使用 PRI 线路实现 DNIS 与调制解调器池

目录

简介

在本文的配置示例说明如何配置的数字号码识别服务(DNIS)支持主速率接口和如何设置调制解调器汇集。提供三配置：

1. 调制解调器汇集用在定义的多个调制解调器pool-range。
2. 调制解调器汇集用在的一个调制解调器pool-range。
3. 没有a的调制解调器汇集pool-range。

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 11.3(1.1)T 或更高版本。
- PRI由DNIS支持的Telco设置了。
- Cisco AS5x00系列路由器。

注意： 调制解调器汇集不是可能的在Cisco 3600系列路由器。

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。

背景理论

如果使用远程拨入用户服务(RADIUS)作为您的认证协议，您需要认识RADIUS (IETF)记帐属性30 (主机ID)。

主机ID允许网络接入服务器(NAS)发送编号用户呼叫作为访问请求信息包一部分(使用DNIS或相似的技术)。主机ID，当与PRI一起使用时， ISDN和调制解调器呼叫仅支持在Cisco AS5x00。

配置

本文档使用如下所示的配置。

- 在pool-range a的多个调制解调器
- 在池的一个调制解调器
- 没有a的调制解调器汇集pool-range

本部分提供有关如何配置本文档所述功能的信息。

注意： 要寻找关于用于本文的指令的其他信息，请使用命令查找工具

网络图

本文档使用下图所示的网络设置。

配置1 ：在pool-range a的多个调制解调器

配置注释

客户拨号5557528并且连接到在的一个调制解调器pool-range 3条到5.线路3到5配置对**autocommand telnet**一个特定IP地址的用户，在登录用户ID和密码输入在路由器提示后(>)。

警告： 当您在*最大连接数时*配置被叫号码功能，并且不放置， Cisco路由器默认为调制解调器编号在池的。在此配置示例中，调制解调器3到5配置，因此Cisco IOS软件在**max-conn 3**放置在**called-number命令结束时**。

如果更换调制解调器编号在池的，您必须手工更换**最大连接数**。

此配置示例使用本地认证。

在pool-range a的多个调制解调器

```
Current configuration:
!
version 11.3
service timestamps debug datetime msec
service password-encryption

service udp-small-servers
service tcp-small-servers
!
hostname isdn2-2
!

aaa new-model
!
username cisco password 7 xxxxxxxxx
!
modem-pool tito
 pool-range 3-5
 called-number 5557528 max-conn 3
ip domain-name cisco.com
isdn switch-type primary-5ess
clock timezone PST -8
clock summer-time PDT recurring
!
!
controller T1 0
 framing esf
 clock source line primary
 linecode b8zs
 pri-group timeslots 1-24
 description 5557528 pri
!
controller T1 1
 framing esf
 clock source line secondary
 linecode b8zs
!
interface Loopback0
 ip address 10.1.1.1 255.0.0.0
!
interface Ethernet0
 ip address 172.16.25.52 255.255.255.240
!
interface Serial0
 no ip address
 shutdown
!
interface Serial1
 no ip address
 shutdown
!
interface Serial0:23
 no ip address
 no ip mroute-cache
 isdn incoming-voice modem
 no cdp enable
!
```

```
interface Group-Async1
 no ip address
 group-range 1 24
!
router eigrp 202
 network 172.16.0.0
 distance 90 172.16.25.49 0.0.0.0
 distance 255 0.0.0.0 255.255.255.255
 no auto-summary
!
ip default-gateway 172.16.25.49
ip classless
ip route 0.0.0.0 0.0.0.0 172.16.25.49
!
line con 0
 exec-timeout 0 0
line 1 2
 modem InOut
line 3 5
 modem InOut
 autocommand telnet 10.1.1.1
line 6 24
 modem InOut
line aux 0
line vty 0 4
 password 7 xxxxx
!
end

isdn2-2#
```

