

ISDN BRI終端端點識別碼協商

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簡介

本檔案提供ISDN基本速率介面(BRI)的範例組態，並說明思科路由器在終端端點識別碼(TEI)交涉流程方面的行為。

必要條件

需求

本文件沒有特定需求。

採用元件

本文中的資訊係根據以下軟體和硬體版本：

- Cisco IOS??軟體版本12.2(6)。
- 所有硬體平台。

注意： `isdn tei-negotiation preserve`命令是在Cisco IOS軟體版本12.2(6)和12.2(6)T中匯入。

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。如果您的網路正在作用，請確保您已瞭解任何指令可能造成的影響。

慣例

如需文件慣例的詳細資訊，請參閱[思科技術提示慣例](#)。

背景資訊

在一些歐洲國家/地區（例如比利時和荷蘭），通常的做法是，由於BRI線路在某一時間段內不活動，電話公司(Telco)會斷開ISDN第1層，這是出於節能原因。這些替代方案是可能的：

- 在第1層停止抖動後，可以保留已分配的TEI。
- 可以將Cisco IOS軟體配置為在每次第1層翻動時重新協商TEI。

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](#)([僅限註冊客戶](#))。

網路圖表

本檔案會使用以下網路設定：



在本示例中，我們使用兩台具有BRI線路的Cisco 2500路由器。

組態

本檔案會使用以下設定：

- 凱文
- 克里姆森

凱文

```
kevin#show running-config
!
version 12.2
service timestamps debug datetime msec
service timestamps log datetime msec
hostname kevin
!
username krimson password
!
isdn switch-type basic-net3
!
interface BRI0
```

```
no ip address
encapsulation ppp
dialer rotary-group 1
dialer-group 1
isdn switch-type basic-net3
isdn tei-negotiation preserve
no cdp enable
ppp authentication chap
!
interface Dialer1
ip address 10.9.8.2 255.255.255.0
encapsulation ppp
dialer in-band
dialer map ip 10.9.8.1 name krimson 027208196
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
  login
!
end
```

克里姆森

```
krimson#show running-config
!
version 12.2
!
service timestamps debug datetime msec
service timestamps log datetime msec
!
hostname krimson
!
username kevin password
!
isdn switch-type basic-net3
!
interface BRI0
no ip address
encapsulation ppp
no ip route-cache
no ip mroute-cache
no keepalive
dialer rotary-group 1
isdn switch-type basic-net3
no fair-queue
no cdp enable
ppp authentication chap
!
interface Dialer1
ip address 10.9.8.1 255.255.255.0
encapsulation ppp
no ip route-cache
no ip mroute-cache
load-interval 30
```

```
no keepalive
dialer in-band
dialer map ip 10.9.8.2 name kevin 027202094
dialer-group 1
no fair-queue
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
  login
!
end
```

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](#)(僅供註冊客戶使用)支援某些show命令，此工具可讓您檢視show命令輸出的分析。

- **show isdn status???**顯示所有ISDN介面的狀態。

```
kevin#show isdn status
Global ISDN Switchtype = basic-net3
ISDN BRI0 interface
dsl 0, interface ISDN Switchtype = basic-net3
Layer 1 Status:
DEACTIVATED
Layer 2 Status:
Layer 2 NOT Activated
!--- TEI is removed Layer 3 Status: 0 Active Layer 3 Call(s) Active dsl 0 CCBs = 0 The Free
Channel Mask: 0x3 Number of L2 Discards = 0, L2 Session ID = 10 Total Allocated ISDN CCBs = 0
```

疑難排解

本節提供的資訊可用於對組態進行疑難排解。

疑難排解指令

注意：發出debug命令之前，請參閱[有關Debug命令的重要資訊](#)。

- **debug isdn q921???**顯示路由器在其ISDN介面的D通道(LAPD)上發生的資料鏈路層（第2層）訪問過程。
- **debug isdn q931???**顯示本地路由器（使用者端）與網路之間的ISDN網路連線（第3層）的呼叫建立和拆除資訊。
- **debug isdn events???**顯示ISDN介面使用者端（路由器上）發生的ISDN事件。
- **debug bri -???**示ISDN BRI路由活動的調試資訊。

