Step by Step Guide

BRI Card Installation

Trixbox 2.8.0.4

Step by Step Guide

BRI Card Installation

(with Trixbox-2.8.0.4)

Version 1.0

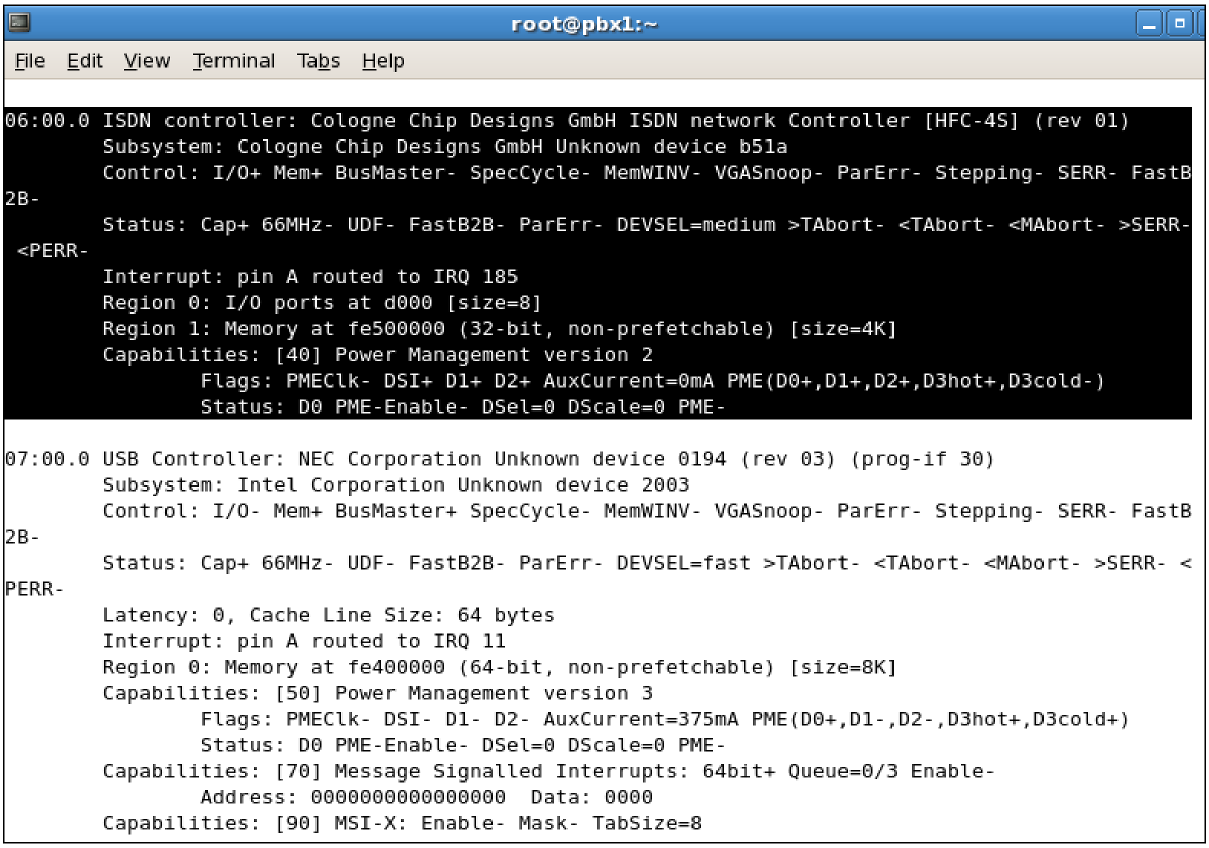
Table of Contents

Hardware Setup

1. Insert the BRI (PCI/PCIe) card in the corresponding slot
2. Check if the installed BRI card is detected using the below command

```
[root@pbx1 ~]# lspci -vvvvv
```

3. Check the output of the given command and ensure if there is a **`Cologne chip Unknown device`** with subsystem id **`b51a`**



```
06:00.0 ISDN controller: Cologne Chip Designs GmbH ISDN network Controller [HFC-4S] (rev 01)
        Subsystem: Cologne Chip Designs GmbH Unknown device b51a
        Control: I/O+ Mem+ BusMaster- SpecCycle- MemWINV- VGASnoop- ParErr- Stepping- SERR- FastB
2B-
        Status: Cap+ 66MHz- UDF- FastB2B- ParErr- DEVSEL=medium >TAbort- <TAbort- <MAbort- >SERR-
 <PERR-
        Interrupt: pin A routed to IRQ 185
        Region 0: I/O ports at d000 [size=8]
        Region 1: Memory at fe500000 (32-bit, non-prefetchable) [size=4K]
        Capabilities: [40] Power Management version 2
                Flags: PMEClk- DSI+ D1+ D2+ AuxCurrent=0mA PME(D0+,D1+,D2+,D3hot+,D3cold-)
                Status: D0 PME-Enable- DSel=0 DScale=0 PME-

07:00.0 USB Controller: NEC Corporation Unknown device 0194 (rev 03) (prog-if 30)
        Subsystem: Intel Corporation Unknown device 2003
        Control: I/O- Mem+ BusMaster+ SpecCycle- MemWINV- VGASnoop- ParErr- Stepping- SERR- FastB
2B-
        Status: Cap+ 66MHz- UDF- FastB2B- ParErr- DEVSEL=fast >TAbort- <TAbort- <MAbort- >SERR- <
PERR-
        Latency: 0, Cache Line Size: 64 bytes
        Interrupt: pin A routed to IRQ 11
        Region 0: Memory at fe400000 (64-bit, non-prefetchable) [size=8K]
        Capabilities: [50] Power Management version 3
                Flags: PMEClk- DSI- D1- D2- AuxCurrent=375mA PME(D0+,D1-,D2-,D3hot+,D3cold+)
                Status: D0 PME-Enable- DSel=0 DScale=0 PME-
        Capabilities: [70] Message Signalled Interrupts: 64bit+ Queue=0/3 Enable-
                Address: 0000000000000000  Data: 0000
        Capabilities: [90] MSI-X: Enable- Mask- TabSize=8
```

Software Installation

To use Allo.com BRI card in Trixbox, you have to reinstall dahdi-linux with the driver of CB400P/CB400E. Dahdi includes two software: dahdi-linux and dahdi-tools, here you just need to download dahdi-linux driver of CB400P/CB400E, then reinstall dahdi-linux with the driver of CB400P/CB400E.

