How to Install and configure AX1D with Zaptel and Centos5.6

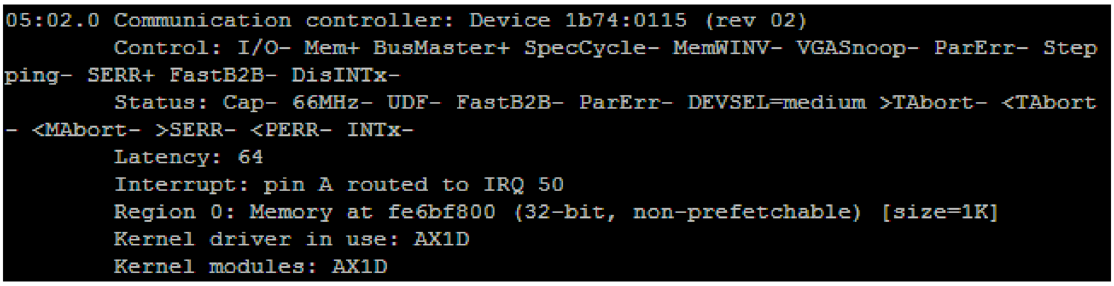
Environment

Centos5.6
Libpri-1.4.7
Zaptel-1.4.12.1
Asterisk-1.4.12.1

Install AX1D in Centos5.6

1. Please install the Centos5.6 and then, install asterisk and zaptel after you have used the command: *rpm –q rpm-package* to check the following RPM packages:
   bison bison-devel zlib zlib-devel openssl openssl-devel gnutls-devel gcc gcc-c++
   If any package isn’t installed, please use the yum install command to install the package.

2. After inserting the card into your PCI slot and boot your server. Then you can use the commad: lspci –vv to check the PCI bus compatibility. The correct print messages like the following:



```
05:02.0 Communication controller: Device 1b74:0115 (rev 02)
        Control: I/O- Mem+ BusMaster+ SpecCycle- MemWINV- VGASnoop- ParErr- Step
ping- SERR+ FastB2B- DisINTx-
        Status: Cap- 66MHz- UDF- FastB2B- ParErr- DEVSEL=medium >TAbort- <TAbort
- <MAbort- >SERR- <PERR- INTx-
        Latency: 64
        Interrupt: pin A routed to IRQ 50
        Region 0: Memory at fe6bf800 (32-bit, non-prefetchable) [size=1K]
        Kernel driver in use: AX1D
        Kernel modules: AX1D
```

3. Please download the asterisk and libpri packages from the following link.
   [root@localhost src]#
   wget http://downloads.asterisk.org/pub/telephony/asterisk/releases/asterisk-1.4.12.1.tar.gz
   [root@localhost src]#
   wget http://downloads.asterisk.org/pub/telephony/libpri/releases/libpri-1.4.7.tar.gz

4. Install Zaptel Method 1
   In this way, you can download the zaptel packet from ATCOM website directly.
   [root@localhost src]#
   wget http://chinavoipsupply.com:8080/downloads/TelephonyCard/drivers/AX1D/zaptel-1.4.12.1.tar.gz

5. Install Zaptel Method 2

1) Please download the zaptel packages from the following link.

[root@localhost src]#
wget http://downloads.asterisk.org/pub/telephony/zaptel/zaptel-1.4.12.1.tar.gz

2) This step, you should download the packages: AX1D-zaptel-1.4.12.1.tar.gz and atcom-zaptel-fw-oct6114-032-1.07.01.tar.gz from ATCOM website.

[root@localhost src]#
wget http://chinavoipsupply.com:8080/downloads/TelephonyCard/drivers/AX1D/atcom-zaptel-fw-oct6114-032-1.07.01.tar.gz
[root@localhost src]#
wget http://chinavoipsupply.com:8080/downloads/TelephonyCard/drivers/AX1D/AX1D-zaptel-1.4.12.1.tar.gz

3) Make sure you have downloaded the package correctly in the last step. You can untar the three packages in the default /usr/src/ files:

"zaptel-1.4.12.1.tar.gz"
"atcom-zaptel-fw-oct6114-032-1.07.01.tar.gz"
"AX1D-zaptel-1.4.12.1.tar.gz"
[root@localhost src]# tar –zxvf zaptel-1.4.12.1.tar.gz
[root@localhost src]# tar –zxvf AX1D-zaptel-1.4.12.1.tar.gz
[root@localhost src]# tar –zxvf atcom-zaptel-fw-oct6114-032-1.07.01.tar.gz

4) Then please move the package "AX1D" under the kernel file like the following:

[root@localhost src]#
[root@localhost src]# mv AX1D /usr/src/zaptel-1.4.12.1/kernel/

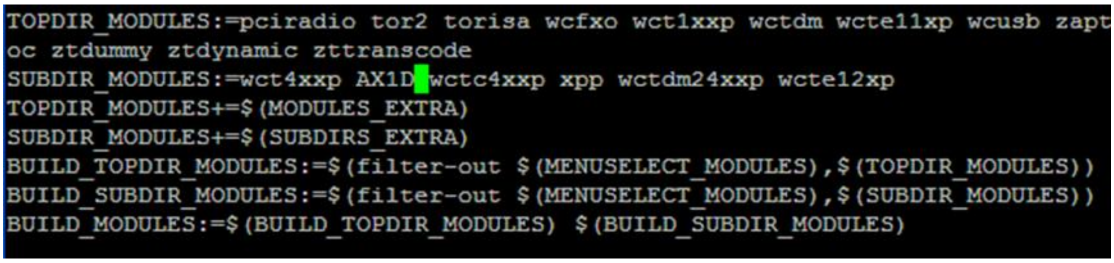
5) And then you can copy the firmware: "zaptel-fw-oct6114-032.bin" like the following:

[root@localhost src]#
[root@localhost src]# cp zaptel-fw-oct6114-032.bin /usr/src/zaptel-1.4.12.1/firmware/
[root@localhost src]# mv zaptel-fw-oct6114-032.bin /lib/firmware/

6) Please modify the zaptel Makefile files

[root@localhost src]#
[root@localhost src]# vi /usr/src/zaptel-1.4.12.1/Makefile

Find the sentence begins with "SUBDIR_MODULES", and add AX1D as the following:

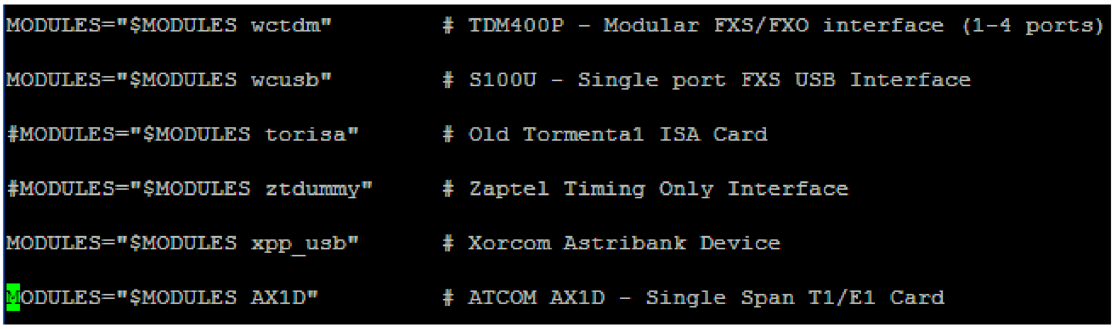


```
TOPDIR_MODULES:=pciradio tor2 torisa wcfxo wct1xxp wctdm wcte11xp wcusb zapt
oc ztdummy ztdynamic zttranscode
SUBDIR_MODULES:=wct4xxp AX1D wctc4xxp xpp wctdm24xxp wcte12xp
TOPDIR_MODULES+=$(MODULES_EXTRA)
SUBDIR_MODULES+=$(SUBDIRS_EXTRA)
BUILD_TOPDIR_MODULES:=$(filter-out $(MENUSELECT_MODULES),$(TOPDIR_MODULES))
BUILD_SUBDIR_MODULES:=$(filter-out $(MENUSELECT_MODULES),$(SUBDIR_MODULES))
BUILD_MODULES:=$(BUILD_TOPDIR_MODULES) $(BUILD_SUBDIR_MODULES)
```