以下是kevin上的debug輸出：

kevin#

```
*Mar 1 03:04:14.235: BRI: write_sid: scp = 0, wrote = 92
*Mar 1 03:04:14.235: BRI: write_sid: scp = 80, wrote = 93
*Mar 1 03:04:14.239: BRI0: DEACTIVATED, state F1, event LSD
*Mar 1 03:04:14.243: BRI: write_sid: scp = 0, wrote = 1B
*Mar 1 03:04:14.243: BRI: write_sid: scp = 0, wrote = 20
*Mar 1 03:04:14.243: BRI: write_sid: scp = 0, wrote = 92
*Mar 1 03:04:14.247: BRI: write_sid: scp = A0, wrote = 93
*Mar 1 03:04:14.247: BRI0: DEACTIVATED, state F3, event AP
*Mar 1 03:04:14.251: BRI: write_sid: scp = 0, wrote = 3
*Mar 1 03:04:14.255: ISDN BR0: Recvd MPH_IIC_IND from L1
*Mar 1 03:04:14.263: BRI: write_sid: scp = 0, wrote = 92
*Mar 1 03:04:14.263: BRI: write_sid: scp = E0, wrote = 93
*Mar 1 03:04:14.267: BRI0: PENDING, state F7, event AI
*Mar 1 03:04:14.267: BRI: Received activation indication.
*Mar 1 03:04:14.271: Flush all frames in the queue if any
*Mar 1 03:04:14.275: ISDN BR0: L1 is IF_ACTIVE
*Mar 1 03:04:14.275: ISDN BR0 EVENT: isdn_sw_cstate: State = 4, Old State = 4
*Mar 1 03:04:14.279: ISDN BR0: Incoming call id = 0x0030, dsl 0
*Mar 1 03:04:14.319: ISDN BR0: TX -> IDREQ ri=65279 ai=127
*Mar 1 03:04:14.323: BRI: write_sid: scp = 0, wrote = E
*Mar 1 03:04:14.355: ISDN BR0: RX <- IDASSN ri=65279 ai=66
*Mar 1 03:04:14.375: ISDN BR0: TX -> SABMEp c/r=0 sapi=0 tei=66
*Mar 1 03:04:14.379: BRI: write_sid: scp = 0, wrote = E
*Mar 1 03:04:14.399: ISDN BR0: RX <- UI c/r=1 sapi=0 tei=127
i=0x08011C05A1040288901801896C0A218332373230383139367009A13237323032303934
*Mar 1 03:04:14.435: SETUP pd = 8 callref = 0x1C
*Mar 1 03:04:14.443: Sending Complete
*Mar 1 03:04:14.443: Bearer Capability i = 0x8890
*Mar 1 03:04:14.451: Channel ID i = 0x89
*Mar 1 03:04:14.455: Calling Party Number i = 0x21, 0x83,
'27208196', Plan:ISDN, Type:National
*Mar 1 03:04:14.475: Called Party Number i = 0xA1, '27202094',
Plan:ISDN, Type:National
*Mar 1 03:04:14.495: ISDN BR0: RX <- Uaf c/r=0 sapi=0 tei=66
*Mar 1 03:04:14.503: %ISDN-6-LAYER2UP: Layer 2 for Interface BR0, TEI 66
changed to up
*Mar 1 03:04:14.515: CCBRI_Go Fr L3 pkt (Len=35) :
*Mar 1 03:04:14.515: 5 1 9C 90 A1 4 2 88 90 18 1 89 6C A 21 83 32 37 32 30
38 31 39 36 70 9 A1 32 37 32 30 32 30 39 34
*Mar 1 03:04:14.527:
*Mar 1 03:04:14.531: ISDN BR0: Incoming call id = 0x0031, dsl 0
*Mar 1 03:04:14.535: ISDN BR0: LIF_EVENT: ces/callid 1/0x31
HOST_INCOMING_CALL
*Mar 1 03:04:14.543: ISDN BR0: HOST_INCOMING_CALL: (non-POTS) DATA
