Configurazione e risoluzione dei problemi di segnalazione T1 CAS

Sommario

Introduzione

Questo documento spiega le configurazioni necessarie per implementare il sistema di segnalazione associato al canale T1 (CAS).

Prerequisiti

Requisiti

Prima di provare questa configurazione, accertarsi di soddisfare i seguenti requisiti:

Questo documento si basa sul [funzionamento di Digital T1 CAS (Robbed Bit Signaling) sui gateway IOS](#). Leggere questo documento per comprendere i vari tipi di metodi di segnalazione CAS. Questo documento funge anche da guida per la configurazione dei diversi tipi di segnalazione CAS.

Prima di implementare la segnalazione E1 R2 in un router Cisco AS5300, verificare che la versione del software Cisco IOS® in uso sia compatibile con Cisco VCWare nel modulo E1. Se le versioni non sono compatibili, i moduli DSP (Digital Signal Processor) nella scheda voce non verranno caricati e non verrà eseguita l'elaborazione del segnale vocale. Per verificare la compatibilità delle versioni, consultare la [matrice di compatibilità di Cisco VCWare per Cisco AS5300](#).

In genere, se la versione di Cisco VCWare non è compatibile con il software Cisco IOS, è possibile verificare questa condizione immettendo il comando **show vfc slot_number interface**

come mostrato di seguito:

```
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
```

Nell'output precedente, le istruzioni "DSP module number is not installed" (Il numero del modulo DSP non è installato) mostrano che le versioni non sono compatibili per quel numero di modulo. Di seguito è riportato un esempio di moduli DSP in cui è caricata la versione corretta di Cisco VCWare:

```
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
```

Per controllare la versione di Cisco VCWare installata, immettere il comando **show vfc slot_number version vcware**, come mostrato di seguito:

```
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
```
Nota: verificare che la versione della tecnologia Cisco VCWare (c549 o c542) corrisponda alla tecnologia DSP Voice Feature Card installata (DSPM-542: supporto vocale a densità singola, o DSPM-549: supporto vocale ad alta densità).

Componenti usati

Le informazioni fornite in questo documento si basano sulle seguenti versioni software e hardware:

- Cisco AS5300 Router (tutte le versioni)

Le informazioni discusse in questo documento fanno riferimento a dispositivi usati in uno specifico ambiente di emulazione. Su tutti i dispositivi menzionati nel documento la configurazione è stata ripristinata ai valori predefiniti. Se la rete è operativa, valutare attentamente eventuali conseguenze derivanti dall'uso dei comandi.

Convenzioni

Per ulteriori informazioni sulle convenzioni usate, consultare il documento Cisco sulle convenzioni nei suggerimenti tecnici.

Configurazione

In questa sezione vengono presentate le informazioni necessarie per configurare le funzionalità descritte più avanti nel documento.

Nota: per ulteriori informazioni sui comandi menzionati in questo documento, usare lo strumento di ricerca dei comandi (solo utenti registrati).

Configurazioni

Per eseguire la segnalazione CAS sui router Cisco serie 2600/3600, è necessario un High Density Voice Network Module (NM-HDV).

Il comando **ds0-group** (o **cas-group**, a seconda della versione di Cisco IOS) deve essere definito sui controller T1 (Cisco AS5xxx e router 2600/3600).

Per configurare CAS, utilizzare la procedura seguente:

1. Impostare il controller T1 collegato al PBX (Automatic Branch Exchange) o allo switch. Verificare che il frame e il codice di linea di T1 siano impostati correttamente.Frame T1: **FSE o SF**Codifica di riga T1: **B8ZS o AMI**Origine orologio T1: **interno o linea**Nota: tenere presente che i diversi PBX hanno requisiti diversi sull'origine dell'orologio.
2. Utilizzare questa sequenza di comandi per definire la segnalazione della linea sulle piattaforme AS5xxx:
```
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>
```

Nota: se si desidera raccogliere informazioni DNIS (Dialed Number Identification Service) su un controller T1, è necessario configurarle manualmente sul server di accesso. Per raccogliere il DNIS (DTMF) a doppia frequenza per E&M-fgb in una configurazione T1 del controller, usare il comando **ds0-group 0 timeslot 1-24 type e&m-fgb dtmf dnis**. Per raccogliere DNIS multifrequenza (MF) per E&M-fgb, utilizzare il comando **ds0-group 0 timeslot 1-24 type e&m-fgb mf dnis**.

3. Utilizzare questa sequenza di comandi per definire la segnalazione sulla linea sulle piattaforme Cisco 2600/3600:

```
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>
```

Con il software Cisco IOS versione 11.3, la sequenza di comandi è la seguente.

```
peggy(config)#controller T1 0

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

...
```

Nota: se si esegue l'aggiornamento dal software Cisco IOS versione 11.3 alla versione 12.0, il nuovo comando sostituirà automaticamente quello precedente.

