使用撥號器監視配置BRI ISDN備份

目錄

簡介

本檔案將說明使用ISDN基本速率介面(BRI)線路使用撥號器監控功能備份租用線路、WAN或序列連線。有關撥號器監視的功能和操作的詳細資訊，請參閱評估備份介面、浮動靜態路由和適用於DDR備份的撥號器監視。

開始之前

慣例

如需文件慣例的詳細資訊，請參閱思科技術提示慣例。

必要條件

配置DDR備份包括兩個不同的步驟：

1. 使用傳統DDR或撥號程式配置檔案配置DDR。在實施備份配置之前，請驗證DDR連線是否正常工作。這允許您在配置備份之前驗證使用的撥號方法、點對點協定(PPP)協商和身份驗證是否成功。
2. 配置路由器，在主鏈路出現故障時啟動備份DDR連線。此配置使用撥號器監視功能來觸發撥出。

有關配置備份所需步驟的詳細資訊，請參閱配置和故障排除DDR備份文檔。

採用元件

本檔案中的資訊是根據以下軟體和硬體版本。

- 兩台運行Cisco IOS??的Cisco 2500路由器（幀中繼DTE）軟體版本12.2(3)和12.2(5)。
- 一台Cisco 4500路由器，用作幀中繼交換機（未顯示配置）。

本文中的資訊是根據特定實驗室環境內的裝置所建立。文中使用到的所有裝置皆從已清除（預設）的組態來啟動。如果您在即時網路中工作，請確保在使用任何命令之前瞭解其潛在影響。

背景理論

此示例使用撥號器配置檔案作為備份BRI鏈路。您還可以使用傳統按需撥號路由(DDR)，它使用**dialer map**命令進行備份BRI連線。有關使用撥號器對映配置撥號器監視的詳細資訊，請參閱使用BRI和撥號器監視配置DDR備份。

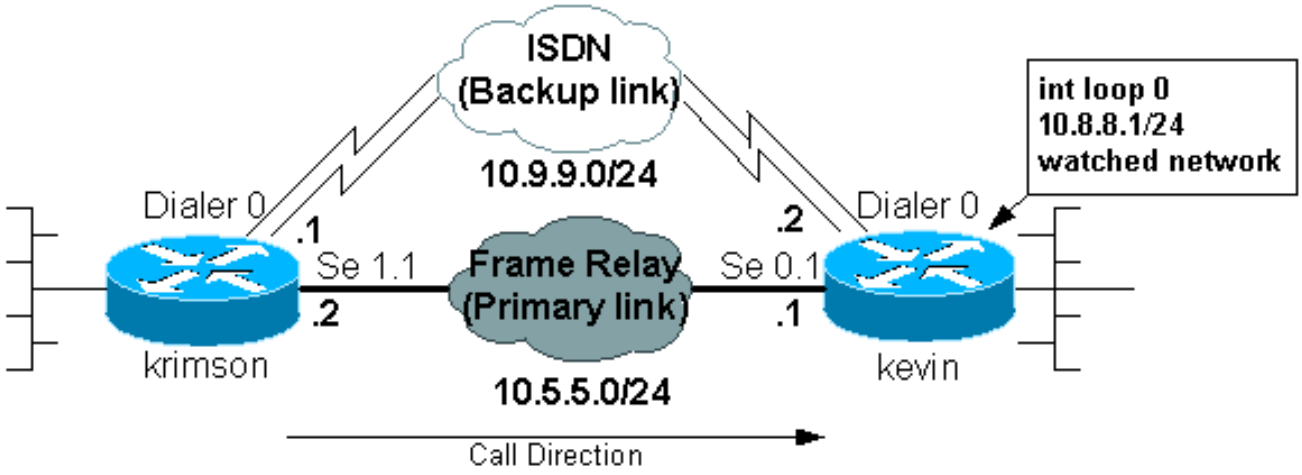
設定

本節提供用於設定本文件中所述功能的資訊。

注意：要查詢有關本文檔中使用的命令的其他資訊，請使用命令查詢工具

網路圖表

本文檔使用下圖所示的網路設定。



組態

本文檔使用如下所示的配置。

- krimson（思科2500路由器）
- kevin(2500)

