

Configuração do backup para ISDN com rotas estáticas flutuantes

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[Introduction](#)

Este documento fornece uma configuração de exemplo para implementar um backup de ISDN com rotas estáticas flutuantes e fornece informações básicas de Troubleshooting para esse tipo de configuração.

Para obter informações sobre as implementações mais comuns de backup de ISDN e comparações entre elas, consulte o seguinte documento: [Avaliação de interfaces de backup, rotas estáticas flutuantes e Dialer Watch para o backup de chamada DDR.](#)

[Prerequisites](#)

[Requirements](#)

Não existem requisitos específicos para este documento.

[Componentes Utilizados](#)

As informações neste documento são baseadas nas versões de software e hardware abaixo.

- Dois roteadores Cisco 2500 executando Cisco IOS® Software Release 12.2(3) e 12.2(5)
- As informações neste documento foram criadas a partir de dispositivos em um ambiente de laboratório específico. All of the devices used in this document started with a cleared (default)

configuration. Se você estiver trabalhando em uma rede ativa, certifique-se de que entende o impacto potencial de qualquer comando antes de utilizá-lo.

[Conventions](#)

Para obter mais informações sobre convenções de documento, consulte as [Convenções de dicas técnicas Cisco](#).

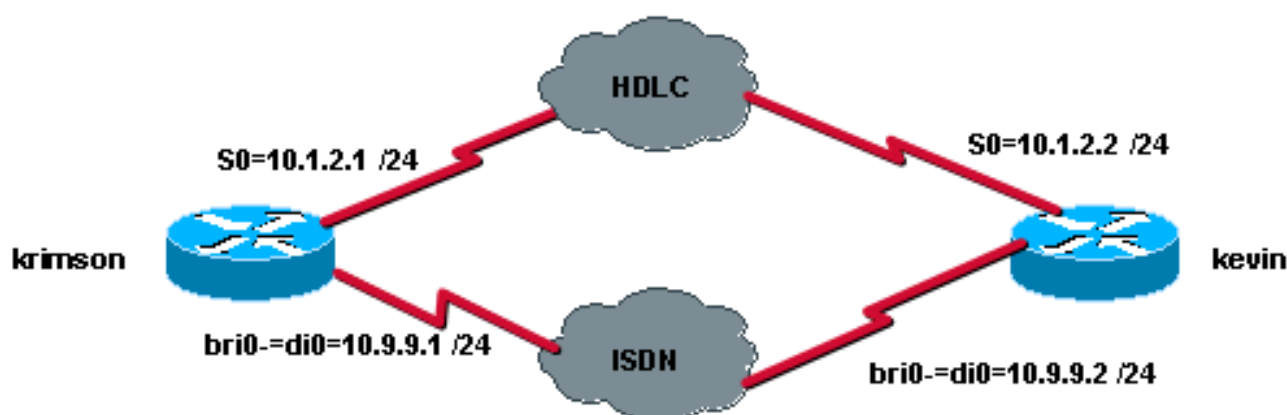
[Configurar](#)

Nesta seção, você encontrará informações para configurar os recursos descritos neste documento.

Observação: para encontrar informações adicionais sobre os comandos usados neste documento, use a [ferramenta Command Lookup Tool](#) (somente clientes [registrados](#)).

[Diagrama de Rede](#)

Este documento utiliza a instalação de rede mostrada no diagrama abaixo.



[Configurações](#)

Este documento utiliza as configurações mostradas abaixo.

- [krimson \(Cisco 2500 Router\)](#)
- [kevin \(Cisco 2500 Router\)](#)

```
krimson (Cisco 2500 Router)
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 Router)

