

Asterisk PCI card install Guide

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Install AX-400p:

To following this guide, you need a PC with linux and asterisk installed, AX-400p mother card and AX-110X FXO module or AX-110S FXS module

Configure Card:

The AX-400p is an FXO/FXS interchangeable card. You can configure it as FXO or FXS or hybrid one with the modules.

There are four module slot in the AX-400p mother board. In this demo, we put the AX-110X (the red one) modules to the TEL1 and TEL2 ports. And the AX-110S modules(the blue one) to the TEL3 and TEL4 ports. Then the tel1 and tel2 were configured as FXO ports. And tel3, tel4 configured as FXS ports. Remember to put the power cable to the AX-400p card when using FXS ports. Otherwise it will claim power error

Install Linux: I am using Redhat9.0 and AS4 update4 in the testing. Other Liunx version may suitable, please refer asterisk official website for more info about the linux support.

Install asterisk: to use AX-400P, you need to install zaptel driver. Libpri. And asterisk. Download these three file from <http://www.asterisk.org/downloads> download the latest version of asterisk 1.4.2, zaptel.1.4.1, libpri.1.4.0 to local directory **/usr/src** .

When finish the downloading; move to /usr/src and unpack the source and run the installation orderly(firdst zaptel, then libpri,then asterisk

```
cd /usr/src
tar -zxvf zaptel-1.4.1.tar.gz
cd zaptel-1.4.1
make clean;make install          ; finish the install of zaptel

cd ..
tar -zxvf libpri-1.4.0.tar.gz      ; unpack the libpri source file
cd libpri-1.4.0
make clean;make install          ; finish the install of libpri

cd ..
tar -zxvf asterisk-1.4.2.tar.gz    ;unpack the asterisk source file
cd asterisk-1.4.2
make clean;make install          ;finish the install of asterisk
```

Configure asterisk:

After success install zaptel , libpri and asterisk. You also need to run **make samples** ;to generate the default configure file for asterisk.

To configure AX-400P , you need to configure the following files:

/etc/zaptel.conf ; configure file for zaptel driver. Set the hardware description of AX-400P in this file

/etc/asterisk/zapata.conf ;configure file for asterisk. Interface the AX-400P to asterisk.

/etc/asterisk/extensions.conf: ;dial plan of asterisk.

/etc/asterisk/sip.conf ;sip account description.

The most important part of **zaptel.conf** is:

```
fxsks=1,2          ;FXO using FXS signaling
fxoks=3,4          ;FXS using FXO signaling
```

In the **/etc/asterisk/zapata.conf** file:

```
signalling = fxs_ks
context = pstn_incoming ; incoming call from port1,2 will route to this extensions.
channel => 1,2

signalling = fxo_ks
context => edwintest
channel => 3,4 ; when port3,port4 make calls, it will go to context edwintest
in extensions.conf file
```

in the **sip.conf** file:

```
[8806] ; sip account 8806
type=friend
username=8806
host=dynamic
secret=8806
context=edwintest ; when 8806 make calls, it will go to context edwintest in
extensions.conf file

callerid="edwin"
mailbox=8806
```

in the **extensions.conf** file:

```
[pstn-incoming]
exten => _x.,1,Answer()
exten => _x.,2,Dial(zip/3,20,tr)
```

Run asterisk:

Connect the AX-400p's port1 to your pstn line and port2 to a normal phone.

Run

```
modprobe zaptel to load zaptel
modprobe wctdm to load the AX-400p driver
asterisk to run asterisk
ztcfg -vvvv to configure AX-400p channel
then run
asterisk again to run asterisk
```

After asterisk is successful running , you can dial to the line connect to port1 via pstn, then the calls will be routed to port2. the normal phone which connect to port2 will ring and you can answer the calls..

Install AX-4E:

Introduce: this guide is the instruction for how to install the AX-4E card on asterisk system, and making a simple local loop testing.

To following this guide, you need a PC with linux and asterisk installed, AX-4E card and E1 cable.

Install AX-4E on Redhat9.0

Install Linux: I am using Redhat9.0 and AS4 update4 in the testing. Other Liunx may suitable, please refer asterisk official website for more info about the linux support.

Install asterisk: to use AX-4E, you need to install zaptel driver. Libpri. And asterisk. Download these three file from <http://www.asterisk.org/downloads> download the latest version of asterisk 1.4.2, zaptel.1.4.1, libpri1.4.0 to local directory **/usr/src** .