krimson（思科2500路由器）

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

 Current configuration : 5055 bytes
 !
 version 12.2
 service timestamps debug datetime msec
 service timestamps log datetime msec
 no service password-encryption
 !
 hostname krimson
 !
 logging buffered 500000 debugging
 no logging console
 enable password <deleted>
 !
 username kevin password 0 <deleted>
 ip subnet-zero
 no ip domain-lookup
 !
 isdn switch-type basic-net3
 !
 interface Ethernet0
  ip address 10.200.16.30 255.255.255.0
  no ip route-cache
  no ip mroute-cache
  no cdp enable

 ! <<- Unused interface configuration omitted
 !
 interface Serial1
  !--- Primary Link (Frame Relay) bandwidth 64 no ip
address encapsulation frame-relay no ip route-cache no
ip mroute-cache ! interface Serial1.1 point-to-point !--
- Point-to-point Frame Relay subinterface ip address
10.5.5.2 255.255.255.0 no ip route-cache frame-relay
interface-dlci 20 ! interface BRI0 !--- Backup physical
interface description Backup ISDN, Nr. 4420038 no ip
address encapsulation ppp no ip route-cache no ip
mroute-cache load-interval 30 no keepalive dialer pool-
member 1 !--- BRI 0 is a member of dialer pool 1 isdn
switch-type basic-net3 no fair-queue no cdp enable ppp
authentication chap ! interface Dialer0 !--- Logical
interface for the backup ip address 10.9.9.1
255.255.255.0 !--- The dialer is in the same network as
the remote dialer interface encapsulation ppp no ip
route-cache no ip mroute-cache dialer pool 1 !--- Dialer
pool 1. BRI 0 is a member of this pool dialer remote-
name kevin !--- Authenticated remote name of the peer.
!--- Verify that this name exactly matches the
authenticated name !--- of the remote dialer dialer
string 6120 !--- Number for outbound call. For inbound
calls this is not needed dialer watch-group 1 !---
Enable dialer watch on this backup interface. !--- Watch
the route specified with dialer watch-list 1

   dialer-group 1
 !--- Apply interesting traffic defined in dialer-list 1

   no cdp enable
   ppp authentication chap
 !
 !
 router ospf 10
```

```
   log-adjacency-changes
   network 10.5.5.0 0.0.0.255 area 0
   network 10.7.7.0 0.0.0.255 area 0
   network 10.9.9.0 0.0.0.255 area 0
 !
 no ip classless
 ip route 0.0.0.0 0.0.0.0 10.200.16.1
  !--- Default route through ethernet 0 no ip http server
! access-list 101 deny ospf any any !--- Mark OSPF as
uninteresting. !--- This will prevent OSPF hellos from
keeping the link up access-list 101 permit ip any any !-
-- All other IP traffic is interesting dialer watch-list
1 ip 10.8.8.0 255.255.255.0 !--- 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 (interface dialer 0)

 dialer-list 1 protocol ip list 101
  !--- Interesting traffic is defined by access-list 101.
!--- This is applied to BRI0 using dialer-group 1

 !
 line con 0
   exec-timeout 0 0
   privilege level 15
 line aux 0
   transport input all
 line vty 0 4
   exec-timeout 0 0
   password <deleted>
   login
  !
 end
```

kevin(2500)

```
kevin#show running-config
 version 12.2
 service timestamps debug datetime msec
 service timestamps log datetime msec
 !
 hostname kevin
 !
 username krimson password 0 <password>
 !
 isdn switch-type basic-net3
 !
 !
 interface Loopback0
  ip address 10.8.8.1 255.255.255.0
  !--- This is the network the remote side is watching
ip ospf network point-to-point ! interface Loopback1 ip
address 172.19.0.1 255.255.255.255 ! interface Ethernet0
ip address 10.200.17.26 255.255.255.0 ! interface
Serial0 no ip address encapsulation frame-relay !
interface Serial0.1 point-to-point !--- Primary link
(Frame Relay sub-interface) ip address 10.5.5.1
255.255.255.0 frame-relay interface-dlci 20 ! interface
BRI0 !--- Physical interface no ip address encapsulation
ppp dialer pool-member 1 !--- Member of dialer pool 1
isdn switch-type basic-net3 no cdp enable ppp
authentication chap ! interface Dialer0 !--- Logical
```

