



CT Server 4.0 Installation Guide

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Notices and Disclaimers

This document is a draft, for internal distribution only.

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1 Introduction

1.1 Intended Audience

This guide is intended to be used as complete step by step instructions for the first time installer, while also being able to be used as a reference for the more experienced installer of Voicetronix CT Server.

1.2 Suggested Reading Order

If you are installing CT Server for the first time, it is suggested that you read this guide from beginning to end before starting your installation.

2 Requirements

In order to run CT Server, you will need the following software and hardware components:

1. x86 PC installed with a fresh copy of CentOS 4.3 or later. The “everything” option should be used with selecting which packages are to be installed.
2. at least one Voicetronix card (OpenLine4, OpenSwitch6, OpenSwitch12, OpenPRI or OpenPCI) installed in the PC.
3. Voicetronix drivers for the installed card, including Wanpipe drivers if using the OpenPRI card.
4. CT Server version 4.
5. Libraries required by CT Server version 4 – libgsm, ortp, osip2, eXosip2 (these can be downloaded from <http://www.voicetronix.com/Downloads/ctserver-libs.tar.gz>).

3 Installation

First things first, we need to stop the machine from running the Xwindow system. Edit `/etc/inittab` and change the default runlevel to 3, then go to runlevel 3 by executing the `init 3` command.

Compile and install the wanpipe drivers if you have an OpenPRI card installed (downloaded from <http://www.voicetronix.com.au/Downloads/>). Use the `./Setup install` command from the wanpipe distribution. Use custom compilation mode and specify the AFT_TE1 protocol only. All other options are either “yes” (for yes/no questions) or the default answer (for other questions).

Compile (`make clean, make`) and install (`make install`) the vpb drivers. If you installed the wanpipe drivers, you should see `-D_OPENPRI` in the compiler command line – if you don't see this then you probably haven't installed the wanpipe drivers correctly. Once installed, run the `VpbConfigurator.pl` script from the `utils` directory of the vpb-driver package. This will create configuration files for all Voicetronix cards installed.

If you have OpenPRI cards installed, you may now start the wanrouter software (`/etc/init.d/wanrouter start`).

Next, configure, compile and install each of the VoIP libraries from the `ctserver-libs` support package:

`gsm (make, make install)`, then `ortp (./configure, make, make install)`, then `osip`

(./configure,make,make install), then eXosip (./configure --disable-josua,make,make install).

Note that when configuring eXosip, you'll need to use the option '--disable-josua' as it doesn't seem to compile with the current version of oRTP.

Create the file /etc/ld.so.conf.d/ctserver.conf containing the single line /usr/local/lib. Debian users note: instead of this step you must add the line to the /etc/ld.so.conf file.

Issue an /sbin/ldconfig command as root. This will tell CT Server where to find its library files.

Compile and install CT Server. This should be as simple as untarring the archive, and running the three commands ./configure,make,and make install.

CT Server should now be installed and ready to configure.

4 Configuration

4.1 SIP configuration

Create a sip.conf file in the /etc/vpb/ directory. It should look something like this:

```
[general]
hostlist=<space separated list of local hostnames>
noncerealm=<your domain name>
noncekey=<random text>
startport=<even numbered port to use as first RTP port>

[phone1]
type=station
host=dynamic
username=<extension number>
password=<login password for handset>

[trunk1]
type=trunk
host=<remote sip server>
username=<remote sip server username>
password=<remote sip server password>
callerid=<full sip url to be provided to server>
maxchannels=4
```

A few notes about the settings in the sip.conf file:

- the [general] label must be exactly as shown. All other labels are arbitrary names used primarily for humans to identify the sections. Give them meaningful names such as the name of the person at that extension.
- using the extension number is simply a recommendation for the station username. It can actually be anything you want, so long as it is a valid SIP username.
- The maxchannels setting can be used on stations or trunks, but it defaults to 1. For a user to be able to make two simultaneous calls from a handset, it should be set to 2. If two CT

Servers are connecting back to back, the station port on one must have the corresponding number for maxchannels as the trunk port it is logically attached to.

5 OpenPBX installation

If you wish to use Voicetronix OpenPBX with your CT Server installation, it is installed separately from CT Server. Installation is a simple matter of a `make install` from the `contrib/openpbx` directory of the CT Server source tree. This will install all the necessary files in `/usr/local/share/openpbx` ready for you to configure.

6 OpenPBX configuration

OpenPBX uses two configuration files: `cards.conf` and `pbx.conf`.