调试与验证提示

要保证您的配置是工作正常，请使用**显示**和调试指令。从这些should命令的输出类似于跟随的输出。

isdn2-2#**show version** Cisco Internetwork Operating System Software IOS (tm) 5200 Software (C5200-D-L), Version 11.3(1.1)T, MAINTENANCE INTERIM SOFTWARE Copyright (c) 1986-1998 by cisco Systems, Inc. Compiled Sun 11-Jan-98 07:12 by ccai Image text-base: 0x03034CD4, data-base: 0x00005000 ROM: System Bootstrap, Version 11.1(473), SOFTWARE isdn2-2 uptime is 18 hours, 41 minutes System restarted by reload System image file is "bootflash:c5200-d-l.113-1.1.T", booted via flash cisco AS5200 (68030) processor (revision 0x00) with 16384K/8192K bytes of memory. Processor board ID 03676053 Bridging software. X.25 software, Version 3.0.0. Primary Rate ISDN software, Version 1.0. Mother board without terminator card. 1 Ethernet/IEEE 802.3 interface(s) 26 Serial network interface(s) 24 terminal line(s) 2 Channelized T1/PRI port(s) 128K bytes of non-volatile configuration memory. 8192K bytes of processor board System flash (Read/Write) 8192K bytes of processor board Boot flash (Read ONLY) Configuration register is 0x2101 isdn2-2#

- **show modem-pool，当用户没有连接**调制解调器3， 4和5为调制解调器池配置名为“铁托”，并且调制解调器未拨号。默认池是为拨号码没有为一定义调制解调器池配置的用户。isdn2-2#**show modem-pool** modem-pool: System-def-Mpool *!--- default pool* modems in pool: 21 active conn: 0 3 no free modems in pool modem-pool: tito *!--- modem-pool named 'tito'* modems in pool: 3 active conn: 0 0 no free modems in pool called_party_number: 5557528 max conn allowed: 3, active conn: 0 0 max-conn exceeded, 0 no free modems in pool
- **与一连接的show modem-pool**一个用户拨号在并且连接对modem5。使用在池的调制解调器的**show modem-pool命令不**显示。
  show modem-pool ------------- modem-pool: tito modems in pool: 3 active conn: 1 0 no free modems in pool called_party_number: 5557528 max conn allowed: 3, active conn: 1 0 max-conn exceeded, 0 no free modems in pool **show line命令**显示使用modem5。isdn2-2#**show line** Tty Typ Tx/Rx A Modem Roty AccO AccI Uses Noise Overruns * 0 CTY - - - - - 0 0 0/0 1 TTY

```
115200/115200 - inout - - - 0 0 0/0 2 TTY 115200/115200 - inout - - - 0 0 0/0 3 TTY
115200/115200 - inout - - - 0 0 0/0 4 TTY 115200/115200 - inout - - - 1 0 0/0 * 5 TTY
115200/115200 - inout - - - 1 0 0/0 6 TTY 115200/115200 - inout - - - 0 0 0/0 7 TTY
115200/115200 - inout - - - 0 0 0/0 8 TTY 115200/115200 - inout - - - 0 0 0/0 9 TTY
115200/115200 - inout - - - 0 0 0/0 10 TTY 115200/115200 - inout - - - 0 0 0/0 11 TTY
115200/115200 - inout - - - 0 0 0/0 12 TTY 115200/115200 - inout - - - 0 0 0/0 [remaining
output omitted]
```

- **使用debug isdn q931命令**注意远程用户拨号的编号。此编号必须匹配编号配置在调制解调器池铁托下。用户的电话号码不是重要在此方案。*Mar 1 18:54:31.951: Called Party Number i = 0xC1, '4085557528'

  注意： 出于打印目的，以下某些调试输出行分为多个行。isdn2-2#

```
*Mar 1 18:54:31.935: ISDN Se0:23: RX <- SETUP pd = 8 callref = 0x2B
*Mar 1 18:54:31.939:     Bearer Capability i = 0x9090A2
*Mar 1 18:54:31.939:     Channel ID i = 0xA98393
*Mar 1 18:54:31.943:     Progress Ind i = 0x8381 - Call not end-to-end ISDN,
   may have in-band info
*Mar 1 18:54:31.947:     Calling Party Number i = '!', 0x83, '4085559486'
*Mar 1 18:54:31.951:     Called Party Number i = 0xC1, '4085557528'
*Mar 1 18:54:31.963: ISDN Se0:23: Incoming call id = 0xA
*Mar 1 18:54:31.987: ISDN Se0:23: TX -> CALL_PROC pd = 8 callref = 0x802B
*Mar 1 18:54:31.991:     Channel ID i = 0xA98393
*Mar 1 18:54:32.023: ISDN Se0:23: TX -> ALERTING pd = 8 callref = 0x802B
*Mar 1 18:54:33.067: ISDN Se0:23: TX -> CONNECT pd = 8 callref = 0x802B
*Mar 1 18:54:33.143: ISDN Se0:23: RX <- CONNECT_ACK pd = 8 callref = 0x2B
isdn2-2#
```

