



OpenVox Communication Co Ltd

OpenVox DE115P/DE115E User Manual





OpenVox Communication Co Ltd

OpenVox-Best Cost Effective Asterisk Cards

OpenVox Communication Co. Ltd.

Address: F/2,Building No.14,Shangsha Science & Technology Park,
No.9283,Binhe Road, Futian District, ShenZhen ,Guangdong 518048,China
Tel:+86-755-82535095,82535461,
Fax:+86-755-82535174

Email for Sales: sales@openvox.com.cn

Email for Technical Support: support@openvox.com.cn

Business Hours: 9:00AM-18:00PM from Monday-Friday

Website: www.openvox.cn

Thank You for Choosing OpenVox Products!



Table of contents

Chapter 1 Overview	4
Chapter 2 Hardware Introduction.....	6
Chapter 3 Installation and Configuration	11
Chapter 4 Reference	26



Chapter 1 Overview

1. What is DE115P/DE115E?

The DE115P/DE115E is a bundling of our D115P/D115E product and our new EC100-32 Octasic DSP-based echo cancellation module. The EC100 provides a certified carrier-grade algorithm that has been labeled a benchmark for echo cancellation for OpenVox.

With the improved I/O speed, the card reduces CPU usage and increased card density per server. DE115P/DE115E is fully compatible with Asterisk applications. The open source driver supports an API interface for custom application development.

DE115P/DE115E supports industry standard telephony and data protocols, including Primary Rate ISDN (both N. American and Standard Euro) protocol families for voice, PPP, Cisco, HDLC, and Frame Relay data modes. Both line-side and trunk-side interfaces are supported.

About OpenVox EC100-32 Module

The OpenVox EC100-32 enables users to eliminate echo tails up to 128ms or 1024 taps across all 32 channels in E1 mode or 24 channels in T1/J1 modes. Further, this module takes advantage of the Octasic Voice Quality Enhancement to provide superior sound quality on all calls.

Benefits:

World recognized & deployed best voice quality

Features:

128ms tail/channel (on all channel densities)
Octasic Music Protection
Adaptive Noise Reduction
Automatic Level Control (G.169)
Field upgradeable algorithm
V.25 / V.8 answer tone (w/ and w/o phase reversal)
DTMF as per Q.24

RoHS compliant

Certificates: CE and FCC

Five Year Warranty!

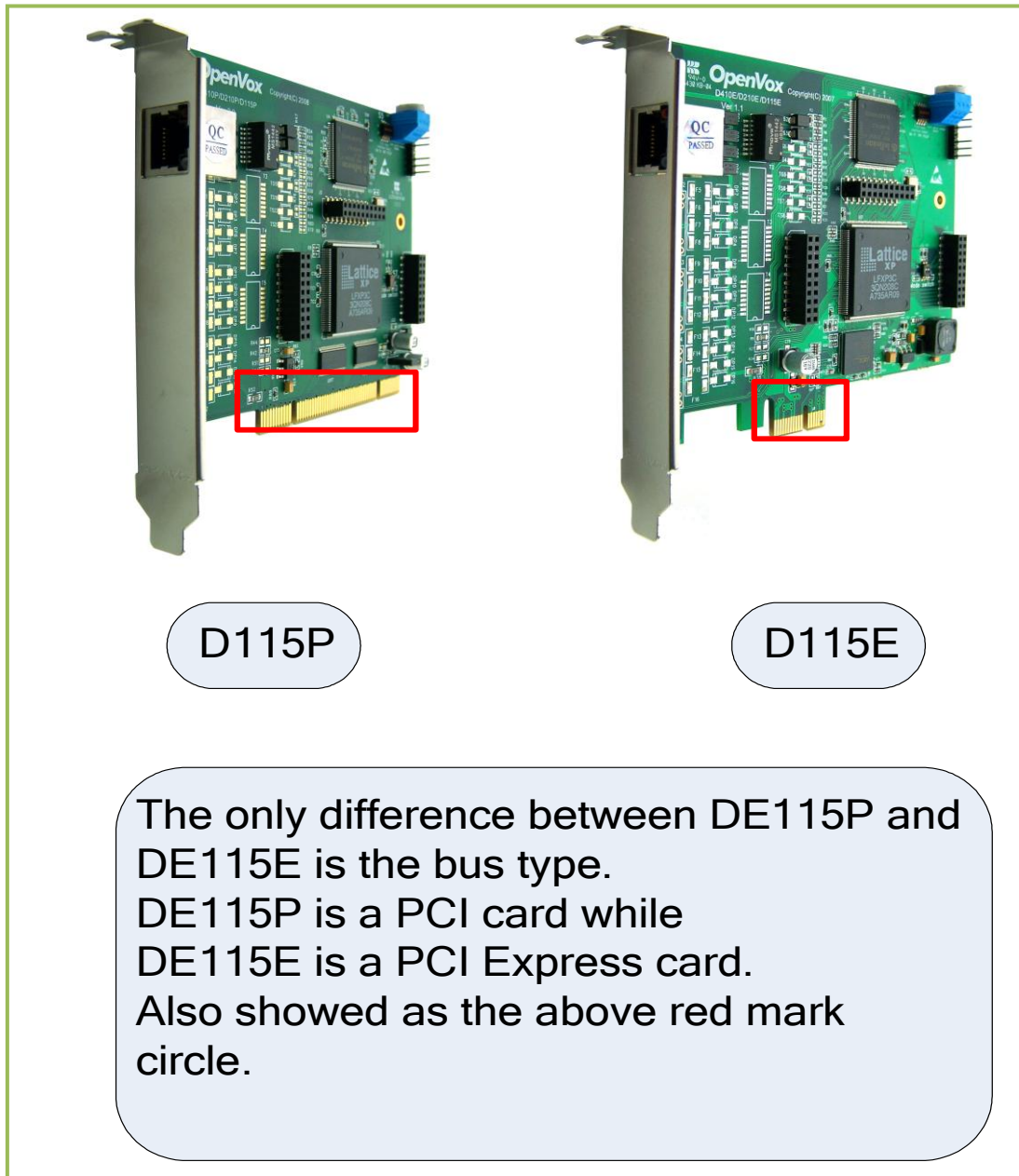
2. What is Asterisk?



Asterisk is a complete PBX in software. It runs on Linux, BSD, Windows(enulated) and provides all of the features you could expect from a PBX and more. Asterisk does voice over IP in four protocols, and can interoperate with almost all standards-based telephony equipment using relatively inexpensive hardware.



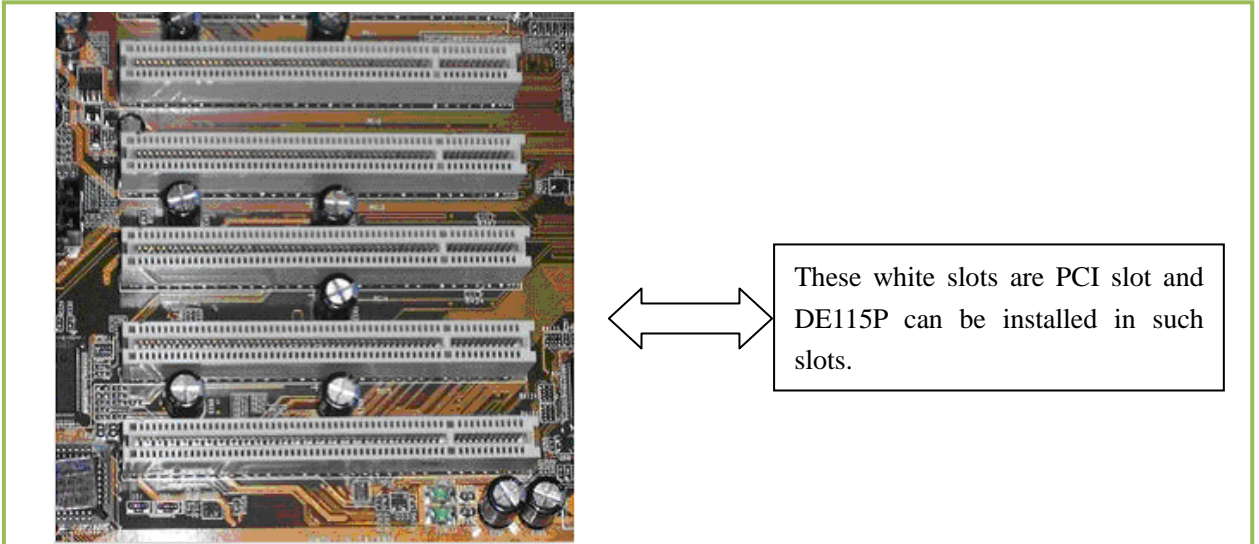
Chapter 2 Hardware Introduction



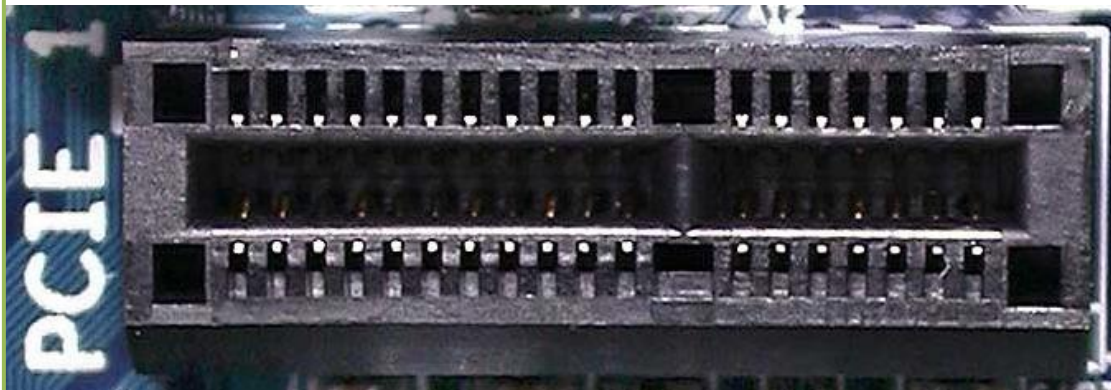
Attention: if you found J914 (input) and J915 (output) interfaces on the card, it means the card supports clock line, for the detail information, please refer to the following link:

<http://bbs.openvox.cn/viewthread.php?tid=874&extra=page%3D1>

Introduction of the slot



The 32 bit PCI slots in a Motherboard



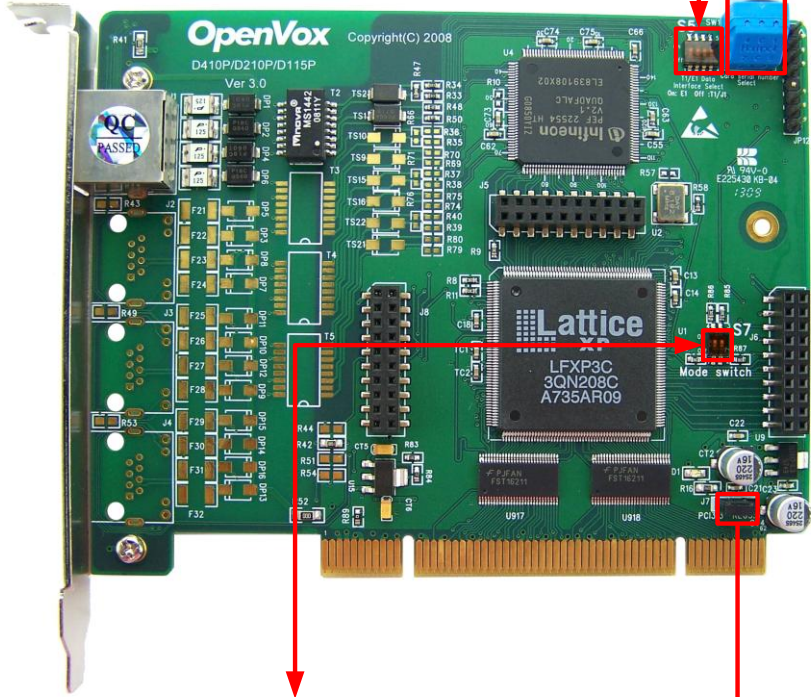
The above slot is a PCI express one and DE115E can be installed in it.



Switch settings


SW1: Card Serial Number Selection
 If there is only one card in PCI slot, SW1 must be set to 0.
 If there are more than one cards in PCI slot, please refer the installation guideline.

S5: Span Type Setting
 Each dip switch controls one span configuration for E1 or T1/J1.
 Setting DIP1 to ON means SPAN1 will be E1.
 Setting DIP1 to OFF means SPAN1 will be T1.
 The example sets all 4 SPANs to E1.



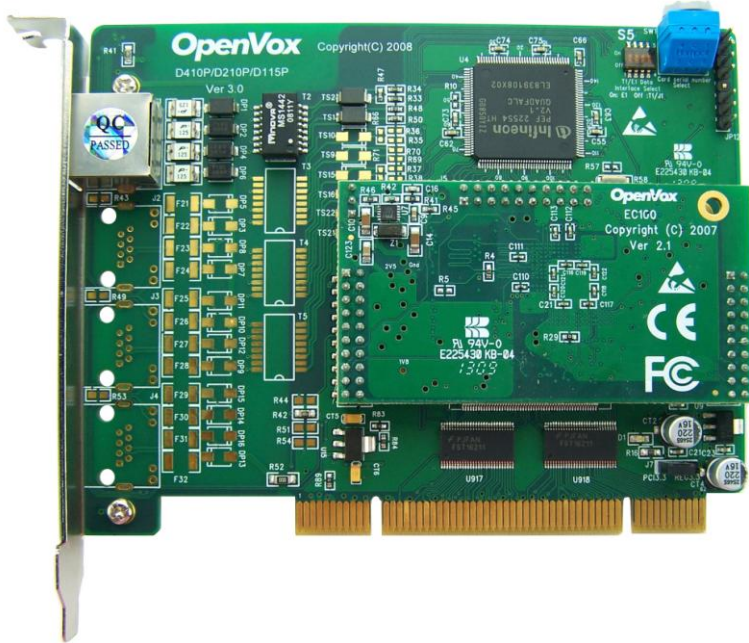
S7: Mode Switch
DIP1:
 ON: The normal driver mode of OpenVox - opvxd115 is in use.
 OFF: The test mode of OpenVox - use in test
DIP2:
 ON: Force PCI Burst On, this model will omit noburst parameter in opvxd115, always keep use PCI Burst model.
 OFF: PCI Burst controlled by driver. Burst controlled by noburst parameter in opvxd115 (default is off).
 Default: Set DIP1 and DIP2 ON.
 The example is a default configuration.

J7: PCI Power Supply
 Shorten the Jumper between 2 and 3 will use 5v power supply of PCI
 Shorten the Jumper 1 and 2 will use 3.3v power supply of PCI

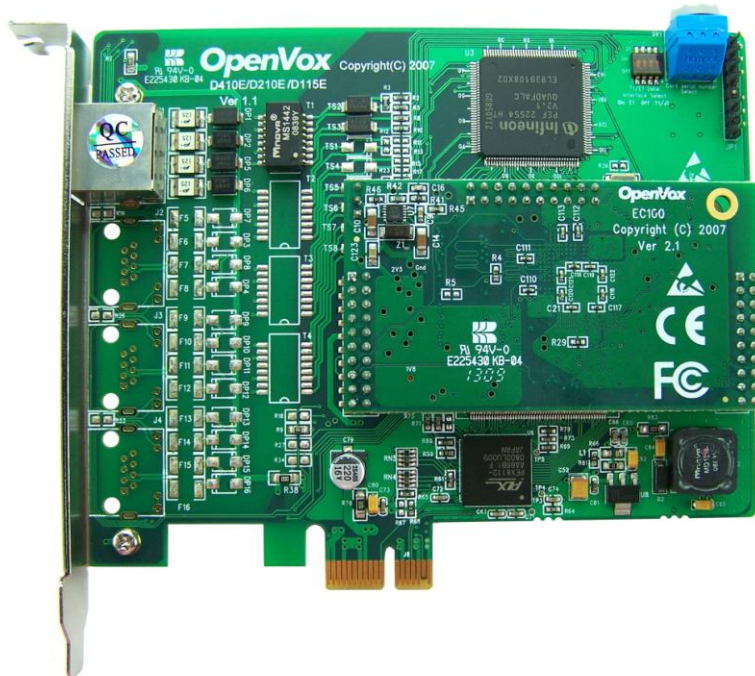




DE115P/DE115E



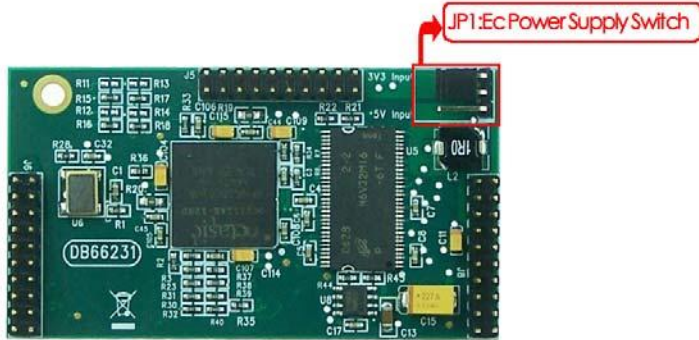
DE115P



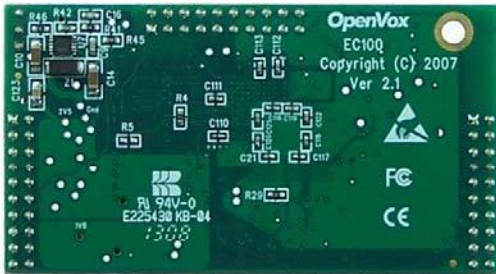
DE115E



EC100-32



EC100 (Bottom View)



EC100 (Top View)

Notice:

JP1:Ec Power Supply Switch

3.3V Power Supply (default)



5V Power Supply



Chapter 3 Installation and Configuration

Installation and configuration environments for reference

CentOS 5.0
Libpri-1.4.7
zaptel-1.4.12.1
asterisk-1.4.21.1
OpenVox DE115P

I. Install the operating system CentOS 5.0

II. Install the DE115P card

Insert the DE115P into the PCI slot, and fix it with screw in order to avoid the mall-connection.