```
interface for incoming call ip address 10.9.9.2
255.255.255.0 !--- The dialer is in the same network as
the remote dialer interface encapsulation ppp dialer
pool 1 !--- Dialer pool 1. BRI 0 is a member of this
pool dialer remote-name krimson !--- Authenticated
remote name of the peer. !--- Verify that this name
exactly matches the authenticated name !--- of the
remote dialer. dialer-group 1 !--- Apply interesting
traffic defined in dialer-list 1 no cdp enable ppp
authentication chap ! router ospf 10 log-adjacency-
changes network 10.5.5.0 0.0.0.255 area 0 network
10.8.8.0 0.0.0.255 area 0 !--- Advertise the network the
remote router is watching network 10.9.9.0 0.0.0.255
area 0 ! ip classless ip route 0.0.0.0 0.0.0.0
10.200.17.1 no ip http server ! dialer-list 1 protocol
ip permit !--- Interesting traffic definition. All IP
traffic is interesting. !--- This is applied to BRI0
using dialer-group 1. !--- Since the remote router
activates and deactivates the backup, this router !---
does not need to restrict interesting traffic no cdp run
! line con 0 exec-timeout 0 0 line aux 0 modem InOut
line vty 0 4 exec-timeout 0 0 password <password> login
! end
```

附註： maui-nas-05的配置不包含任何與備份相關的命令。對於maui-nas-05，備份鏈路只是另一個撥入客戶端。當許多裝置建立到同一個中心站點的備份鏈路時，這可以簡化中心站點的配置。在備份方案中，理想的做法是隻讓一端發起撥號，而另一端只接受呼叫。

撥號器監視命令

以下是可用於撥號器監視的命令清單。其中一些命令已包括在上述配置中，而其他命令則提供以供參考。

- **dialer watch-list** *group-number* **ip** *ip-address address-mask* :定義要監視的IP地址或網路。配置的地址或網路（使用正確的掩碼）必須存在於路由表中。您也可以使用**dialer watch-list**指令觀察多個路由。範例如下：
  ```
  dialer watch-list 1 ip 10.1.1.0 255.255.255.0
  dialer watch-list 1 ip 10.1.2.0 255.255.255.0
  dialer watch-list 1 ip 10.1.3.0 255.255.255.0
  ```
- **dialer watch-group** *group-number* :在備份介面上啟用撥號器監視。此處使用的*group number*與定義要監視的路由的*dialer watch-list*命令的*group number*匹配。只能在一個介面上配置帶有特定組號的**dialer watch-group**命令。這表示路由器*不能*使用多個介面為特定路由提供備份。但是，一個介面可以包含多個**dialer watch-group**命令，並且帶有不同的group-number。因此，一個介面可用於為多個路由提供備份。
- **dialer watch-disable** *seconds* :為介面套用停用延遲時間。主介面恢復後，此延遲可防止在指定時間段內斷開備份介面。當空閒計時器過期時，此延遲計時器啟動，並且檢查主路由的狀態並發現其為up。此延遲可確保穩定性，尤其是對於擺動介面或經常發生路由更改的介面。
- **dialer watch-list** *group-number* **delay route-check initial** *seconds* :此命令使路由器能夠檢查在路由器初始啟動完成且計時器（以秒為單位）過期後，主路由是否已啟動。如果沒有此命令，則僅當從路由表中刪除主路由時，才會觸發撥號器監視。如果主鏈路在路由器初始啟動時無法啟動，則路由絕不會新增到路由表中，因此無法進行監控。因此，使用此命令， dialer watch會在路由器初始啟動期間出現主鏈路故障時撥打備用鏈路。

驗證

本節提供的資訊可用於確認您的組態是否正常運作。

輸出直譯器工具支援某些**show**命令，該工具允許您檢視**show**命令輸出的分析。

- **show interfaces serial** — 顯示有關組播資料鏈路連線識別符號(DLCI)、介面上使用的DLCI以及本地管理介面(LMI)使用的DLCI的資訊。 使用此命令驗證主介面是處於開啟還是關閉狀態。
- **show interface dialer** — 顯示撥號器介面的狀態。
- **show ip route** — 顯示IP路由表條目。檢驗路由表中是否存在受監控的網路（當主鏈路處於開啟狀態時）。 當主鏈路斷開並撥打備用號碼時，路由表應重新收斂，受監控的網路應重新出現（下一跳作為撥號器介面）。

疑難排解

本節提供的資訊可用於對組態進行疑難排解。

此處使用的幀中繼配置(使用點對點子介面並使用開放最短路徑優先(OSPF)作為路由協定)特定於此設定。但是，無論使用哪種路由協定，下面給出的故障排除步驟都比較籠統，可用於不同的配置，如採用高級資料鏈路控制(HDLC)和點對點協定(PPP)封裝的幀中繼點對多點或主鏈路。

為了檢驗備份功能，我們將充當幀中繼交換機的Cisco 4500路由器上的一個介面置於關閉狀態，以模擬幀中繼網路中的問題。因此，這會導致PVC非活動狀態通過幀中繼網路傳給DTE路由器，並引發幀中繼子介面關閉事件。受監控的路由隨後消失，備用鏈路被啟用。

有關Dialer Watch故障排除的資訊，請參閱DDR備份配置和故障排除文檔。

疑難排解指令

輸出直譯器工具支援某些**show**命令，該工具允許您檢視**show**命令輸出的分析。

注意：發出debug指令之前，請先參閱有關Debug指令的重要資訊。

- **debug isdn q931** — 顯示有關本地路由器（使用者端）與網路之間的ISDN網路連線（第3層）的呼叫建立和拆除的資訊。
- **debug backup** -調試備份事件。
- **debug dialer** — 顯示有關撥號器介面上的資料包或事件的調試資訊。
- **debug ppp negotiation** — 使**debug ppp**命令顯示PPP啟動期間傳輸的PPP資料包，其中會協商PPP選項。
- **debug ppp authentication** — 使**debug ppp**命令顯示身份驗證協定消息，包括質詢身份驗證協定(CHAP)資料包交換和口令身份驗證協定(PAP)交換。
- **debug ip ospf events** — 顯示有關OSPF相關事件的資訊，例如鄰接關係、泛洪資訊、指定路由器選擇和最短路徑優先(SPF)計算。
- **debug frame-relay events** — 顯示有關支援組播通道和使用動態定址的網路上的幀中繼地址解析協定(ARP)應答的調試資訊。

故障排除輸出示例

