

Asterisk Management Portal Installation Guide

i. Linux Installation

White Box Enterprise Linux 3.0 (WBEL) is the distribution used throughout this guide. We believe that the goals of the distribution are in good alignment with the mission-critical nature of a small business telephone system. WBEL ISOs can be downloaded from a number of mirror sites. Check the official WBEL website for more information:

<http://www.whiteboxlinux.org/>

Detailing a Linux installation is beyond the scope of this document. There are numerous articles, HOW-TOs and books available to the individual that deal with this subject. Therefore, for the purposes of this document it is assumed that the WBEL installation is that of a “Server” system (the other choices given during installation are: Personal Desktop, Workstation and Custom). Furthermore, for the purposes of this document it is assumed that the partitioning of the hard disk drive was done automatically by selecting “Autopartition” when prompted, and that no previous partitions existed on the drive prior to installation.

A note about Package Group Selection. It is not recommended to use the X Window System on a production AMP/Asterisk server. Therefore, since a mouse is not needed, this document also assumes that the text based installation method of WBEL is used.

AMP has several requirements (which we will cover in a later section) but at this point of the WBEL installation ensure that the following package groups are selected (or deselected if the “Server” system selected them by default):

- Text-based Internet
- Server Configuration Tools
- Web Server
- Mail Server
- [Deselect Windows File Server]
- MySQL Database
- Development Tools
- Kernel Development
- Administration Tools
- [Deselect Printing Support]

ii. Post-Install Configuration

Note: all editing of configuration files and commandline operations below are done as the root user.

For performance and security reasons it is important to update the system immediately after install. WBEL uses “yum” for this purpose. You should edit the /etc/yum.conf file to point to a mirror close to you. You can use vi or nano to edit configuration files. Here is an example yum.conf edited to point to a mirror:

```
[main]
cachedir=/var/cache/yum
debuglevel=2
logfile=/var/log/yum.log
pkgpolicy=newest
distroverpkg=whitebox-release
tolerant=1
exactarch=1

[base]
name=White Box Enterprise Linux $releasever - $basearch - Base
#baseurl=http://whiteboxlinux.org/pub/$releasever/en/os/$basearch
baseurl=http://mirror.cpsc.ucalgary.ca/mirror/whiteboxlinux.org/3.0/en/os/i386

[updates-released]
name=White Box Enterprise Linux $releasever - $basearch - Released Updates
#baseurl=http://whiteboxlinux.org/pub/$releasever/en/updates/
baseurl=http://mirror.cpsc.ucalgary.ca/mirror/whiteboxlinux.org/3.0/en/updates

#[updates-testing]
#name=White Box Enterprise Linux $releasever - $basearch - Unreleased Updates
#baseurl=http://whiteboxlinux.org/pub/\$releasever/en/os/testing/
```

Having edited /etc/yum.conf to point to a mirror, proceed with updating the system by running from the commandline:

```
[root@pbx etc]# yum -y update
```

1. Additional Package Installation to Satisfy AMP/Asterisk dependencies

You can check if a particular package is installed by doing either:

```
yum info [package]
```

or:

```
rpm -qa | grep [package]
```

If the package is not installed, install it by using yum:

```
yum install [package]
```

See the yum man page for more information.

The following packages need to be installed with yum:

- libxml2
- libtiff
- libtiff-devel
- httpd
- mysql
- mysql-devel
- mysql-server
- php
- php-mysql
- openssl
- openssl-devel
- kernel-source
- perl
- perl-CPAN
- cvs
- bison
- ncurses-devel
- audiofile-devel

lame may not be available through a yum repository; it can be obtained from:

<http://apt.sw.be/redhat/el3/en/i386/RPMS.dag/lame-3.96.1-2.1.el3.rf.i386.rpm>

Download and install the rpm:

```
[root@pbx tmp]# wget http://apt.sw.be/redhat/el3/en/i386/RPMS.dag/lame-3.96.1-2.1.el3.rf.i386.rpm

[root@pbx tmp]# rpm -ivh lame-3.96.1-2.1.el3.rf.i386.rpm
warning: lame-3.96.1-2.1.el3.rf.i386.rpm: V3 DSA signature: NOKEY, key ID
6b8d79e6
Preparing...                               ##### [100%]
 1:lame                                     ##### [100%]
```

2. Satisfying AMP's PERL module dependencies

a. From the commandline run the following:

```
perl -MCPAN -e "install Net::Telnet"
```

This will invoke the CPAN Configuration routine. More information on the prompts can be found here, under the “CONFIGURATION” section:

<http://search.cpan.org/~jhi/perl-5.8.0/lib/CPAN.pm>

Note that you can safely answer “no” when prompted "Are you ready for manual configuration?". It will just take longer to install because you will not configure a nearby repository.