Make sure the setting for the switch of the DE115P is correct according to the picture about the switch setting in Chapter 2.

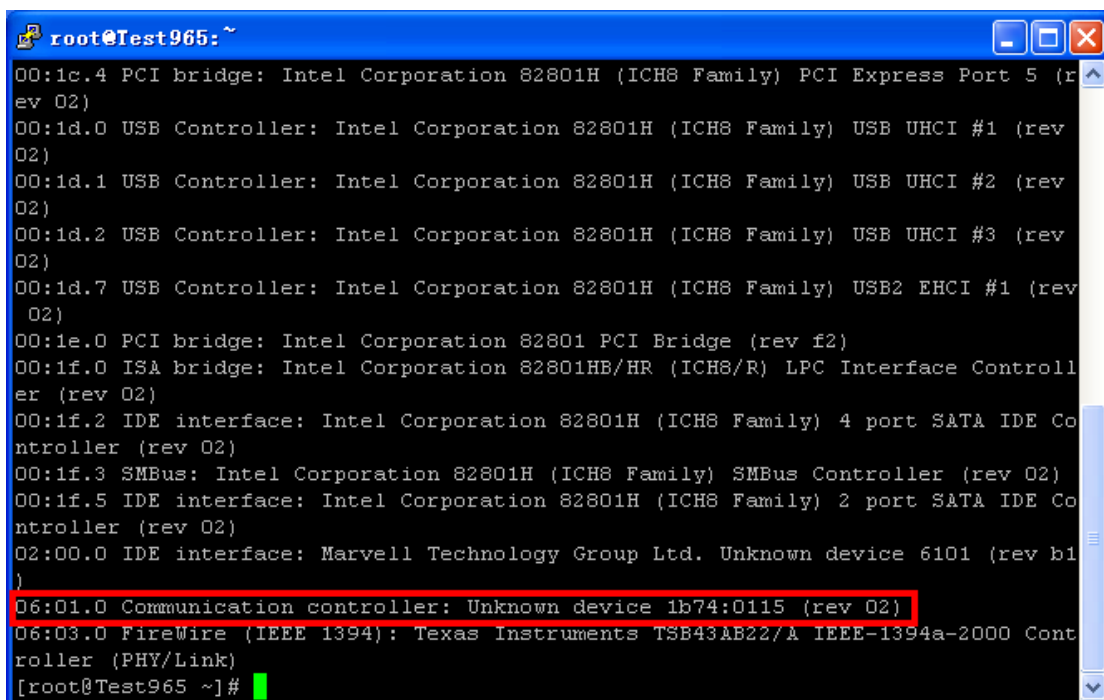
III. Start the CentOS 5.0

IV. Check the system identification of the DE115P

lspci



```
root@Test965:~  
[root@Test965 ~]# lspci
```



```
root@Test965:~  
00:1c.4 PCI bridge: Intel Corporation 82801H (ICH8 Family) PCI Express Port 5 (rev 02)  
00:1d.0 USB Controller: Intel Corporation 82801H (ICH8 Family) USB UHCI #1 (rev 02)  
00:1d.1 USB Controller: Intel Corporation 82801H (ICH8 Family) USB UHCI #2 (rev 02)  
00:1d.2 USB Controller: Intel Corporation 82801H (ICH8 Family) USB UHCI #3 (rev 02)  
00:1d.7 USB Controller: Intel Corporation 82801H (ICH8 Family) USB2 EHCI #1 (rev 02)  
00:1e.0 PCI bridge: Intel Corporation 82801 PCI Bridge (rev f2)  
00:1f.0 ISA bridge: Intel Corporation 82801HB/HR (ICH8/R) LPC Interface Controller (rev 02)  
00:1f.2 IDE interface: Intel Corporation 82801H (ICH8 Family) 4 port SATA IDE Controller (rev 02)  
00:1f.3 SMBus: Intel Corporation 82801H (ICH8 Family) SMBus Controller (rev 02)  
00:1f.5 IDE interface: Intel Corporation 82801H (ICH8 Family) 2 port SATA IDE Controller (rev 02)  
02:00.0 IDE interface: Marvell Technology Group Ltd. Unknown device 6101 (rev b1)  
06:01.0 Communication controller: Unknown device 1b74:0115 (rev 02)  
06:03.0 FireWire (IEEE 1394): Texas Instruments TSB43AB22/A IEEE-1394a-2000 Controller (PHY/Link)  
[root@Test965 ~]#
```

As the picture shows, system has identified a DE115P card.

V. Check the necessary software packages for Asterisk installation, as the picture shows:

There are eleven necessary software packages for Asterisk installation, using the following command respectively:

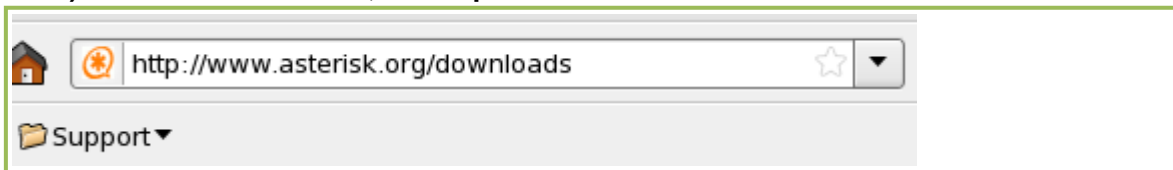
```
# yum install bison
# yum install bison-devel
# yum install ncurses
# yum install ncurses-devel
# yum install zlib
# yum install zlib-devel
# yum install openssl
# yum install openssl-devel
# yum install gnutls-devel
# yum install gcc
# yum install gcc-c++
```

VI. Download Zaptel and Asterisk

Download method 1:

Access www.asterisk.org with firefox, download zaptel and asterisk, 1.4 edition recommended.

1) Access the website, as the picture shows:

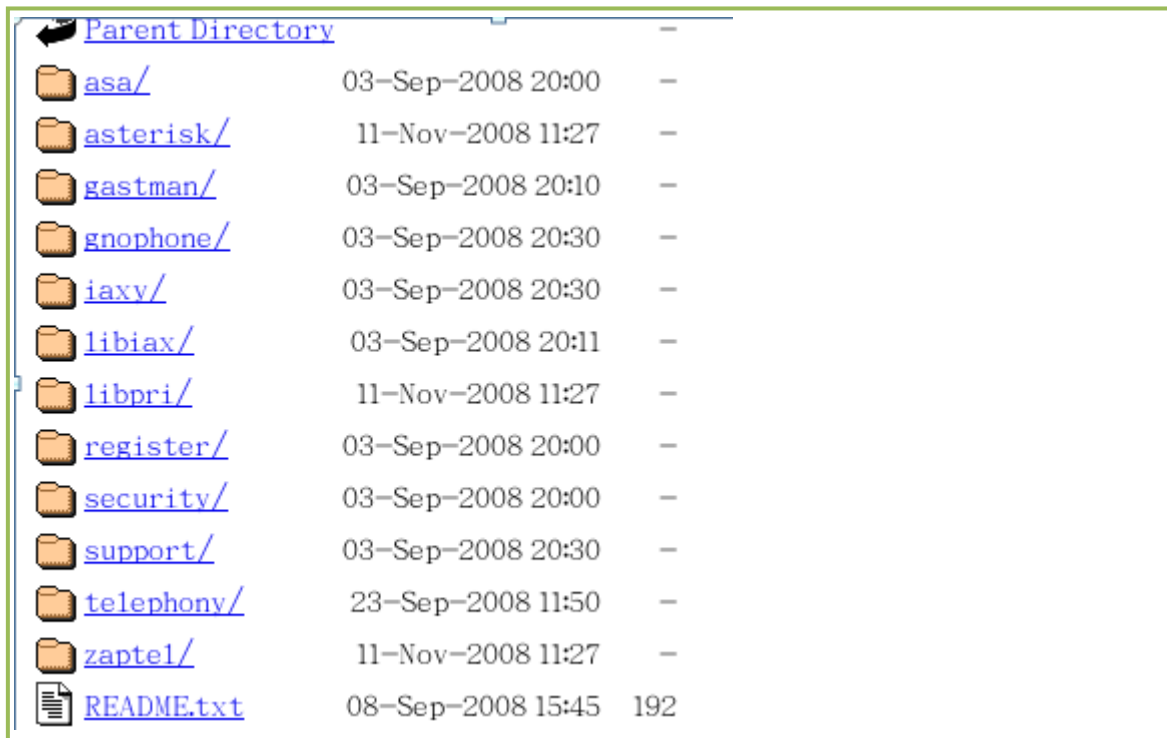


2) Find the sign[http] of downloads in the webpage, marked with red pane in the picture:

 A screenshot of the Asterisk.org website. The page content includes:

- Bandwidth for Asterisk.org and AsteriskNOW.org sponsored by API Digital and Bandwidth.com.
- Complete directory
- downloads.digium.com - [http] (The text "[http]" is enclosed in a red rectangular box.)
- AsteriskNOW project: Asterisk made easy. Text: "Not familiar enough with Linux to install Asterisk via a command line interface? Want Asterisk made easy? Asterisk can now be easily configured with a graphical interface. AsteriskNOW™ is an open source" and "and Digital interface cards. Digium hardware requires Zaptel drivers."
- Other projects: Liblax. Text: "Library for the Inter-Asterisk eXchange (IAX) protocol. Liblax provides a foundation for the development of IAX clients."