Nel documento vengono usate queste configurazioni:

- Cisco 5300 configurato per E&M-FGD DTMF DNIS
- Cisco 5300 configurato per E&M-FGB
- Cisco 3600 configurato per E&M FGB (wink-start)

Cisco 5300 configurato per E&M-FGD DTMF DNIS
| ```
hostname 5300-fg-d

!
``` |

```
controller T1 0

 clock source line primary

 ds0-group 1 timeslots 1-24 type e&m-fgd dtmf dnis


 !--- With this configuration we will use DTMF and !---
request the DNIS information. ! voice-port 0:1 ! dial-
peer voice 123 pots destination-pattern 123 direct-
inward-dial !--- This will only work if the DNIS
information is recieved. port 0:1 prefix 123 ! dial-peer
voice 567 voip destination-pattern 567 session target
ipv4:2.0.0.2 !
```

Cisco 5300 configurato per E&M-FGB

```
hostname 5300-fg-b
!

controller T1 0

 clock source line primary

 ds0-group 1 timeslots 1-24 type e&m-fgb

!

voice-port 0:1

!
dial-peer voice 123 pots

 destination-pattern 123

 port 0:1

 prefix 123

!

dial-peer voice 567 voip

 destination-pattern 567

 session target ipv4:2.0.0.2

!
```

Cisco 3600 configurato per E&M FGB (wink-start)

```
hostname 3600-fg-b
!

controller T1 1/0

 clock source line primary

 ds0-group 1 timeslots 1-24 type e&m-wink-start

!
```

```
voice-port 1/0:1

!
dial-peer voice 123 pots

 destination-pattern 123

 port 1/0:1

 prefix 123

!

dial-peer voice 567 voip

 destination-pattern 567

 session target ipv4:2.0.0.2
```

Verifica

Attualmente non è disponibile una procedura di verifica per questa configurazione.

Risoluzione dei problemi

Le informazioni contenute in questa sezione permettono di risolvere i problemi relativi alla configurazione.

Procedura di risoluzione dei problemi

Seguire queste istruzioni per risolvere i problemi relativi alla configurazione. Per ulteriori informazioni sulla risoluzione dei problemi, consultare il documento sulla personalizzazione di E1 R2 con il comando cas-custom.

1. Verificare che il controller T1 0 sia attivo. Se il cavo è spento, controllare i frame, la codifica della linea, l'origine dell'orologio, gli allarmi, sostituire il cavo, riposizionare la scheda e così via.
2. Se si utilizza un Cisco AS5300, verificare che i DSP siano installati correttamente con il comando **show vfc slot number interface**.
3. Per i trunk FGD configurare il Direct Inward Dial (DID) sul peer POTS (Plain Old Telephone Service), in modo che le cifre ricevute vengano utilizzate per scegliere un peer in uscita.**Nota:** su Cisco AS5300 è necessario configurare l'opzione "dnis" per richiedere DNIS.
4. Attivare alcuni dei comandi **debug** mostrati nella sezione seguente e studiare gli output
5. Verificare la comunicazione tra il router e il PBX o lo switch.La linea è bloccata?Il router riceve/invia cifre?Scopri da che parte sta cancellando la chiamata.Se possibile, utilizzare le versioni software Cisco IOS più recenti disponibili sul sito Cisco.com.

Determinazione della segnalazione su un router Cisco AS5xxx

Può essere difficile determinare il tipo di segnalazione di cui si dispone guardando i debug di un router. Tuttavia, è possibile fare una buona ipotesi su quale dovrebbe essere il segnale. Il comando **debug** riportato di seguito è abbastanza affidabile (soprattutto quando tutti i canali sono inattivi) nel determinare il tipo di segnalazione. È consigliabile verificare innanzitutto la

segnalazione in questi debug, in quanto possono rilevare gli errori di provisioning più comuni e non così ovvi. Come al solito, prestare attenzione quando si attivano i debug sul router. È consigliabile attivare il debug solo se si ha familiarità con le relative funzionalità. Tenere presente che non tutti i debug sono disponibili per ogni piattaforma NAS (Network Access Server).

Comandi per la risoluzione dei problemi

Lo strumento Output Interpreter (solo utenti registrati) (OIT) supporta alcuni comandi **show**. Usare l'OIT per visualizzare un'analisi dell'output del comando **show**.

Nota: consultare le informazioni importanti sui comandi di debug prima di usare i comandi di debug.

- **debug serial interface** - Visualizza informazioni su un errore di connessione seriale.
- **show controller t1**: visualizza lo stato del controller specifico per l'hardware del controller.
- **debug cas**: per la segnalazione della linea sulle piattaforme Cisco AS5xxx.
- **debug vpm signal**: per la segnalazione di linea su piattaforme Cisco 26xx/36xx.
- **debug vtsp all**: abilita l'output di tutti i messaggi (cifre) scambiati tra il PBX e il router.