I recommend going through the configuration routine if only to specify a local repository. You can pretty much just hit <Enter> for everything (assuming the system has 1 CPU) but the specification of the local repository. The output below only includes the sections relevant to specifying a local repository and the building and installing of the module:

```
[root@pbx root]# perl -MCPAN -e "install Net::Telnet"

/usr/lib/perl5/5.8.0/CPAN/Config.pm initialized.
```

CPAN is the world-wide archive of perl resources. It consists of about 100 sites that all replicate the same contents all around the globe. Many countries have at least one CPAN site already. The resources

found on CPAN are easily accessible with the CPAN.pm module. If you want to use CPAN.pm, you have to configure it properly.

If you do not want to enter a dialog now, you can answer 'no' to this question and I'll try to autoconfigure. (Note: you can revisit this dialog anytime later by typing 'o conf init' at the cpan prompt.)

Are you ready for manual configuration? [yes]

[snip]

You have no /root/.cpan/sources/MIRRORED.BY

I'm trying to fetch one

CPAN: LWP::UserAgent loaded ok

Fetching with LWP:

ftp://ftp.perl.org/pub/CPAN/MIRRORED.BY

Now we need to know where your favorite CPAN sites are located. Push a few sites onto the array (just in case the first on the array won't work). If you are mirroring CPAN to your local workstation, specify a file: URL.

First, pick a nearby continent and country (you can pick several of each, separated by spaces, or none if you just want to keep your existing selections). Then, you will be presented with a list of URLs of CPAN mirrors in the countries you selected, along with previously selected URLs. Select some of those URLs, or just keep the old list. Finally, you will be prompted for any extra URLs -- file:, ftp:, or http: -- that host a CPAN mirror.

- (1) Africa
- (2) Asia
- (3) Central America
- (4) Europe
- (5) North America
- (6) Oceania
- (7) South America

Select your continent (or several nearby continents) [] 5

Sorry! since you don't have any existing picks, you must make a geographic selection.

- (1) Canada
- (2) Mexico
- (3) United States

Select your country (or several nearby countries) [] 1

Sorry! since you don't have any existing picks, you must make a geographic selection.

- (1) ftp://cpan.chebucto.ns.ca/pub/CPAN/
- (2) ftp://cpan.mirror.cygnal.ca/pub/CPAN/
- (3) ftp://cpan.sunsite.ualberta.ca/pub/CPAN/
- (4) ftp://ftp.nrc.ca/pub/CPAN/
- (5) ftp://mirror.isurf.ca/pub/CPAN
- (6) ftp://theoryx5.uwinnipeg.ca/pub/CPAN/

Select as many URLs as you like,

put them on one line, separated by blanks [] 3

```
Enter another URL or RETURN to quit: []
New set of picks:
  ftp://cpan.sunsite.ualberta.ca/pub/CPAN/
```

[snip]

```
commit: wrote /usr/lib/perl5/5.8.0/CPAN/Config.pm
CPAN: Storable loaded ok
Going to read /root/.cpan/Metadata
  Database was generated on Sat, 13 Nov 2004 05:10:14 GMT
Running install for module Net::Telnet
Running make for J/JR/JROGERS/Net-Telnet-3.03.tar.gz
CPAN: Digest::MD5 loaded ok
Fetching with LWP:
  ftp://cpan.sunsite.ualberta.ca/pub/CPAN/authors/id/J/JR/JROGERS/CHECKSUMS
Checksum for /root/.cpan/sources/authors/id/J/JR/JROGERS/Net-Telnet-
3.03.tar.gz ok
Scanning cache /root/.cpan/build for sizes
Net-Telnet-3.03/
Net-Telnet-3.03/Makefile.PL
Net-Telnet-3.03/ChangeLog
Net-Telnet-3.03/lib/
Net-Telnet-3.03/lib/Net/
Net-Telnet-3.03/lib/Net/Telnet.pm
Net-Telnet-3.03/t/
Net-Telnet-3.03/t/select.t
Net-Telnet-3.03/README
Net-Telnet-3.03/MANIFEST
```

```
CPAN.pm: Going to build J/JR/JROGERS/Net-Telnet-3.03.tar.gz
```

```
Checking if your kit is complete...
Looks good
Writing Makefile for Net::Telnet
cp lib/Net/Telnet.pm blib/lib/Net/Telnet.pm
Manifying blib/man3/Net::Telnet.3pm
  /usr/bin/make -- OK
Running make test
PERL_DL_NONLAZY=1 /usr/bin/perl "-MExtUtils::Command::MM" "-e" "test_harness
(0, 'blib/lib', 'blib/arch')" t/*.t
t/select....ok
All tests successful.
Files=1, Tests=3, 0 wallclock secs ( 0.12 cusr + 0.02 csys = 0.14 CPU)
  /usr/bin/make test -- OK
Running make install
Installing /usr/lib/perl5/site_perl/5.8.0/Net/Telnet.pm
Installing /usr/share/man/man3/Net::Telnet.3pm
Writing /usr/lib/perl5/site_perl/5.8.0/i386-linux-thread-
multi/auto/Net/Telnet/.packlist
Appending installation info to /usr/lib/perl5/5.8.0/i386-linux-thread-
multi/perllocal.pod
  /usr/bin/make install -- OK
```

