深圳开源通信有限公司

OpenVox-Best Cost Effective Asterisk Cards

OpenVox D210E D410E User Manual

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深圳开源通信有限公司

OpenVox-Best Cost Effective Asterisk Cards

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Chapter 1 Overview

1. What is D410E/D210E

The D410E/D210E series supports E1, T1 and J1 environments and is selectable on a per-card or per-port basis. This feature enables signaling translation between E1 and T1 equipment and allows inexpensive T1 channel banks to connect with E1 circuits.

With the improved I/O speed, the card reduces CPU usage and increased card density per server. D410E/D210E series is fully compatible with Asterisk applications. The open source driver supports an API interface for custom application development.

D410E/D210E series 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.

Other Features Include:
Supporting PCI Express 1.0
Be easy to install: Support wct4xxp driver included in original zaptel without any patch

RoHS compliant
Certificates: CE and FCC

2. What is Asterisk:

The Definition of Asterisk is described as follow:
Asterisk is a complete PBX in software. It runs on Linux, BSD,Windows (emulated) and provides all of the features you would 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.

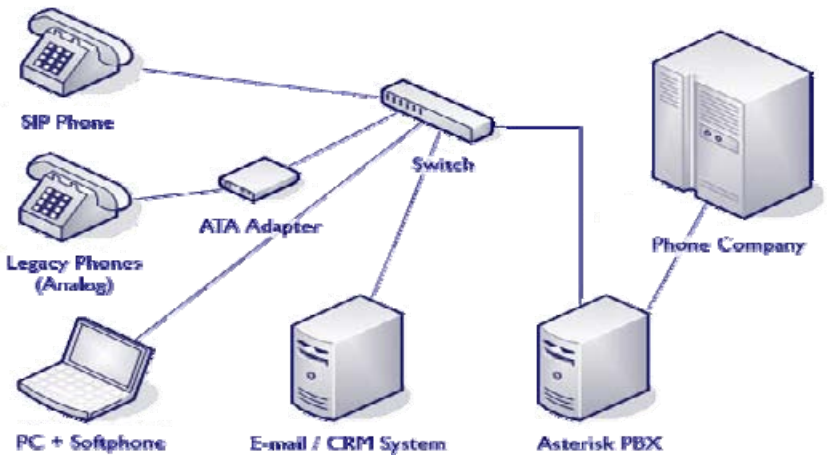

Figure 1: Asterisk Setup

Source (http://www.siriusit.co.uk/uploads/images/consulting/asteriskSetup.gif)

Asterisk provides Voicemail services with Directory, Call Conferencing, Interactive Voice Response, Call Queuing. It has support for three-way calling, caller ID services, ADSI, IAX, SIP, H.323 (as both client and gateway), MGCP (call manager only) and SCCP/Skinny(voip-info.org).

Chapter 2 Card Installation and Configuration

1. Hardware Installation and Setup

Before inserting the D410E/D210E card in to PC, customer should set the jumpers correctly. If customers can not sure the difference of the PCI and PCI Express, please check that from below:

(Source: http://www.geeks.com/techtips/2006/Images/motherboard.gif)

There are three steps that customers should check:

1) SPAN Type Setup
   DIP Switch S1 controls the function of each span at E1 or T1 mode, for more detail, please refer chapter 4.

2) CardID: if customers only have one D410E/D210E card in pc PCI express slot, customers should set SW1 to 0, otherwise set to SW1 of each card to different values, and it must start from 0 to card number -1.

2. Software Installation and Setup

D410E/D210E supports original zaptel wct4xxp driver. Customers can download zaptel driver from asterisk.org. There are few steps to install wct4xxp drivers.

1) Checking the D410E/D210E hardware by command: lspci -v

```
04:00.0 PCI bridge: PLX Technology, Inc. PEX 8111 PCI Express-to-PCI Bridge (rev 21) (prog-if 00 [Normal decode])
        Flags: bus master, fast devsel, latency 0
        Bus: primary=04, secondary=05, subordinate=05, sec-latency=64
        I/O behind bridge: 0000c000-0000cfff
        Memory behind bridge: dff00000-dfffffff
        Capabilities: [40] Power Management version 2
        Capabilities: [50] Message Signalled Interrupts: 64bit+ Queue=0/0 Enable-
        Capabilities: [60] Express PCI/PCI-X Bridge IRQ 0

05:00.0 Communication controller: Digium, Inc. Wildcard TE410P Quad-Span togglable E1/T1/J1 card 3.3v (rev 02)
        Flags: bus master, medium devsel, latency 32, IRQ 169
        Memory at dffffc00 (32-bit, non-prefetchable) [size=128]
```

2) Downloading and compiling

Before installing libpri, zaptel and asterisk, make sure that all supporting packages have been installed in system.