- **debug isdn q931和debug modem csm输出**用户连接到Line5或Modem5调制解调器(slot/port)=0/4。呼叫处理是循环法。使用的第一个调制解调器是3，下是4，并且为时是5。不重要第一个调制解调器是否是可用的。isdn2-2# **show line 5** TTY Typ TX/Rx A Modem Roty AccO AccI Uses Noise Overruns * 5 TTY 115200/115200 - inout - - - 1 0 0/0 Line 5, Location: "", Type: "" Length: 24 lines, Width: 80 columns Baud rate (TX/RX) is 115200/115200, no parity, 1 stopbits, 8 databits Status: Ready, Active, No Exit Banner Capabilities: Hardware Flowcontrol In, Hardware Flowcontrol Out Modem Callout, Modem RI is CD Modem state: Ready modem(slot/port)=0/4, state=CONNECTED dsx1(slot/unit/channel)=2/0/18, status=VDEV_STATUS_ACTIVE_CALL. Modem hardware state: CTS DSR DTR RTS Special Chars: Escape Hold Stop Start Disconnect Activation ^^x none - - none Timeouts: Idle EXEC Idle Session Modem Answer Session Dispatch 00:10:00 never none not set Idle Session Disconnect Warning never Modem type is unknown. Session limit is not set. Time since activation: 00:01:35 Editing is enabled. History is enabled, history size is 10. DNS resolution in show commands is enabled Full user help is disabled Allowed transports are pad telnet rlogin mop. Preferred is telnet. Automatically execute command "telnet 10.1.1.1" No output characters are padded No special data dispatching characters isdn2-2#
- **调试输出**isdn2-2#

```
%SYS-5-CONFIG_I: Configured from console by console
*Mar 1 19:00:07.227: ISDN Se0:23: RX <- SETUP pd = 8 callref = 0x2D
*Mar 1 19:00:07.227:     Bearer Capability i = 0x9090A2
*Mar 1 19:00:07.231:     Channel ID i = 0xA98393
*Mar 1 19:00:07.235:     Progress Ind i = 0x8381 - Call not end-to-end ISDN,
   may have in-band info
*Mar 1 19:00:07.239:     Calling Party Number i = '!', 0x83, '4085559444'
*Mar 1 19:00:07.243:     Called Party Number i = 0xC1, '4085557528'
*Mar 1 19:00:07.255: ISDN Se0:23: Incoming call id = 0xC
*Mar 1 19:00:07.259: EVENT_FROM_ISDN::dchan_idb=0x25B660, call_id=0xC, ces=0x1
  bchan=0x12, event=0x1, cause=0x0
*Mar 1 19:00:07.263: VDEV_ALLOCATE: slot 0 and port 4 is allocated.
*Mar 1 19:00:07.263: EVENT_FROM_ISDN:(000C): DEV_INCALL at slot 0 and port 4
*Mar 1 19:00:07.267: CSM_PROC_IDLE: CSM_EVENT_ISDN_CALL at slot 0, port 4
*Mar 1 19:00:07.267: Fast Ringing On at modem slot 0, port 4
*Mar 1 19:00:07.291: ISDN Se0:23: TX -> CALL_PROC pd = 8 callref = 0x802D
*Mar 1 19:00:07.291:     Channel ID i = 0xA98393
*Mar 1 19:00:07.343: ISDN Se0:23: TX -> ALERTING pd = 8 callref = 0x802D
```

```
*Mar 1 19:00:08.367: Fast Ringing Off at modem slot 0, port 4
*Mar 1 19:00:08.367: CSM_PROC_IC1_RING: CSM_EVENT_MODEM_OFFHOOK at slot 0, port 4
*Mar 1 19:00:08.379: ISDN Se0:23: TX -> CONNECT pd = 8 callref = 0x802D
*Mar 1 19:00:08.451: ISDN Se0:23: RX <- CONNECT_ACK pd = 8 callref = 0x2D
*Mar 1 19:00:08.463: EVENT_FROM_ISDN::dchan_idb=0x25B660, call_id=0xC, ces=0x1
   bchan=0x12, event=0x4, cause=0x0
*Mar 1 19:00:08.467: EVENT_FROM_ISDN:(000C): DEV_CONNECTED at slot 0 and port 4
*Mar 1 19:00:08.471: CSM_PROC_IC4_WAIT_FOR_CARRIER: CSM_EVENT_ISDN_CONNECTED at
   slot 0, port 4
*Mar 1 19:00:20.939: TTY5: DSR came up
*Mar 1 19:00:20.947: tty5: Modem: IDLE->READY
*Mar 1 19:00:20.951: TTY5: EXEC creation
```