- 3) Click it, find the folders of libpri,zaptel and asterisk, download the corresponding edition package and save it to the /usr/src/, as in the following picture:



- 4) Downloaded packages, as picture shows:



Download method 2:

```
# cd /usr/src
```

```
# wget http://downloads.asterisk.org/pub/telephony/libpri/releases/libpri-1.4.7.tar.gz
```

```
# wget http://downloads.asterisk.org/pub/telephony/zaptel/releases/zaptel-1.4.12.1.tar.gz
```

```
# wget http://downloads.asterisk.org/pub/telephony/asterisk/releases/asterisk-1.4.12.1.tar.gz
```

VII. Installing libpri

- a) Unzip it

```
# cd /usr/src
```

```
# tar -xzf libpri-1.4.7.tar.gz
```

- b) Compiling installation

```
# cd libpri-1.4.7
```

```
# make
```

```
# make install
```

VIII. Installing zaptel

Install method 1:

1. Unzip it

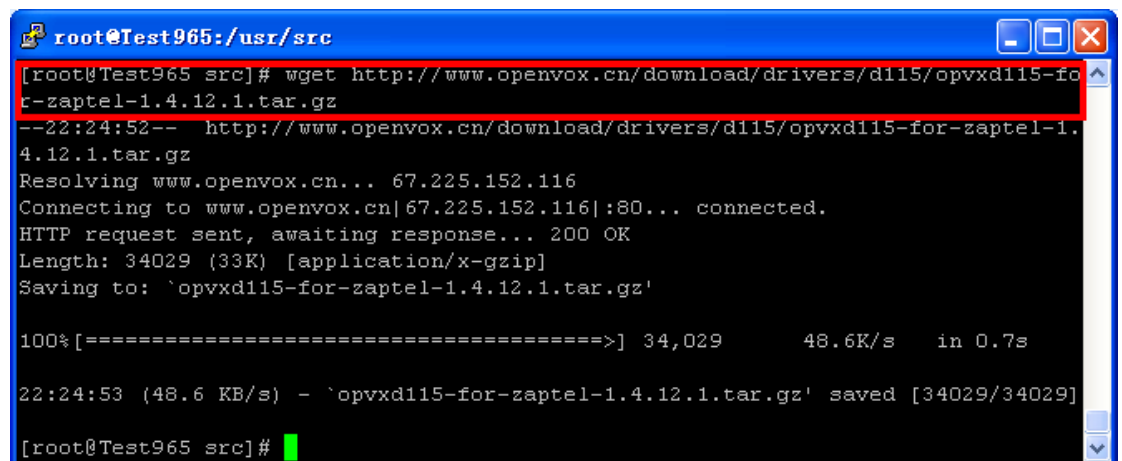
```
# cd /usr/src
```

```
# tar -xvzf zaptel-1.4.12.1.tar.gz
```

2. Download the driving systeme of DE115P/DE115E

```
# wget
```

```
http://www.openvox.cn/download/drivers/d115/opvxd115-for-zaptel-1.4.12.1.tar.gz
```



```
root@Test965:/usr/src
[root@Test965 src]# wget http://www.openvox.cn/download/drivers/d115/opvxd115-for-zaptel-1.4.12.1.tar.gz
--22:24:52--  http://www.openvox.cn/download/drivers/d115/opvxd115-for-zaptel-1.4.12.1.tar.gz
Resolving www.openvox.cn... 67.225.152.116
Connecting to www.openvox.cn|67.225.152.116|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 34029 (33K) [application/x-gzip]
Saving to: `opvxd115-for-zaptel-1.4.12.1.tar.gz'

100%[=====>] 34,029      48.6K/s   in 0.7s

22:24:53 (48.6 KB/s) - `opvxd115-for-zaptel-1.4.12.1.tar.gz' saved [34029/34029]

[root@Test965 src]#
```

3. Downloading firmware to support the echo-cancellation modules:

```
# wget
```

```
http://www.openvox.cn/download/firmware/opvx-zaptel-fw-oct6114-032-1.07.01.tar.gz
```



```
root@Test965:/usr/src
[root@Test965 src]# wget http://www.openvox.cn/download/firmware/opvx-zaptel-fw-oct6114-032-1.07.01.tar.gz
--22:10:06--  http://www.openvox.cn/download/firmware/opvx-zaptel-fw-oct6114-032-1.07.01.tar.gz
Resolving www.openvox.cn... 67.225.152.116
Connecting to www.openvox.cn|67.225.152.116|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 171302 (167K) [application/x-gzip]
Saving to: `opvx-zaptel-fw-oct6114-032-1.07.01.tar.gz'

100%[=====>] 171,302      9.59K/s   in 13s

22:10:19 (13.1 KB/s) - `opvx-zaptel-fw-oct6114-032-1.07.01.tar.gz' saved [171302/171302]

[root@Test965 src]#
```

4. Adding the DE115P/DE115E operating system and firmware to zaptel:

```
# tar -xzvf opvxd115-for-zaptel-1.4.12.1.tar.gz
# mv opvxd115 /usr/src/zaptel-1.4.12.1/kernel
# tar -xzvf opvx-zaptel-fw-oct6114-032-1.07.01.tar.gz
# cp zaptel-fw-oct6114-032.bin /usr/lib/hotplug/firmware
# mv zaptel-fw-oct6114-032.bin /lib/firmware/
```

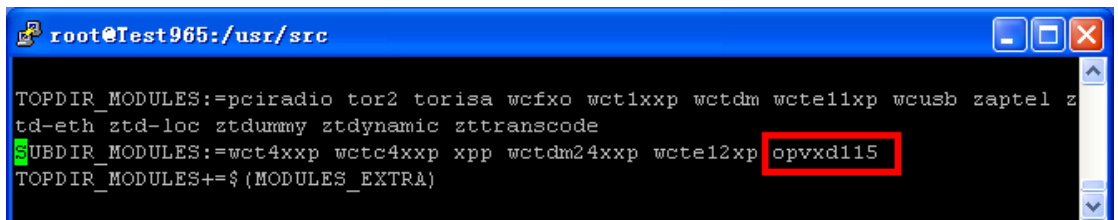
5. Modify Makefile files

```
# vi /usr/src/zaptel-1.4.12.1/Makefile
```



```
root@Test965:/usr/src
[root@Test965 src]# vi /usr/src/zaptel-1.4.12.1/Makefile
```

Find the sentence begins with SUBDIR_MODULES, type opvxd115, as in the picture:



```
root@Test965:/usr/src
TOPDIR_MODULES:=pciradio tor2 torisa wcfxo wct1xxp wctdm wctel1xp wcusb zaptel z
td-eth ztd-loc ztdummy ztdynamic zttranscode
SUBDIR_MODULES:=wct4xxp wctc4xxp xpp wctdm24xxp wctel2xp opvxd115
TOPDIR_MODULES+=$(MODULES_EXTRA)
```

Exit after saved

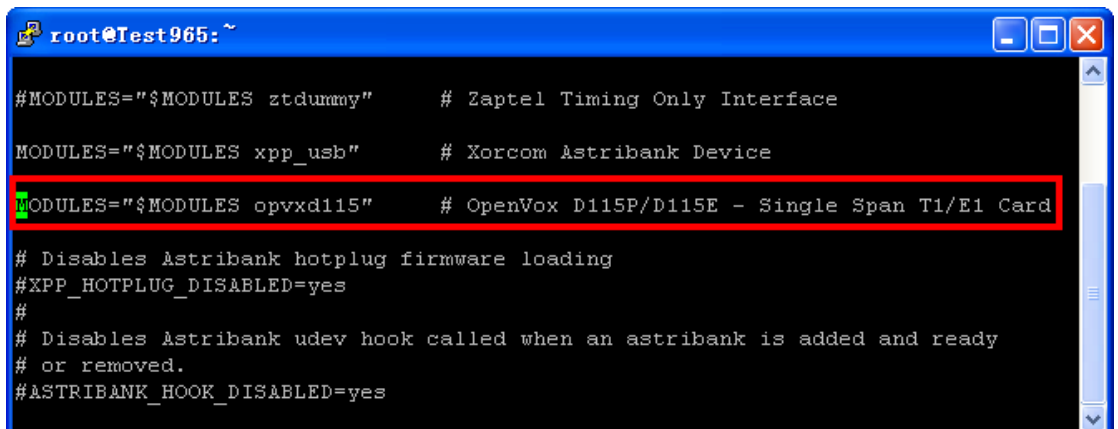
6. Modify zaptel.sysconfig files

```
# vi /usr/src/zaptel-1.4.12.1/zaptel.sysconfig
```



```
root@Test965:/usr/src
[root@Test965 src]# vi /usr/src/zaptel-1.4.12.1/zaptel.sysconfig
```