```
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 !--- 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.
```

L'output seguente è per E&M FGB su un Cisco AS5300.

```
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.*

Questo esempio è per E&M FGB in uscita su Cisco 3600.

```
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*

Questo esempio è per l'avvio in loop di FXS su un Cisco 2600.

```
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_dsprm_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]

Questo esempio è per l'avvio in loop di FXO su un Cisco 2600.

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

```
msechtsp_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. vdtl-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_dsprm_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. vdtl-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_dsprm_close_cleanup
*Mar 1 03:51:08.483: [1/1:1(2), FXOLS_GUARD_OUT,
E_HTSP_EVENT_TIMER] fxols_guard_out_timeout
```

Questo esempio è per l'avvio al suolo di FXS su un Cisco 2600.

```
!--- 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 *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:
htsp_dsp_message: SEND/RESP_SIG_STATUS: state=0x0 timestamp=15488 systime=1472698 *Mar 1
04:05:26.982: [1/1:1(1), FXSGS_ONHOOK, E_DSP_SIG_0000] fxsgs_onhook_ringgnd[Foreign Exchange
Station 1/1:1(1)] set signal state = 0x4 *Mar 1 04:05:26.982: htsp_timer - 900 msec *Mar 1
04:05:27.142: htsp_dsp_message: SEND/RESP_SIG_STATUS: state=0xC timestamp=15648 systime=1472714
*Mar 1 04:05:27.142: [1/1:1(1), FXSGS_WAIT_LOOPCLOSE, E_DSP_SIG_1100] fxsgs_wait_loopclose *Mar
1 04:05:27.142: htsp_timer_stop htsp_setup_ind *Mar 1 04:05:27.150: [1/1:1(1),
FXSGS_WAIT_SETUP_ACK, E_HTSP_SETUP_ACK] fxsgs_wait_setup_rcv_ack[Foreign Exchange Station
1/1:1(1)] set signal state = 0x4 *Mar 1 04:05:28.282: [1/1:1(1), FXSGS_OFFHOOK,
E_HTSP_PROCEEDING] htsp_alert_notify *Mar 1 04:05:28.598: [1/1:1(1), FXSGS_OFFHOOK,
E_HTSP_VOICE_CUT_THROUGH] *Mar 1 04:05:28.626: [1/1:1(1), FXSGS_OFFHOOK,
E_HTSP_VOICE_CUT_THROUGH] *Mar 1 04:05:28.638: [1/1:1(1), FXSGS_OFFHOOK,
E_HTSP_VOICE_CUT_THROUGH] !--- Call is ringing now. !--- Call is answered below. vdtl-2600-
6d#htsp_connect: no_offhook 0
*Mar 1 04:05:35.262: [1/1:1(1), FXSGS_OFFHOOK, E_HTSP_CONNECT]
fxsgs_offhook_connect[Foreign Exchange Station 1/1:1(1)] set signal state = 0x6

!--- Call is disconnected via T1 side. *Mar 1 04:05:42.822: htsp_dsp_message:
SEND/RESP_SIG_STATUS: state=0x4 timestamp=31328 systime=1474282 *Mar 1 04:05:42.822: [1/1:1(1),
FXSGS_CONNECT, E_DSP_SIG_0100] fxsgs_connect_onhookhtsp_release_req: cause 16, no_onhook 0 *Mar
1 04:05:42.850: [1/1:1(1), FXSGS_WAIT_RELEASE_REQ, E_HTSP_RELEASE_REQ]
fxsgs_wait_release_req_release[Foreign Exchange Station 1/1:1(1)] set signal state = 0xC *Mar 1
04:05:42.850: vnm_dsprm_close_cleanup *Mar 1 04:05:42.854: htsp_dsp_message:
```