在下面的輸出中，幀中繼介面為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 10.200.16.1 to network 0.0.0.0

   10.0.0.0/24 is subnetted, 6 subnets
   C 10.5.5.0 is directly connected, Serial1.1
   O 10.8.8.0 [110/1563] via 10.5.5.1, 00:01:31, Serial1.1
   !--- Initial state through the primary Frame Relay interface, !--- before line failure
occurred C 10.9.9.0 is directly connected, Dialer0 C 10.7.7.0 is directly connected, Loopback0 C
10.200.16.0 is directly connected, Ethernet0 S* 0.0.0.0/0 [1/0] via 10.200.16.1 krimson# *Apr 17
01:00:50.591: OSPF: Rcv hello from 172.19.0.1 area 0 from Serial1.1 10.5.5.1 *Apr 17
01:00:50.595: OSPF: End of hello processing *Apr 17 01:00:51.127: %SYS-5-CONFIG_I: Configured
from console by console *Apr 17 01:01:00.591: OSPF: Rcv hello from 172.19.0.1 area 0 from
Serial1.1 10.5.5.1 *Apr 17 01:01:00.595: OSPF: End of hello processing *Apr 17 01:01:05.243:
%LINK-3-UPDOWN: Interface Serial1, changed state to down !--- Frame Relay failure simulated by
shutting down the interface on !--- the Cisco 4500 router(acting as switch) *Apr 17
01:01:05.251: OSPF: Interface Serial1.1 going Down *Apr 17 01:01:05.255: %OSPF-5-ADJCHG: Process
10, Nbr 172.19.0.1 on Serial1.1 from FULL to DOWN, Neighbor Down: Interface down or detached
*Apr 17 01:01:05.399: DDR: Dialer Watch: watch-group = 1 *Apr 17 01:01:05.403: DDR: network
10.8.8.0/255.255.255.0 DOWN,
   !--- Watched network is down *Apr 17 01:01:05.407: DDR: primary DOWN *Apr 17 01:01:05.407:
DDR: Dialer Watch: Dial Reason: Primary of group 1 DOWN *Apr 17 01:01:05.411: DDR: Dialer Watch:
watch-group = 1,
   *Apr 17 01:01:05.411: BR0 DDR: rotor dialout [priority]
   *Apr 17 01:01:05.411: DDR: dialing secondary by dialer string 6120 on Di0
   !--- router dials 6120 on interface Dialer 1 *Apr 17 01:01:05.415: BR0 DDR: Attempting to
dial 6120 *Apr 17 01:01:05.523: ISDN BR0: TX -> SETUP pd = 8 callref = 0x43 *Apr 17
01:01:05.531: Bearer Capability i = 0x8890 *Apr 17 01:01:05.535: Channel ID i = 0x83 *Apr 17
01:01:05.543: Called Party Number i = 0x80, '6120', Plan:Unknown, Type:Unknown *Apr 17
01:01:05.599: ISDN BR0: RX <- CALL_PROC pd = 8 callref = 0xC3 *Apr 17 01:01:05.603: Channel ID i
= 0x89 *Apr 17 01:01:05.855: ISDN BR0: RX <- CONNECT pd = 8 callref = 0xC3 *Apr 17 01:01:05.875:
%LINK-3-UPDOWN: Interface BRI0:1, changed state to up *Apr 17 01:01:05.875: BR0:1 DDR: Dialer
Watch: resetting call in progress *Apr 17 01:01:05.883: %DIALER-6-BIND: Interface BR0:1 bound to
profile Di0 *Apr 17 01:01:05.891: BR0:1 PPP: Treating connection as a callout *Apr 17
01:01:05.895: BR0:1 PPP: Phase is ESTABLISHING, Active Open [0 sess, 0 load] *Apr 17
01:01:05.899: BR0:1 LCP: O CONFREQ [Closed] id 54 len 15 *Apr 17 01:01:05.903: BR0:1 LCP:
AuthProto CHAP (0x0305C22305) *Apr 17 01:01:05.903: BR0:1 LCP: MagicNumber 0xF24F182E
(0x0506F24F182E) *Apr 17 01:01:05.911: ISDN BR0: TX -> CONNECT_ACK pd = 8 callref = 0x43 *Apr 17
01:01:05.939: BR0:1 LCP: I CONFREQ [REQsent] id 88 len 15 *Apr 17 01:01:05.943: BR0:1 LCP:
AuthProto CHAP (0x0305C22305) *Apr 17 01:01:05.943: BR0:1 LCP: MagicNumber 0x9B15A6B0
(0x05069B15A6B0) *Apr 17 01:01:05.947: BR0:1 LCP: O CONFACK [REQsent] id 88 len 15 *Apr 17
01:01:05.951: BR0:1 LCP: AuthProto CHAP (0x0305C22305) *Apr 17 01:01:05.955: BR0:1 LCP:
MagicNumber 0x9B15A6B0 (0x05069B15A6B0) *Apr 17 01:01:05.959: BR0:1 LCP: I CONFACK [ACKsent] id
54 len 15 *Apr 17 01:01:05.963: BR0:1 LCP: AuthProto CHAP (0x0305C22305) *Apr 17 01:01:05.963:
BR0:1 LCP: MagicNumber 0xF24F182E (0x0506F24F182E) *Apr 17 01:01:05.967: BR0:1 LCP: State is
Open *Apr 17 01:01:05.967: BR0:1 PPP: Phase is AUTHENTICATING, by both [0 sess, 0 load] *Apr 17