1. Go to `/usr/src` directory

2. Download the DAHDI driver with tools, which are available at http://www.allo.com/isdn-bri-card.html under ‘Drivers and Manuals’.

```
#wget http://www.allo.com/firmware/bri-card/allo-dahdi-
drivers/ahdi-linux-complete-2.5.0.1+2.5.0.1.tar.gz
```

3. Expand the downloaded file and enter into that directory.

```
[root@pbx1 ~]#tar -xvzf dahdi-linux-complete-
2.5.0.1.2+2.5.0.1.tar.gz
```

5. Before reinstalling dahdi-linux, you had better stop asterisk and dahdi in your server. Please use the following command to stop asterisk and dahdi

```
[root@pbx1 ~]#amportal stop
[root@pbx1 ~]#service dahdi stop
```

6. Please use the following command to reinstall the DAHDI

```
[root@localhost dahdi-linux-x.x.x]#make clean
 [root@localhost dahdi-linux-x.x.x]#make
[root@localhost dahdi-linux-x.x.x]#make install
```

7. During step 6, if you do not get any error information, it means that you have reinstalled dahdi successfully; if you get any error information, you have to check the error and fix it, then run the installation command above again.

Software Configuration

1. Please add the line "allo4xxp" at the end of the file in /etc/dahdi/modules and run "service dahdi start" command to start dahdi.

```
[root@pbx1 ~]#service dahdi start
```

2. Run dahdi_tool from the command line and see if the span turns green for each span you have connected.

```
[root@pbx1 ~]# dahdi_tool
```

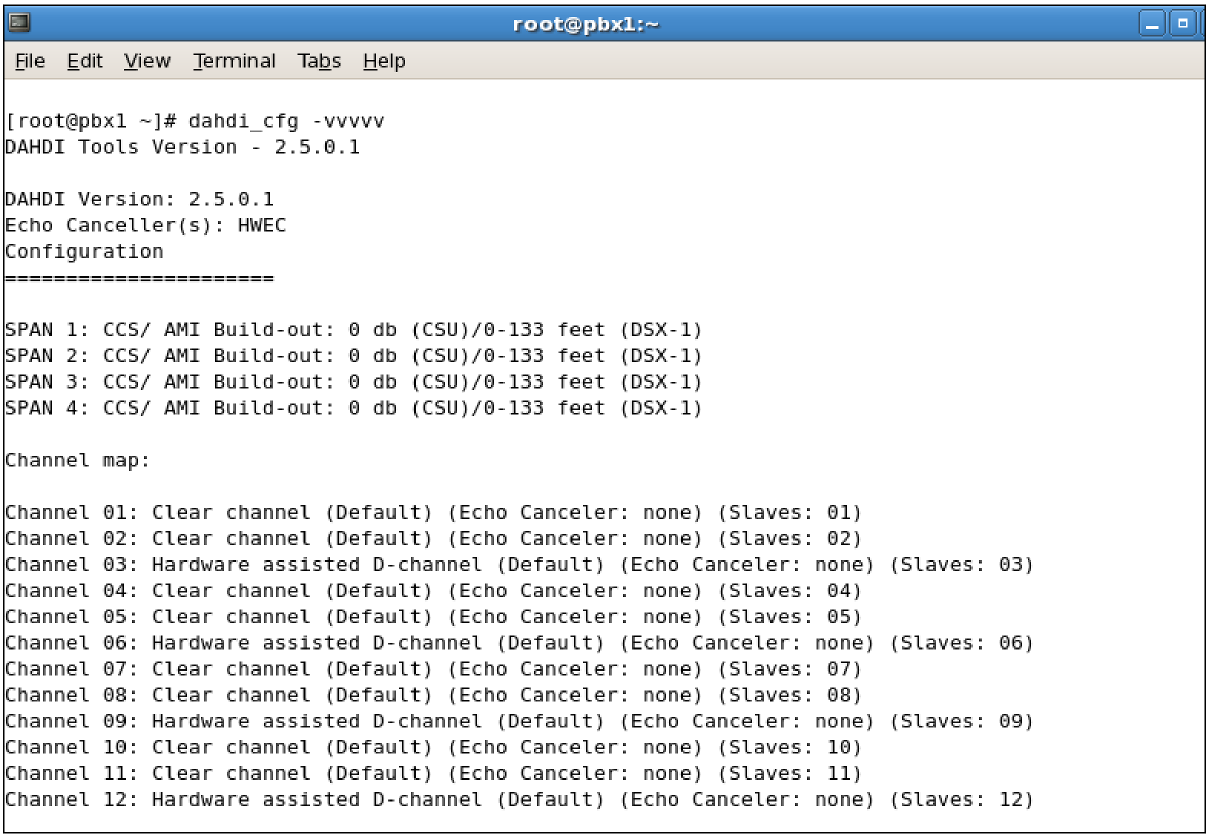
3. Please run the following command to configure the /etc/dahdi/system.conf and /etc/asterisk/dahdi-channels.conf file automatically.

```
[root@pbx1 ~]# dahdi_genconf
```

It does not show any output if dahdi_genconf runs successfully.

```
[root@pbx1 ~]# dahdi_cfg –vvvvvvv
```

