

T1 CAS 信令的配置与故障排除

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简介

本文解释必要的配置实现T1随路信令(CAS)。

先决条件

要求

尝试进行此配置之前，请确保满足以下要求：

本文根据[知道数字T1 CAS \(夺位信号\)如何在IOS网关工作](#)。阅读本文了解CAS信令方法的多种类型。本文也起一个指南作用对于配置不同种类的CAS发信号。

在您实现发信号在Cisco AS5300路由器前的E1 R2，请检查保证您的Cisco IOS版本软件是与在E1模块的Cisco VCWare兼容。如果版本是不兼容的，在语音卡的数字信号信号处理器(DSP)模块不会装载，并且语音信号处理不会发生。请参阅[Cisco VCWare兼容性矩阵关于Cisco AS5300](#)保证您的版本兼容。

一般，如果Cisco VCWare版本不是与Cisco IOS软件兼容，您能由输入**show vfc slot_number interface**命令看到此如显示此处：

```
5300#show vfc 1 interface
Rx: in ptr 18, outptr 0
Tx: in ptr 14  outptr 14
0 in hw queue, 0 queue head , 0 queue tail
Hardware is VFC out-of-band channel
Interface : state RESET DSP instance (0x61048284)
```

```
dsp_number 0, Channel ID 0
TX outstanding 0, max TX outstanding 0
Received 18 packets, 1087 bytes, 0 giant packets
0 drops, 0 no buffers, 0 input errors
121 bytes output, 14 frames output
0 bounce errors 0
```

```
DSP module 1 is not installed
DSP module 2 is not installed
DSP module 3 is not installed
DSP module 4 is not installed
DSP module 5 is not installed
```

在以上输出，“DSP模块号不是安装的”语句显示版本为该模块号是不兼容的。安排DSP的模块的示例正确Cisco VCWare版本装载显示此处：

```
5300#show vfc 1 interface
Rx: in ptr 24, outptr 0
TX: in ptr 15 outptr 15
0 in hw queue, 0 queue head , 0 queue tail
Hardware is VFC out-of-band channel
Interface : state RESET DSP instance (0x618C6088)
dsp_number 0, Channel ID 0
TX outstanding 0, max TX outstanding 0
Received 283288 packets, 15864278 bytes, 0 giant packets
0 drops, 0 no buffers, 0 input errors
1416459 bytes output, 141647 frames output
0 bounce errors 0
```

```
Slot 1, DSPM 1 (C542), DSP 1, Channel 1
State RESET, DSP instance (0x61914BDC)
TX outstanding 0, max TX outstanding 8
Received 0 packets, 0 bytes, 0 giant packets
0 drops, 0 no buffers, 0 input errors
0 bytes output, 0 frames output
0 bounce errors 0
```

```
Slot 1, DSPM 1 (C542), DSP 2, Channel 1
State RESET, DSP instance (0x6191510C)
TX outstanding 0, max TX outstanding 8
Received 0 packets, 0 bytes, 0 giant packets
0 drops, 0 no buffers, 0 input errors
0 bytes output, 0 frames output
0 bounce errors 0
```

要检查已安装Cisco VCWare版本，请输入show vfc slot_number version vcware命令如显示此处：

```
5300#show vfc 1 version vcware
Voice Feature Card in Slot 1:
VCware Version : 4.10
ROM Monitor Version : 1.2
DSPware Version :
Technology : C542
```

注意：确保Cisco VCWare技术版本(c549或c542)匹配已安装语音功能卡DSP技术(DSPM-542：单密度语音支持或者DSPM-549：高密度语音支持)。

使用的组件

本文档中的信息基于以下软件和硬件版本：

- Cisco AS5300路由器(所有版本)

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](#)。

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: 有关本文档所用命令的详细信息,请使用[命令查找工具](#)([仅限注册用户](#))。