Install these PERL modules as well:

```
[root@pbx root]# perl -MCPAN -e "install IPC::Signal"
```

```
[root@pbx root]# perl -MCPAN -e "install Proc::WaitStat"
```

b. Download and install mime-construct:

```
[root@pbx tmp]# wget http://search.cpan.org/CPAN/authors/id/R/RO/ROSCHE/mime-construct-1.8.tar.gz
[root@pbx tmp]# tar xzf mime-construct-1.8.tar.gz
[root@pbx tmp]# cd mime-construct-1.8
[root@pbx mime-construct-1.8]# perl Makefile.PL
[root@pbx mime-construct-1.8]# make install
```

c. Download and install asterisk-perl:

```
[root@pbx tmp]# wget http://asterisk.gnuinter.net/files/asterisk-perl-0.08.tar.gz
[root@pbx tmp]# tar xzf asterisk-perl-0.08.tar.gz
[root@pbx tmp]# cd asterisk-perl-0.08
[root@pbx asterisk-perl-0.08]# perl Makefile.PL
[root@pbx asterisk-perl-0.08]# make install
```

3. **Download and install mpg123 (for Music on Hold):**

```
[root@pbx tmp]# wget http://www.mpg123.de/mpg123/mpg123-0.59r.tar.gz
[root@pbx tmp]# tar xzf mpg123-0.59r.tar.gz
[root@pbx tmp]# cd mpg123-0.59r
[root@pbx mpg123-0.59r]# make linux
[root@pbx mpg123-0.59r]# make install
```

4. **Getting the latest AMP files**

```
[root@pbx mpg123-0.59r]# cd /usr/src
[root@pbx src]# wget http://osdn.dl.sourceforge.net/sourceforge/ampportal/AMP-1.10.008.tar.gz
[root@pbx src]# tar xzf AMP-1.10.008.tar.gz
```

5. **Getting Asterisk and Zaptel**

```
[root@pbx src]# export CVSROOT=:pserver:anoncvs@cvs.digium.com:/usr/cvsroot
[root@pbx src]# cvs login
Logging in to :pserver:anoncvs@cvs.digium.com:2401/usr/cvsroot
CVS password:
```

(the password is: anoncvs)

```
[root@pbx src]# cvs checkout -r v1-0 zaptel asterisk asterisk-addons
```

If you will be using a Digium telephony card that supports T1/E1 signaling (e.g. TE110P) you will want to additionally checkout libpri. i.e.:

```
[root@pbx src]# cvs checkout -r v1-0 zaptel libpri asterisk asterisk-addons
```

6. Build/Compile zaptel (and libpri)

```
[root@pbx src]# cd zaptel
[root@pbx zaptel]# make && make install
```

If you will be using a Digium telephony card that supports T1/E1 signaling do this step as well:

```
[root@pbx zaptel]# cd ../libpri
[root@pbx libpri]# make && make install
```

7. Patching Asterisk for incoming fax functionality (softfax/spandsp)

Download the latest spandsp files from <http://www.soft-switch.org>; as of this writing:

```
[root@pbx src]# wget ftp://ftp.soft-switch.org/pub/spandsp/spandsp-0.0.2pre18/spandsp-0.0.2pre18.tar.gz
[root@pbx src]# tar xzf spandsp-0.0.2pre18.tar.gz
[root@pbx src]# cd spandsp-0.0.2
[root@pbx spandsp-0.0.2]# ./configure && make && make install
```