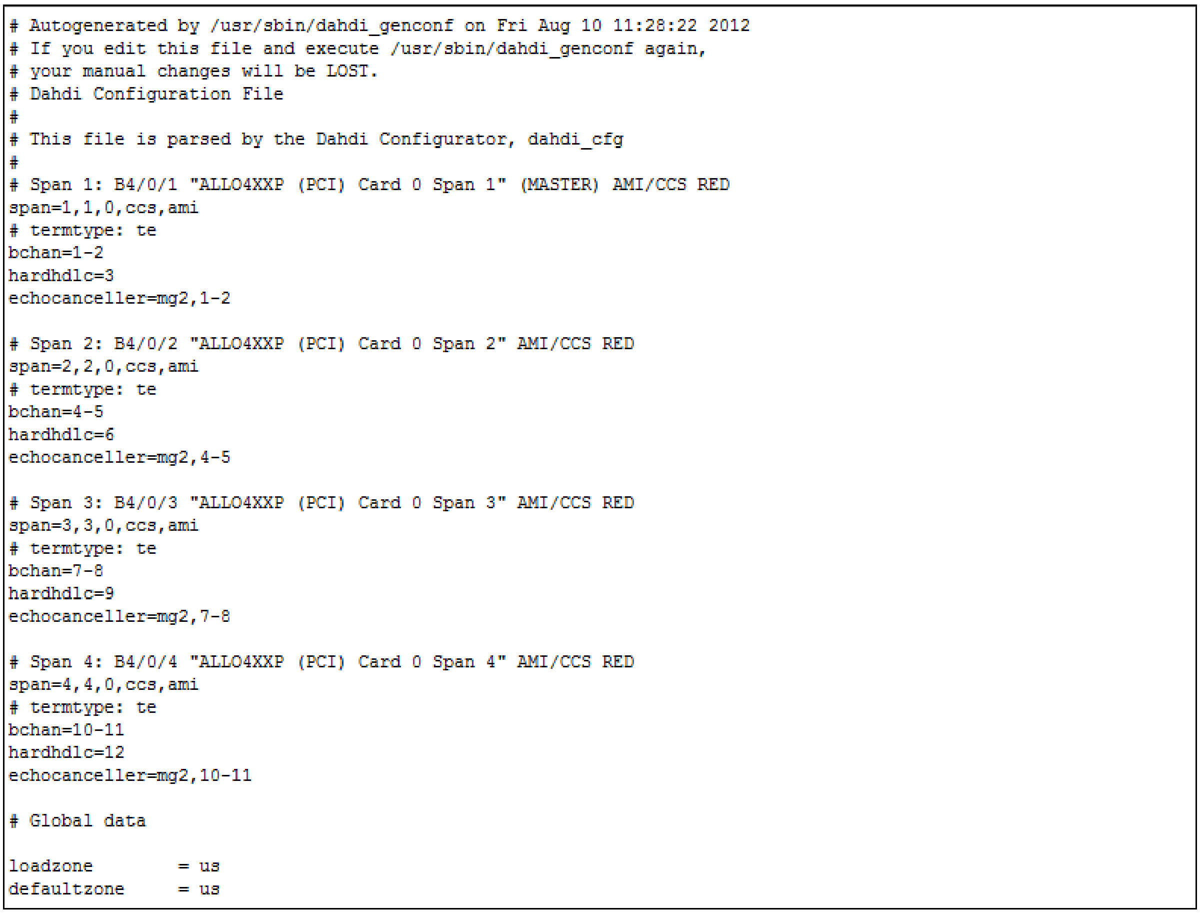
You can get some information of all the channels as shown in screenshot, if dahdi_cfg –vv command runs successfully.



```
[root@pbx1 ~]# dahdi_cfg -vvvvv
DAHDI Tools Version - 2.5.0.1

DAHDI Version: 2.5.0.1
Echo Canceller(s): HWEC
Configuration
======================

SPAN 1: CCS/ AMI Build-out: 0 db (CSU)/0-133 feet (DSX-1)
SPAN 2: CCS/ AMI Build-out: 0 db (CSU)/0-133 feet (DSX-1)
SPAN 3: CCS/ AMI Build-out: 0 db (CSU)/0-133 feet (DSX-1)
SPAN 4: CCS/ AMI Build-out: 0 db (CSU)/0-133 feet (DSX-1)

Channel map:

Channel 01: Clear channel (Default) (Echo Canceler: none) (Slaves: 01)
Channel 02: Clear channel (Default) (Echo Canceler: none) (Slaves: 02)
Channel 03: Hardware assisted D-channel (Default) (Echo Canceler: none) (Slaves: 03)
Channel 04: Clear channel (Default) (Echo Canceler: none) (Slaves: 04)
Channel 05: Clear channel (Default) (Echo Canceler: none) (Slaves: 05)
Channel 06: Hardware assisted D-channel (Default) (Echo Canceler: none) (Slaves: 06)
Channel 07: Clear channel (Default) (Echo Canceler: none) (Slaves: 07)
Channel 08: Clear channel (Default) (Echo Canceler: none) (Slaves: 08)
Channel 09: Hardware assisted D-channel (Default) (Echo Canceler: none) (Slaves: 09)
Channel 10: Clear channel (Default) (Echo Canceler: none) (Slaves: 10)
Channel 11: Clear channel (Default) (Echo Canceler: none) (Slaves: 11)
Channel 12: Hardware assisted D-channel (Default) (Echo Canceler: none) (Slaves: 12)
```

4. To check whether it has finished the configuration, please open the system.conf file

```
[root@pbx1 ~]# vi /etc/dahdi/system.conf
```

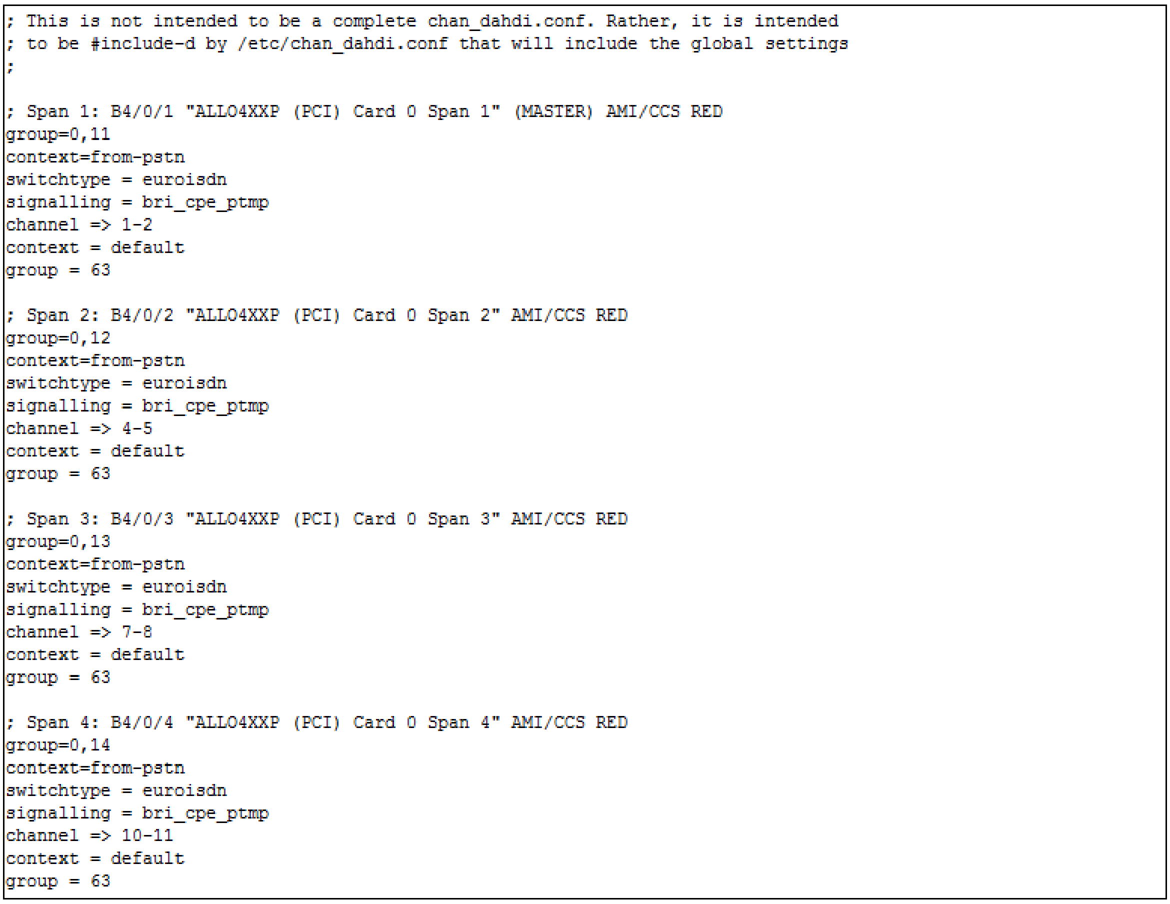


```
# Autogenerated by /usr/sbin/dahdi_genconf on Fri Aug 10 11:28:22 2012
# If you edit this file and execute /usr/sbin/dahdi_genconf again,
# your manual changes will be LOST.
# Dahdi Configuration File
#
# This file is parsed by the Dahdi Configurator, dahdi_cfg
#
# Span 1: B4/0/1 "ALLO4XXP (PCI) Card 0 Span 1" (MASTER) AMI/CCS RED
span=1,1,0,ccs,ami
# termtype: te
bchan=1-2
hardhdlc=3
echocanceller=mg2,1-2

# Span 2: B4/0/2 "ALLO4XXP (PCI) Card 0 Span 2" AMI/CCS RED
span=2,2,0,ccs,ami
# termtype: te
bchan=4-5
hardhdlc=6
echocanceller=mg2,4-5

# Span 3: B4/0/3 "ALLO4XXP (PCI) Card 0 Span 3" AMI/CCS RED
span=3,3,0,ccs,ami
# termtype: te
bchan=7-8
hardhdlc=9
echocanceller=mg2,7-8

# Span 4: B4/0/4 "ALLO4XXP (PCI) Card 0 Span 4" AMI/CCS RED
span=4,4,0,ccs,ami
# termtype: te
bchan=10-11
hardhdlc=12
echocanceller=mg2,10-11

# Global data

loadzone        = us
defaultzone     = us
```