Add MODULES="\$MODULES opvxd115", showed as follows:



```
root@Test965: ~
#MODULES="$MODULES ztdummy"      # Zaptel Timing Only Interface
MODULES="$MODULES xpp_usb"       # Xorcom Astribank Device
MODULES="$MODULES opvxd115"     # OpenVox D115P/D115E - Single Span T1/E1 Card
# Disables Astribank hotplug firmware loading
#XPP_HOTPLUG_DISABLED=yes
#
# Disables Astribank udev hook called when an astribank is added and ready
# or removed.
#ASTRIBANK_HOOK_DISABLED=yes
```

7. Modify genzaptelconf files

vi /usr/src/zaptel-1.4.12.1/kernel/xpp/utils/genzaptelconf

```
root@Test965:/usr/src
[root@Test965 src]# vi /usr/src/zaptel-1.4.12.1/kernel/xpp/utils/genzaptelconf
```

Add the operating support for the opvxd115 in the genzaptelconf, as in the following picture:

```
root@Test965:/usr/src
85 tmp_dir=
86
87 # A list of all modules:
88 # - the list of modules which will be probed (in this order) if -d is used
89 # - The module that will be deleted from /etc/modules , if -d -M is used
90 ALL_MODULES="wct4xpp opvxd115 wctel2xp wctel1xp wct1xpp wanpipe tor2 torisa qozap vzaphfc zapnlc ztgsm wctdm24xpp wctdm opvxa1200 wcfxo pciradio wusb xpp_usb"
91
92 # The name of the variable in /etc/sysconfig/zaptel into which to set
93 # the list of detected modules.
94 modules_var=MODULES
95 # On SuSE with the rpm package:
96 #modules_var=ZAPTEL_MODULES
97
98 # What signalling to give to ZapBRI channels?
```

```
root@Test965:/usr/src
694 ;;
695 *ztgsm*/*)
696     # Junghanns's GSM cards.
697     echo 'ccs' >$tmp_dir/span_framing
698     #Does this mean anything?
699     echo 'gsm' >$tmp_dir/span_signalling
700     ;;
701 *TE[24]/* | *WCT1/* | *Tor2/* | *TorISA/* | *WP[TE]1/* | \
702 *R[124]T1/* | *XPP_[TEJ]1_* | *D115/*)
703     # FIXME: handle cwain around here.
704     # name: *cwain[12]/* . Always E1.
705
706     # PRI span (E1/T1)
707     echo 'esf' >$tmp_dir/span_framing
708     echo 'b8zs' >$tmp_dir/span_coding
709     echo 'national' >$tmp_dir/span_switchtype
710     if [ "`cat $tmp_dir/span_termtype`" = 'nt' 2>/dev/null ]
```

```
root@Test965:/usr/src
1019 # Atribank FXS span (input port)
1020 print_pattern -a input $chan_num fxo $mo
de
1021 ;;
1022 *ZTHFC/* | *ztqoz*/ | *ztgsm/* | *TE[24]/* | \
1023 *WCT1/* | *Tor2/* | *TorISA/* | \
1024 *XPP_BRI_*/ | *WP[TE]1/* | *R[124]T1/*
| \
1025 *XPP_[TE]1/* | *D115/*)
1026 detect_digital_channel "$line" "$chan_num"
m" "$span_num"
1027 ;;
1028 ' ) ;; # Empty line (after span header)
1029 *)
1030 case "$mode" in
1031 list) echo "# ??: $line";;
1032 files)
```

8. Installing zaptel

```
# cd /usr/src/zaptel-1.4.12.1
```

```
# ./configure
```

```

root@Test965:/usr/src/zaptel-1.4.12.1
checking for strings.h... yes
checking for inttypes.h... yes
checking for stdint.h... yes
checking for unistd.h... yes
checking for initscr in -lcurses... yes
checking curses.h usability... yes
checking curses.h presence... yes
checking for curses.h... yes
checking for initscr in -lcurses... yes
checking for curses.h... (cached) yes
checking for newtBell in -lnewt... no
checking for usb_init in -lusb... no
configure: creating ./config.status
config.status: creating build_tools/menuselect-deps
config.status: creating makeopts
config.status: creating build_tools/make_firmware_object
configure: *** Zaptel build successfully configured ***
[root@Test965 zaptel-1.4.12.1]#

```

```
# make
```

```

root@Test965:/usr/src/zaptel-1.4.12.1
zt_registration syntax OK
xpp_sync syntax OK
lszaptel syntax OK
xpp_blink syntax OK
zapconf syntax OK
zaptel_hardware syntax OK
touch perlcheck
pod2man --section 8 zt_registration > zt_registration.8 || rm -f zt_registration.8
pod2man --section 8 xpp_sync > xpp_sync.8 || rm -f xpp_sync.8
pod2man --section 8 lszaptel > lszaptel.8 || rm -f lszaptel.8
pod2man --section 8 xpp_blink > xpp_blink.8 || rm -f xpp_blink.8
pod2man --section 8 zapconf > zapconf.8 || rm -f zapconf.8
pod2man --section 8 zaptel_hardware > zaptel_hardware.8 || rm -f zaptel_hardware.8
make[2]: Leaving directory `/usr/src/zaptel-1.4.12.1/kernel/xpp/utils'
make[1]: Leaving directory `/usr/src/zaptel-1.4.12.1'
[root@Test965 zaptel-1.4.12.1]#

```

```
# make install
```

```

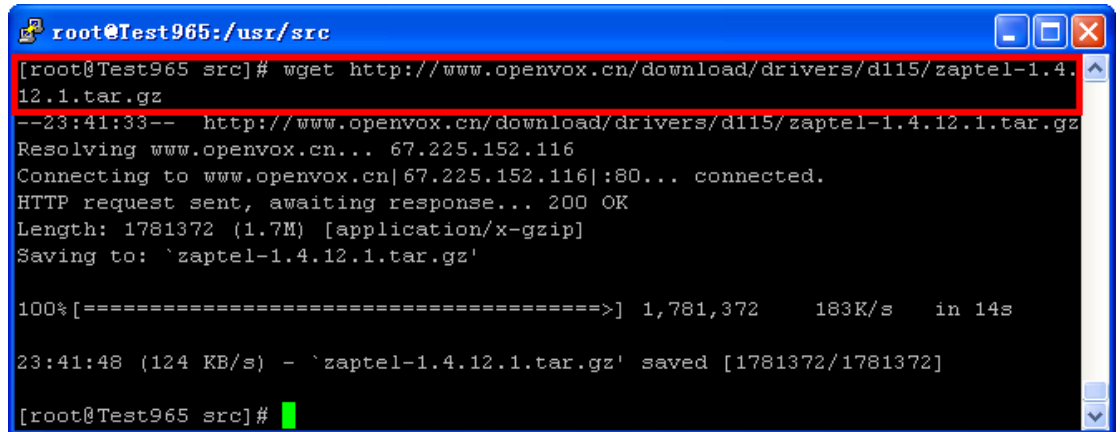
root@Test965:/usr/src/zaptel-1.4.12.1
100%[=====>] 41,375      57.7K/s   in 0.7s
23:13:07 (57.7 KB/s) - `zaptel-fw-vpmdt032-1.07.tar.gz' saved [41375/41375]

Installing zaptel-fw-oct6114-064.bin to hotplug firmware directories
Installing zaptel-fw-oct6114-128.bin to hotplug firmware directories
Installing zaptel-fw-tc400m.bin to hotplug firmware directories
Installing zaptel-fw-vpmdt032.bin to hotplug firmware directories
make[1]: Leaving directory `/usr/src/zaptel-1.4.12.1/firmware'
#####
###
### Zaptel installed successfully.
### If you have not done so before, install init scripts with:
###
###   make config
###
#####
[root@Test965 zaptel-1.4.12.1]#

```

Installing method 2:

- 1) Downloading the zaptel with opvxd115 driver

wget**<http://www.openvox.cn/download/drivers/d115/zaptel-1.4.12.1.tar.gz>**


```

root@Test965:/usr/src
[root@Test965 src]# wget http://www.openvox.cn/download/drivers/d115/zaptel-1.4.12.1.tar.gz
--23:41:33-- http://www.openvox.cn/download/drivers/d115/zaptel-1.4.12.1.tar.gz
Resolving www.openvox.cn... 67.225.152.116
Connecting to www.openvox.cn[67.225.152.116]:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 1781372 (1.7M) [application/x-gzip]
Saving to: `zaptel-1.4.12.1.tar.gz'

100%[=====] 1,781,372 183K/s in 14s

23:41:48 (124 KB/s) - `zaptel-1.4.12.1.tar.gz' saved [1781372/1781372]

[root@Test965 src]#