7) Modify zaptel.sysconfig files

[root@localhost src]#

[root@localhost src]# vi /usr/src/zaptel-1.4.12.1/zaptel.sysconfig



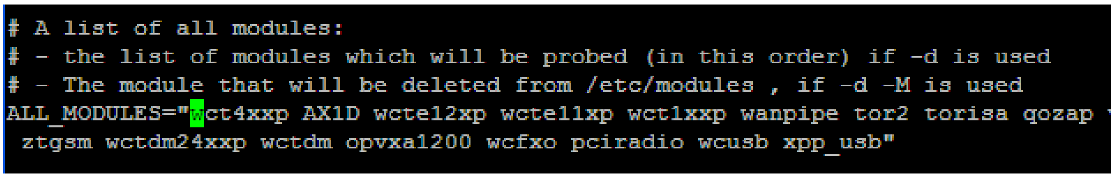
```
MODULES="$MODULES wctdm"          # TDM400P - Modular FXS/FXO interface (1-4 ports)

MODULES="$MODULES wcusb"          # S100U - Single port FXS USB Interface

#MODULES="$MODULES torisa"        # Old Tormenta1 ISA Card

#MODULES="$MODULES ztdummy"       # Zaptel Timing Only Interface

MODULES="$MODULES xpp_usb"        # Xorcom Astribank Device

MODULES="$MODULES AX1D"           # ATCOM AX1D - Single Span T1/E1 Card
```

8) Modify the files: genzaptelconf as the following:

[root@localhost src]# cd /usr/src/ax1d_zaptel/zaptel-1.4.12.1/kernel/xpp/utils

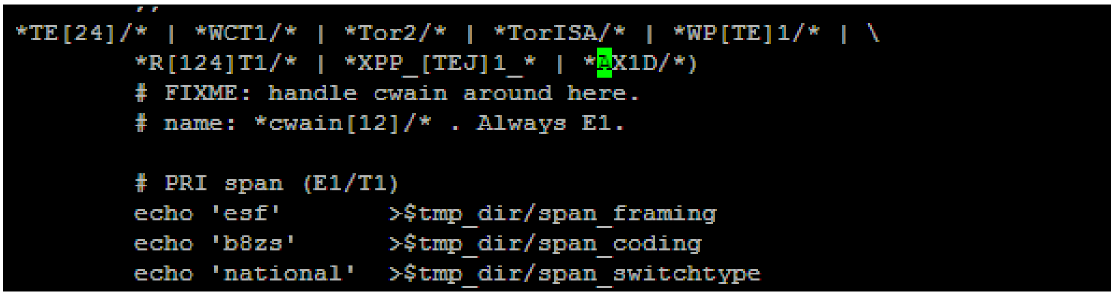
[root@localhost src]# vi genzaptelconf

Firstly, add “AX1D” behind the wct4xxp as the following:



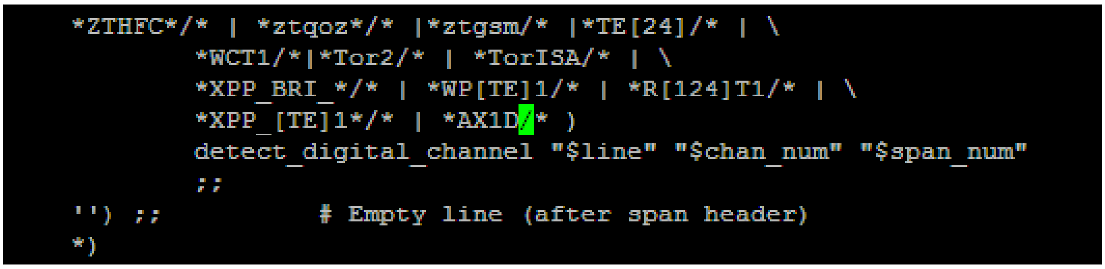
```
# A list of all modules:
# - the list of modules which will be probed (in this order) if -d is used
# - The module that will be deleted from /etc/modules , if -d -M is used
ALL_MODULES="wct4xxp AX1D wcte12xp wcte11xp wct1xxp wanpipe tor2 torisa qozap
 ztgsm wctdm24xxp wctdm opvxa1200 wcfxo pciradio wcusb xpp_usb"
```