5. Configure file /etc/dahdi/system.conf and /etc/asterisk/dahdi-channels.conf manually,

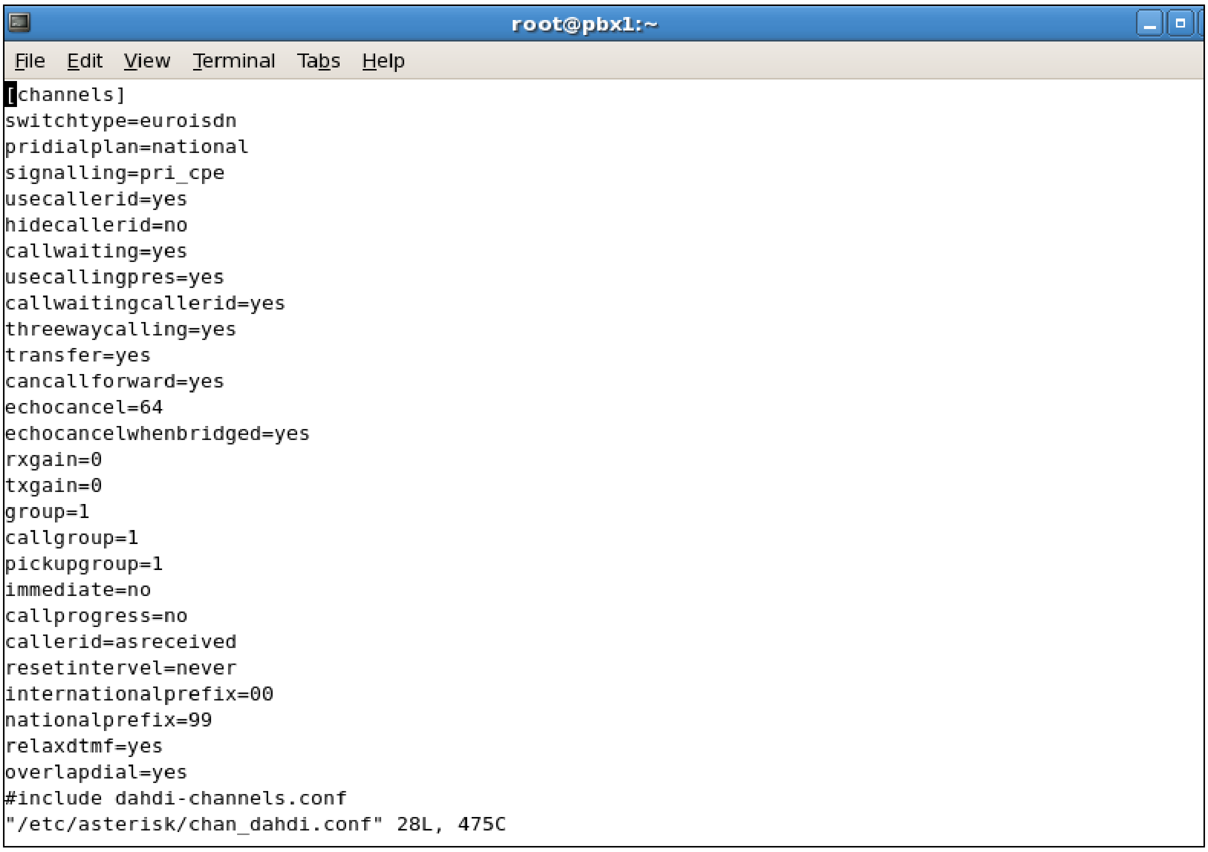
   If you are using E1, you can configure the two files like the following:

Here is an example of `dahdi-channels.conf` file



```
; This is not intended to be a complete chan_dahdi.conf. Rather, it is intended
; to be #include-d by /etc/chan_dahdi.conf that will include the global settings
;

; Span 1: B4/0/1 "ALLO4XXP (PCI) Card 0 Span 1" (MASTER) AMI/CCS RED
group=0,11
context=from-pstn
switchtype = euroisdn
signalling = bri_cpe_ptmp
channel => 1-2
context = default
group = 63

; Span 2: B4/0/2 "ALLO4XXP (PCI) Card 0 Span 2" AMI/CCS RED
group=0,12
context=from-pstn
switchtype = euroisdn
signalling = bri_cpe_ptmp
channel => 4-5
context = default
group = 63

; Span 3: B4/0/3 "ALLO4XXP (PCI) Card 0 Span 3" AMI/CCS RED
group=0,13
context=from-pstn
switchtype = euroisdn
signalling = bri_cpe_ptmp
channel => 7-8
context = default
group = 63

; Span 4: B4/0/4 "ALLO4XXP (PCI) Card 0 Span 4" AMI/CCS RED
group=0,14
context=from-pstn
switchtype = euroisdn
signalling = bri_cpe_ptmp
channel => 10-11
context = default
group = 63
```