6.1 `/usr/local/share/openpbx/cards.conf`

A template for this file, tailored to a certain extent for your system, can be generated by running the `vpbconf` command. The output should be redirected to the `cards.conf` file and that gives a good starting point. Note that the output from this command is dependent on the `verbosity` setting in `/etc/vpb/vpb.conf` – it must be set to 0 in order to get the correct output for `cards.conf`. Note also that this utility requires the Voicetronix card drivers to be loaded beforehand. Different drivers are required for different cards – the `vpb` driver should be loaded for the OpenLine4 card, `vpbhp` for OpenSwitch6 or OpenSwitch12, and `vtopenpci` for OpenPCI cards. If in doubt, it doesn't hurt to just load all three drivers.

Having run the `vpbconf` command and redirected its output to `cards.conf`, it is time to edit the `cards.conf` file to exactly tailor it to your setup. Two different types of change may be necessary:

6.1.1 OpenPRI changes for a partial E1/T1/J1

If your OpenPRI is connected to a partial E1, T1 or J1 then the ports which are not in use should be removed from the appropriate card's port listing. For example, if you are in Australia and have an OnRamp10 service – this is an E1 with only the first 10 of the 30 ports commissioned – then you will want to remove the last 20 ports (ports 10 through 29 inclusive in a system containing only that board). Any ports on higher numbered boards should **not** be renumbered, but rather they should be left as they were, now with a gap between them. If this is the highest numbered board in the system, it is important to remember the highest port number that it had if you delete it as we will require that in order to add SIP ports in the next step.

6.1.2 SIP “board” addition

At the moment, OpenPBX reads all of its channels from this file, so we will add the SIP ports here in order that they have either station or trunk scripts started for them. Increase the Cards detected setting by one, and add the following to the file:

```
BOARD 2
MODEL      : SIP
STATIONS[2]: 42 43 44 45
TRUNKS[2] : 46 47
```

This assumes that you have two physical boards in the system (boards 0 and 1) and that they have a total of 42 ports between them (ports 0 through 11 for an OpenSwitch12 and ports 12 through 41 for an OpenPRI, for example). Furthermore, it says that we have 4 SIP station ports configured and 2

SIP trunk ports configured – these must correspond to the settings in `/etc/vpb/sip.conf`.

6.2 `/usr/local/share/openpbx/pbx.conf`

The `contrib/Utils` directory of the CT Server source tree contains a perl script which will perform basic configuration of OpenPBX for you. It is called `PbxConfigurator.pl`.

Run this script, which will create a `pbx.conf` file in the current directory. Tailor it to your own environment (for example, adding least cost routing settings suitable for your location and trunk services), then copy it into place and start `openpbx` with the command `/usr/local/share/openpbx/openpbx start`. Full details on the settings available and their meanings are documented in `/usr/local/share/openpbx/doc/README.conf-file`.

7 Sample Configuration Files

7.1 *cards.conf*

The following configuration file is for a system containing two OpenSwitch12 cards, one OpenPRI card, has 8 SIP stations, a SIP trunk with 2 channels maximum and a SIP trunk with 4 channels maximum. The service connected to the OpenPRI is a partial E1 with only the first 10 B-channels active.

```
Cards detected:4

BOARD 0
MODEL      : V12PCI
DATE       : 24/06/2005
REVISION   : 02.11
SERIAL NUMBER : 52500209
STATIONS[0]: 0 1 2 3 4 5 6 7 8 9 10 11
TRUNKS[0]:
=====
BOARD 1
MODEL      : V12PCI
DATE       : 17/06/2003
REVISION   : 02.11
SERIAL NUMBER : 00000023
STATIONS[1]: 12 13 14 15 16 17 18 19
TRUNKS[1]: 20 21 22 23
=====
BOARD 2
MODEL      : PRI
STATIONS[2]:
TRUNKS[2]: 24 25 26 27 28 29 30 31 32 33
=====
BOARD 3
MODEL      : SIP
STATIONS[3]: 54 55 56 57 58 59 60 61
TRUNKS[3]: 62 63 64 65 66 67
```