Secondly, add “AX1D” as the following:



```
*TE[24]/* | *WCT1/* | *Tor2/* | *TorISA/* | *WP[TE]1/* | \
        *R[124]T1/* | *XPP_[TEJ]1_* | *AX1D/*)
        # FIXME: handle cwain around here.
        # name: *cwain[12]/* . Always E1.

        # PRI span (E1/T1)
        echo 'esf'       >$tmp_dir/span_framing
        echo 'b8zs'      >$tmp_dir/span_coding
        echo 'national'  >$tmp_dir/span_switchtype
```

Thirdly, add “AX1D” as the following:



```
    *ZTHFC*/* | *ztqoz*/* |*ztgsm/* |*TE[24]/* | \
            *WCT1/*|*Tor2/* | *TorISA/* | \
            *XPP_BRI_*/* | *WP[TE]1/* | *R[124]T1/* | \
            *XPP_[TE]1*/* | *AX1D/* )
            detect_digital_channel "$line" "$chan_num" "$span_num"
            ;;
    '') ;;          # Empty line (after span header)
    *)
```

6. Untar libpri package then compile and install it using the following command.

[root@localhost src]#

[root@localhost src]# tar zxvf libpri-1.4.10.2.tar.gz

[root@localhost src]# cd libpri-1.4.10.2

[root@localhost libpri-1.4.10.2]# make;make install

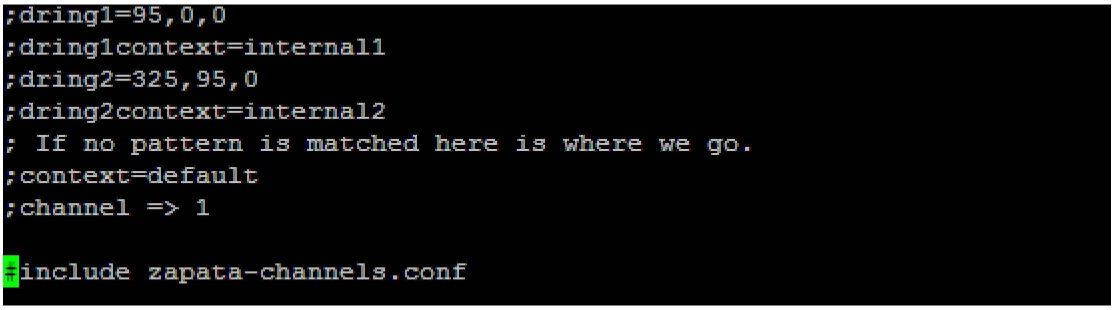
7. Please compile the zaptel and install it using the following commands.
   [root@localhost src]#
   [root@localhost src]# /usr/src/zaptel-1.4.12.1
   [root@localhost src]# ./configure;make;make install;make config

8. Please compile the asterisk and install it.
   [root@localhost src]#
   [root@localhost src]# /usr/src/asterisk-1.4.2.1
   [root@localhost src]# ./configure;make;make install;make samples

9. Auto-configure the zaptel use the command: genzaptelconf -sdvM
   [root@localhost src]#
   [root@localhost src]# genzaptelconf -sdvM

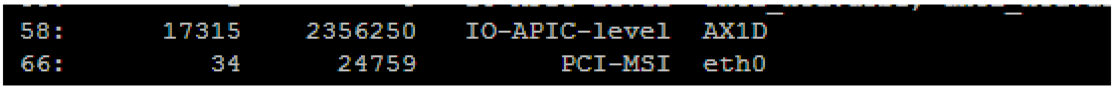
   (If there are any errors after running the command, please check the detailed information. The system will offer command for solution, users can solve the problem according to the command, and then run ./genzaptelconf -sdvM, if there is no error, users can go to the next step.)

