

ISDN BRI 终端端点标识协商

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简介

本文为ISDN基本速率接口(BRI)提供一个配置示例，并且描述了Cisco路由器关于终端端点标识(TEI)协商进程的行为。

先决条件

要求

本文档没有任何特定的要求。

使用的组件

本文档中的信息基于以下软件和硬件版本：

- Cisco IOS软件版本12.2(6)。
- 所有硬件平台。

注意： `isdn tei-negotiation preserve`命令在Cisco IOS软件版本12.2(6)和12.2(6)T中被引入。

本文档中的信息都是基于特定实验室环境中的设备编写的。本文档中使用的所有设备最初均采用原始（默认）配置。如果您使用的是真实网络，请确保您已经了解所有命令的潜在影响。

规则

有关文档规则的详细信息，请参阅 [Cisco 技术提示规则](#)。

背景信息

在某些欧洲国家(例如，比利时和荷兰)，通常做法是电话公司(Telco)当BRI线路在非活动状态下一定时间后，断开ISDN第1层，处于节能的考虑。这些选择是可能的：

- 在第1层停止摆动后，已经分配的TEI可以被保留。
- Cisco IOS软件可以配置为每次第1层摆动就重新协商TEI。

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：要查找本文档所用命令的其他信息，请使用[命令查找工具](#)（[仅限注册用户](#)）。

网络图

本文档使用以下网络设置：



在本例中，我们使用以BRI线路连接的两个Cisco 2500路由器。

配置

本文档使用以下配置：

- kevin
- krimson

kevin

```
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
```

krimson

```
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
```

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 isdn status**显示所有ISDN接口状况。

```
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
```

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

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 q921**显示数据链路层(2层)接入过程，在路由器ISDN接口的D信道(LAPD)上发生。
- **debug isdn q931** 显示关于ISDN网络连接（3层）呼叫建立及断开的信息，在本地路由器(用户端)和网络之间。
- **debug isdn events** 显示发生在ISDN接口用户端(在路由器上)的ISDN事件。
- **debug bri** 显示关于ISDN BRI路由活动的调试信息。

这是在kevin上的debug输出：

```
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 -> INFOc 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
```

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