When finish the downloading; move to /usr/src and unpack the source and run the installation orderly(firdst zaptel, then libpri,then asterisk

```
cd /usr/src
```

```
tar -zxvf zaptel-1.4.1.tar.gz      ;unpack the zaptel source file; notice , to install AX-4E, you need to override the tormenta2.dat file to /usr/src/zaptel-1.4.1 source file
```

```
cd zaptel-1.4.1
```

```
make clean;make install          ; finish the install of zaptel
```

```
cd ..
```

```
tar -zxvf libpri-1.4.0.tar.gz      ; unpack the libpri source file
```

```
cd libpri-1.4.0
```

```
make clean;make install          ; finish the install of libpri
```

```
cd ..
```

```
tar -zxvf asterisk-1.4.2.tar.gz    ;unpack the asterisk source file
```

```
cd asterisk-1.4.2
```

```
make clean;make install          ;finish the install of asterisk
```

Configure asterisk:

After success install zaptel , libpri and asterisk. You also need to run

```
make samples      ;to generate the default configure file for asterisk.
```

To configure AX-4E, you need to configure the following files:

/etc/zaptel.conf ; configure file for zaptel driver. Set the hardware description of AX-4E in this file

/etc/asterisk/zapata.conf ;configure file for asterisk. Interface the AX-4E to asterisk.

/etc/asterisk/extensions.conf: ;dial plan of asterisk.

/etc/asterisk/sip.conf ;sip account description.

The most important part of **zaptel.conf** is:

```
span=1,1,0,ccs,hdb3,crc4          ; configure port1 as synchronization source.Net port)
```

```
span=2,0,0,ccs,hdb3,crc4          ; configure port2 as CPE port
```

```
span=3,0,0,ccs,hdb3,crc4          ; configure port3 as CPE port
```

```
span=4,0,0,ccs,hdb3,crc4          ; configure port4 as CPE port
```

```
#span 1
```

```
bchan=1-15
```

```
dchan=16
```

```
bchan=17-31
#span 2
bchan=32-46
dchan=47
bchan=48-62
#span 3
bchan=63-77
dchan=78
bchan=79-93
#span 4
bchan=94-108
dchan=109
bchan=110-124
```

in the **/etc/asterisk/zapata.conf** file:

```
context=isdn-callin           ; all calls to port1 will go to context isdn-callin in
                               extensions.conf file.
```

```
group=1
signalling=pri_net
channel=>1-15
channel=>17-31
```

```
context=group2
group=2
signalling=pri_cpe
channel=>32-46
channel=>48-62
```

```
context=group2
group=2
signalling=pri_cpe
channel=>63-77
channel=>79-93
```

```
context=group2
group=2
signalling=pri_cpe
channel=94-108
channel=110-124
```

in the **sip.conf** file:

```
[8806]                        ; sip account 8806
type=friend
username=8806
host=dynamic
secret=8806
context=edwintest            ; when 8806 make calls, it will go to context edwintest in
                               extensions.conf file

callerid="edwin"
mailbox=8806
```

in the **extensions.conf** file:

```
[isdn-callin]
exten => _x.,1,Answer()
exten => _x.,2,Playback(hello-world)
exten => _x.,3,Hangup

[edwintest]
exten => 1006,1,Answer()
exten => 1006,2,Dial(zap/g2/2001)
exten => 1006,3,Hangup()
```

Run asterisk:

Connect the AX-4E's port1 and port2 with an E1 cable. Since we configure port1 as net port, and port2 as cpe port, we can make calls between port1 and port2

Run

```
modprobe zaptel to load zaptel
modprobe tor2 to load the tor2 driver
asterisk to run asterisk
ztcfg -vvvv to configure AX-4E channel
then run
asterisk again to run asterisk
```

after asterisk is successful running , you can register 8806 account use an sip softphone and call to 1006 , then the calls will be routed to a free channel in port2. since port2 has established link to port1, then the calls will be routed to port1 via E1 cable. Then you will listen "Hello world " which means the test is finish.

Install AX-4E on Trixbox2.0

To install the AX-4E on Trixbox2.0, you need to download the source file of zaptel and override the tormenta2.dat file, otherwise the port2 and port 4 can not work properly. To build the zaptel in trixbox, you need to download the Trixbox kernel source code.

Install Kernel Source:

```
yum -y install kernel-devel kernel
```

there is a bug in the new kernel , to fix it, you need to:

```
cd /usr/src/kernels
ls
```

Find your kernel source, looks like 2.6.9-34.0.2.EL-(processor of type of your system)

```
cd /usr/src/kernels/2.6.9-34.0.2.EL-i686/include/linux
mv spinlock.h spinlock.h.old
wget http://nerdvittles.com/trixbox/spinlock.h
shutdown -r now
```

after doing above, you should able to compile zaptel driver.

Install Zaptel:

Download the zaptel driver.

```
cd /usr/src
tar -zxvf zaptel-1.4.1.tar.gz ;unpack the zaptel source file; notice , to install AX-4E, you
need to override the tormenta2.dat file to /usr/src/zaptel-1.4.1 source file
cd zaptel-1.4.1
make clean;make install ; finish the install of zaptel
```

after install the zaptel driver on the trixbox, you can run genzapconf to auto configure the card on

Trixbox. Please notice that the zaptel.conf and Zapata.conf configure files are wrong generated. You need to change them to work properly. Please refer the sample configure file if there is any problem.