10. Please use the command add a command line: #include zapata-channels.conf at the end of zapata.conf files.
    [root@localhost asterisk]# vi /etc/asterisk/zapata.conf



```
;dring1=95,0,0
;dring1context=internal1
;dring2=325,95,0
;dring2context=internal2
; If no pattern is matched here is where we go.
;context=default
;channel => 1

#include zapata-channels.conf
```

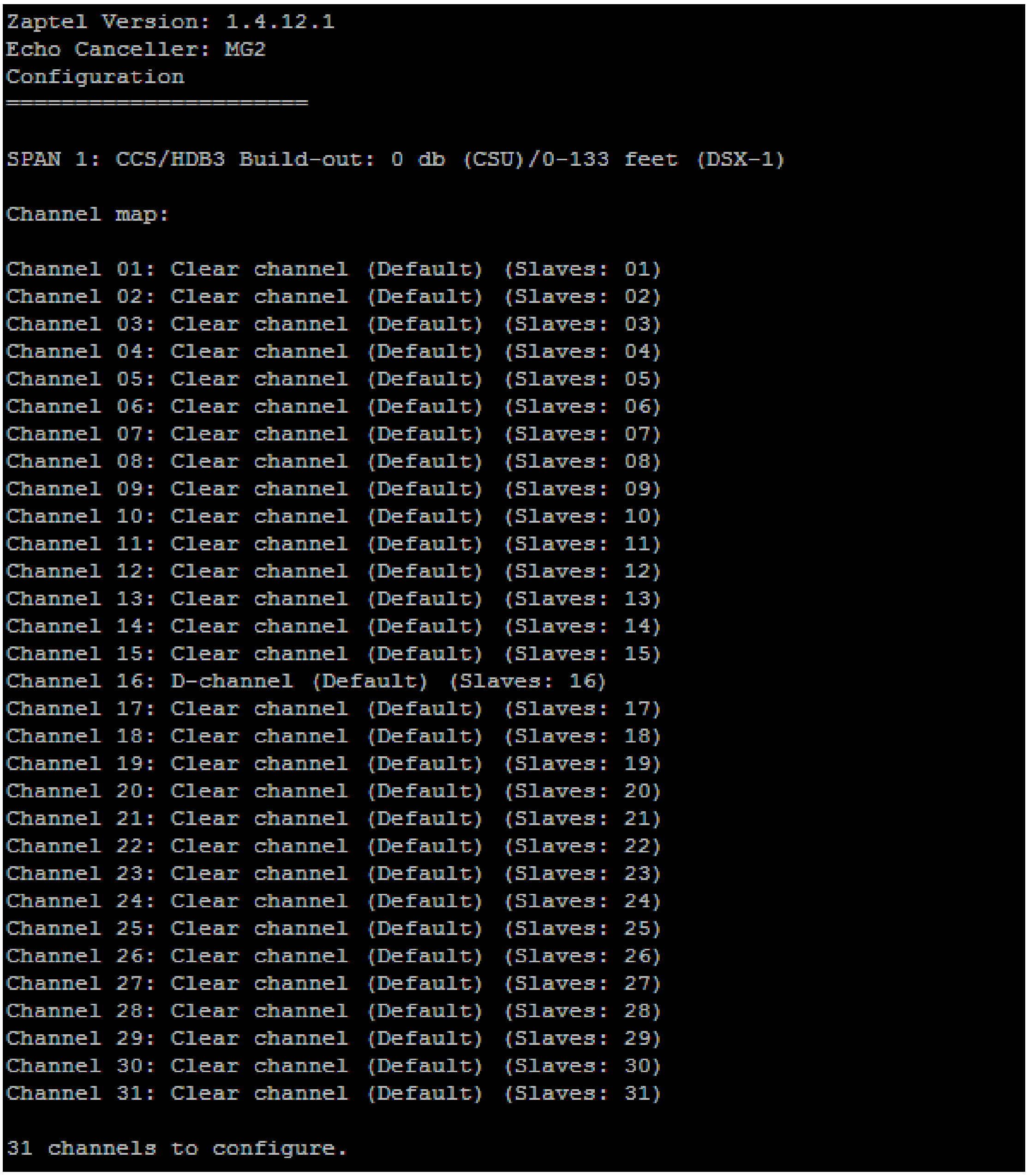
11. Check the PCI messages and check the card's interrupts like this:
    [root@localhost asterisk]# cat /proc/interrutps



```
 58:       17315     2356250   IO-APIC-level   AX1D
 66:          34       24759         PCI-MSI   eth0
```

