:1,
changed state to upcess rate is 80 percent (4/5), round-trip min/avg/max =
36/47/76 ms
krimson#

```

备份之后的状态为“up”：

```

krimson#show interface dialer 0
Dialer0 is up, line protocol is up (spoofing)
Hardware is Unknown
Internet address is 10.9.9.1/24
MTU 1500 bytes, BW 56 Kbit, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation PPP, loopback not set
DTR is pulsed for 1 seconds on reset
Interface is bound to BR0:1
Last input never, output never, output hang never
Last clearing of "show interface" counters 00:13:26
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
Conversations 0/1/16 (active/max active/max total)
Reserved Conversations 0/0 (allocated/max allocated)
Available Bandwidth 42 kilobits/sec
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
36 packets input, 2160 bytes
36 packets output, 2160 bytes
Bound to:
BRI0:1 is up, line protocol is up
Hardware is BRI
MTU 1500 bytes, BW 64 Kbit, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation PPP, loopback not set
Keepalive set (10 sec)
Time to interface disconnect: idle 00:01:33
Interface is bound to Di0 (Encapsulation PPP)
LCP Open
Open: IPCP
Last input 00:00:26, output 00:00:01, output hang never
Last clearing of "show interface" counters never
Queueing strategy: fifo
Output queue 0/40, 0 drops; input queue 0/75, 0 drops
30 second input rate 0 bits/sec, 0 packets/sec
30 second output rate 0 bits/sec, 0 packets/sec
126 packets input, 3664 bytes, 0 no buffer
Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort

```

```
131 packets output, 3777 bytes, 0 underruns
0 output errors, 0 collisions, 15 interface resets
0 output buffer failures, 0 output buffers swapped out
28 carrier transitions
```

```
krimson#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 10.48.74.1 to network 0.0.0.0
```

```
10.0.0.0/8 is variably subnetted, 5 subnets, 3 masks
C 10.9.9.2/32 is directly connected, Dialer0
S 10.8.8.0/24 [180/0] via 10.9.9.2
C 10.9.9.0/24 is directly connected, Dialer0
C 10.7.7.0/24 is directly connected, Loopback0
C 10.48.74.0/23 is directly connected, Ethernet0
S* 0.0.0.0/0 [254/0] via 10.48.74.1
```

在被呼叫端：

备份之后的状态为“up”。

```
kevin#show interface dialer 0
```

```
Dialer0 is up, line protocol is up (spoofing)
Hardware is Unknown
Internet address is 10.9.9.2/24
MTU 1500 bytes, BW 56 Kbit, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation PPP, loopback not set
DTR is pulsed for 1 seconds on reset
Interface is bound to BR0:1
Last input never, output never, output hang never
Last clearing of "show interface" counters 00:16:18
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
Conversations 0/1/16 (active/max active/max total)
Reserved Conversations 0/0 (allocated/max allocated)
Available Bandwidth 42 kilobits/sec
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
40 packets input, 2224 bytes
40 packets output, 2224 bytes
Bound to:
BRI0:1 is up, line protocol is up
Hardware is BRI
MTU 1500 bytes, BW 64 Kbit, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation PPP, loopback not set
Keepalive set (10 sec)
Time to interface disconnect: idle 00:01:11
Interface is bound to Di0 (Encapsulation PPP)
LCP Open
Open: IPCP
Last input 00:00:48, output 00:00:00, output hang never
```

```
Last clearing of "show interface" counters never
Queueing strategy: fifo
Output queue 0/40, 0 drops; input queue 0/75, 0 drops
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
136 packets input, 3857 bytes, 0 no buffer
Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
131 packets output, 3744 bytes, 0 underruns
0 output errors, 0 collisions, 12 interface resets
0 output buffer failures, 0 output buffers swapped out
35 carrier transitions
```

```
kevin#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 10.48.74.1 to network 0.0.0.0
```

```
10.0.0.0/8 is variably subnetted, 4 subnets, 3 masks
C 10.9.9.0/24 is directly connected, Dialer0
C 10.8.8.0/24 is directly connected, Loopback0
C 10.9.9.1/32 is directly connected, Dialer0
C 10.48.74.0/23 is directly connected, Ethernet0
S* 0.0.0.0/0 [254/0] via 10.48.74.1
```

在此，我们可以通过在远程串行接口上使用 **no shutdown** 命令来模拟主链路的恢复：