01:01:05.971: BR0:1 CHAP: O CHALLENGE id 54 len 28 from "krimson" *Apr 17 01:01:06.051: BR0:1
CHAP: I CHALLENGE id 56 len 26 from "kevin" *Apr 17 01:01:06.055: BR0:1 CHAP: O RESPONSE id 56
len 28 from "krimson" *Apr 17 01:01:06.151: BR0:1 CHAP: I SUCCESS id 56 len 4 *Apr 17
01:01:06.167: BR0:1 CHAP: I RESPONSE id 54 len 26 from "kevin" *Apr 17 01:01:06.175: BR0:1 CHAP:
O SUCCESS id 54 len 4 *Apr 17 01:01:06.179: BR0:1 PPP: Phase is UP [0 sess, 0 load] *Apr 17
01:01:06.183: BR0:1 IPCP: O CONFREQ [Not negotiated] id 46 len 10 *Apr 17 01:01:06.187: BR0:1
IPCP: Address 10.9.9.1 (0x03060A090901) *Apr 17 01:01:06.279: BR0:1 IPCP: I CONFREQ [REQsent] id
34 len 10 *Apr 17 01:01:06.283: BR0:1 IPCP: Address 10.9.9.2 (0x03060A090902) *Apr 17
01:01:06.287: BR0:1 IPCP: O CONFACK [REQsent] id 34 len 10 *Apr 17 01:01:06.291: BR0:1 IPCP:
Address 10.9.9.2 (0x03060A090902) *Apr 17 01:01:06.295: BR0:1 IPCP: I CONFACK [ACKsent] id 46
len 10 *Apr 17 01:01:06.299: BR0:1 IPCP: Address 10.9.9.1 (0x03060A090901) *Apr 17 01:01:06.303:
```

```
BR0:1 IPCP: State is Open *Apr 17 01:01:06.315: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Serial1, changed state to down *Apr 17 01:01:06.319: BR0:1 DDR: dialer protocol up *Apr 17
01:01:06.327: Di0 IPCP: Install route to 10.9.9.2 *Apr 17 01:01:07.175: %LINEPROTO-5-UPDOWN:
Line protocol on Interface BRI0:1,
   changed state to up
   !--- Call connects *Apr 17 01:01:10.775: OSPF: Rcv hello from 172.19.0.1 area 0 from Dialer0
10.9.9.2
   !--- OSPF hello from the peer *Apr 17 01:01:10.779: OSPF: End of hello processing *Apr 17
01:01:11.891: %ISDN-6-CONNECT: Interface BRI0:1 is now connected to 6120 kevin#show interface
serial 1.1
   Serial1.1 is down, line protocol is down
   !--- Primary link is still down Hardware is HD64570 Internet address is 10.5.5.2/24 MTU 1500
bytes, BW 64 Kbit, DLY 20000 usec, reliability 255/255, txload 1/255, rxload 1/255 Encapsulation
FRAME-RELAY krimson#show interface dialer 0
   !--- Backup interface is up and active 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 1w6d, output never, output hang never
   Last clearing of "show interface" counters 6w5d
   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
   882 packets input, 69656 bytes
   892 packets output, 70436 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 not set
   DTR is pulsed for 1 seconds on reset
   Time to interface disconnect: idle 00:01:38
   Interface is bound to Di0 (Encapsulation PPP)
   LCP Open
   Open: IPCP
   Last input 00:00:03, 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
   4213 packets input, 414529 bytes, 0 no buffer
   Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
   29 input errors, 18 CRC, 0 frame, 0 overrun, 0 ignored, 11 abort
   3922 packets output, 242959 bytes, 0 underruns
   0 output errors, 0 collisions, 27 interface resets
   0 output buffer failures, 0 output buffers swapped out
   622 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 10.200.16.1 to network 0.0.0.0

   192.168.64.0/30 is subnetted, 1 subnets
   C 192.168.64.0 is directly connected, Dialer4
   10.0.0.0/8 is variably subnetted, 6 subnets, 2 masks
   C 10.9.9.2/32 is directly connected, Dialer0
   O 10.8.8.0/24 [110/1786] via 10.9.9.2, 00:00:25, Dialer0
   !--- New route to the same destination (through dialer 0). !--- Network now points to backup
interface C 10.9.9.0/24 is directly connected, Dialer0 C 10.7.7.0/24 is directly connected,
Loopback0 C 10.9.8.0/24 is directly connected, Dialer1 C 10.200.16.0/24 is directly connected,
Ethernet0 S* 0.0.0.0/0 [1/0] via 10.200.16.1
```