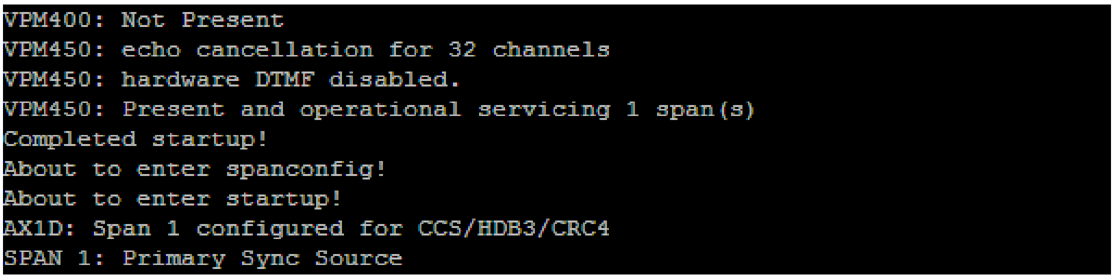
12. Please load the zaptel using the command: "ztcfg –vv", and check the echocancel mode messages using the command: dmesg.
    [root@localhost asterisk]# ztcfg -vv
    [root@localhost asterisk]# dmesg

If you use the command: ztcfg –vv with AX1D card, it will display the channels messages in E1 mode.



```
Zaptel Version: 1.4.12.1
Echo Canceller: MG2
Configuration
======================

SPAN 1: CCS/HDB3 Build-out: 0 db (CSU)/0-133 feet (DSX-1)

Channel map:

Channel 01: Clear channel (Default) (Slaves: 01)
Channel 02: Clear channel (Default) (Slaves: 02)
Channel 03: Clear channel (Default) (Slaves: 03)
Channel 04: Clear channel (Default) (Slaves: 04)
Channel 05: Clear channel (Default) (Slaves: 05)
Channel 06: Clear channel (Default) (Slaves: 06)
Channel 07: Clear channel (Default) (Slaves: 07)
Channel 08: Clear channel (Default) (Slaves: 08)
Channel 09: Clear channel (Default) (Slaves: 09)
Channel 10: Clear channel (Default) (Slaves: 10)
Channel 11: Clear channel (Default) (Slaves: 11)
Channel 12: Clear channel (Default) (Slaves: 12)
Channel 13: Clear channel (Default) (Slaves: 13)
Channel 14: Clear channel (Default) (Slaves: 14)
Channel 15: Clear channel (Default) (Slaves: 15)
Channel 16: D-channel (Default) (Slaves: 16)
Channel 17: Clear channel (Default) (Slaves: 17)
Channel 18: Clear channel (Default) (Slaves: 18)
Channel 19: Clear channel (Default) (Slaves: 19)
Channel 20: Clear channel (Default) (Slaves: 20)
Channel 21: Clear channel (Default) (Slaves: 21)
Channel 22: Clear channel (Default) (Slaves: 22)
Channel 23: Clear channel (Default) (Slaves: 23)
Channel 24: Clear channel (Default) (Slaves: 24)
Channel 25: Clear channel (Default) (Slaves: 25)
Channel 26: Clear channel (Default) (Slaves: 26)
Channel 27: Clear channel (Default) (Slaves: 27)
Channel 28: Clear channel (Default) (Slaves: 28)
Channel 29: Clear channel (Default) (Slaves: 29)
Channel 30: Clear channel (Default) (Slaves: 30)
Channel 31: Clear channel (Default) (Slaves: 31)

31 channels to configure.
```

If you have installed the drivers correctly, it will display “VPM400” “VPM450” messages to show the Echocancel hardware module having been detected like the following illustration.