```

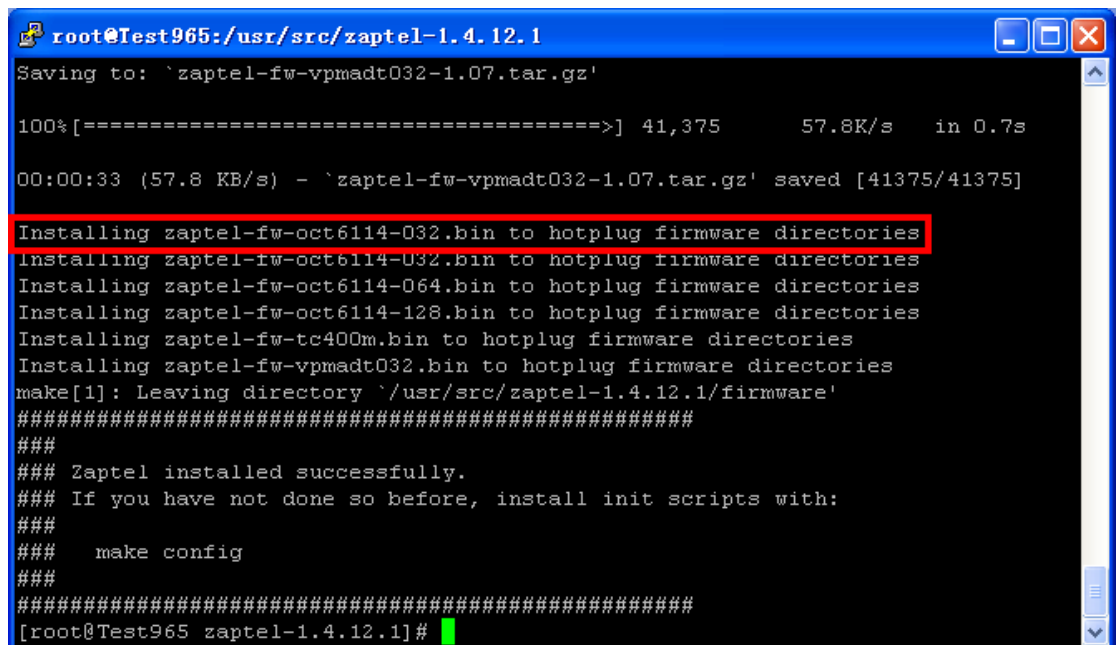
- 2) Unzip it

tar -xzvf zaptel-1.4.12.1.tar.gz

- 3) Compiling installation

cd zaptel-1.4.12.1**# ./configure****# make****# make install**

In the process of make install, firmware zaptel-fw-oct6114-032.bin will be downloaded automatically from the internet



```

root@Test965:/usr/src/zaptel-1.4.12.1
Saving to: `zaptel-fw-vpmadt032-1.07.tar.gz'

100%[=====] 41,375 57.8K/s in 0.7s

00:00:33 (57.8 KB/s) - `zaptel-fw-vpmadt032-1.07.tar.gz' saved [41375/41375]

Installing zaptel-fw-oct6114-032.bin to hotplug firmware directories
Installing zaptel-fw-oct6114-032.bin to hotplug firmware directories
Installing zaptel-fw-oct6114-064.bin to hotplug firmware directories
Installing zaptel-fw-oct6114-128.bin to hotplug firmware directories
Installing zaptel-fw-tc400m.bin to hotplug firmware directories
Installing zaptel-fw-vpmadt032.bin to hotplug firmware directories
make[1]: Leaving directory `/usr/src/zaptel-1.4.12.1/firmware'
#####
###
### Zaptel installed successfully.
### If you have not done so before, install init scripts with:
###
### make config
###
#####
[root@Test965 zaptel-1.4.12.1]#

```


make

```

root@Test965:/usr/src/asterisk-1.4.12.1
o ast_expr2f.o asterisk.o astmm.o astobj2.o autoservice.o callerid.o cdr.o chann
el.o chanvars.o cli.o config.o cryptostub.o db.o devicestate.o dial.o dns.o dnsm
gr.o dsp.o enum.o file.o fixedjitterbuf.o frame.o fskmodem.o http.o image.o indi
cations.o io.o jitterbuf.o loader.o logger.o manager.o md5.o netsock.o pbx.o plc
.o privacy.o rtp.o say.o sched.o sha1.o slinfactory.o srv.o stdtime/localtime.o
strcompat.o tdd.o term.o threadstorage.o translate.o udptl.o ulaw.o utils.o edit
line/libedit.a db1-ast/libdb1.a -> asterisk
+----- Asterisk Build Complete -----+
+ Asterisk has successfully been built, and +
+ can be installed by running:           +
+                                         +
+             make install                 +
+-----+
[root@Test965 asterisk-1.4.12.1]#

```

make install

```

root@Test965:/usr/src/asterisk-1.4.12.1
+---- Asterisk Installation Complete -----+
+
+   YOU MUST READ THE SECURITY DOCUMENT   +
+
+ Asterisk has successfully been installed. +
+ If you would like to install the sample +
+ configuration files (overwriting any    +
+ existing config files), run:           +
+                                         +
+             make samples                 +
+
+----- or -----+
+
+ You can go ahead and install the asterisk +
+ program documentation now or later run:  +
+                                         +
+             make progdocs                +
+
+ **Note** This requires that you have    +
+ doxygen installed on your local system  +
+-----+
[root@Test965 asterisk-1.4.12.1]#

```

make samples**X. Auto-configure configuration files**

```

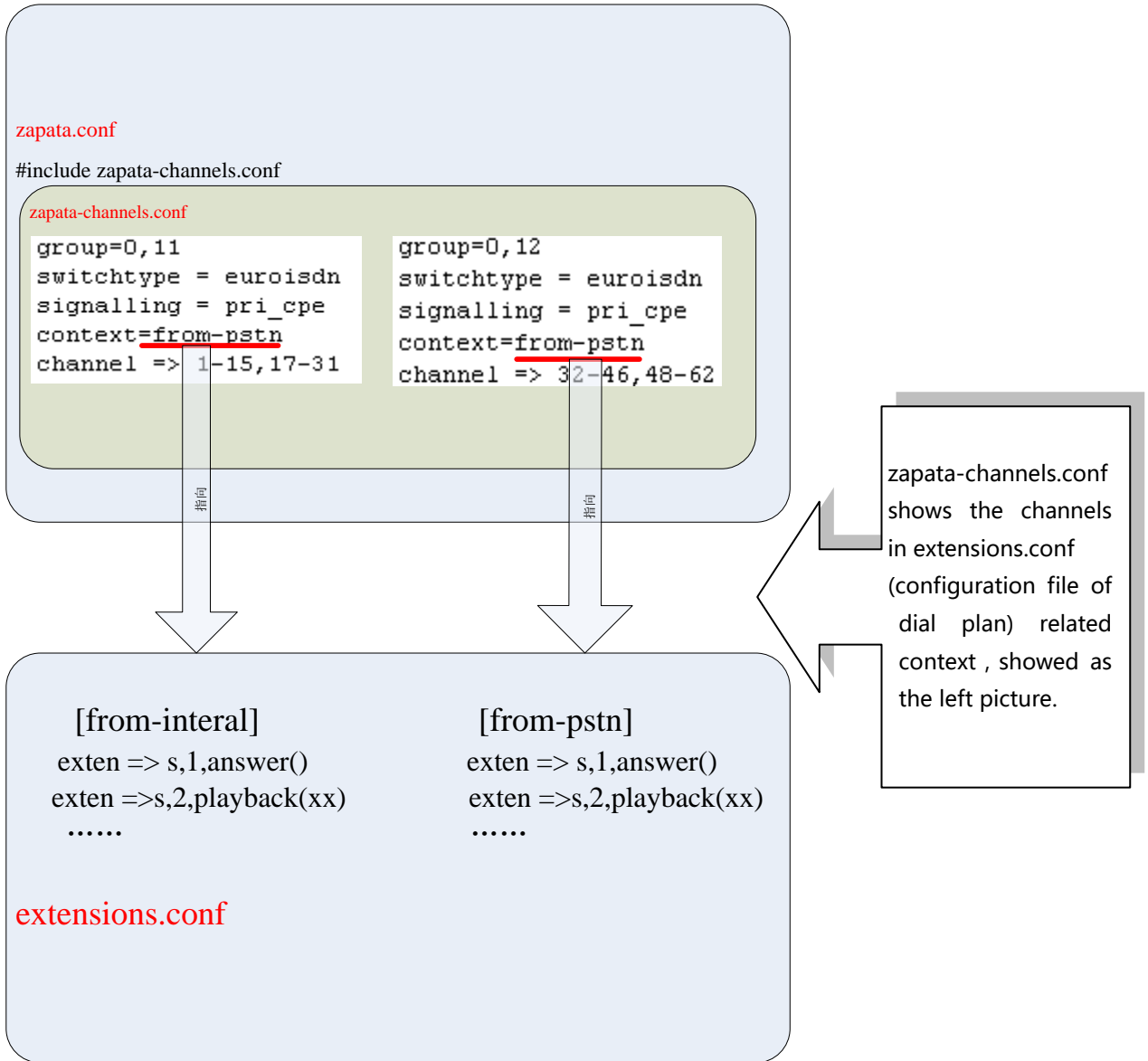
# cd /usr/src/zaptel-1.4.12.1/kernel/xpp/utlis
# ./genzaptelconf -sdvM