Another example of a typical chan_dahdi.conf file

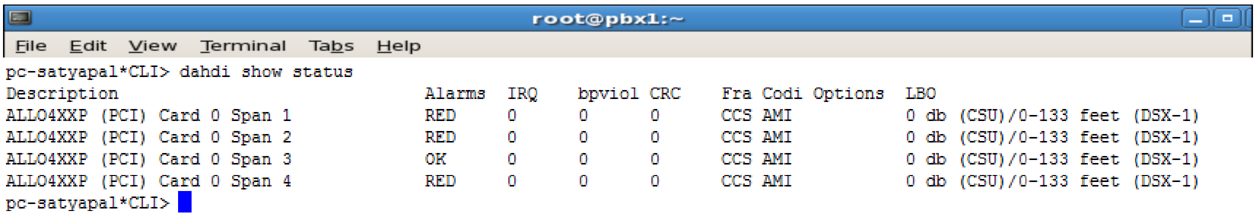


```
[channels]
switchtype=euroisdn
pridialplan=national
signalling=pri_cpe
usecallerid=yes
hidecallerid=no
callwaiting=yes
usecallingpres=yes
callwaitingcallerid=yes
threewaycalling=yes
transfer=yes
cancallforward=yes
echocancel=64
echocancelwhenbridged=yes
rxgain=0
txgain=0
group=1
callgroup=1
pickupgroup=1
immediate=no
callprogress=no
callerid=asreceived
resetintervel=never
internationalprefix=00
nationalprefix=99
relaxdtmf=yes
overlapdial=yes
#include dahdi-channels.conf
"/etc/asterisk/chan_dahdi.conf" 28L, 475C
```

6. Start the asterisk and connect the Asterisk CLI

```
[root@pbx1 ~]# /etc/init.d/asterisk start
```

7. Check the status of configured DAHDI channels in asterisk console

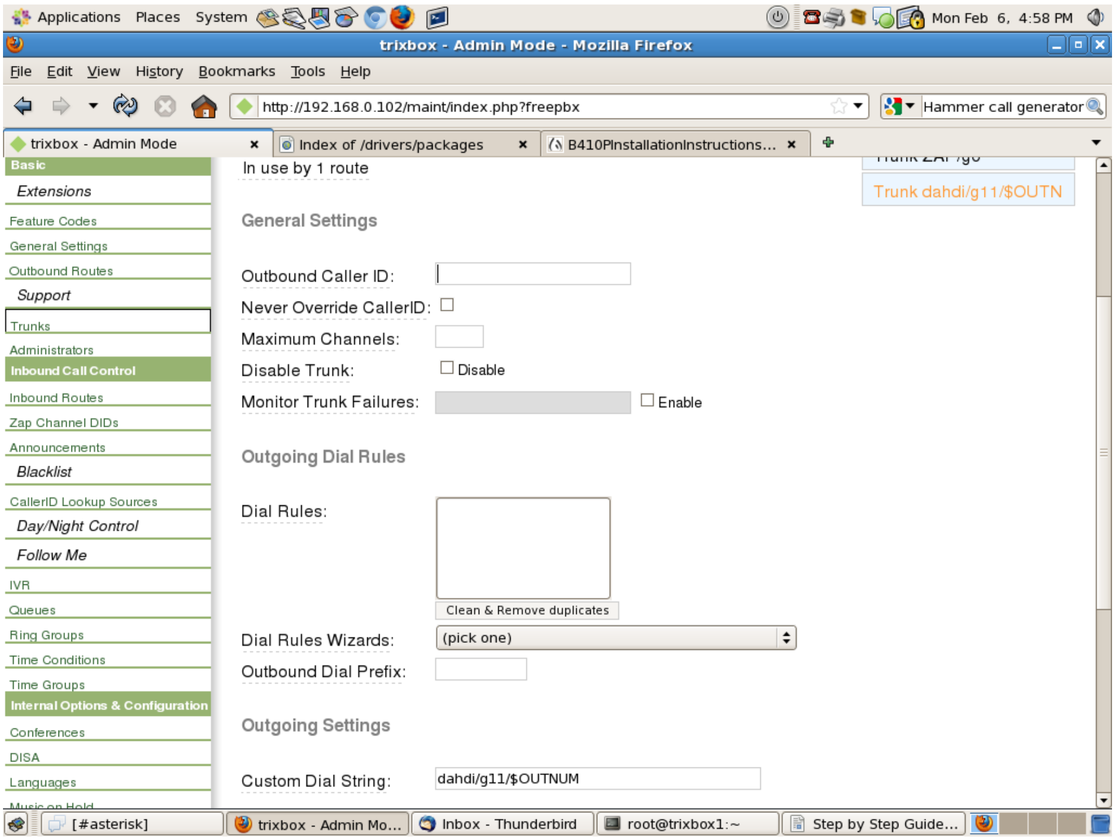


```
pc-satyapal*CLI> dahdi show status
Description                         Alarms  IRQ    bpviol CRC    Fra Codi Options  LBO
ALLO4XXP (PCI) Card 0 Span 1        RED     0      0      0      CCS AMI           0 db (CSU)/0-133 feet (DSX-1)
ALLO4XXP (PCI) Card 0 Span 2        RED     0      0      0      CCS AMI           0 db (CSU)/0-133 feet (DSX-1)
ALLO4XXP (PCI) Card 0 Span 3        OK      0      0      0      CCS AMI           0 db (CSU)/0-133 feet (DSX-1)
ALLO4XXP (PCI) Card 0 Span 4        RED     0      0      0      CCS AMI           0 db (CSU)/0-133 feet (DSX-1)
pc-satyapal*CLI>
```

If you can see the four spans, that means CB400P/CB400E is OK now. At this point we are ready to make calls using configured dahdi channels.

8. Input your IP of Trixbox system (For example – 192.168.0.68) in the address bar, When you see the Trixbox web page (Username:- main, Password:- password) , Go to Admin login and Select Trunk option in the menu. Click Add Custom Trunk option.