在下面的輸出中，幀中繼介面正在啟動。

```
*Apr 17 01:02:50.631: %LINEPROTO-5-UPDOWN: Line protocol
   on Interface Serial1,
    changed state to up
   !--- Primary is UP again *Apr 17 01:02:50.975: OSPF: Rcv hello from 172.19.0.1 area 0 from
Dialer0 10.9.9.2 *Apr 17 01:02:50.979: OSPF: End of hello processing *Apr 17 01:03:00.975: OSPF:
Rcv hello from 172.19.0.1 area 0 from Dialer0 10.9.9.2 *Apr 17 01:03:00.979: OSPF: End of hello
processing *Apr 17 01:03:05.887: BR0:1 DDR: idle timeout *Apr 17 01:03:05.887: DDR: Dialer
Watch: watch-group = 1 *Apr 17 01:03:05.887: DDR: network 10.8.8.0/255.255.255.0 UP, !---
Watched route is UP *Apr 17 01:03:05.891: DDR: primary DOWN *Apr 17 01:03:10.551: OSPF: Rcv
hello from 172.19.0.1 area 0 from Serial1.1 10.5.5.1 *Apr 17 01:03:10.555: OSPF: End of hello
processing *Apr 17 01:03:10.975: OSPF: Rcv hello from 172.19.0.1 area 0 from Dialer0 10.9.9.2
*Apr 17 01:03:10.979: OSPF: End of hello processing 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 10.200.16.1 to network 0.0.0.0

   10.0.0.0/8 is variably subnetted, 7 subnets, 2 masks
   C 10.9.9.2/32 is directly connected, Dialer0
   C 10.5.5.0/24 is directly connected, Serial1.1
   O 10.8.8.0/24 [110/1563] via 10.5.5.1, 00:00:01, Serial1.1
   ! -- Route entry to destination network via primary has been installed again. C 10.9.9.0/24
is directly connected, Dialer0 C 10.7.7.0/24 is directly connected, Loopback0 C 10.9.8.0/24 is
directly connected, Dialer1 C 10.200.16.0/24 is directly connected, Ethernet0 S* 0.0.0.0/0 [1/0]
via 10.200.16.1 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   6120          kevin  149     90      29      0
   ----------------------------------------------------------------------------
```