配置

要运行发信号在Cisco 2600/3600系列路由器的CAS,高密度语音网络模块([NM-HDV](#))要求。

ds0-group命令(或cas组,根据Cisco IOS版本)在T1控制器需要定义(Cisco As5xxx和2600/3600路由器)。

使用此步骤配置CAS:

1. 设置T1控制器连接对专用自动小交换机(PBX)或交换机。保证T1的成帧和线性编码适当地设置。
T1帧: **ESF或SFT**线性编码: **B8ZS或AMIT** clock source: **内部或线路**注意: 记住不同的PBX有在时钟源的不同的需求。
2. 请使用此指令序列定义您的在As5xxx平台的线路信令:

```
5300(config)#controller T1 0
```

```
5300(config-controller)#
```

```
ds0-group 1 timeslots 1-24 type ?
```

```
e&m-fgb          E & M Type II FGB
e&m-fgd          E & M Type II FGD
e&m-immediate-start E & M Immediate Start
fgd-eana         FGD Exchange Access North American
fgd-os           FGD Operator Services
fxs-ground-start FXS Ground Start
fxs-loop-start   FXS Loop Start
none             Null Signaling for External Call Control
r1-itu           R1 ITU
sas-ground-start SAS Ground Start
sas-loop-start   SAS Loop Start
<cr>
```

注意: 如果要收集关于T1控制器的拨号号码识别服务(DNIS)信息,您在接入服务器必须手工配置它。要收集双音多频E&m-fgb的DNIS在控制器T1配置下,请使用**ds0-group 0时隙1-24类型e&m-fgb dtmf dnis**命令。要收集E&m-fgb的多频的(MF) DNIS,请使用**dnis**命令**ds0-group 0时隙1-24类型的e&m-fgb mf**。

3. 请使用此指令序列定义您的在Cisco2600/3600平台的线路信令:

```
3600(config)#controller T1 0
```

```
3600(config-controller)#
```

```
ds0-group 1 timeslots 1-24 type ?
```

```

e&m-delay-dial      E & M Delay Dial
e&m-fgd E & M Type II FGD
e&m-immediate-start E & M Immediate Start
e&m-wink-start      E & M Wink Start
ext-sig            External Signaling
fgd-eana          FGD-EANA BOC side
fxo-ground-start   FXO Ground Start
fxo-loop-start     FXO Loop Start
fxs-ground-start   FXS Ground Start
fxs-loop-start     FXS Loop Start
none              Null Signaling for External Call Control
<cr>

```

使用Cisco IOS软件版本11.3，指令序列如下。

```
peggy(config)#controller T1 0
```

```
peggy(config-controller)#cas-group 1 timeslot 1-15 type ?
```

...

注意： 如果从Cisco IOS软件版本11.3升级到版本12.0，new命令将自动地取代一个。
 本文档使用以下配置：

- [为E&M-FGD DTMF DNIS配置的Cisco 5300](#)
- [为E&M-FGB配置的Cisco 5300](#)
- [为E&M FGB配置的Cisco3600 \(wink-start\)](#)

为E&M-FGD DTMF DNIS配置的Cisco 5300

```

peggy(config)#controller T1 0

peggy(config-controller)#cas-group 1 timeslot 1-15 type
?

...

```

为E&M-FGB配置的Cisco 5300

```

peggy(config)#controller T1 0

peggy(config-controller)#cas-group 1 timeslot 1-15 type
?

...

```

为E&M FGB配置的Cisco3600 (wink-start)

```

peggy(config)#controller T1 0

peggy(config-controller)#cas-group 1 timeslot 1-15 type
?

...