```
kevin#show interface dialer 0
```

```
Dialer0 is up, line protocol is up (spoofing)
Hardware is Unknown
Internet address is 10.9.9.2/24
MTU 1500 bytes, BW 56 Kbit, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation PPP, loopback not set
DTR is pulsed for 1 seconds on reset
Interface is bound to BR0:1
Last input never, output never, output hang never
Last clearing of "show interface" counters 00:16:18
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
Conversations 0/1/16 (active/max active/max total)
Reserved Conversations 0/0 (allocated/max allocated)
Available Bandwidth 42 kilobits/sec
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
40 packets input, 2224 bytes
40 packets output, 2224 bytes
Bound to:
BRI0:1 is up, line protocol is up
Hardware is BRI
MTU 1500 bytes, BW 64 Kbit, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation PPP, loopback not set
Keepalive set (10 sec)
Time to interface disconnect: idle 00:01:11
```

```
Interface is bound to Di0 (Encapsulation PPP)
LCP Open
Open: IPCP
Last input 00:00:48, output 00:00:00, output hang never
Last clearing of "show interface" counters never
Queueing strategy: fifo
Output queue 0/40, 0 drops; input queue 0/75, 0 drops
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
136 packets input, 3857 bytes, 0 no buffer
Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
131 packets output, 3744 bytes, 0 underruns
0 output errors, 0 collisions, 12 interface resets
0 output buffer failures, 0 output buffers swapped out
35 carrier transitions
```

kevin#**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 10.48.74.1 to network 0.0.0.0

```
10.0.0.0/8 is variably subnetted, 4 subnets, 3 masks
C 10.9.9.0/24 is directly connected, Dialer0
C 10.8.8.0/24 is directly connected, Loopback0
C 10.9.9.1/32 is directly connected, Dialer0
C 10.48.74.0/23 is directly connected, Ethernet0
S* 0.0.0.0/0 [254/0] via 10.48.74.1
```

备份会在空闲超时之后断开。

krimson#**show isdn active**

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

```
Call Calling Called Remote Seconds Seconds Seconds Charges
Type Number Number Name Used Left Idle
Units/Currency
-----
```

```
Out 8114 kevin 120 1 118 0
-----
```

krimson#

```
*Mar 4 15:29:41.738: BR0:1 DDR: idle timeout
*Mar 4 15:29:41.742: BR0 DDR: has total 0 call(s), dial_out 0, dial_in 0
*Mar 4 15:29:41.746: BR0:1 PPP: Treating connection as a callout
*Mar 4 15:29:41.750: %DIALER-6-UNBIND: Interface BR0:1 unbound from profile
Di0
*Mar 4 15:29:41.754: BR0:1 DDR: disconnecting call
*Mar 4 15:29:41.758: %ISDN-6-DISCONNECT: Interface BRI0:1 disconnected from
8114 kevin, call lasted 121 seconds
*Mar 4 15:29:41.774: ISDN BR0: TX -> DISCONNECT pd = 8 callref = 0x09
*Mar 4 15:29:41.782: Cause i = 0x8090 - Normal call clearing
```

```
*Mar 4 15:29:41.790: Di0 IPCP: Remove route to 10.9.9.2
*Mar 4 15:29:41.862: ISDN BR0: RX <- RELEASE pd = 8 callref = 0x89
*Mar 4 15:29:41.886: %LINK-3-UPDOWN: Interface BRI0:1, changed state to down
*Mar 4 15:29:41.894: BR0:1 IPCP: State is Closed
*Mar 4 15:29:41.894: BR0:1 PPP: Phase is TERMINATING [0 sess, 0 load]
*Mar 4 15:29:41.898: BR0:1 LCP: State is Closed
*Mar 4 15:29:41.898: BR0:1 PPP: Phase is DOWN [0 sess, 0 load]
*Mar 4 15:29:41.902: BR0:1 DDR: disconnecting call
*Mar 4 15:29:41.910: ISDN BR0: TX -> RELEASE_COMP pd = 8 callref = 0x09
*Mar 4 15:29:42.886: %LINEPROTO-5-UPDOWN: Line protocol on Interface BRI0:1,
changed state to down
```

现在，初始状态已经恢复。

```
krimson#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 10.48.74.1 to network 0.0.0.0

10.0.0.0/8 is variably subnetted, 5 subnets, 2 masks
C 10.1.2.0/24 is directly connected, Serial0
S 10.8.8.0/24 [1/0] via 10.1.2.2
C 10.9.9.0/24 is directly connected, Dialer0
C 10.7.7.0/24 is directly connected, Loopback0
C 10.48.74.0/23 is directly connected, Ethernet0
S* 0.0.0.0/0 [254/0] via 10.48.74.1
```

相关信息

- [拨号技术支持页](#)
- [技术支持 - Cisco Systems](#)