Install AX-4S:

For Asterisk Version 1.2:

Notice: before install AX-4S, please read carefully the AX-4S jumper setting and set the jumper properly

1: go to asterisk source file `./asterisk/channels/misdn`.

Run `make misdn`, then asterisk will update the misdn driver from `@cvs.isdn4linux.de`, so make sure your internet connection before running it.

```
[root@localhost misdn]# make misdn
```

2: and then go to the `../asterisk` directory

And run: `make` to build asterisk.

```
[root@localhost asterisk-1.2.13]# make
```

3. Then you will see `chan_mISDN.so` under `../asterisk/channels` directory.

4: go to `../asterisk`, run `make install` to install asterisk. And the `mISDN` driver will be installed together with asterisk

```
[root@localhost asterisk-1.2.13]# make install
```

5. Then make samples.

6: Configure AX-4S

Run

```
[root@localhost /]# /etc/init.d/misdn-init scan
```

If it shows

```
[OK] found the following devices:
```

```
card=1,0x4 <== AX-4S is detected
```

```
[ii] run "/usr/sbin/misdn-init config" to store this information to /etc/misdn-init.conf
```

Then run

```
[root@localhost ~]# /etc/init.d/misdn-init config
```

```
[OK] /etc/misdn-init.conf already present. backing it up to /etc/misdn-init.conf.save
```

```
[OK] /etc/misdn-init.conf created. It's now safe to run "/usr/sbin/misdn-init start"
```

```
[ii] make your ports (1-4) available in asterisk by editing "/etc/asterisk/misdn.conf"
```

And then configure:

`/etc/misdn-init.conf`

& `/etc/asterisk/misdn.conf`

Then run `/usr/sbin/misdn-init start` to load AX-4S.

For Asterisk Version 1.4:

Notice: before install AX-4S, please read carefully the AX-4S jumper setting and set the jumper properly, insert the card on the PCI slot.

1. First, download and install `mISDN` and `chan_mISDN`. To do it, please follow

a) `cd /usr/src`

b) `wget http://www.misdn.org/downloads/mISDN.tar.gz`

c) `wget http://www.misdn.org/downloads/mISDNUser.tar.gz`

d) `tar -zxvf mISDN.tar.gz`

- e) **tar -zxvf mISDNuser.tar.gz**
- f) **cd mISDN-1_1_2**
- g) **make install**
- h) **cd ../mISDNuser-1_1_2**
- i) **make install**

2. After that you should be able to reconfigure asterisk like:

- a) **cd /usr/src/asterisk**
- b) **./configure**
- c) **make menuselect**
- d) **now you should enable chan_misdn in the menuselect, you can find chan_misdn in Channel Driver Section.**

3. Reinstall asterisk with

- a) **make install**

4. After doing above, you should be able to run misdn-init tool to scan and configure the AX-4S

- a) **misdn-init scan**

It shows:

[OK] found the following devices:

card=1,0x4 <== AX-4S is detected

[ii] run "/usr/sbin/misdn-init config" to store this information to /etc/misdn-init.conf

- b) **misdn-init config**
- c) **configure the /etc/misdn-init.conf file and /etc/asterisk/misdn.conf file.**
- d) **misdn-init start ; to load the card , you should see the LED of card blinking.**

Install AX-1E:

For Asterisk Version 1.2:

Notice: before install AX-1E, please read carefully the AX-1E jumper setting and set the jumper properly

1: go to asterisk source file `./asterisk/channels/misdn`.

Run `make misdn`, then asterisk will update the misdn driver from `@cvs.isdn4linux.de`, so make sure your internet connection before running it.

```
[root@localhost misdn]# make misdn
```

2: and then go to the `../asterisk` directory

And run: `make` to build asterisk.

```
[root@localhost asterisk-1.2.13]# make
```

3. Then you will see `chan_mISDN.so` under `../asterisk/channels` directory.

4: go to `../asterisk`, run `make install` to install asterisk. And the mISDN driver will be installed together with asterisk

```
[root@localhost asterisk-1.2.13]# make install
```

5. Then make samples.

6: Configure AX-1E

Run

```
[root@localhost /]# /etc/init.d/misdn-init scan
```

If it shows

```
[OK] found the following devices:
```

```
card=1,0x1 <== AX-1E is detected
```

```
[ii] run "/usr/sbin/misdn-init config" to store this information to /etc/misdn-init.conf
```

Then run

```
[root@localhost ~]# /etc/init.d/misdn-init config
```

```
[OK] /etc/misdn-init.conf already present. backing it up to /etc/misdn-init.conf.save
```

```
[OK] /etc/misdn-init.conf created. It's now safe to run "/usr/sbin/misdn-init start"
```

And then configure:

```
/etc/misdn-init.conf
```

```
& /etc/asterisk/misdn.conf
```

Then run `/usr/sbin/misdn-init start` to load AX-1E. for more info of how to configure AX-1E and AX-4S ,please refer description in the `/etc/misdn-init.conf` and `/etc/asterisk/misdn.conf` file

For Asterisk Version 1.4:

Notice: before install AX-1E, please read carefully the AX-1E jumper setting and set the jumper properly, insert the card on the PCI slot.