```

验证

当前没有可用于此配置的验证过程。

故障排除

本部分提供的信息可用于对配置进行故障排除。

故障排除步骤

请按照以下说明排除配置故障。参考[用cas-custom命令定制E1 R2](#)关于故障排除的更多信息。

1. 验证T1控制器0是UP。如果它发生故障，请检查帧，线性编码，时钟源，警报，替换电缆，重新安装卡，等等等等。
2. 如果使用Cisco AS5300，请检查DSP用**show vfc slot number interface**命令正确地安装。
3. 对于FGD中继请配置在普通旧式电话服务对等体的直接拨入(DID)，因此接收的数字用于选择流出对等体。**注意：**在Cisco AS5300上您将需要安排“DNIS”选项配置请求DNIS。
4. 打开在以下部分显示的某些调试指令并且学习输出
5. 检查路由器和PBX之间的通信或者交换。线路被占用？路由器是否接收/发送位？发现侧清除呼叫。若可能，请使用最新的Cisco IOS软件版本可用在Cisco.com。

确定您的在思科As5xxx路由器的信令

可以是困难确定什么类型的信令您有通过查看路由器的调试。然而，做一个好猜测至于是可能的什么信令应该是。以下**调试**是相当可靠(特别是当所有信道空闲)时在确定信令种类。推荐您通过这些调试首先验证您的信令，因为他们能发现最普通和not-so-obvious设置的错误。照常，练习小心，当启用调试在路由器时。推荐您不启用调试，除非熟悉其功能。注意不是所有的调试为每个网络接入服务器(NAS)平台是可用的。

故障排除命令

[命令输出解释程序 \(仅限注册用户 \)](#) (OIT) 支持某些 **show** 命令。使用 OIT 可查看对 show 命令输出的分析。

注意： 使用 **debug** 命令之前，请参阅[有关 Debug 命令的重要信息](#)。

- **debug serial interface** —显示关于串行连接故障的信息。
- **show controller t1** —显示控制器状态特定到控制器硬件。
- **debug cas** —在思科As5xxx平台的线路信令。
- **debug vpm signal** —在思科26xx/36xx平台的线路信令。
- **全的debug vtsp**启用输出所有消息(位)被交换在PBX和路由器之间。

```
bosshog#debug serial interface
!--- This enables the output below. Serial network interface debugging is on bosshog#show
controller t1
T1 0 is up.
No alarms detected.
Version info of slot 0: HW: 2, Firmware: 16, PLD Rev: 0
Manufacture Cookie Info:
EEPROM Type 0x0001, EEPROM Version 0x01, Board ID 0x42,
Board Hardware Version 1.0, Item Number 73-2217-4,
Board Revision A0, Serial Number 07389920,
PLD/ISP Version 0.0, Manufacture Date 3-Jan-1998.
Framing is ESF, Line Code is B8ZS, Clock Source is Line Primary.
Data in current interval (6 seconds elapsed):
  0 Line Code Violations, 0 Path Code Violations
  0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
  0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs, 0 Unavail Secs
Robbed bit signals state:
```

timeslots	rxA	rxB	rxC	rxD	txA	txB	txC	txD
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
<snip>								
23	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0

!--- Looking at the above signals, we are receiving all 0s from the switch. !--- This looks like some form of E&M Signaling. !--- We can determine the following when the line is idle.
timeslots rxA rxB rxC rxD txA txB txC txD 1 0 0 0 0 0 0 0 0 0 !--- Looks like an E&M variant. 2 0
1 0 1 0 1 0 1 !--- Looks like fxs-loop-start. 3 1 1 1 1 0 1 0 1 !--- Looks like fxs-ground-start.