Note that if there is no kernel source in the system, user should install them. User can run **yum** again: *yum install kernel-devel*. If the kernel is **smp kernel**, please run this command: *yum install kernel-smp-devel*.

It is time to check for the availability of some other packages:

```
rpm -q bison
rpm -q bison-devel
rpm -q ncurses
rpm -q ncurses-devel
rpm -q zlib
rpm -q zlib-devel
rpm -q openssl
rpm -q openssl-devel
rpm -q gnutls-devel
rpm -q gcc
rpm -q gcc-c++
```

If any of those packages are not installed install them by using yum

```
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++
```

Here, assuming the three packages are stored in /usr/src directory. Customers compile those packages as following in order:

1. Installing libpri:

   cd /usr/src/libpri

```
make clean
make
make install
```

2. Installing zaptel

```
cd /usr/src/zaptel
make clean
make
make install
```

3. Installing asterisk

```
cd /usr/src/asterisk
make clean
make
make install
make samples
```

3) Configuration for zaptel.conf and zapata.conf

1) Modify the zaptel.conf by vi /etc/zaptel.conf

```
# Span 1: TE4/0/1 "T4XXP (PCI) Card 0 Span 1"
span=1,1,1,ccs,hdb3
# termtype: te
bchan=1-15,17-31
dchan=16
# Span 2: TE4/0/2 "T4XXP (PCI) Card 0 Span 2"
span=2,2,1,ccs,hdb3
# termtype: te
bchan=32-46,48-62
dchan=47
# Span 3: TE4/0/3 "T4XXP (PCI) Card 0 Span 3"
span=3,3,1,ccs,hdb3
# termtype: te
bchan=63-77,79-93
dchan=78
# Span 4: TE4/0/4 "T4XXP (PCI) Card 0 Span 4"
span=4,4,1,ccs,hdb3
# termtype: te
bchan=94-108,110-124
dchan=109
# Global data
loadzone = us
defaultzone = us
```

4) Edit the zapata.conf by vi /etc/asterisk/zapata.conf:

```
[channels]
context=zap-in
switchtype=euroisdn
pridialplan=national
signalling=pri_cpe
usecallerid=yes
hidecallerid=no
callwaiting=yes
callwaitingcallerid=yes
threewaycalling=yes
transfer=yes
cancallforward=yes
echocancel=yes
rxgain=0.0
txgain=0.0
group=1
callgroup=1
pickupgroup=1
immediate=no
callprogress=no
callerid=asreceived
group=1
signalling=pri_cpe
channel => 1-15,17-31
group=2
signalling=pri_cpe
channel => 32-46,48-62
group=3
signalling=pri_cpe
channel => 63-77,79-93
group=4
signalling=pri_cpe
channel => 94-108,110-124
```

5) Loading wct4xxp driver for D410E/D210E:

```
modprobe zaptel
modprobe wct4xxp
ztcfg -vvvvvvvv
```

```
[root@new-host-4 src]# ztcfg -vvvvvv

Zaptel Configuration
======================

SPAN 1: CCS/HDB3 Build-out: 133-266 feet (DSX-1)
SPAN 2: CCS/HDB3 Build-out: 133-266 feet (DSX-1)
SPAN 3: CCS/HDB3 Build-out: 133-266 feet (DSX-1)
SPAN 4: CCS/HDB3 Build-out: 133-266 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)
```

List the part of channels

dmesg

```
TE4XXP: Span 1 configured for CCS/HDB3
SPAN 1: Primary Sync Source
Completed startup!
About to enter spanconfig!
About to enter startup!
TE4XXP: Span 2 configured for CCS/HDB3
SPAN 2: Secondary Sync Source
Completed startup!
About to enter spanconfig!
About to enter startup!
TE4XXP: Span 3 configured for CCS/HDB3
SPAN 3: Tertiary Sync Source
Completed startup!
About to enter spanconfig!
About to enter startup!
TE4XXP: Span 4 configured for CCS/HDB3
SPAN 4: Quaternary Sync Source
Completed startup!
Registered tone zone 0 (United States / North America)
```