1. First, download and install mISDN and chan_mISDN. To do it, please follow

a) `cd /usr/src`

b) `wget http://www.misdn.org/downloads/mISDN.tar.gz`

c) `wget http://www.misdn.org/downloads/mISDNUser.tar.gz`

d) `tar -zxvf mISDN.tar.gz`

e) `tar -zxvf mISDNUser.tar.gz`

f) `cd mISDN-1_1_2`

- g) **make install**
- h) **cd ../mISDNuser-1_1_2**
- e) **make install**

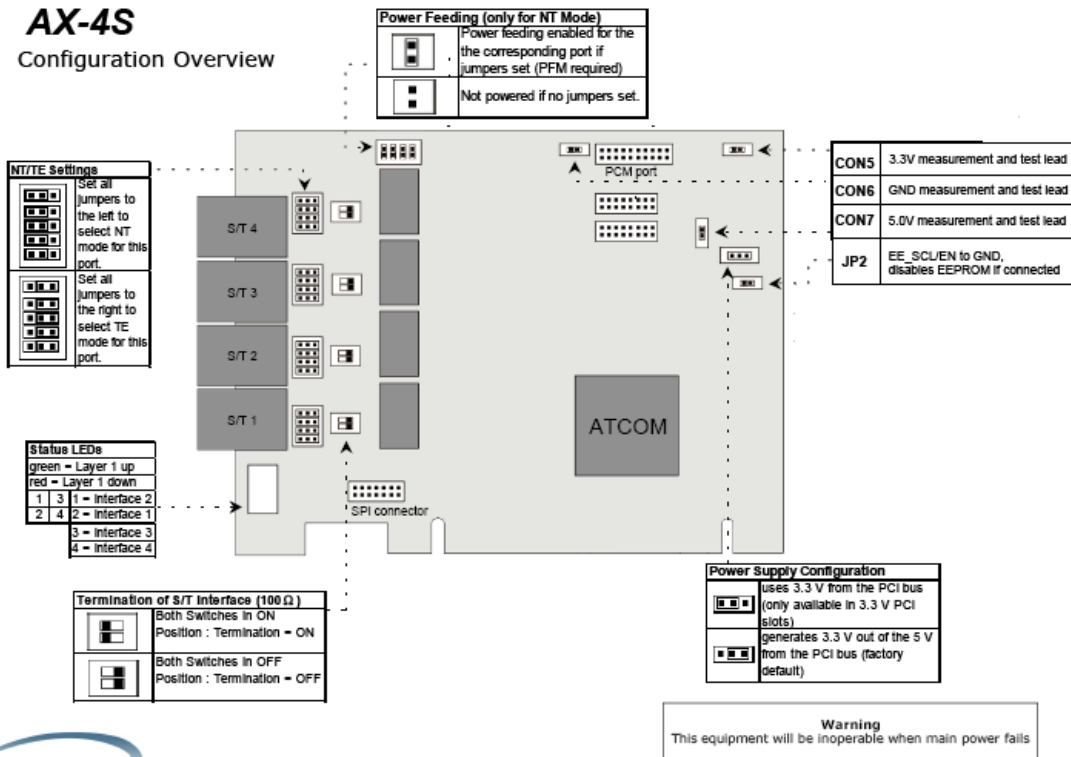
2. After that you should be able to reconfigure asterisk like:
 - a) **cd /usr/src/asterisk**
 - b) **./configure**
 - c) **make menuselect**
 - d) **Now you should enable chan_misdn in the menuselect, you can find chan_misdn in Channel Driver Section.**
3. Reinstall asterisk with
 - a) **make install**
4. After doing above, you should be able to run misdn-init tool to scan and configure the AX-4S
 - a) **misdn-init scan**
It shows:
[OK] found the following devices:
card=1,0x1 <== AX-1E is detected
[ii] run "/usr/sbin/misdn-init config" to store this information to /etc/misdn-init.conf
 - b) **misdn-init config**
 - c) **configure the /etc/misdn-init.conf file and /etc/asterisk/misdn.conf file.**
 - d) **misdn-init start** ; to load the card , you should see the LED of card blinking.

Jumper Setting of AX-4S and AX-1E

AX-4S

AX-4S

Configuration Overview



AX-1E