下面的输出是为在Cisco AS5300的E&M FGB。

```
5300-fg-b#show debug
CAS:
```

Channel Associated Signaling debugging is on

```
5300-fg-b#
```

```
!--- Incoming call to router. *May 28 12:40:35.376: from Trunk(0): (1/0): Rx LOOP_CLOSURE (ABCD=1111) !--- Switch is off hook. !--- Send wink back to the switch. Note we transition from a on/off/on hook state. *May 28 12:40:35.600: from Trunk(0): (1/0): Tx LOOP_CLOSURE (ABCD=1111) !--- Sending Wink back. Off hook. *May 28 12:40:35.800: from Trunk(0): (1/0): Tx LOOP_OPEN (ABCD=0000) !--- End of wink ~200 ms duration. On hook. 5300-fg-b# 5300-fg-b# !--- The call is now in an alerting state waiting for a connect. !--- Router goes off hook. Call is connected. *May 28 12:40:37.352: from Trunk(0): (1/0): Tx LOOP_CLOSURE (ABCD=1111) !--- Router has gone off hook. Send a connect. 5300-fg-b# 5300-fg-b# 5300-fg-b# !--- At this point, the call is torn down in the direction of the PBX. *May 28 12:40:42.608: from Trunk(0): (1/0): Tx LOOP_OPEN (ABCD=0000) !--- Router disconnects call on hook. *May 28 12:40:42.940: from Trunk(0): (1/0): Rx LOOP_OPEN (ABCD=0000) !--- Switch terminates upon receipt on hook.
```

此示例是为在Cisco3600的流出的E&M FGB。

```
3600-fg-b#show debug
```

Voice Port Module signaling debugging is on

```
3600-fg-b#
```

```
!--- Outgoing call from router. *Mar 3 04:01:35.167: htsp_process_event: [2/1:1(1), EM_ONHOOK, E_HTSP_SETUP_REQ ]em_onhook_setup !--- On hook state. *Mar 3 04:01:35.167: em_offhook (0)[recEive and transMit2/1:1(1)] set signal st ate = 0x8 *Mar 3 04:01:35.167: htsp_process_event: [2/1:1(1), EM_BRANCH, EM_EVENT_WINK] *Mar 3 04:01:35.167: em_start_timer: 550 ms *Mar 3 04:01:35.167: htsp_timer - 550 msec *Mar 3 04:01:35.415: htsp_process_event: [2/1:1(1), EM_WAIT_WINKUP, E_DSP_SIG_1 100]em_wink_offhook !--- Router sends off hook. *Mar 3 04:01:35.415: em_stop_timers *Mar 3 04:01:35.415: htsp_timer_stop *Mar 3 04:01:35.415: em_start_timer: 1200 ms *Mar 3 04:01:35.415: htsp_timer - 1200 msec *Mar 3 04:01:35.619: htsp_process_event: [2/1:1(1), EM_WAIT_WINKDOWN, E_DSP_SIG_0000]em_wink_onhook !--- Router sends on hook. *Mar 3 04:01:35.623: em_stop_timers *Mar 3 04:01:35.623: htsp_timer_stop htsp_wink_ind *Mar 3 04:01:35.623: htsp_timer - 70 msec *Mar 3 04:01:35.695: htsp_process_event: [2/1:1(1), EM_WAIT_DIALOUT_DELAY, E_HT SP_EVENT_TIMER]em_imm_send_digits em_send_digits htsp_dial !--- At this point we send the digits. *Mar 3 04:01:36.507: htsp_process_event: [2/1:1(1), EM_WAIT_FOR_ANSWER, E_DSP_D IALING_DONE]em_offhook_digit_done htsp_progress *Mar 3 04:01:36.507: ===== state 0x630852C0 *Mar 3 04:01:37.035: htsp_process_event: [2/1:1(1), EM_WAIT_FOR_ANSWER, E_DSP_S IG_1100]em_wait_answer_offhook !--- Router is waiting for far end to connect. *Mar 3 04:01:37.035: em_stop_timers *Mar 3 04:01:37.035: htsp_timer_stop *Mar 3 04:01:37.035: htsp_timer_stop2
```

此示例是为FXS回路开始在Cisco2600。

FXS Loop-start Signal Map

*Mar 1 01:55:51.091: Foreign Exchange Station 1/1:1(22) rx_signal_map:

0 F F F
5 F 5 F
F F F F
F F F F

*Mar 1 01:55:51.095: Foreign Exchange Station 1/1:1(22) tx_signal_map:

4 4 4 4
4 4 4 4
C C C C
C C C C

!--- FXS Loop-start incoming call. *Mar 1 02:02:13.743: htsp_dsp_message: SEND/RESP_SIG_STATUS: state=0xC timestamp=26688 systime=733374 *Mar 1 02:02:13.743: [1/1:1(1), FXSLS_ONHOOK, E_DSP_SIG_1100] fxsls_onhook_offhook htsp_setup_ind *Mar 1 02:02:13.751: [1/1:1(1), FXSLS_WAIT_SETUP_ACK, E_HTSP_SETUP_ACK] *Mar 1 02:02:14.871: [1/1:1(1), FXSLS_OFFHOOK, E_HTSP_PROCEEDING] htsp_alert_notify *Mar 1 02:02:15.163: [1/1:1(1), FXSLS_OFFHOOK, E_HTSP_VOICE_CUT_THROUGH] *Mar 1 02:02:15.607: [1/1:1(1), FXSLS_OFFHOOK, E_HTSP_VOICE_CUT_THROUGH] *Mar 1 02:02:15.607: [1/1:1(1), FXSLS_OFFHOOK, E_HTSP_VOICE_CUT_THROUGH] *!--- Call is ringing now. !--- Is answered below.* vdtl-2600-6d#**htsp_connect: no_offhook 0**

*Mar 1 02:02:26.239: [1/1:1(1), FXSLS_OFFHOOK, E_HTSP_CONNECT] fxsls_offhook_connect[Foreign Exchange Station 1/1:1(1)] set signal state = 0x6

!--- Call is disconnected from T1 side below. vdtl-2600-6d# *!--- Near end disconnect (from T1 side).* vdtl-2600-6d# *Mar 1 02:02:37.299: htsp_dsp_message: SEND/RESP_SIG_STATUS: state=0x4 timestamp=50246 systime=735730 *Mar 1 02:02:37.299: [1/1:1(1), FXSLS_CONNECT, E_DSP_SIG_0100] fxsls_offhook_onhook *Mar 1 02:02:37.299: htsp_timer - 600 msec *Mar 1 02:02:37.899: [1/1:1(1), FXSLS_CONNECT, E_HTSP_EVENT_TIMER] fxsls_connect_wait_release_req *Mar 1 02:02:37.899: htsp_timer_stop htsp_release_req: cause 16, no_onhook 0 *Mar 1 02:02:37.919: [1/1:1(1), FXSLS_WAIT_RELEASE_REQ, E_HTSP_RELEASE_REQ] fxsls_waitrls_req_rlshtsp_report_onhook_sig *Mar 1 02:02:37.923: vnm_dsprml_close_cleanup *!--- FXS loop-start outgoing call.* *Mar 1 03:42:05.067: [1/1:1(2), FXSLS_ONHOOK, E_HTSP_SETUP_REQ] fxsls_onhook_setup[Foreign Exchange Station 1/1:1(2)] set signal state = 0x0htsp_alert *Mar 1 03:42:05.327: [1/1:1(2), FXSLS_WAIT_OFFHOOK, E_HTSP_VOICE_CUT_THROUGH] fxsls_waitoff_voice *Mar 1 03:42:05.763: [1/1:1(2), FXSLS_WAIT_OFFHOOK, E_HTSP_VOICE_CUT_THROUGH] fxsls_waitoff_voice *Mar 1 03:42:05.763: [1/1:1(2), FXSLS_WAIT_OFFHOOK, E_HTSP_VOICE_CUT_THROUGH] fxsls_waitoff_voice *!--- Call is ringing now.*

!--- Call is answered below.