Here is an example of Custom trunk created via TRIXBOX GUI.



http://192.168.0.102/maint/index.php?freepbx

In use by 1 route

General Settings

Outbound Caller ID:

Never Override CallerID: □

Maximum Channels:

Disable Trunk: □ Disable

Monitor Trunk Failures: □ Enable

Outgoing Dial Rules

Dial Rules:

Clean & Remove duplicates

Dial Rules Wizards: (pick one)

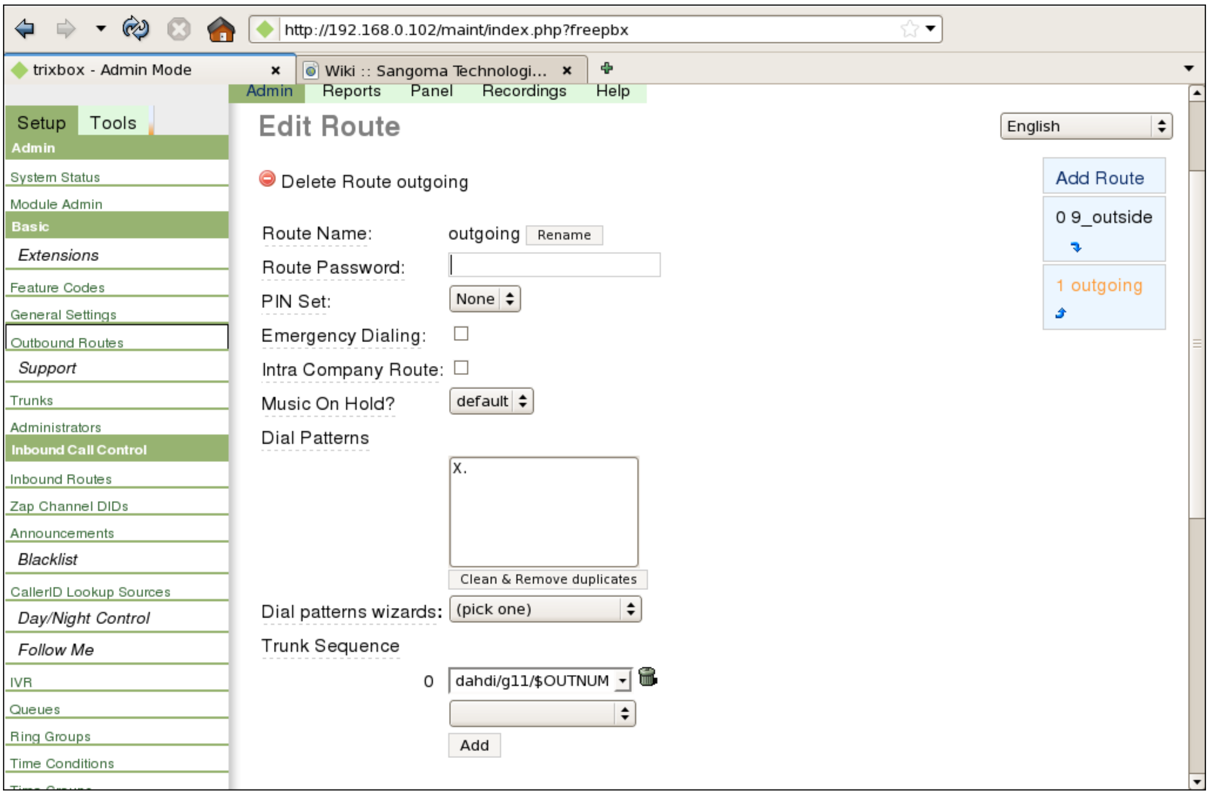
Outbound Dial Prefix:

Outgoing Settings

Custom Dial String: dahdi/g11/$OUTNUM

9. Next go to outbound routes, create new outbound to rule to make outgoing calls using these dahdi channels.

Here is an example of outbound route using dahdi group (g11) in TRIXBOX GUI.



Edit Route

Delete Route outgoing

Route Name: outgoing Rename

Route Password:

PIN Set: None

Emergency Dialing: □

Intra Company Route: □

Music On Hold? default

Dial Patterns

```
X.
```

Clean & Remove duplicates

Dial patterns wizards: (pick one)

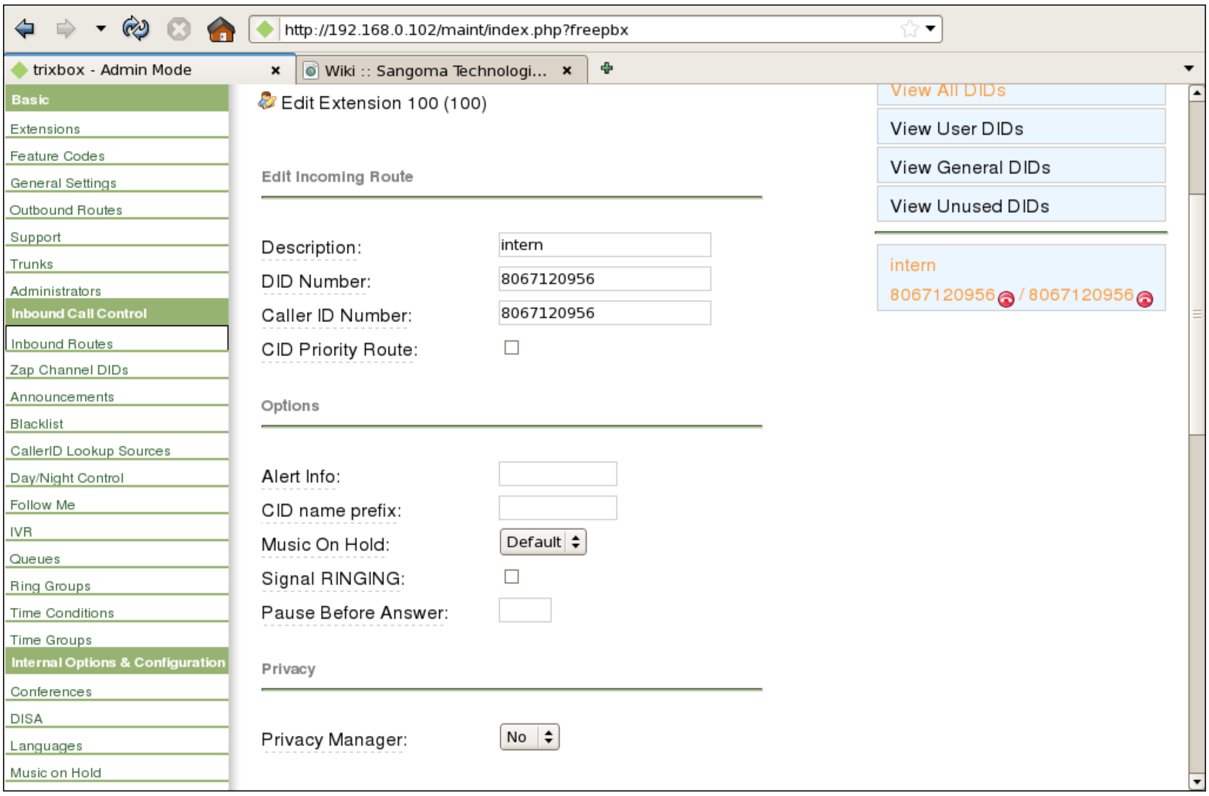
Trunk Sequence

0 dahdi/g11/$OUTNUM

Add

10. Next go to inbound routes and select the created trunk in Trunk Sequence option.

Here is an example of inbound route in TRIXBOX GUI.



