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Digium TDM400P Cards

Affix the 2 FXS cards (green) on channels 1 and 3, and the 2 FXO cards (red) on channels 2 and 4, respectively, on the Digium TDM400P card.

On my TDM400 card, channel 1 is the port at the top of the card, with channel 4 being next to the PCI connector at the bottom. The card for channel 1 is next to the telephone connectors, and the card for channel 4 is on the other side.

That is:

channels	usage	type / zaptel.cfg	signalling / openzap.cfg
2 and 4	telephone line	FXO	FXS
1 and 3	telephone extension	FXS	FXO

Turn off your machine and insert the Digium TDM400P card with 2 FXS/ 2 FXO into your machine.

Ensure an hard-drive power cable is properly inserted into the end of the card.

Zaptel Driver Installation

The FXO/FXS card should be installed first to verify the zaptel installation. Verify Internet connectivity.

Download the latest zaptel-1.4.x.tar.gz from reliable sources. Untar the source tarball, compile and install.

```
# tar -zxvf zaptel-1.4.x.tar.gz
# cd zaptel-1.4.x
# ./configure
# make
# make install
# make config
```

Ensure the proper zaptel.conf is in the /etc directory. Correctly configure country zone in zaptel.conf. FXO and FXS are reversed in /etc/zaptel.conf but is normal everywhere else.

```
----- @/etc/zaptel.conf -----
loadzone=in
defaultzone=in
fxsks=4
fxoks=1
fxsks=2
```

```
fxoks=3
```

Add the wctdm and zaptel modules now.

```
# modprobe wctdm
# modprobe zaptel
```

Now verify the installation with the ztcfg command

```
# ztcfg -vv

Zaptel Version: 1.4.2
Echo Canceller: MG2
Configuration
======================
Channel map:
Channel 01: FXO Kewlstart (Default) (Slaves: 01)
Channel 03: FXO Kewlstart (Default) (Slaves: 03)
Channel 02: FXS Kewlstart (Default) (Slaves: 02)
Channel 04: FXS Kewlstart (Default) (Slaves: 04)
2 channels configured.
```

Setup

1. Once you are done with installing zaptel drivers and fixed the FXS/FXO card on your machine, the green LEDs(Digium TDM400P card in my case) on your card will start glowing. (Good omen for you)

2. When you compile the Freeswitch code, make sure you have included openzap module by uncommenting the following line in ${Freeswitch_src)/modules.conf

../../libs/openzap/mod_openzap

3. After successful compilation, you have to put the openzap.conf.xml file into /usr/local/freeswitch/conf/autoload_configs/ as it will not be available there.For eg, you can use the sample openzap.conf.xml for Digium TDM400P at Openzap.conf.xml Examples

4. At the time of running Freeswitch from /usr/local/freeswitch/bin/, make sure again that <load module ="mod_openzap"/> is included in /usr/local/freeswitch/conf/autoload_configs/modules.conf.xml

5.Make sure you see the Openzap FXS and FXO configuration messages on your console when you run Freeswitch. For example,

```
2008-05-01 18:10:32 [INFO] zap_zt.c:170 zt_open_range() configuring device /dev/zap/channel chann
2008-05-01 18:10:32 [INFO] zap_zt.c:170 zt_open_range() configuring device /dev/zap/channel chann
2008-05-01 18:10:32 [INFO] zap_zt.c:170 zt_open_range() configuring device /dev/zap/channel chann
2008-05-01 18:10:32 [INFO] zap_zt.c:170 zt_open_range() configuring device /dev/zap/channel chann
2008-05-01 18:10:32 [INFO] zap_io.c:1978 load_config() Configured 4 channel(s)
2008-05-01 18:10:32 [CONSOLE] switch_loadable_module.c:749 switch_loadable_module_load_file() Suc
2008-05-01 18:10:32 [NOTICE] switch_loadable_module.c:139 switch_loadable_module_process() Adding
2008-05-01 18:10:32 [NOTICE] switch_loadable_module.c:245 switch_loadable_module_process() Adding
```

6. Now you can take a ride on your Ozzzzzzz... zip zap zoom ;)

Dialplan Configuration

1. To bridge an inbound call to your FXS that is configured on channel 1, for an UA registered as 507@proxy.com configure as below

```
<extension name="incoming-fxs-channel-1">
  <condition field="destination_number" expression="^(507)$">
    <action application="bridge" data="openzap/1/1"/>
  </condition>
</extension>
```

2. To bridge an outbound call onto your FXO card that is configured on channel 4, for any 10-digit destination configure as below

```
<extension name="outgoing-fxo-channel-4">
  <condition field="destination_number" expression="^([0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-
    <action application="set" data="dialed_ext=$1"/>
    <action application="bridge" data="openzap/2/2/${dialed_ext}"/>
  </condition>
</extension>
```