- **没有调制解调器的show modem-pool释放**以下表示忙碌所有的调制解调器和ISDN呼叫设置拒绝的呼叫。modem-pool: System-def-Mpool
modems in pool: 21 active conn: 0
 3 no free modems in pool

modem-pool: tito
modems in pool: 3 active conn: 0
     3 no free modems in pool
!--- This number is the number of times it has failed to allocate a modem !--- from the pool. It is not the number of modems in the pool.) called_party_number: 5557528 max conn allowed: 3, active conn: 0 *!--- 3 is the number of modems configured in the pool tito. !--- None are active.* 0 max-conn exceeded, 3 no free modems in pool *!--- failed 3 times to allocate a modem from the pool* isdn2-2#**debug isdn events** ISDN events debugging is on isdn2-2# *Mar 1 19:11:26.471: ISDN Se0:23: RX <- SETUP pd = 8 callref = 0x2F *Mar 1 19:11:26.475: Bearer Capability i = 0x9090A2 *Mar 1 19:11:26.479: Channel ID i = 0xA98393 *Mar 1 19:11:26.479: Progress Ind i = 0x8381 - Call not end-to-end ISDN, may have in-band info *Mar 1 19:11:26.483: Calling Party Number i = '!', 0x83, '4085559445' *Mar 1 19:11:26.487: Called Party Number i = 0xC1, '4085557528' *Mar 1 19:11:26.499: ISDN Se0:23: Incoming call id = 0xE *Mar 1 19:11:26.503: CCPRI, state = 0, serv = 0, int_id = 0, lo_chan = 19, type = 3, Dsl_Id = 0, callid = E *Mar 1 19:11:26.507: CCPRI in a Glare situation state 0 serv 0 *Mar 1 19:11:26.511: ISDN Se0:23: received CALL_INCOMING *Mar 1 19:11:26.511: extracted channel ie[0-8]= 18 3 A9 83 93 38 34 33 32 *Mar 1 19:11:26.515: *Mar 1 19:11:26.519: ISDN Se0:23: Event: Received a Voice call from 4085559445 on B19 at 64 Kb/s *Mar 1 19:11:26.519: ISDN Se0:23: CALL_INCOMING: MODEM ERROR 2C: bchan 18, call id E *Mar 1 19:11:26.535: in CCPRI_ReleaseCall bchan is 13 dsl is 0 *Mar 1 19:11:26.539: leaving CCPRI_ReleaseCall, Allocated CCBs = 0 *Mar 1 19:11:26.543: ISDN Se0:23: entering process_rxstate, CALL_CLEARED *Mar 1 19:11:26.615: ISDN Se0:23: TX -> RELEASE_COMP pd = 8 callref = 0x802F *Mar 1 19:11:26.615: Cause i = 0x80AC - Requested channel not available isdn2-2#