```

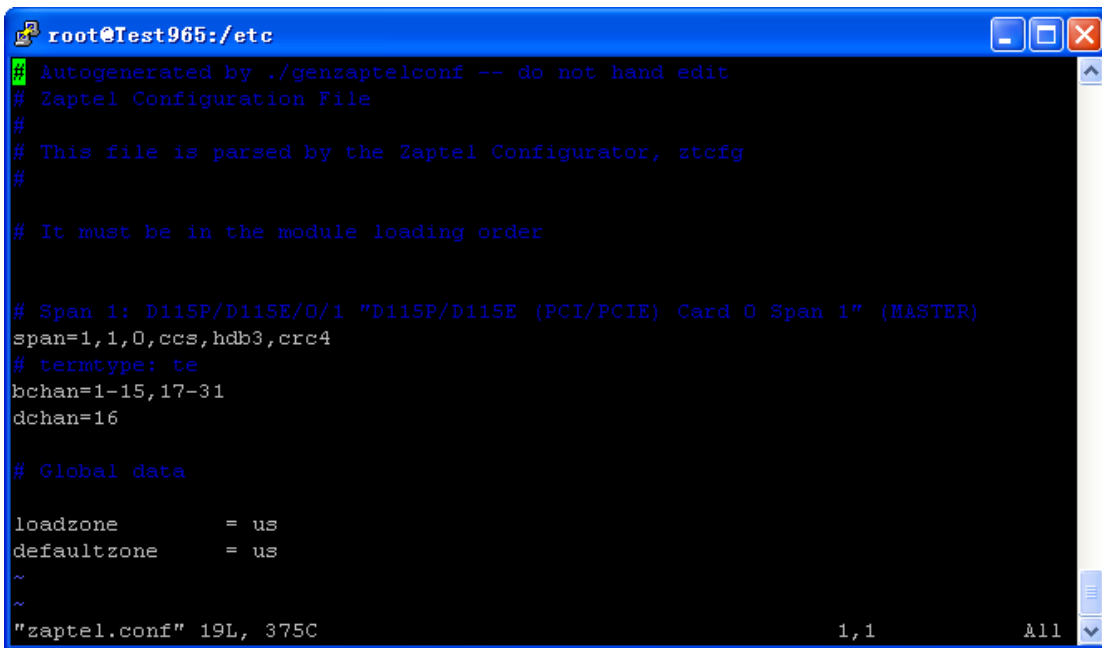
(If there are any errors after running the command, please check the detailed information. The system will offer command for solution, users can solve the problem according to the command, and then run `/genzaptelconf -sdvM`, if there is no error, users can go to the next step.)

This command will generate `/etc/zaptel.conf` and `/etc/asterisk/Zapata-channels.conf` files, the following are two generated files:

zapata.conf , zapata-channels.conf, extensions.conf
 picture about their relationship:



`zaptel.conf` files are as follows:

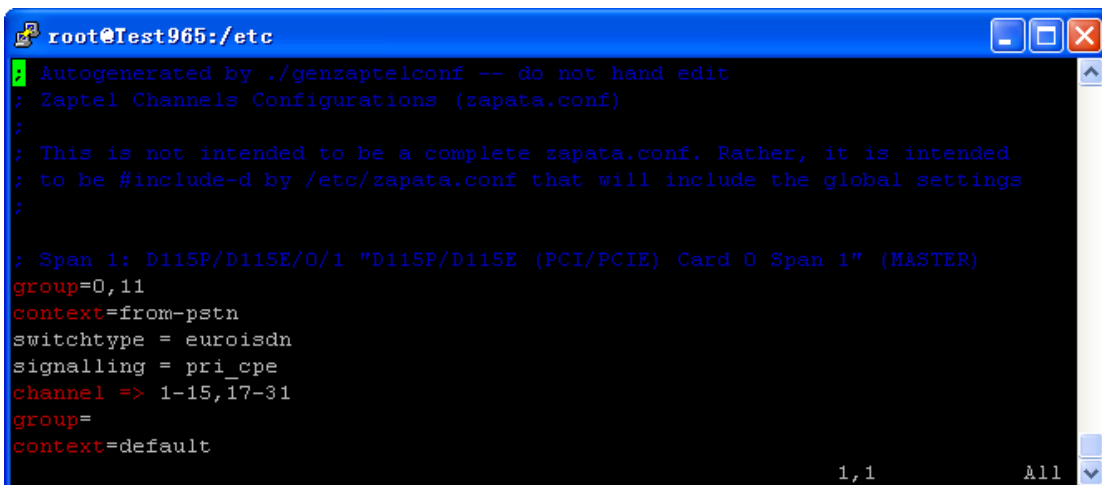


```
root@Test965:/etc
# Autogenerated by ./genzaptelconf -- do not hand edit
# Zaptel Configuration File
#
# This file is parsed by the Zaptel Configurator, ztcfg
#
# It must be in the module loading order

# Span 1: D115P/D115E/O/1 "D115P/D115E (PCI/PCIE) Card 0 Span 1" (MASTER)
span=1,1,0,ccs,hdb3,crc4
# termtype: te
bchan=1-15,17-31
dchan=16

# Global data
loadzone      = us
defaultzone   = us
~
~
"zaptel.conf" 19L, 375C          1,1          All
```

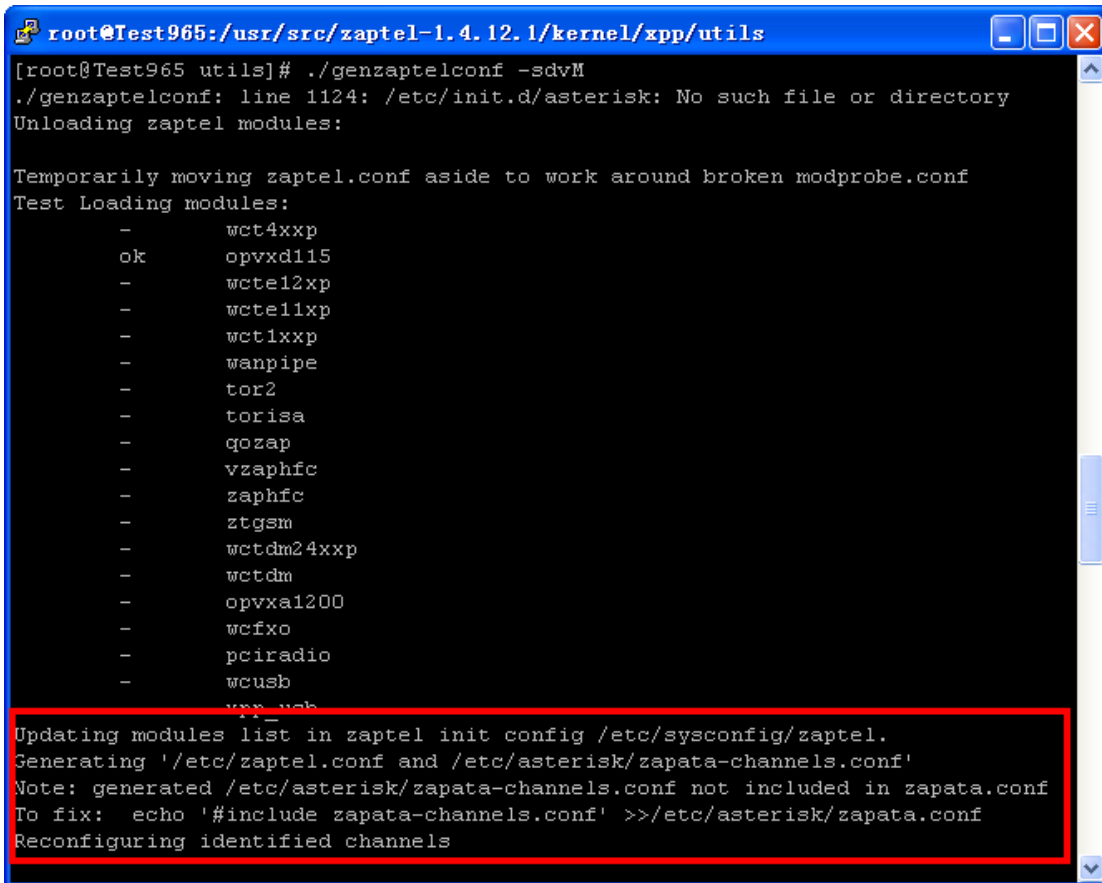
`/etc/asterisk/zapata-channels.conf` files are as follows:



```
root@Test965:/etc
# Autogenerated by ./genzaptelconf -- do not hand edit
; Zaptel Channels Configurations (zapata.conf)
;
; This is not intended to be a complete zapata.conf. Rather, it is intended
; to be #include-d by /etc/zapata.conf that will include the global settings
;
; Span 1: D115P/D115E/O/1 "D115P/D115E (PCI/PCIE) Card 0 Span 1" (MASTER)
group=0,11
context=from-pstn
switchtype = euroisdh
signalling = pri_cpe
channel => 1-15,17-31
group=
context=default

1,1          All
```