*Mar 1 03:42:30.039: htsp_dsp_message: SEND/RESP_SIG_STATUS: state=0x4 timestamp=14102 systime=1335004 *Mar 1 03:42:30.039: [1/1:1(1), FXSLS_ONHOOK, E_DSP_SIG_0100] *Mar 1 03:42:30.087: htsp_dsp_message: SEND/RESP_SIG_STATUS: state=0xC timestamp=14144 systime=1335008 *Mar 1 03:42:30.087: [1/1:1(2), FXSLS_WAIT_OFFHOOK, E_DSP_SIG_1100] fxsls_waitoff_offhook[Foreign Exchange Station 1/1:1(2)] set signal state = 0x4[Foreign Exchange Station 1/1:1(2)] set signal state = 0x6 htsp_dial

!--- Call is disconnected via VoIP side below. vdtl-2600-6d#**htsp_release_req: cause 16, no_onhook 0**

*Mar 1 03:43:27.855: [1/1:1(2), FXSLS_CONNECT, E_HTSP_RELEASE_REQ] fxsls_connect_disc *Mar 1 03:43:27.855: htsp_timer_stop [Foreign Exchange Station 1/1:1(2)] set signal state = 0xC[Foreign Exchange Station 1/1:1(2)] set signal state = 0x4 *Mar 1 03:43:27.859: htsp_timer - 950 msec *Mar 1 03:43:28.811: [1/1:1(2), FXSLS_CPC, E_HTSP_EVENT_TIMER] fxsls_cpc_timer *Mar 1 03:43:28.811: htsp_timer - 30000 msec *Mar 1 03:43:28.815: htsp_dsp_message: SEND/RESP_SIG_STATUS: state=0xC timestamp=8470 systime=1340881 *Mar 1 03:43:28.815: [1/1:1(2), FXSLS_WAIT_ONHOOK, E_DSP_SIG_1100]