Edit Extension 100 (100)

Edit Incoming Route

Description: intern

DID Number: 8067120956

Caller ID Number: 8067120956

CID Priority Route: □

Options

Alert Info:

CID name prefix:

Music On Hold: Default

Signal RINGING: □

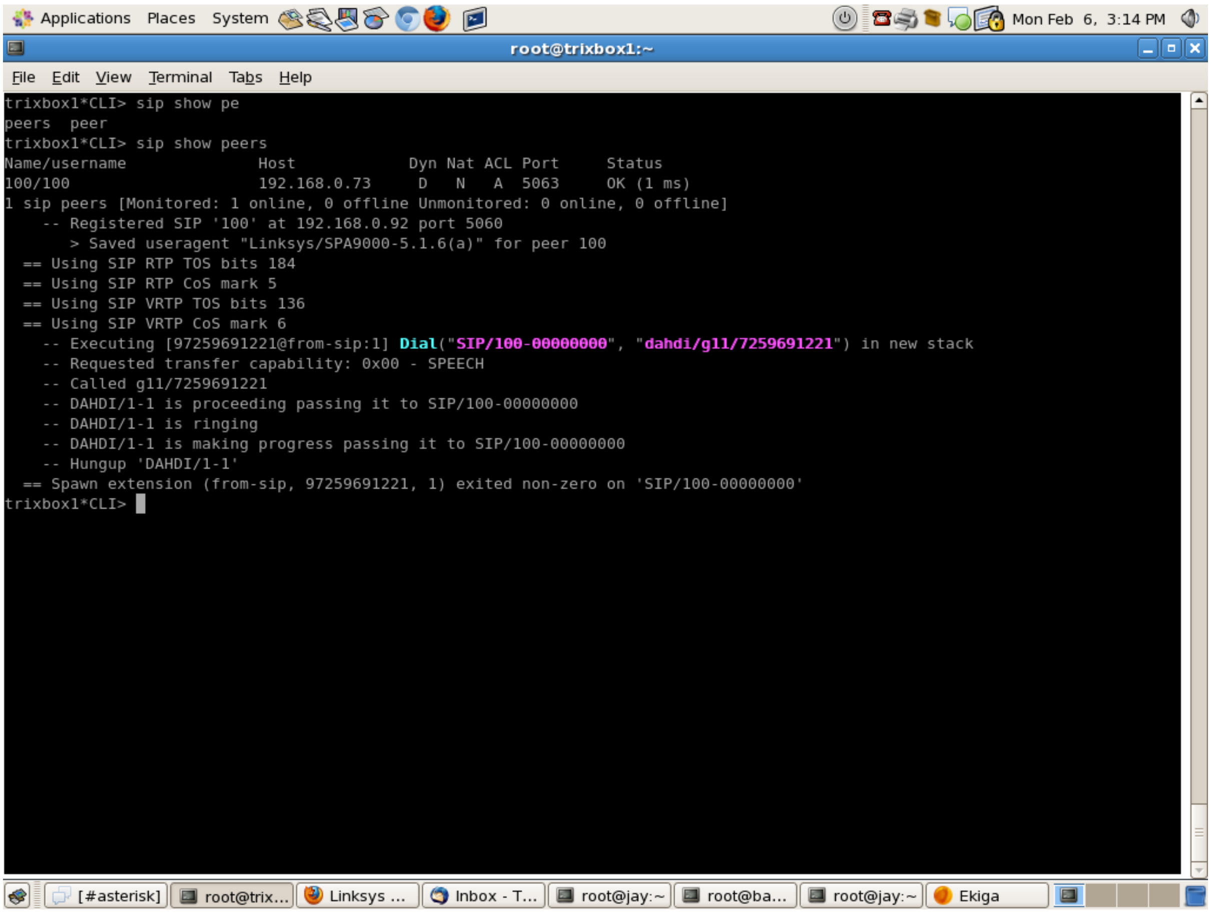
Pause Before Answer:

Privacy

Privacy Manager: No

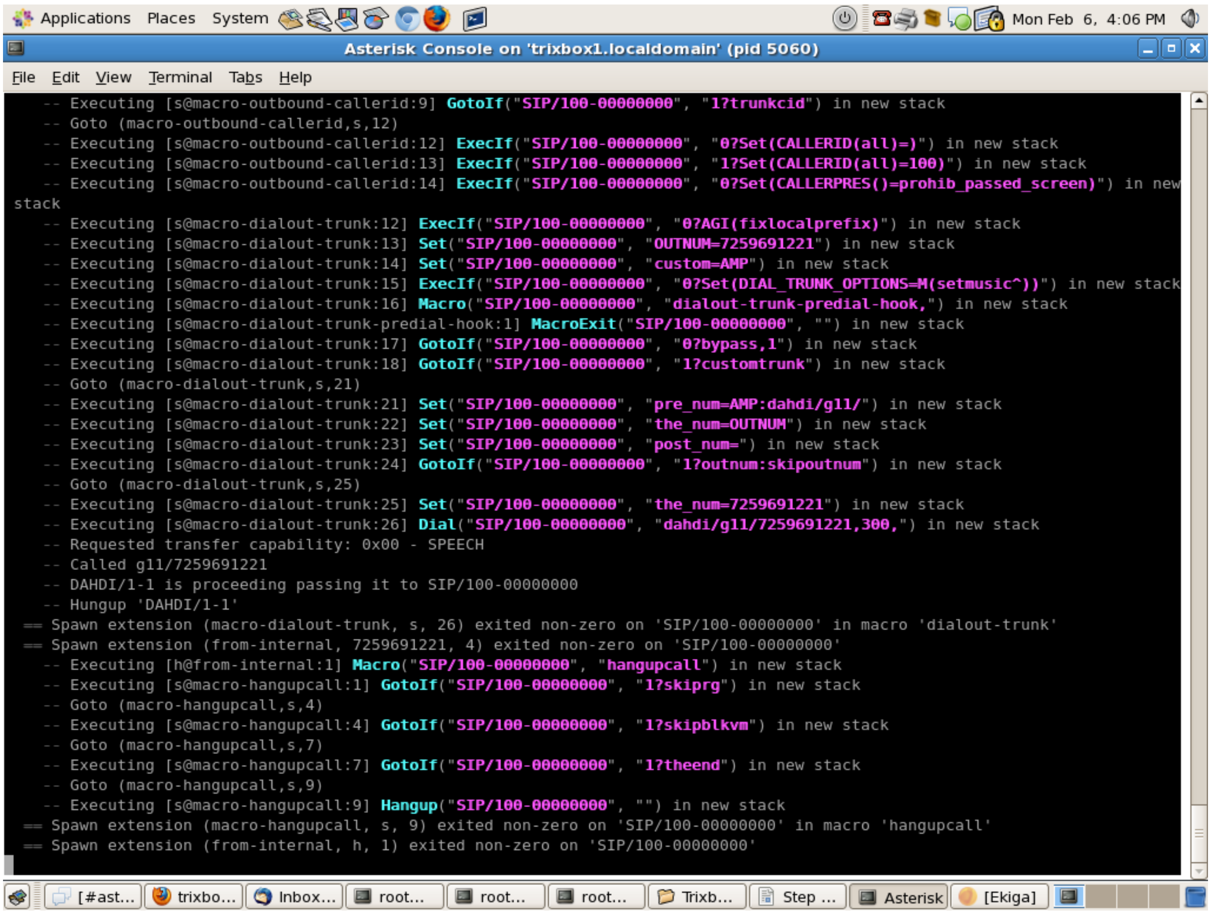
Now the system is ready to make calls.