*Mar 1 03:04:14.543: ISDN BR0: HOST_INCOMING_CALL: (1) call_type = DATA
*Mar 1 03:04:14.547: ISDN BR0: HOST_INCOMING_CALL: voice_answer_data =
FALSE call type is DATA
*Mar 1 03:04:14.551: ISDN BR0: Event: Received a DATA call from 27208196
on B1 at 64 Kb/s
*Mar 1 03:04:14.551: ISDN BR0: Event: Accepting the call id 0x31
*Mar 1 03:04:14.555: ISDN BR0: RM returned call_type 0 resource type 0
response 1
*Mar 1 03:04:14.559: CCBRI_Go Fr Host InPkgInfo (Len=9) :
*Mar 1 03:04:14.563: 7 0 1 0 31 3 18 1 89
*Mar 1 03:04:14.567:
*Mar 1 03:04:14.575: ISDN BR0: isdn_send_connect(): msg 4, call id 0x31,
ces 1 bchan 0, call type DATA
*Mar 1 03:04:14.579: BRI: enable channel B1
*Mar 1 03:04:14.579: %LINK-3-UPDOWN: Interface BRI0:1, changed state to up
*Mar 1 03:04:14.591: ISDN: get_isdn_service_state(): idb 0x230B74 bchan 2
is_isdn 1 Not a Pri
```

```
*Mar 1 03:04:14.595: CCBRI_Go Fr Host InPkgInfo (Len=6) :
*Mar 1 03:04:14.599: 4 0 1 0 31 0
*Mar 1 03:04:14.603:
*Mar 1 03:04:14.615: ISDN BR0: TX -> INFOc sapi=0 tei=66 ns=0 nr=0
i=0x08019C02180189
*Mar 1 03:04:14.627: CALL_PROC pd = 8 callref = 0x9C
*Mar 1 03:04:14.631: Channel ID i = 0x89
*Mar 1 03:04:14.639: BRI: write_sid: scp = 0, wrote = E
*Mar 1 03:04:14.663: ISDN BR0: RX <- RRr sapi=0 tei=66 nr=1
*Mar 1 03:04:14.675: ISDN BR0: TX -> INFOc sapi=0 tei=66 ns=1 nr=0
i=0x08019C07
*Mar 1 03:04:14.679: CONNECT pd = 8 callref = 0x9C
*Mar 1 03:04:14.687: BRI: write_sid: scp = 0, wrote = E
*Mar 1 03:04:14.711: ISDN BR0: RX <- RRr sapi=0 tei=66 nr=2
*Mar 1 03:04:15.567: ISDN BR0: RX <- INFOc sapi=0 tei=66 ns=0 nr=2
i=0x08011C0F
*Mar 1 03:04:15.575: CONNECT_ACK pd = 8 callref = 0x1C
*Mar 1 03:04:15.595: ISDN BR0: TX -> RRr sapi=0 tei=66 nr=1
*Mar 1 03:04:15.595: BRI: write_sid: scp = 0, wrote = E
*Mar 1 03:04:15.619: CCBRI_Go Fr L3 pkt (Len=4) :
*Mar 1 03:04:15.619: F 1 9C 92
*Mar 1 03:04:15.623:
*Mar 1 03:04:15.627: ISDN BR0: LIF_EVENT: ces/callid 1/0x31 HOST_CONNECT
*Mar 1 03:04:15.631: BRI: enable channel B1
*Mar 1 03:04:15.631: ISDN BR0: Event: Connected to 27208196 on B1 at 64 Kb/s
*Mar 1 03:04:16.223: BR0:1 DDR: dialer protocol up
*Mar 1 03:04:17.187: %LINEPROTO-5-UPDOWN: Line protocol on Interface
BRI0:1, changed state to up
*Mar 1 03:04:20.591: %ISDN-6-CONNECT: Interface BRI0:1 is now connected to
027208196 krimson
*Mar 1 03:04:25.591: ISDN BR0: TX -> RRp sapi=0 tei=66 nr=1
*Mar 1 03:04:25.595: BRI: write_sid: scp = 0, wrote = E
*Mar 1 03:04:25.615: ISDN BR0: RX <- RRf sapi=0 tei=66 nr=2
```