Copy the following files (from soft-switch.org) to /usr/src/asterisk/apps and patch Asterisk, i.e.:

```
[root@pbx spandsp-0.0.2]# cd /usr/src/asterisk/apps
[root@pbx apps]# wget ftp://ftp.soft-switch.org/pub/spandsp/spandsp-0.0.2pre18/app_rxfax.c
[root@pbx apps]# wget ftp://ftp.soft-switch.org/pub/spandsp/spandsp-0.0.2pre18/app_txfax.c
[root@pbx apps]# wget ftp://ftp.soft-switch.org/pub/spandsp/spandsp-0.0.2pre18/apps_makefile.patch
[root@pbx apps]# patch < apps_makefile.patch
```

8. Create a group and non-root user

```
[root@pbx apps]# groupadd asterisk
[root@pbx apps]# useradd -c "asterisk PBX" -d /var/lib/asterisk -u 5060 -g asterisk asterisk
```


9. Building/Compiling Asterisk to run as our non-root user

```
[root@pbx apps]# mkdir /var/run/asterisk
[root@pbx apps]# cd /usr/src/asterisk
[root@pbx asterisk]# make clean && make && make install
```

10. Setting up MySQL for CDR (Call Detail Reports)

```
[root@pbx asterisk]# /usr/bin/mysql_install_db
[root@pbx asterisk]# service mysqld start
Starting MySQL: [ OK ]
[root@pbx asterisk]# mysqladmin -u root password 'passw0rd'
[root@pbx asterisk]# mysqladmin create asteriskcdrdb -p
Enter password:
```

(password is what you entered above, i.e.: passw0rd)

```
[root@pbx asterisk]# mysql -u root -p asteriskcdrdb < /
usr/src/AMP/SQL/cdr_mysql_table.sql
```

```
[root@pbx asterisk]# mysql -u root -p
mysql> GRANT ALL PRIVILEGES
-> ON asteriskcdrdb.*
-> TO asteriskuser@localhost
-> IDENTIFIED BY 'amp109';
Query OK, 0 rows affected (0.00 sec)
```

```
mysql> \q
Bye
```

11. Build/Compile cdr_mysql module for Asterisk

```
[root@pbx asterisk]# cd /usr/src/asterisk-addons/
```

Edit the /usr/src/asterisk-addons/Makefile to include “CFLAGS+=-DMYSQL_LOGUNIQUEID”

i.e.:

```
CFLAGS+=-fPIC
```

```
CFLAGS+=-I./asterisk
```

```
CFLAGS+=-D_GNU_SOURCE
```

```
CFLAGS+=-DMYSQL_LOGUNIQUEID
```

```
[root@pbx asterisk-addons]# make clean && make && make install
```

12. Setup MySQL for AMP web interface

```
[root@pbx asterisk-addons]# mysqladmin create asterisk -p
Enter password:
```

```
[root@pbx asterisk-addons]# mysql -u root -p asterisk < /
usr/src/AMP/SQL/newinstall.sql
```

```
[root@pbx asterisk-addons]# mysql -u root -p
Enter password:
```

```
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A
```

```
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 7 to server version: 3.23.58
```

```
Type 'help;' or '\h' for help. Type '\c' to clear the buffer.
```

```
mysql> GRANT ALL PRIVILEGES
-> ON asterisk.*
-> TO asteriskuser@localhost
-> IDENTIFIED BY 'amp109';
Query OK, 0 rows affected (0.00 sec)
```

```
mysql> \q
Bye
```

13. Apply the AMP/Asterisk configuration files

Version 1.10.007 of AMP provides a new configuration file – amportal.conf . This file is populated at install time by values needed by the AMP interface. If your configuration deviates from the default WBEL configuration, or if you chose to use different credentials, you can specify them here so that AMP will function properly.