Check whether the configuration of the auto-generated files is the same as the DE115P, if not, modify it.



```
root@Test965:/usr/src/zaptel-1.4.12.1/kernel/xpp/utils
[root@Test965 utils]# ./genzaptelconf -sdvM
./genzaptelconf: line 1124: /etc/init.d/asterisk: No such file or directory
Unloading zaptel modules:

Temporarily moving zaptel.conf aside to work around broken modprobe.conf
Test Loading modules:
- wct4xxp
ok  opvxd115
- wctel2xp
- wctel1xp
- wctlxxp
- wanpipe
- tor2
- torisa
- qozap
- vzaphfc
- zaphfc
- ztgsm
- wctdm24xxp
- wctdm
- opvxa1200
- wcfxo
- pccradio
- wcusb
- xxx_uxb

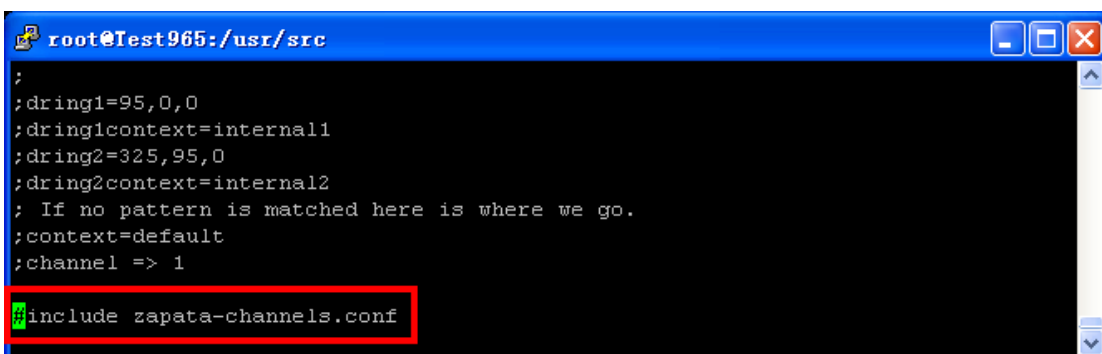
Updating modules list in zaptel init config /etc/sysconfig/zaptel.
Generating '/etc/zaptel.conf and /etc/asterisk/zapata-channels.conf'
Note: generated /etc/asterisk/zapata-channels.conf not included in zapata.conf
To fix: echo '#include zapata-channels.conf' >>/etc/asterisk/zapata.conf
Reconfiguring identified channels
```

The picture above shows the output of the command **`./genzaptelconf -sdvM`**, from which we can find (the software in this user manual may cause a problem, while the other edition may not), `/etc/asterisk/zapata-channels.conf` was not included in `/etc/asterisk/zapata.conf`, the solution for the problem is:

Add a command **`#include zapata-channels.conf`** at the end of Zapata.conf files,

As the following picture shows:

`# vi /etc/asterisk/zapata.conf`



```
root@Test965:/usr/src
;
;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
```

XI. Loading start-up driver

If the `zaptel.conf` file has been changed, you must reload the driver for DE115P/DE115E.

```
# modprobe -r opvxd115
# modprobe opvxd115
# ztcfg -vvvvvv
```

```
root@Test965:/usr/src
[root@Test965 src]# ztcfg -vvvvvv

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.

[root@Test965 src]# █
```

The output above shows all the DE115P channels are identified, the driver is installed successfully.

```
# dmesg
```

```
root@Test965:/usr/src/zaptel-1.4.12.1/kernel/xpp/utlis
SPAN 1: Primary Sync Source
VPM400: Not Present
VPM450: echo cancellation for 32 channels
VPM450: hardware DTMF disabled.
VPM450: Present and operational servicing 1 span(s)
Completed startup!
[root@Test965 utlis]# █
```

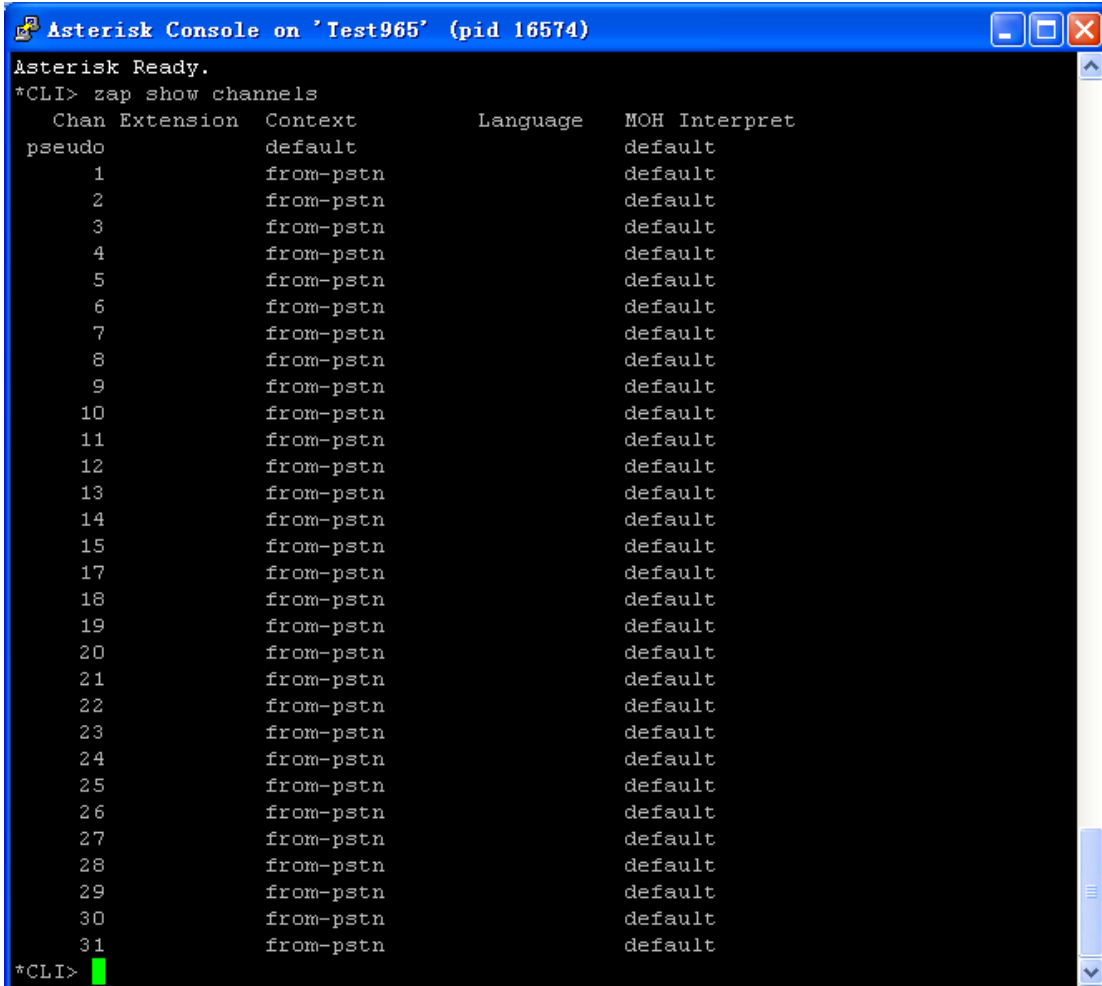
The above output shows the EC100-32 is successfully loaded in the system.

XII. Starting asterisk

asterisk -vvvvvvvvgc

(If the asterisk has already started, you can input **asterisk -r**)

Check the status of the channels

A screenshot of a terminal window titled "Asterisk Console on 'Test965' (pid 16574)". The terminal shows the command "*CLI> zap show channels" and its output. The output is a table with columns: Chan, Extension, Context, Language, MOH, and Interpret. The first row is "pseudo" with "default" for Context, Language, MOH, and Interpret. The following 31 rows are numbered 1 through 31, each with "from-pstn" for Context, Language, MOH, and Interpret. The terminal ends with "*CLI>".

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

Chapter 4 Reference

www.openvox.cn

www.digium.com

www.asterisk.org

www.voip-info.org

www.asteriskguru.com