kevin#**show isdn status**

```
Global ISDN Switchtype = basic-net3
ISDN BRI0 interface
dsl 0, interface ISDN Switchtype = basic-net3
Layer 1 Status:
ACTIVE
Layer 2 Status:
TEI = 66, Ces = 1, SAPI = 0, State = MULTIPLE_FRAME_ESTABLISHED
I_Queue_Len 0, UI_Queue_Len 0
Layer 3 Status:
1 Active Layer 3 Call(s)
CCB:callid=31, sapi=0, ces=1, B-chan=1, calltype=DATA
Active dsl 0 CCBs = 1
The Free Channel Mask: 0x80000002
Number of L2 Discards = 0, L2 Session ID = 10
Total Allocated ISDN CCBs = 1
```

kevin#

```
*Mar 1 03:04:35.623: ISDN BR0: TX -> RRp sapi=0 tei=66 nr=1
*Mar 1 03:04:35.627: BRI: write_sid: scp = 0, wrote = E
*Mar 1 03:04:35.647: ISDN BR0: RX <- RRf sapi=0 tei=66 nr=2
*Mar 1 03:04:45.655: ISDN BR0: TX -> RRp sapi=0 tei=66 nr=1
*Mar 1 03:04:45.659: BRI: write_sid: scp = 0, wrote = E
*Mar 1 03:04:45.679: ISDN BR0: RX <- RRf sapi=0 tei=66 nr=2
*Mar 1 03:04:55.683: ISDN BR0: RX <- RRp sapi=0 tei=66 nr=2
*Mar 1 03:04:55.691: ISDN BR0: TX -> RRf sapi=0 tei=66 nr=1
*Mar 1 03:04:55.695: BRI: write_sid: scp = 0, wrote = E
```