配置2 ：在池的一个调制解调器

在池的一个调制解调器

```
enable password 7 XXXXXXXXXX
!
username cisco password 7 xxxxxxxxxxxx
!
modem-pool tito
 pool-range 3
! -- only modem #3 is configured called-number 5557528
max-conn 1 ip domain-name cisco.com isdn switch-type
primary-5ess clock timezone PST -8 clock summertime PDT
recurring ! !
```

调试与验证提示

要保证您的配置是工作正常，请使用show命令。从此should命令的输出类似于跟随的输出。

- **show modem-pool用一个调制解调器**以下表示用一个调制解调器配置的调制解调器池。两个用户同时拨，并且一个用户连接。isdn2-2# **show modem-pool** modem-pool: System-def-Mpool modems in pool: 23 active conn: 0 3 no free modems in pool modem-pool: tito modems in pool: 1 active conn: 1 4 no free modems in pool called_party_number: 5557528 max conn allowed: 1, active conn: 1 0 max-conn exceeded, 1 no free modems in pool isdn2-2# **show modem-pool** modem-pool: System-def-Mpool modems in pool: 23 active conn: 0 3 no free modems in pool modem-pool: tito modems in pool: 1 active conn: 1 4 no free modems in pool called_party_number: 5557528 max conn allowed: 1, active conn: 1 0 max-conn exceeded, 1 no free modems in pool isdn2-2# **在以下输出中，第一个用户保持已连接，并且第二个用户一次拨，并且呼叫发生故障**
  - isdn2-2#
isdn2-2#
*Mar 1 19:38:57.103: ISDN Se0:23: RX <- SETUP pd = 8 callref = 0x33
*Mar 1 19:38:57.107: Bearer Capability i = 0x9090A2
*Mar 1 19:38:57.111: Channel ID i = 0xA98394
*Mar 1 19:38:57.111: Progress Ind i = 0x8381
- Call not end-to-end ISDN, may have in-band info
*Mar 1 19:38:57.115: Calling Party Number i = '!', 0x83, '4085559474'
*Mar 1 19:38:57.119: Called Party Number i = 0xC1, '4085557528'
*Mar 1 19:38:57.135: ISDN Se0:23: Incoming call id = 0x12
*Mar 1 19:38:57.139: ISDN Se0:23: CALL_INCOMING: MODEM ERROR 2C: bchan 19,
call id 12
*Mar 1 19:38:57.235: ISDN Se0:23: TX -> RELEASE_COMP pd = 8 callref = 0x8033
*Mar 1 19:38:57.239: Cause i = 0x80AC - Requested channel not available
isdn2-2#
isdn2-2#**show modem-pool** modem-pool: System-def-Mpool modems in pool: 23 active conn: 0 3 no free modems in pool modem-pool: tito modems in pool: 1 active conn: 1 4 no free modems in pool called_party_number: 5557528 max conn allowed: 1, active conn: 1 1 max-conn exceeded, 1 no free modems in pool isdn2-2# **第二用户尝试再拨号和失败。注意2 max-conn超出的**语句。
isdn2-2#
*Mar 1 19:40:34.143: ISDN Se0:23: RX <- SETUP pd = 8 callref = 0x34
*Mar 1 19:40:34.147: Bearer Capability i = 0x9090A2
*Mar 1 19:40:34.147: Channel ID i = 0xA98394
*Mar 1 19:40:34.151: Progress Ind i = 0x8381 - Call not end-to-end ISDN,
may have in-band info
*Mar 1 19:40:34.155: Calling Party Number i = '!', 0x83, '4085559486'
*Mar 1 19:40:34.159: Called Party Number i = 0xC1, '4085557528'
*Mar 1 19:40:34.171: ISDN Se0:23: Incoming call id = 0x13
*Mar 1 19:40:34.179: ISDN Se0:23: CALL_INCOMING: MODEM ERROR 2C: bchan 19,
call id 13
*Mar 1 19:40:34.267: ISDN Se0:23: TX -> RELEASE_COMP pd = 8 callref = 0x8034
*Mar 1 19:40:34.271: Cause i = 0x80AC - Requested channel not available
isdn2-2#
isdn2-2#**show modem-pool** modem-pool: System-def-Mpool modems in pool: 23 active conn: 0 3 no free modems in pool modem-pool: tito modems in pool: 1 active conn: 1 4 no free modems in pool called_party_number: 5557528 max conn allowed: 1, active conn: 1 **2 max-conn exceeded**, 1 no free modems in pool isdn2-2#
- **show modem-pool，当第一个用户计时了由于非活动**isdn2-2#**show modem-pool** modem-pool: System-def-Mpool modems in pool: 23 active conn: 0 3 no free modems in pool modem-pool: tito modems in pool: 1 active conn: 0 4 no free modems in pool called_party_number: 5557528 max conn allowed: 1, active conn: 0 2 max-conn exceeded, 1 no free modems in pool modem-pool: System-def-Mpool *!--- This is the default modem pool* modems in pool: 23 active conn: 0 *!--- There are 24 modems installed on this access server, !--- 23 are available to the default pool, the other !--- modem is available only to modem-pool tito* 3 no free modems in pool *!--- Three failures to allocate a modem from a pool for a user dialing in* modem-pool: tito *!--- Pool named tito* modems in pool: 1 active conn: 0 *!--- One modem configured in this pool, 0 active connections to !--- modems in this pool* 4 no free modems in pool *!--- Four failed attempts to allocate a modem to a user that dialed in.* called_party_number: 5557528 *!--- This is the number of the Cisco access-server that the remote user dialed.* max conn allowed: 1, active conn: 0 *!--- Max connection allowed per pool, 0 active* 2 max-conn exceeded, 1 no free modems in pool *!--- Failed twice to allocate a modem to the user because the !--- number of connections was exceeded for that pool)* isdn2-2#