SEND/RESP_SIG_STATUS: state=0x4 timestamp=8983 systime=1474285 *Mar 1 04:05:42.854: [1/1:1(1),
FXSGS_ONHOOK, E_DSP_SIG_0100] vdtl-2600-6d# *!--- FXS ground-start outgoing call.* *Mar 1
04:26:50.578: [1/1:1(1), FXSGS_ONHOOK, E_HTSP_SETUP_REQ] fxsgs_onhook_setup[Foreign Exchange
Station 1/1:1(1)] set signal state = 0x0htsp_alert *Mar 1 04:26:50.834: [1/1:1(1),
FXSGS_WAIT_OFFHOOK, E_HTSP_VOICE_CUT_THROUGH] fxsgs_waitoff_voice *Mar 1 04:26:51.282:
[1/1:1(1), FXSGS_WAIT_OFFHOOK, E_HTSP_VOICE_CUT_THROUGH] fxsgs_waitoff_voice *Mar 1
04:26:51.282: [1/1:1(1), FXSGS_WAIT_OFFHOOK, E_HTSP_VOICE_CUT_THROUGH] fxsgs_waitoff_voice *!---
Call rings and is then answered.* *Mar 1 04:27:02.234: htsp_dsp_message: SEND/RESP_SIG_STATUS:
state=0xC timestamp=974 systime=1602223 *Mar 1 04:27:02.234: [1/1:1(1), FXSGS_WAIT_OFFHOOK,
E_DSP_SIG_1100] fxsgs_waitoff_offhook[Foreign Exchange Station 1/1:1(1)] set signal state = 0x4
*Mar 1 04:27:02.238: htsp_timer_stop [Foreign Exchange Station 1/1:1(1)] set signal state = 0x6
!--- Call is disconnected via VoIP side below. vdtl-2600-6d#**htsp_release_req: cause 16,
no_onhook 0**
*Mar 1 04:27:16.146: [1/1:1(1), FXSGS_CONNECT, E_HTSP_RELEASE_REQ]
fxsgs_connect_release[Foreign Exchange Station 1/1:1(1)] set signal state = 0xC
*Mar 1 04:27:16.190: htsp_dsp_message: SEND/RESP_SIG_STATUS:
state=0x0 timestamp=14928 systime=1603619
*Mar 1 04:27:16.194: [1/1:1(1), FXSGS_WAIT_ONHOOK, E_DSP_SIG_0000]

Questo esempio è per l'avvio al suolo di FXO su un Cisco 2600.

!--- FXO ground-start signal map. *Mar 1 04:31:34.166: Foreign Exchange Office 1/1:1(1)
rx_signal_map: 0 F F F 5 F F F F F F F F F F F *Mar 1 04:31:34.166: Foreign Exchange Office
1/1:1(1) tx_signal_map: 0 0 0 0 4 4 4 4 8 8 8 8 C C C C *!--- FXO ground-start incoming call.*
*Mar 1 04:35:26.194: htsp_dsp_message: SEND/RESP_SIG_STATUS: state=0x0 timestamp=46190
systime=1652619 *Mar 1 04:35:26.194: [1/1:1(1), FXOGS_ONHOOK, E_DSP_SIG_0000]
fxogs_onhook_ringing *Mar 1 04:35:26.194: htsp_timer_stop *Mar 1 04:35:28.194: htsp_dsp_message:
SEND/RESP_SIG_STATUS: state=0x4 timestamp=48188 systime=1652819 *Mar 1 04:35:28.194: [1/1:1(1),
FXOGS_RINGING, E_DSP_SIG_0100] *Mar 1 04:35:28.194: fxogs_ringing_not: *Mar 1 04:35:28.194:
htsp_timer_stop htsp_setup_ind *Mar 1 04:35:28.198: [1/1:1(1), FXOGS_WAIT_SETUP_ACK,
E_HTSP_SETUP_ACK] *Mar 1 04:35:28.202: fxogs_wait_setup_ack: [Foreign Exchange Office 1/1:1(1)]
set signal state = 0xC vdtl-2600-6d# *!--- Call is answered. Entering digits to route the call
further.* vdtl-2600-6d# *Mar 1 04:35:37.458: [1/1:1(1), FXOGS_OFFHOOK, E_HTSP_PROCEEDING]
htsp_alert_notify *Mar 1 04:35:37.750: [1/1:1(1), FXOGS_OFFHOOK, E_HTSP_VOICE_CUT_THROUGH] *Mar
1 04:35:37.782: [1/1:1(1), FXOGS_OFFHOOK, E_HTSP_VOICE_CUT_THROUGH] *Mar 1 04:35:37.798:
[1/1:1(1), FXOGS_OFFHOOK, E_HTSP_VOICE_CUT_THROUGH] *!--- VoIP side connected.* vdtl-2600-
6d#**htsp_connect: no_offhook 0**
*Mar 1 04:35:43.350: [1/1:1(1), FXOGS_OFFHOOK, E_HTSP_CONNECT] fxogs_proc_voice

!--- Call disconnected from T1 side. vdtl-2600-6d# *Mar 1 04:36:02.890: htsp_dsp_message:
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
msechtsp_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_dsprm_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_donehtsp_connect:
no_offhook 0htsp_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.* vdtl-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

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*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_dsprm_close_cleanup *Mar 1
04:33:24.778: [1/1:1(1), FXOGS_GUARD_OUT, E_HTSP_EVENT_TIMER]
```

Informazioni correlate

- [Informazioni sul funzionamento di Digital T1 CAS (Rob Bit Signaling) nei gateway IOS](#)
- [T1 - Risoluzione dei problemi](#)
- [Risoluzione dei problemi E1](#)
- [Linee guida per la risoluzione dei problemi di E&M analogico](#)
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