*Mar 1 03:05:05.691: ISDN BR0: TX -> RRp sapi=0 tei=66 nr=1
*Mar 1 03:05:05.695: BRI: write_sid: scp = 0, wrote = E
*Mar 1 03:05:05.715: ISDN BR0: RX <- RRf sapi=0 tei=66 nr=2
*Mar 1 03:05:15.724: ISDN BR0: TX -> RRp sapi=0 tei=66 nr=1
*Mar 1 03:05:15.728: BRI: write_sid: scp = 0, wrote = E
*Mar 1 03:05:15.748: ISDN BR0: RX <- RRf sapi=0 tei=66 nr=2
*Mar 1 03:05:25.756: ISDN BR0: TX -> RRp sapi=0 tei=66 nr=1
*Mar 1 03:05:25.760: BRI: write_sid: scp = 0, wrote = E
*Mar 1 03:05:25.780: ISDN BR0: RX <- RRf sapi=0 tei=66 nr=2
*Mar 1 03:05:35.788: ISDN BR0: TX -> RRp sapi=0 tei=66 nr=1
*Mar 1 03:05:35.792: BRI: write_sid: scp = 0, wrote = E
*Mar 1 03:05:35.812: ISDN BR0: RX <- RRf sapi=0 tei=66 nr=2
*Mar 1 03:05:45.820: ISDN BR0: TX -> RRp sapi=0 tei=66 nr=1
*Mar 1 03:05:45.824: BRI: write_sid: scp = 0, wrote = E
*Mar 1 03:05:45.844: ISDN BR0: RX <- RRf sapi=0 tei=66 nr=2
*Mar 1 03:05:55.852: ISDN BR0: TX -> RRp sapi=0 tei=66 nr=1
*Mar 1 03:05:55.856: BRI: write_sid: scp = 0, wrote = E
*Mar 1 03:05:55.880: ISDN BR0: RX <- RRf sapi=0 tei=66 nr=2
*Mar 1 03:06:05.888: ISDN BR0: TX -> RRp sapi=0 tei=66 nr=1
*Mar 1 03:06:05.892: BRI: write_sid: scp = 0, wrote = E
*Mar 1 03:06:05.912: ISDN BR0: RX <- RRf sapi=0 tei=66 nr=2
*Mar 1 03:06:15.920: ISDN BR0: TX -> RRp sapi=0 tei=66 nr=1
*Mar 1 03:06:15.924: BRI: write_sid: scp = 0, wrote = E
*Mar 1 03:06:15.944: ISDN BR0: RX <- RRf sapi=0 tei=66 nr=2
*Mar 1 03:06:17.024: BR0:1 DDR: idle timeout
*Mar 1 03:06:17.028: BR0:1 DDR: disconnecting call
*Mar 1 03:06:17.028: ISDN BR0: Event: Hangup call to call id 0x31
*Mar 1 03:06:17.032: BRI: disable channel B1
*Mar 1 03:06:17.032: ISDN BR0: process_disconnect(): call id 0x31, call
type is DATA, b_idb 0x230B74, ces 1, cause Normal call clearing(0x10)
*Mar 1 03:06:17.040: %ISDN-6-DISCONNECT: Interface BRI0:1 disconnected
from 27208196 krimson, call lasted 122 seconds
*Mar 1 03:06:17.048: ISDN: get_isdn_service_state(): idb 0x230B74 bchan 2
is_isdn 1 Not a Pri
*Mar 1 03:06:17.052: CCBRI_Go Fr Host InPkgInfo (Len=13) :
*Mar 1 03:06:17.052: 5 0 1 0 31 3 8 1 90 8 2 80 90
*Mar 1 03:06:17.056:
*Mar 1 03:06:17.072: ISDN BR0: TX -> INFOc sapi=0 tei=66 ns=2 nr=1
i=0x08019C4508028090
*Mar 1 03:06:17.084: DISCONNECT pd = 8 callref = 0x9C
*Mar 1 03:06:17.088: Cause i = 0x8090 - Normal call clearing
*Mar 1 03:06:17.096: BRI: write_sid: scp = 0, wrote = E
*Mar 1 03:06:17.124: ISDN BR0: RX <- RRr sapi=0 tei=66 nr=3
*Mar 1 03:06:17.556: ISDN BR0: RX <- INFOc sapi=0 tei=66 ns=1 nr=3
i=0x08011C4D
*Mar 1 03:06:17.564: RELEASE pd = 8 callref = 0x1C
*Mar 1 03:06:17.580: CCBRI_Go Fr L3 pkt (Len=4) :
*Mar 1 03:06:17.584: 4D 1 9C 97
*Mar 1 03:06:17.584:
*Mar 1 03:06:17.592: ISDN BR0: LIF_EVENT: ces/callid 1/0x31
HOST_DISCONNECT_ACK
*Mar 1 03:06:17.596: ISDN: get_isdn_service_state(): idb 0x230B74 bchan 2
is_isdn 1 Not a Pri
*Mar 1 03:06:17.600: ISDN BR0: HOST_DISCONNECT_ACK: call type is DATA
*Mar 1 03:06:17.604: BRI: disable channel B1
*Mar 1 03:06:17.604: %LINK-3-UPDOWN: Interface BRI0:1, changed state to
down
*Mar 1 03:06:17.612: BR0:1 DDR: disconnecting call
*Mar 1 03:06:17.616: ISDN BR0: LIF_EVENT: ces/callid 1/0x31
HOST_DISCONNECT_ACK
*Mar 1 03:06:17.620: ISDN: get_isdn_service_state(): idb 0x230B74 bchan 2
is_isdn 1 Not a Pri
*Mar 1 03:06:17.624: ISDN BR0: HOST_DISCONNECT_ACK: call type is DATA
*Mar 1 03:06:17.628: BRI: disable channel B1

```
*Mar 1 03:06:17.636: ISDN BR0: TX -> RRr sapi=0 tei=66 nr=2
*Mar 1 03:06:17.640: BRI: write_sid: scp = 0, wrote = E
*Mar 1 03:06:17.644: ISDN BR0: TX -> INF0c sapi=0 tei=66 ns=3 nr=2
i=0x08019C5A
*Mar 1 03:06:17.652: RELEASE_COMP pd = 8 callref = 0x9C
*Mar 1 03:06:17.660: BRI: write_sid: scp = 0, wrote = E
*Mar 1 03:06:17.684: ISDN BR0: RX <- RRr sapi=0 tei=66 nr=4
*Mar 1 03:06:18.940: %LINEPROTO-5-UPDOWN: Line protocol on Interface
BRI0:1, changed state to down
*Mar 1 03:06:27.693: ISDN BR0: TX -> RRp sapi=0 tei=66 nr=2
*Mar 1 03:06:27.697: BRI: write_sid: scp = 0, wrote = E
*Mar 1 03:06:27.717: ISDN BR0: RX <- RRf sapi=0 tei=66 nr=4
*Mar 1 03:06:32.781: ISDN BR0: RX <- DISCp c/r=1 sapi=0 tei=66
*Mar 1 03:06:32.785: %ISDN-6-LAYER2DOWN: Layer 2 for Interface BR0, TEI 66
changed to down
*Mar 1 03:06:32.793: ISDN BR0: TX -> UAf c/r=1 sapi=0 tei=66
*Mar 1 03:06:32.797: BRI: write_sid: scp = 0, wrote = E
```