7.2 *pbx.conf*

A reasonably complex pbx.conf file corresponding to the above cards.conf file might look like this:

```
[general]
admin=admin
password=voice
path=audio
externallinekey=0
cidonstations=yes

[voicemail]
greetpath=audio/vmail/
mailpath=vmail
smtp=localhost
maxmsg=20

[moh]
timeout=120
operator=100
moh1=music-onhold1.wav

[autoattendant]
ringstoanswer=2
0=humans
repeatprompt=5
prompt=audio/aagreeting-tbirds.wav
#prompt=audio/xmas-aa.wav
fax=104
1=support
2=peter
3=ben
4=sales
5=benmob
6=mark

[groups]
support=100:voicemail=no,101:voicemail=no,100:voicemail=yes
```

```
peter=101,aa
ben=100,aa
humans=100:voicemail=no,101:voicemail=no,100:voicemail=yes
mark=113,aa
benmob=00412345678,

[ports]
0=station
1=station
2=station
3=station
4=station
5=station
6=station
7=station
8=station
9=station
10=station
11=station
12=station
13=station
14=station
15=station
16=station
17=station
18=station
19=station
20=trunk
21=trunk
22=trunk
23=trunk
24=trunk
25=trunk
26=trunk
27=trunk
28=trunk
29=trunk
30=trunk
31=trunk
32=trunk
33=trunk
54=station
55=station
56=station
57=station
58=station
59=station
60=station
61=station
62=trunk
63=trunk
64=trunk
65=trunk
66=trunk
67=trunk

[extmap]
extensions=100,101,102,103,104,105,106,107,108,109,110,111,112,113,114,115,116,117,1
18,119,120,121,122,151,152,153,154,155

[100]
ringout=4
pin=1234
email=ben@voicetronix.com
ip=192.168.3.31
voicemail=yes
name=Ben Smith
email_voicemail=yes
label=bsmith
email_notification=yes
port=54

[101]
email=peter@voicetronix.com
ringout=4
pin=1234
name=Peter Jones
voicemail=yes
email_voicemail=yes
label=pjones
email_notification=yes
```

```
port=55

[102]
port=2
label=ext102
ringout=20
pin=1234

[103]
port=3
label=ext103
ringout=20
pin=1234

[104]
port=4
label=ext104
ringout=20
pin=1234

[105]
port=5
label=ext105
ringout=20
pin=1234

[106]
port=6
label=ext106
ringout=20
pin=1234

[107]
port=7
label=ext107
ringout=20
pin=1234

[108]
port=8
label=ext108
ringout=20
pin=1234

[109]
port=9
label=ext109
ringout=20
pin=1234

[110]
port=10
label=ext110
ringout=20
pin=1234

[111]
port=11
label=ext111
ringout=20
pin=1234

[112]
port=12
label=ext112
ringout=20
pin=1234

[113]
port=56
label=mbloggs
name=Mark Bloggs
ringout=4
email=mark@voicetronix.com
pin=1234
voicemail=yes
email_voicemail=yes
email_notification=yes

[114]
port=14
```

```
label=ext114
ringout=20
pin=1234

[115]
port=15
label=ext115
ringout=20
pin=1234

[116]
port=16
label=ext116
ringout=20
pin=1234

[117]
port=17
label=ext117
ringout=20
pin=1234

[118]
port=18
label=ext118
ringout=20
pin=1234

[119]
port=19
label=ext119
ringout=20
pin=1234

[120]
port=0
label=ext120
ringout=20
pin=1234

[121]
port=1
label=ext121
ringout=20
pin=1234

[122]
port=13
label=ext122
ringout=20
pin=1234

[151]
port=57
label=ext151
ringout=20
pin=1234

[152]
port=58
label=ext152
ringout=20
pin=1234

[153]
port=59
label=ext153
ringout=20
pin=1234

[154]
port=60
label=ext154
ringout=20
pin=1234

[155]
port=61
label=ext155
ringout=20
pin=1234
```

```

[trunkmap]
20=aa
21=aa
22=aa
23=aa
24=aa
25=aa
26=aa
27=aa
28=aa
29=aa
30=aa
31=aa
32=aa
33=aa
62=aa
63=aa
64=aa
65=aa
66=aa
67=aa

[lcr]
rule10=1|20|. *|-|-|any

```

7.3 sip.conf

Here is the sip.conf file, also corresponding to the two files configuration file examples shown above.

```

[general]
hostlist=sip.voicetronix.com sip.voicetronix.com.au 1.2.3.4
noncerealm=voicetronix.com.au
noncekey=thisisasecretphrasewhichcannotsharewithyou
startport=60000

[ben]
type=station
host=dynamic
username=100
password=1234

[peter]
type=station
host=dynamic
username=101
password=1234

[mark]
type=station
host=dynamic
username=113
password=1234

[guest1]
type=station
host=dynamic
username=151
password=1234

[guest2]
type=station
host=dynamic
username=152
password=1234

[guest3]
type=station
host=dynamic
username=153
password=1234

[guest4]
type=station
host=dynamic

```

```
username=154
password=1234

[guest5]
type=station
host=dynamic
username=155
password=1234

[nodephone]
type=trunk
host=sip.internode.on.net
username=087127xxxx
password=xxxxxxxxx
callerid=sip:087127xxxx@sip.internode.on.net
maxchannels=2

[voipfonic]
type=trunk
host=sip.articul-8.com
username=xxxxxxxxx
password=xxxxxxxxx
maxchannels=4
```