Seconds idle欄位指出沒有更多流量通過備份介面，並且空閒時間正在增加。

```
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          6120   kevin  165      74      45      0
--------------------------------------------------------------------------------

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          6120   kevin   224    15      104       0
--------------------------------------------------------------------------------

krimson#show isdn active
--------------------------------------------------------------------------------
ISDN ACTIVE CALLS
--------------------------------------------------------------------------------
Call Calling Called Remote Seconds Seconds Seconds Charges
Type Number Number Name Used Left Idle Units/Currency
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------

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 10.200.16.1 to network 0.0.0.0

192.168.64.0/30 is subnetted, 1 subnets
C 192.168.64.0 is directly connected, Dialer4
10.0.0.0/24 is subnetted, 6 subnets
C 10.5.5.0 is directly connected, Serial1.1
O 10.8.8.0 [110/1563] via 10.5.5.1, 00:01:52, Serial1.1
C 10.9.9.0 is directly connected, Dialer0
C 10.7.7.0 is directly connected, Loopback0
C 10.9.8.0 is directly connected, Dialer1
C 10.200.16.0 is directly connected, Ethernet0
S* 0.0.0.0/0 [1/0] via 10.200.16.1
```

相關資訊

- 存取技術支援頁面
- 技術支援 - Cisco Systems