kevin#**show isdn status**

```
Global ISDN Switchtype = basic-net3
ISDN BRI0 interface
dsl 0, interface ISDN Switchtype = basic-net3
Layer 1 Status:
ACTIVE
Layer 2 Status:
TEI = 66, Ces = 1, SAPI = 0, State = TEI_ASSIGNED
!--- ISDN Layer 2 is disconnected I_Queue_Len 0, UI_Queue_Len 0 Layer 3 Status: 0 Active Layer 3
Call(s) Active dsl 0 CCBs = 0 The Free Channel Mask: 0x3 Number of L2 Discards = 0, L2 Session
ID = 10 Total Allocated ISDN CCBs = 0
```

kevin#

```
*Mar 1 03:06:42.881: BRI: write_sid: scp = 0, wrote = 92
*Mar 1 03:06:42.885: BRI: write_sid: scp = 90, wrote = 93
*Mar 1 03:06:42.885: BRI0: ACTIVATED, state F2, event DI
*Mar 1 03:06:42.889: BRI: T4 timer started DEACT timer expired
*Mar 1 03:06:43.493: BRI: write_sid: scp = 0, wrote = 92
*Mar 1 03:06:43.493: BRI: write_sid: scp = 90, wrote = 93
*Mar 1 03:06:43.497: BRI: write_sid: scp = 0, wrote = 1
*Mar 1 03:06:43.497: BRI: write_sid: scp = 0, wrote = 0
*Mar 1 03:06:43.501: ISDN BR0 EVENT: isdn_sw_cstate: State = 0, Old State = 4
*Mar 1 03:06:43.505: BRI: disable channel B1
*Mar 1 03:06:43.505: BRI: disable channel B2
*Mar 1 03:06:43.509: ISDN BR0: Physical layer is IF_DOWN
!--- ISDN Layer 1 deactivated due to no calls on BRI
*Mar 1 03:06:43.509: ISDN BR0: Shutting down ME
*Mar 1 03:06:43.513: ISDN BR0: Shutting down ISDN Layer 3
```

kevin#**show isdn status**

```
Global ISDN Switchtype = basic-net3
ISDN BRI0 interface
dsl 0, interface ISDN Switchtype = basic-net3
Layer 1 Status:
DEACTIVATED
Layer 2 Status:
TEI = 66, Ces = 1, SAPI = 0, State = TEI_ASSIGNED
!--- TEI is preserved due to used configuration I_Queue_Len 0, UI_Queue_Len 0 Layer 3 Status: 0
Active Layer 3 Call(s) Active dsl 0 CCBs = 0 The Free Channel Mask: 0x3 Number of L2 Discards =
0, L2 Session ID = 11 Total Allocated ISDN CCBs = 0
```

[相關資訊](#)

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- [技術支援 - Cisco Systems](#)