6) Starting asterisk by **asterisk -vvvvvvvgc** and run: **zap show channels:**

```
zap show channels
   Chan Extension  Context         Language   MusicOnHold
 pseudo            from-zaptel     en
      1            from-zaptel     en
      2            from-zaptel     en
      3            from-zaptel     en
      4            from-zaptel     en
      5            from-zaptel     en
      6            from-zaptel     en
      7            from-zaptel     en
      8            from-zaptel     en
      9            from-zaptel     en
     10            from-zaptel     en
     11            from-zaptel     en
     12            from-zaptel     en
     13            from-zaptel     en
     14            from-zaptel     en
     15            from-zaptel     en
     17            from-zaptel     en
```

Show part of channles in asterisk console

Chapter 3 References

www.openvox.com.cn
www.digium.com
www.asterisk.org
www.voip-info.org
www.asteriskguru.com

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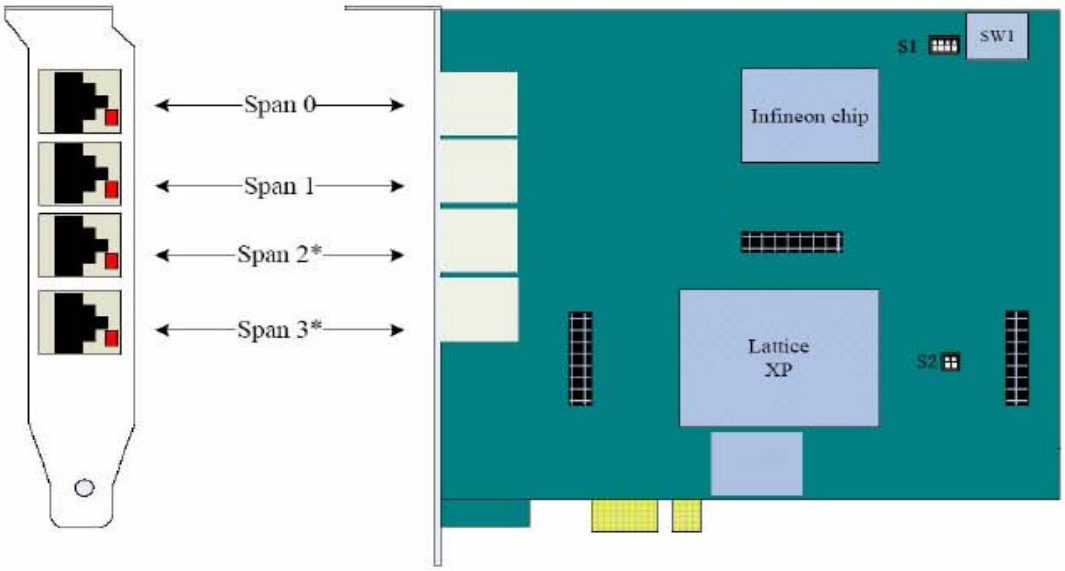
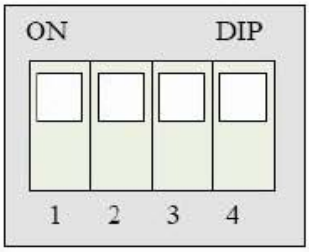
Chapter 4 Hardware Setting



Notes:

S1: Span Type Setting

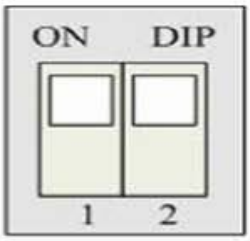
1. Each dip switch controls one span configuration to E1 or T1.
2. Setting DIP1 to ON means that SPAN1 will be E1, OFF means that SPAN1 will be T1.
3. The Example set all 4 SPANs to E1.



S2: Mode Switch

1. DIP1:
   ON: Digium™ Compatible Model – use wct4xxp directly
   OFF: OpenVox dedicate model – use openvox driver

2. DIP2:
   ON: Force PCI Burst On, this model will omit noburst parameter in wct4xxp, always keep using PCI Burst model.
   OFF: PCI Burst controlled by driver. Burst controlled by noburst parameter in wct4xxp (default is off).



Default: Set DIP1 and DIP2 ON.

*Only for D410E

D410E/D210E Hardware Configuration