此示例是为FXO回路开始在Cisco2600。

FXO Loop-start Channel Map

```
*Mar 1 03:48:30.055: Foreign Exchange Office 1/1:1(24) rx_signal_map:
F F F F
5 F F F
F F F F
F F F F [Foreign Exchange Office 1/1:1(24)] set signal state = 0x4
*Mar 1 03:48:30.055: Foreign Exchange Office 1/1:1(24) tx_signal_map:
0 0 4 4
4 4 4 4
C C C C
C C C C
```

```
!--- FXO loop-start incoming call. *Mar 1 03:52:56.271: htsp_dsp_message: SEND/RESP_SIG_STATUS:
state=0x0 timestamp=50660 systime=1397627 *Mar 1 03:52:56.271: [1/1:1(1), FXOLS_ONHOOK,
E_DSP_SIG_0000] fxols_onhook_ringing *Mar 1 03:52:56.271: htsp_timer - 10000 msec *Mar 1
03:52:58.267: htsp_dsp_message: SEND/RESP_SIG_STATUS: state=0x4 timestamp=52658 systime=1397826
*Mar 1 03:52:58.271: [1/1:1(1), FXOLS_RINGING, E_DSP_SIG_0100] *Mar 1 03:52:58.271:
fxols_ringing_not *Mar 1 03:52:58.271: htsp_timer_stop htsp_setup_ind *Mar 1 03:52:58.275:
[1/1:1(1), FXOLS_WAIT_SETUP_ACK, E_HTSP_SETUP_ACK] *Mar 1 03:52:58.275: fxols_wait_setup_ack:
[Foreign Exchange Office 1/1:1(1)] set signal state = 0xC !--- Call is ringing and is answered
(dial tone). !--- Entering destination for the call now. *Mar 1 03:53:09.019: [1/1:1(1),
FXOLS_PROCEEDING, E_HTSP_PROCEEDING] fxols_offhook_proc *Mar 1 03:53:09.019: htsp_timer - 120000
msec htsp_alert_notify *Mar 1 03:53:09.311: [1/1:1(1), FXOLS_PROCEEDING,
E_HTSP_VOICE_CUT_THROUGH] *Mar 1 03:53:09.759: [1/1:1(1), FXOLS_PROCEEDING,
E_HTSP_VOICE_CUT_THROUGH] *Mar 1 03:53:09.759: [1/1:1(1), FXOLS_PROCEEDING,
E_HTSP_VOICE_CUT_THROUGH] htsp_connect: no_offhook 0 *Mar 1 03:53:12.711: [1/1:1(1),
FXOLS_PROCEEDING, E_HTSP_CONNECT] fxols_offhook_connect *Mar 1 03:53:12.711: htsp_timer_stop !---
- Call is disconnected via VoIP side. vdt1-2600-6d#htsp_release_req: cause 16, no_onhook 0
*Mar 1 03:53:44.079: [1/1:1(1), FXOLS_CONNECT, E_HTSP_RELEASE_REQ]
fxols_offhook_release
*Mar 1 03:53:44.079: htsp_timer_stop [Foreign Exchange Office 1/1:1(1)]
set signal state = 0x4
*Mar 1 03:53:44.079: htsp_timer - 2000 msec
*Mar 1 03:53:44.079: vnm_dsprn_close_cleanup
*Mar 1 03:53:46.079: [1/1:1(1), FXOLS_GUARD_OUT,
E_HTSP_EVENT_TIMER] fxols_guard_out_timeout
```

```
!--- FXO loop-start outgoing call. *Mar 1 03:50:47.099: [1/1:1(2), FXOLS_ONHOOK,
E_HTSP_SETUP_REQ] fxols_onhook_setup [Foreign Exchange Office 1/1:1(2)] set signal state = 0xC
*Mar 1 03:50:47.099: htsp_timer - 1300 msec *Mar 1 03:50:48.399: [1/1:1(2),
FXOLS_WAIT_DIAL_TONE, E_HTSP_EVENT_TIMER] fxols_wait_dial_timer htsp_dial *Mar 1 03:50:50.407:
[1/1:1(2), FXOLS_WAIT_DIAL_DONE, E_DSP_DIALING_DONE] fxols_wait_dial_done htsp_alert *Mar 1
03:50:50.659: [1/1:1(2), FXOLS_OFFHOOK, E_HTSP_VOICE_CUT_THROUGH] *Mar 1 03:50:50.695:
[1/1:1(2), FXOLS_OFFHOOK, E_HTSP_VOICE_CUT_THROUGH] *Mar 1 03:50:50.707: [1/1:1(2),
FXOLS_OFFHOOK, E_HTSP_VOICE_CUT_THROUGH] !--- Call is answered now. Debugs shown because of lack
of answer supervision. !--- The next thing that happens is a VoIP side disconnect. vdt1-2600-
6d#htsp_release_req: cause 16, no_onhook 0
*Mar 1 03:51:06.483: [1/1:1(2), FXOLS_OFFHOOK,
E_HTSP_RELEASE_REQ] fxols_offhook_release
*Mar 1 03:51:06.483: htsp_timer_stop
[Foreign Exchange Office 1/1:1(2)] set signal state = 0x4
*Mar 1 03:51:06.483: htsp_timer - 2000 msec
*Mar 1 03:51:06.487: vnm_dsprn_close_cleanup
*Mar 1 03:51:08.483: [1/1:1(2), FXOLS_GUARD_OUT,
E_HTSP_EVENT_TIMER] fxols_guard_out_timeout
```

此示例是为在Cisco2600的FXS接地启动。

```
!--- FXS ground-start signal map. *Mar 1 04:04:13.334: Foreign Exchange Station 1/1:1(16)
rx_signal_map: 0 F F F 5 F 5 F F F F F F F F F F *Mar 1 04:04:13.338: Foreign Exchange Station
1/1:1(16) tx_signal_map: 0 0 0 0 4 4 4 4 8 8 8 8 C C C C !--- FXS ground-start incoming call.
*Mar 1 04:05:22.650: %SYS-5-CONFIG_I: Configured from console by console *Mar 1 04:05:26.982:
```