配置3 ：没有a的调制解调器汇集pool-range

除了pool-range 3-5命令和max-conn参数，此配置是相同的象多个调制解调器在pool-range配置方面。

没有a的调制解调器汇集pool-range
! **modem-pool tito called-number 5557528 max-conn 0** ip domain-name cisco.com isdn switch-type primary-5ess !

调试与验证提示

要保证您的配置是工作正常，请使用show命令。从此should命令的输出类似于跟随的输出。

- **在第一个拨号前的show modem-pool**isdn2-2#**show modem-pool** modem-pool: System-def-Mpool modems in pool: 24 active conn: 1 3 no free modems in pool modem-pool: tito modems in pool: 0 active conn: 0 4 no free modems in pool called_party_number: 5557528 max conn allowed: 0, active conn: 0 0 max-conn exceeded, 0 no free modems in pool
- **在用户以后的show modem-pool及debug拨号并且不能连接**isdn2-2#**debug isdn q931** ISDN Q931 packets debugging is on isdn2-2#**debug modem** Modem control/process activation debugging is on isdn2-2# *Mar 1 19:56:50.827: ISDN Se0:23: RX <- SETUP pd = 8 callref = 0x38 *Mar 1 19:56:50.827: Bearer Capability i = 0x9090A2 *Mar 1 19:56:50.831: Channel ID i = 0xA98393 *Mar 1 19:56:50.835: Progress Ind i = 0x8381 - Call not end-to-end ISDN, may have in-band info *Mar 1 19:56:50.839: Calling Party Number i = '!', 0x83, '4085559474' *Mar 1 19:56:50.843: Called Party Number i = 0xC1, '4085557528' *Mar 1 19:56:50.851: ISDN Se0:23: Incoming call id = 0x17 *Mar 1 19:56:50.859: ISDN Se0:23: CALL_INCOMING: MODEM ERROR 2C: bchan 18, call id 17 *Mar 1 19:56:50.947: ISDN Se0:23: TX -> RELEASE_COMP pd = 8 callref = 0x8038 *Mar 1 19:56:50.951: Cause i = 0x80AC - Requested channel not available isdn2-2# isdn2-2#**show modem-pool** modem-pool: System-def-Mpool modems in pool: 24 active conn: 0 3 no free modems in pool modem-pool: tito modems in pool: 0 active conn: 0 4 no free modems in pool called_party_number: 5557528 max conn allowed: 0, active conn: 0 1 max-conn exceeded, 0 no free modems in pool

验证

请参考上面配置示例特定验证信息。

故障排除

请参考上面配置示例特定验证信息。

相关信息

- 技术支持 - Cisco Systems