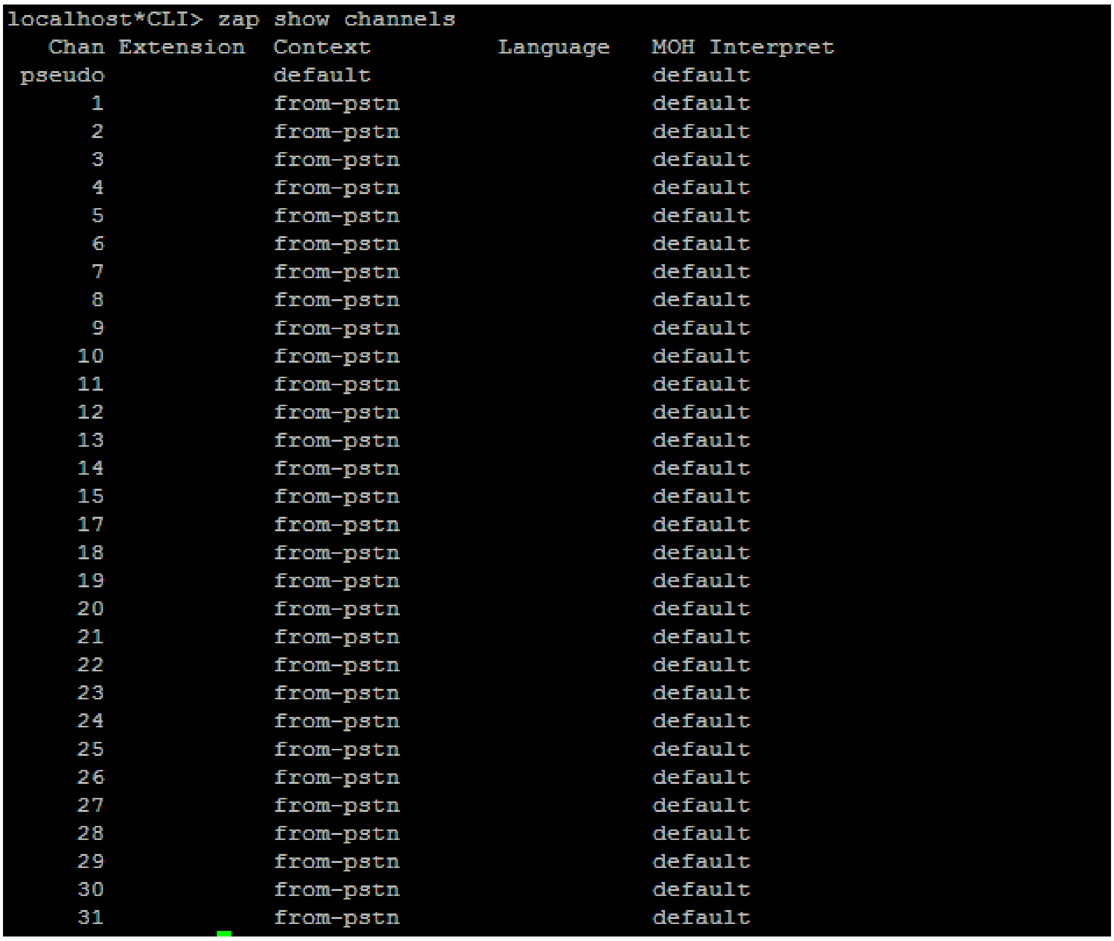
```
VPM400: Not Present
VPM450: echo cancellation for 32 channels
VPM450: hardware DTMF disabled.
VPM450: Present and operational servicing 1 span(s)
Completed startup!
About to enter spanconfig!
About to enter startup!
AX1D: Span 1 configured for CCS/HDB3/CRC4
SPAN 1: Primary Sync Source
```

13. Please load the asterisk and show channels in the CLI.

    [root@localhost src]# asterisk

    [root@localhost src]# asterisk –vvgr

    localhost*CLI> zap show channels



```
localhost*CLI> zap show channels
   Chan Extension  Context         Language   MOH Interpret
 pseudo            default                    default
      1            from-pstn                  default
      2            from-pstn                  default
      3            from-pstn                  default
      4            from-pstn                  default
      5            from-pstn                  default
      6            from-pstn                  default
      7            from-pstn                  default
      8            from-pstn                  default
      9            from-pstn                  default
     10            from-pstn                  default
     11            from-pstn                  default
     12            from-pstn                  default
     13            from-pstn                  default
     14            from-pstn                  default
     15            from-pstn                  default
     17            from-pstn                  default
     18            from-pstn                  default
     19            from-pstn                  default
     20            from-pstn                  default
     21            from-pstn                  default
     22            from-pstn                  default
     23            from-pstn                  default
     24            from-pstn                  default
     25            from-pstn                  default
     26            from-pstn                  default
     27            from-pstn                  default
     28            from-pstn                  default
     29            from-pstn                  default
     30            from-pstn                  default
     31            from-pstn                  default
```