SEND/RESP_SIG_STATUS: state=0xC timestamp=17354 systime=1656289 *Mar 1 04:36:02.894: [1/1:1(1), FXOGS_OFFHOOK, E_DSP_SIG_1100] fxogs_offhook_disc *Mar 1 04:36:02.894: htsp_timer_stop [Foreign Exchange Office 1/1:1(1)] set signal state = 0x4 *Mar 1 04:36:02.894: htsp_timer - 2000 msec
htsp_release_req: cause 16, no_onhook 0 *Mar 1 04:36:02.918: [1/1:1(1), FXOGS_GUARD_OUT, E_HTSP_RELEASE_REQ] fxogs_onhook_release *Mar 1 04:36:02.922: vnm_dsprn_close_cleanup *Mar 1 04:36:04.894: [1/1:1(1), FXOGS_GUARD_OUT, E_HTSP_EVENT_TIMER] *!--- FXO ground-start outgoing call.* *Mar 1 04:33:08.838: [1/1:1(1), FXOGS_ONHOOK, E_HTSP_SETUP_REQ] fxogs_onhook_setup [Foreign Exchange Office 1/1:1(1)] set signal state = 0x0 *Mar 1 04:33:08.838: htsp_timer - 10000 msec
*Mar 1 04:33:09.214: htsp_dsp_message: SEND/RESP_SIG_STATUS: state=0x4 timestamp=40280 systime=1638921 *Mar 1 04:33:09.218: [1/1:1(1), FXOGS_WAIT_TIP_GROUND, E_DSP_SIG_0100] fxogs_start_dial *Mar 1 04:33:09.218: htsp_timer_stop [Foreign Exchange Office 1/1:1(1)] set signal state = 0xC *Mar 1 04:33:09.218: htsp_timer - 1000 msec *Mar 1 04:33:10.218: [1/1:1(1), FXOGS_WAIT_DIAL_TONE, E_HTSP_EVENT_TIMER] fxogs_wait_dial_timer htsp_dial *Mar 1 04:33:12.226: [1/1:1(1), FXOGS_WAIT_DIAL_DONE, E_DSP_DIALING_DONE] fxogs_wait_dial_done
htsp_connect: no_offhook 0 htsp_alert *Mar 1 04:33:12.226: [1/1:1(1), FXOGS_OFFHOOK, E_HTSP_CONNECT] fxogs_proc_voice *Mar 1 04:33:12.478: [1/1:1(1), FXOGS_OFFHOOK, E_HTSP_VOICE_CUT_THROUGH] *Mar 1 04:33:12.514: [1/1:1(1), FXOGS_OFFHOOK, E_HTSP_VOICE_CUT_THROUGH] *Mar 1 04:33:12.526: [1/1:1(1), FXOGS_OFFHOOK, E_HTSP_VOICE_CUT_THROUGH] *!--- Call connects and is answered. !--- No signaling is reported (no answer supervision for ground-start). !--- Call disconnected from VoIP leg below.* vdt1-2600-6d#htsp_release_req: cause 16, no_onhook 0 *Mar 1 04:33:22.590: [1/1:1(1), FXOGS_OFFHOOK, E_HTSP_RELEASE_REQ] fxogs_offhook_release *Mar 1 04:33:22.590: htsp_timer_stop *Mar 1 04:33:22.590: htsp_timer_stop2 [Foreign Exchange Office 1/1:1(1)] set signal state = 0x4 *Mar 1 04:33:22.590: htsp_timer - 2000 msec *Mar 1 04:33:22.778: htsp_dsp_message: SEND/RESP_SIG_STATUS: state=0xC timestamp=53840 systime=1640278 *Mar 1 04:33:22.778: [1/1:1(1), FXOGS_WAIT_ONHOOK, E_DSP_SIG_1100] fxogs_waitonhook_onhook *Mar 1 04:33:22.778: htsp_timer_stop *Mar 1 04:33:22.778: htsp_timer - 2000 msec *Mar 1 04:33:22.782: vnm_dsprn_close_cleanup *Mar 1 04:33:24.778: [1/1:1(1), FXOGS_GUARD_OUT, E_HTSP_EVENT_TIMER]

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