```
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
```

[Verificar](#)

Esta seção fornece informações que você pode usar para confirmar se sua configuração está funcionando adequadamente.

A [Output Interpreter Tool \(somente clientes registrados\)](#) oferece suporte a determinados comandos show, o que permite exibir uma análise da saída do comando show.

- **show ip route** - Exibe entradas de tabela de IP Routing.
- **show interfaces** - Exibe estatísticas para todas as interfaces configuradas no roteador ou no servidor de acesso.

Troubleshoot

Esta seção fornece informações que podem ser usadas para o troubleshooting da sua configuração.

Comandos para Troubleshooting

A [Output Interpreter Tool \(somente clientes registrados\)](#) oferece suporte a determinados comandos **show**, o que permite exibir uma análise da saída do comando **show**.

Observação: antes de emitir comandos **debug**, consulte [Informações importantes sobre comandos debug](#).

- **debug isdn q931** - Exibe informações sobre a configuração de chamadas e a desconexão de conexões de rede ISDN (Camada 3) entre o roteador local (lado do usuário) e a rede.
- **debug isdn events** - Exibe eventos de ISDN que ocorrem no lado do usuário (no roteador) da interface ISDN. Os eventos ISDN que podem ser exibidos são eventos Q.931 (configuração de chamada e destruição de conexões de rede ISDN).
- **debug dialer** - Exibe informações de depuração sobre os pacotes ou eventos em uma interface de discador.
- **debug ppp negotiation** - Faz com que o comando **debug ppp** exiba pacotes PPP transmitidos durante a inicialização de PPP, em que as opções de PPP são negociadas.
- **debug ppp authentication** – Faz com que o comando **debug ppp** exiba mensagens de protocolo de autenticação, incluindo alterações de pacote do Protocolo de autenticação de desafio (CHAP) e intercâmbios de Protocolo de autenticação de senha (PAP).

Exemplo de Saída de Troubleshooting

Aqui, podemos testar a funcionalidade de backup usando os comandos **shutdown** e **no shutdown** na interface serial no lado remoto. Conseqüentemente, isso leva ao desaparecimento da rota ip principal para a rede de destino em questão.

Primeiro, vamos examinar o estado inicial da interface primária e a tabela de roteamento ip:

Lado da chamada:

```
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

Lado chamado:

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#
```

Agora podemos simular a falha do link usando o comando **shutdown** na interface serial remota:

```
krimson#
*Mar 4 15:25:18.302: %LINK-3-UPDOWN: Interface Serial0, changed state to
down
*Mar 4 15:25:19.302: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Serial0, changed state to down
```

Podemos ver aqui que o link principal foi desativado.

```
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#
```

Os detalhes da tabela de roteamento agora mostram que a rota flutuante está instalada na tabela de roteamento:

```
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#
```

No roteador chamado, podemos simular a falha simulada de link primário, usando o comando shutdown na interface serial 0 local:

```
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
```

Agora podemos ver que o link principal está inativo:

```
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

O tráfego de ping definido como tráfego interessante inicia a chamada de saída através da interface do discador 0 de backup.

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 upcss rate is 80 percent (4/5), round-trip min/avg/max =
36/47/76 ms
krimson#
```

Ao mesmo tempo, as **deparações** em execução no lado chamado mostram a seguinte saída para esta mesma chamada:

```
kevin#
*Mar 4 15:34:21.698: ISDN BR0: RX <- SETUP pd = 8 callref = 0x07
*Mar 4 15:34:21.706: Bearer Capability i = 0x8890
*Mar 4 15:34:21.714: Channel ID i = 0x89
*Mar 4 15:34:21.718: Calling Party Number i = 0xA1, '8113',
Plan:ISDN, Type:National
*Mar 4 15:34:21.734: Called Party Number i = 0xC1, '8114',
Plan:ISDN, Type:Subscriber(local)
*Mar 4 15:34:21.762: ISDN BR0: Event: Received a DATA call from 8113 on B1
at 64 Kb/s
*Mar 4 15:34:21.762: ISDN BR0: Event: Accepting the call id 0xC
*Mar 4 15:34:21.766: BR0:1: interface must be fifo queue, force fifo
*Mar 4 15:34:21.774: %DIALER-6-BIND: Interface BR0:1 bound to profile Di0
*Mar 4 15:34:21.786: %LINK-3-UPDOWN: Interface BRI0:1, changed state to up
*Mar 4 15:34:21.798: BR0:1 PPP: Treating connection as a callin
*Mar 4 15:34:21.802: BR0:1 PPP: Phase is ESTABLISHING, Passive Open [0 sess,
0 load]
*Mar 4 15:34:21.806: BR0:1 LCP: State is Listen
*Mar 4 15:34:21.818: ISDN BR0: TX -> CALL_PROC pd = 8 callref = 0x87
*Mar 4 15:34:21.826: Channel ID i = 0x89
*Mar 4 15:34:21.854: ISDN BR0: TX -> CONNECT pd = 8 callref = 0x87
*Mar 4 15:34:21.918: ISDN BR0: RX <- CONNECT_ACK pd = 8 callref = 0x07
*Mar 4 15:34:21.926: Channel ID i = 0x89
*Mar 4 15:34:21.978: BR0:1 LCP: I CONFREQ [Listen] id 19 len 15
*Mar 4 15:34:21.982: BR0:1 LCP: AuthProto CHAP (0x0305C22305)
*Mar 4 15:34:21.986: BR0:1 LCP: MagicNumber 0x12D0A490 (0x050612D0A490)
*Mar 4 15:34:21.990: BR0:1 LCP: O CONFREQ [Listen] id 9 len 15
*Mar 4 15:34:21.994: BR0:1 LCP: AuthProto CHAP (0x0305C22305)
*Mar 4 15:34:21.994: BR0:1 LCP: MagicNumber 0x12D6B638 (0x050612D6B638)
*Mar 4 15:34:21.998: BR0:1 LCP: O CONFACK [Listen] id 19 len 15
*Mar 4 15:34:22.002: BR0:1 LCP: AuthProto CHAP (0x0305C22305)
*Mar 4 15:34:22.006: BR0:1 LCP: MagicNumber 0x12D0A490 (0x050612D0A490)
*Mar 4 15:34:22.030: BR0:1 LCP: I CONFACK [ACKsent] id 9 len 15
*Mar 4 15:34:22.034: BR0:1 LCP: AuthProto CHAP (0x0305C22305)
*Mar 4 15:34:22.034: BR0:1 LCP: MagicNumber 0x12D6B638 (0x050612D6B638)
*Mar 4 15:34:22.038: BR0:1 LCP: State is Open
*Mar 4 15:34:22.042: BR0:1 PPP: Phase is AUTHENTICATING, by both [0 sess, 0
load]
*Mar 4 15:34:22.046: BR0:1 CHAP: O CHALLENGE id 7 len 26 from "kevin"
*Mar 4 15:34:22.050: BR0:1 CHAP: I CHALLENGE id 7 len 28 from "krimson"
*Mar 4 15:34:22.054: BR0:1 CHAP: Waiting for peer to authenticate first
*Mar 4 15:34:22.070: BR0:1 CHAP: I RESPONSE id 7 len 28 from "krimson"
*Mar 4 15:34:22.078: BR0:1 CHAP: O SUCCESS id 7 len 4
*Mar 4 15:34:22.082: BR0:1 CHAP: Processing saved Challenge, id 7
*Mar 4 15:34:22.090: BR0:1 CHAP: O RESPONSE id 7 len 26 from "kevin"
*Mar 4 15:34:22.114: BR0:1 CHAP: I SUCCESS id 7 len 4
*Mar 4 15:34:22.118: BR0:1 PPP: Phase is UP [0 sess, 0 load]
*Mar 4 15:34:22.122: BR0:1 IPCP: O CONFREQ [Not negotiated] id 2 len 10
*Mar 4 15:34:22.126: BR0:1 IPCP: Address 10.9.9.2 (0x03060A090902)
*Mar 4 15:34:22.130: BR0:1 IPCP: I CONFREQ [REQsent] id 2 len 10
*Mar 4 15:34:22.134: BR0:1 IPCP: Address 10.9.9.1 (0x03060A090901)
*Mar 4 15:34:22.138: BR0:1 IPCP: O CONFACK [REQsent] id 2 len 10
*Mar 4 15:34:22.142: BR0:1 IPCP: Address 10.9.9.1 (0x03060A090901)
*Mar 4 15:34:22.226: BR0:1 IPCP: I CONFACK [ACKsent] id 2 len 10
*Mar 4 15:34:22.230: BR0:1 IPCP: Address 10.9.9.2 (0x03060A090902)
*Mar 4 15:34:22.230: BR0:1 IPCP: State is Open
*Mar 4 15:34:22.242: BR0:1 DDR: dialer protocol up
*Mar 4 15:34:22.250: Di0 IPCP: Install route to 10.9.9.1
*Mar 4 15:34:23.114: %LINEPROTO-5-UPDOWN: Line protocol on Interface BRI0:1,
```

changed state to up

*Mar 4 15:34:27.794: %ISDN-6-CONNECT: Interface BRI0:1 is now connected to 8113 krimson

O estado depois do backup é "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
```

No lado chamado:

O estado após o backup é "ativo".

```
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:
BRIO: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

Aqui, simulamos a recuperação do link primário usando o comando **no shutdown** na interface serial remota:

```
krimson#  
*Mar 4 15:28:58.726: %LINK-3-UPDOWN: Interface Serial0, changed state to up  
*Mar 4 15:28:59.730: %LINEPROTO-5-UPDOWN: Line protocol on Interface  
Serial0, changed state to up
```

O backup é desconectado após o timeout de ociosidade.

```
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
```

O estado inicial agora é restaurado.

```
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
```

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- [Suporte Técnico - Cisco Systems](#)