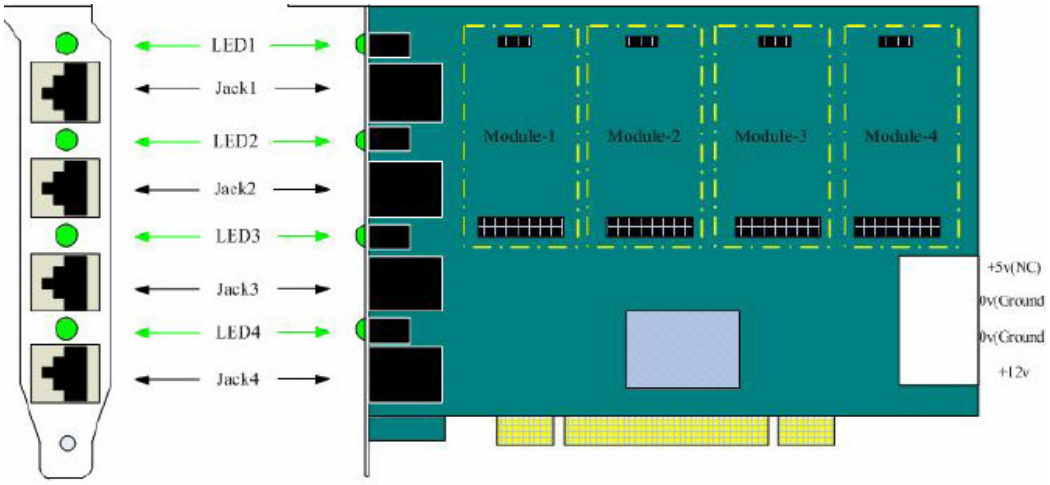
Model: **PXC0422**
Version 1.0
User Manual

PXC0422 Install Guide

Chapter 1, Product Description

PXC0422 is an asterisk PCI card support 4 analog ports. There are 4 modules interface on the PXC0422 mother board. It support below modules:
FXO-100 Single FXO module
FXS-100 Single FXS module
The PXC0422 Card Full software and hardware can the rate of compatible for Digium's TDM400P is 100%.



Chapter 2, Software Installation and Configuration

1. Hardware Installation and Setup
1) Power off your PC, and unplug the AC power cable
2) Insert PXC0422 into a 3.3V or 5.0V PCI slot
3) If the PCI card have FXS modules(the green color module), please plugging the power supply cable into PXC0422
4) Plug back the AC power cable and power on PC.
2. Software Installation and Setup
1) Checking the PXC0422 hardware by command: lspci –vvvv you can see the follow Figure 1 info

```
00:1f.3 SMBus: Intel Corporation 82801G (ICH7 Family) SMBus Controller (rev 01)
        Subsystem: Intel Corporation Unknown device 464c
        Flags: medium devsel, IRQ 185
        I/O ports at 3000 [size=32]

01:00.0 Ethernet controller: Realtek Semiconductor Co., Ltd. RTL8111/8168B PCI Express Gigabit Ethernet controller (rev 02)
        Subsystem: Unknown device 8680:0100
        Flags: bus master, fast devsel, latency 0, IRQ 50
        I/O ports at 2000 [size=256]
        Memory at 50200000 (64-bit, non-prefetchable) [size=4K]
        Memory at 50000000 (64-bit, prefetchable) [size=64K]
        Expansion ROM at 50020000 [disabled] [size=128K]
        Capabilities: [40] Power Management version 3
        Capabilities: [50] Message Signalled Interrupts: 64bit+ Queue=0/0 Enable+
        Capabilities: [70] Express Endpoint IRQ 1
        Capabilities: [b0] MSI-X: Enable- Mask- TabSize=2
        Capabilities: [d0] Vital Product Data
        Capabilities: [100] Advanced Error Reporting
        Capabilities: [140] Virtual Channel
        Capabilities: [160] Device Serial Number 00-e0-4c-68-00-00-00-01

04:00.0 Communication controller: Tiger Jet Network Inc. Tiger3XX Modem/ISDN interface
        Subsystem: Unknown device b1d9:0003
        Flags: bus master, medium devsel, latency 32, IRQ 58
        I/O ports at 1000 [size=256]
        Memory at 50100000 (32-bit, non-prefetchable) [size=4K]
        Capabilities: [40] Power Management version 2
```

Figure 1

2) Install supporting packages
To install PXC0422, user needs install the following package before compiling asterisk and zaptel driver:

- Kernel-devel
- Zlib
- Zlib-devel
- Openssl
- Openssl-devel

3) Download zaptel and asterisk
You can download the source code from asterisk.org, Unzip those packages under /usr/src.
4) Compile zaptel-xxx and asterisk-xxx
Under /usr/src, execute the commands:
cd zaptel-xxx
./configure
make
make install
make config
cd asterisk-xxx
./configure
make
make install
make samples
if you use set port1 and port2 with FXO modules, port3 and port4 with FXS modules on PXC0422. Please edit /etc/zaptel.conf file, like the follow example file.

```
00:1f.3 SMBus: Intel Corporation 82801G (ICH7 Family) SMBus Controller (rev 01)
        Subsystem: Intel Corporation Unknown device 464c
        Flags: medium devsel, IRQ 185
        I/O ports at 3000 [size=32]

01:00.0 Ethernet controller: Realtek Semiconductor Co., Ltd. RTL8111/8168B PCI Express Gigabit Ethernet controller (rev 02)
        Subsystem: Unknown device 8680:0100
        Flags: bus master, fast devsel, latency 0, IRQ 50
        I/O ports at 2000 [size=256]
        Memory at 50200000 (64-bit, non-prefetchable) [size=4K]
        Memory at 50000000 (64-bit, prefetchable) [size=64K]
        Expansion ROM at 50020000 [disabled] [size=128K]
        Capabilities: [40] Power Management version 3
        Capabilities: [50] Message Signalled Interrupts: 64bit+ Queue=0/0 Enable+
        Capabilities: [70] Express Endpoint IRQ 1
        Capabilities: [b0] MSI-X: Enable- Mask- TabSize=2
        Capabilities: [d0] Vital Product Data
        Capabilities: [100] Advanced Error Reporting
        Capabilities: [140] Virtual Channel
        Capabilities: [160] Device Serial Number 00-e0-4c-68-00-00-00-01

04:00.0 Communication controller: Tiger Jet Network Inc. Tiger3XX Modem/ISDN interface
        Subsystem: Unknown device b1d9:0003
        Flags: bus master, medium devsel, latency 32, IRQ 58
        I/O ports at 1000 [size=256]
        Memory at 50100000 (32-bit, non-prefetchable) [size=4K]
        Capabilities: [40] Power Management version 2
```

After load zaptel, driver and run asterisk system, your executes:
modprobe zaptel
modprobe wctdm
ztcfg
ztcfg –vvvvvvvvvvvvv
After the ztcfg –vvvvvvvvvvvvv command, you can see the follow info:

```
[root@elastix etc]# ztcfg -vvvvvvv

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


Channel map:

Channel 01: FXS Kewlstart (Default) (Slaves: 01)
Channel 02: FXS Kewlstart (Default) (Slaves: 02)
Channel 03: FXO Kewlstart (Default) (Slaves: 03)
Channel 04: FXO Kewlstart (Default) (Slaves: 04)

4 channels configured.
```

5) Start asterisk
Before starting asterisk, please configure Zapata.conf under document /etc/asterisk.

```
; Span 1: WCTDM/0 "Wildcard TDM400P REV I Board 1"
;;; line="1 WCTDM/0/0 FXSKS"
signalling=fxs_ks
callerid=asreceived
group=0
context=from-pstn
channel => 1
context=default

;;; line="2 WCTDM/0/1 FXSKS"
signalling=fxs_ks
callerid=asreceived
group=0
context=from-pstn
channel => 2
context=default

;;; line="3 WCTDM/0/2 FXOKS"
signalling=fxo_ks
callerid="Channel 3" <6003>
mailbox=6003
group=5
context=from-internal
channel => 3
callerid=
mailbox=
group=
context=default

;;; line="4 WCTDM/0/3 FXOKS"
signalling=fxo_ks
callerid="Channel 4" <6004>
mailbox=6004
group=5
context=from-internal
channel => 4
callerid=
mailbox=
group=
context=default
```

3. Please edit the extensions.conf, make sure that there is a context called from-pstn and from-internal. Like follow the example.

```
[from-pstn]
exten => s,1,Dial(zap/1)
exten => s,2,Hangup
[from-internal]
exten => _X.,1,Dial(sip/${EXTEN})
exten => _X.,2,Hangup
```

4. After starting asterisk, you should check status of zap channels first
Use command:
asterisk –vvvvvvvvvvvvgr
login to asterisk CLI. Under asterisk console, run command: **dahdi show channels:**

```
      *CLI> dahdi show channels
  Chan Extension  Context         Language   MOH Interpret
pseudo            default                    default
     1            from-pstn                  default
     2            from-pstn                  default
     3            from-internal              default
     4            from-internal              default
```

If you can see the zap channels, which means that the zap channels are loaded successfully. After then, you can make inbound calls and the call will be forward to FXS channel.
Notes:
Test environments are:
Centos-5.0
Kernel version: 2.6.18 -53.1.19.el5
Zaptel: 1.4.11
Asterisk: 1.4.22
Analog Card: Asterisk PXC0422