Here is an example output of outbound call which is using DAHDI channel group g11.



```
trixbox1*CLI> sip show pe
peers  peer
trixbox1*CLI> sip show peers
Name/username              Host            Dyn Nat ACL Port     Status
100/100                    192.168.0.73     D   N   A  5063     OK (1 ms)
1 sip peers [Monitored: 1 online, 0 offline Unmonitored: 0 online, 0 offline]
    -- Registered SIP '100' at 192.168.0.92 port 5060
       > Saved useragent "Linksys/SPA9000-5.1.6(a)" for peer 100
  == Using SIP RTP TOS bits 184
  == Using SIP RTP CoS mark 5
  == Using SIP VRTP TOS bits 136
  == Using SIP VRTP CoS mark 6
    -- Executing [97259691221@from-sip:1] Dial("SIP/100-00000000", "dahdi/g11/7259691221") in new stack
    -- Requested transfer capability: 0x00 - SPEECH
    -- Called g11/7259691221
    -- DAHDI/1-1 is proceeding passing it to SIP/100-00000000
    -- DAHDI/1-1 is ringing
    -- DAHDI/1-1 is making progress passing it to SIP/100-00000000
    -- Hungup 'DAHDI/1-1'
  == Spawn extension (from-sip, 97259691221, 1) exited non-zero on 'SIP/100-00000000'
trixbox1*CLI> 
```

Here is an example output of inbound call which is reached on IVR.



Applications Places System
Mon Feb 6, 4:06 PM
Asterisk Console on 'trixbox1.localdomain' (pid 5060)
File Edit View Terminal Tabs Help
[#ast... trixbo... Inbox... root... root... root... Trixb... Step ... Asterisk [Ekiga]

```
    -- Executing [s@macro-outbound-callerid:9] GotoIf("SIP/100-00000000", "1?trunkcid") in new stack
    -- Goto (macro-outbound-callerid,s,12)
    -- Executing [s@macro-outbound-callerid:12] ExecIf("SIP/100-00000000", "0?Set(CALLERID(all)=)") in new stack
    -- Executing [s@macro-outbound-callerid:13] ExecIf("SIP/100-00000000", "1?Set(CALLERID(all)=100)") in new stack
    -- Executing [s@macro-outbound-callerid:14] ExecIf("SIP/100-00000000", "0?Set(CALLERPRES()=prohib_passed_screen)") in new
stack
    -- Executing [s@macro-dialout-trunk:12] ExecIf("SIP/100-00000000", "0?AGI(fixlocalprefix)") in new stack
    -- Executing [s@macro-dialout-trunk:13] Set("SIP/100-00000000", "OUTNUM=7259691221") in new stack
    -- Executing [s@macro-dialout-trunk:14] Set("SIP/100-00000000", "custom=AMP") in new stack
    -- Executing [s@macro-dialout-trunk:15] ExecIf("SIP/100-00000000", "0?Set(DIAL_TRUNK_OPTIONS=M(setmusic^))") in new stack
    -- Executing [s@macro-dialout-trunk:16] Macro("SIP/100-00000000", "dialout-trunk-predial-hook,") in new stack
    -- Executing [s@macro-dialout-trunk-predial-hook:1] MacroExit("SIP/100-00000000", "") in new stack
    -- Executing [s@macro-dialout-trunk:17] GotoIf("SIP/100-00000000", "0?bypass,1") in new stack
    -- Executing [s@macro-dialout-trunk:18] GotoIf("SIP/100-00000000", "1?customtrunk") in new stack
    -- Goto (macro-dialout-trunk,s,21)
    -- Executing [s@macro-dialout-trunk:21] Set("SIP/100-00000000", "pre_num=AMP:dahdi/g11/") in new stack
    -- Executing [s@macro-dialout-trunk:22] Set("SIP/100-00000000", "the_num=OUTNUM") in new stack
    -- Executing [s@macro-dialout-trunk:23] Set("SIP/100-00000000", "post_num=") in new stack
    -- Executing [s@macro-dialout-trunk:24] GotoIf("SIP/100-00000000", "1?outnum:skipoutnum") in new stack
    -- Goto (macro-dialout-trunk,s,25)
    -- Executing [s@macro-dialout-trunk:25] Set("SIP/100-00000000", "the_num=7259691221") in new stack
    -- Executing [s@macro-dialout-trunk:26] Dial("SIP/100-00000000", "dahdi/g11/7259691221,300,") in new stack
    -- Requested transfer capability: 0x00 - SPEECH
    -- Called g11/7259691221
    -- DAHDI/1-1 is proceeding passing it to SIP/100-00000000
    -- Hungup 'DAHDI/1-1'
  == Spawn extension (macro-dialout-trunk, s, 26) exited non-zero on 'SIP/100-00000000' in macro 'dialout-trunk'
  == Spawn extension (from-internal, 7259691221, 4) exited non-zero on 'SIP/100-00000000'
    -- Executing [h@from-internal:1] Macro("SIP/100-00000000", "hangupcall") in new stack
    -- Executing [s@macro-hangupcall:1] GotoIf("SIP/100-00000000", "1?skiprg") in new stack
    -- Goto (macro-hangupcall,s,4)
    -- Executing [s@macro-hangupcall:4] GotoIf("SIP/100-00000000", "1?skipblkvm") in new stack
    -- Goto (macro-hangupcall,s,7)
    -- Executing [s@macro-hangupcall:7] GotoIf("SIP/100-00000000", "1?theend") in new stack
    -- Goto (macro-hangupcall,s,9)
    -- Executing [s@macro-hangupcall:9] Hangup("SIP/100-00000000", "") in new stack
  == Spawn extension (macro-hangupcall, s, 9) exited non-zero on 'SIP/100-00000000' in macro 'hangupcall'
  == Spawn extension (from-internal, h, 1) exited non-zero on 'SIP/100-00000000'
```