WARNING! If you have an existing Asterisk installation, the script below will overwrite your Asterisk configuration files. Backup your /etc/asterisk directory before running.

```
[root@pbx asterisk-addons]# cd /usr/src/AMP/
[root@pbx AMP]# ./install_amp
Content-type: text/html
X-Powered-By: PHP/4.3.2

Checking for PEAR DB..OK
Checking for PEAR Console::Getopt..OK
Checking user..OK
Checking for /etc/amportal.conf../etc/amportal.conf does not exist, copying
default
Creating new /etc/amportal.conf
Enter your USERNAME to connect to the 'asterisk' database:
[asteriskuser]
Enter your PASSWORD to connect to the 'asterisk' database:
[amp109]
Enter a USERNAME to connect to the Asterisk Manager interface:
[admin]
Enter a PASSWORD to connect to the Asterisk Manager interface:
[amp111]
Enter the path to your Apache webroot:
[/var/www/html]
Enter the path to your Apache cgi-bin:
[/var/www/cgi-bin]
Enter the IP ADDRESS or hostname used to access the AMP web-admin:
[xx.xx.xx.xx] 192.168.1.3
Enter a PASSWORD to perform call transfers with the Flash Operator Panel:
[passw0rd]
/etc/amportal.conf writtenOK
Reading /etc/amportal.conf..OK
Connecting to database..OK
Checking current version of AMP..1.10.007
Installing new AMP files..OK
Configuring install for your environment..OK
Setting permissions on files..OK
Checking for upgrades..0 found
Generating AMP configs..
Generating extensions_additional.conf..
No extensions defined in extensions
```

```
Generating sip_additional.conf..
No sip accounts defined in sip
Generating zap_additional.conf..
No zap accounts defined in zap
Generating iax_additional.conf..
No iax accounts defined in iax
Generating meetme_additional.conf..
No extensions defined in extensions
Generating queues_additional.conf..
No queues defined in queues
Generating op_buttons_additional.conf..
Notice: no sip accounts defined
Notice: no iax accounts defined
Notice: no zap accounts defined
Notice: no Queues defined
Notice: no sip trunks defined
Notice: no iax trunks defined
Notice: no AMP Users defined
Generating AMP configs..OK
Restarting Flash Operator Panel..op_server.pl: no process killed
OK
Please Reload Asterisk by visiting http://192.168.1.3/admin
```

14. Edit Apache/PHP environment

Edit Apache/PHP to allow for large Music on Hold files

e.g. vi +482 /etc/php.ini

Edit such that the line looks like this:

```
upload_max_filesize = 20M
```

e.g. vi +14 /etc/httpd/conf.d/php.conf

Edit such that the line looks like this:

```
LimitRequestBody 20000000
```

16. Configure zaptel module

a. Edit `/etc/zaptel.conf` to reflect installed Digium telephony card(s).

Only the parameters/values relevant to a TDM400P with 4 FXO modules are included below:

```
fxsks=1-4
loadzone=us
defaultzone=us
```

Only the parameters/values relevant to a TE110P (T1 configuration) are included below:

```
span=1,1,0,esf,b8zs
bchan=1-23
dchan=24
loadzone=us
defaultzone=us
```

b. Run `ztcfg -v`

TDM400P configuration:

```
[root@pbx etc]# ztcfg -v
```

```
Zaptel Configuration
=====
```

```
4 channels configured.
```

```
Notice: Configuration file is /etc/zaptel.conf
line 133: Unable to open master device '/dev/zap/ctl'
```

The “line 133:” warning above is the result of not loading the zaptel module yet. The module gets loaded at boot time (dealt with below) so don't worry about its presence here.

TE110P (T1 configuration):

```
[root@pbx etc]# ztcfg -v
```

```
Zaptel Configuration  
=====
```

```
SPAN 1: ESF/B8ZS Build-out: 0 db (CSU)/0-133 feet (DSX-1)
```

```
24 channels configured.
```

Detailed information with regard to Asterisk's configuration files can be found here:

<http://voip-info.org/wiki-Asterisk+config+files>

17. Configure zapata module

Create `/etc/asterisk/zapata.conf` to reflect installed Digium telephony card(s).

Only the parameters/values relevant to a TDM400P with 4 FXO modules are included below:

```
[channels]  
language=en  
context=from-pstn  
signalling=fxs_ks  
faxdetect=incoming  
usecallerid=yes  
echocancel=yes  
callprogress=no  
busydetect=no  
echocancelwhenbridged=no  
echotraining=800  
group=0  
channel=1-4
```

Only the parameters/values relevant to a TE110P (T1 configuration) are included below:

```
[channels]
language=en
context=from-pstn
switchtype=national
pridialplan=national
signalling=pri_cpe
faxdetect=incoming
usecallerid=yes
echocancel=yes
echocancelwhenbridged=no
echotraining=800
group=0
channel=1-23
```

Note: if your configuration is using zap channels as FXS endpoints, zapata.conf must contain the following line in order to provision these endpoints in AMP's Extensions admin:

```
#include zapata_additional.conf
```

Detailed information with regard to Asterisk's configuration files can be found here:

<http://voip-info.org/wiki-Asterisk+config+files>

18. **Edit web server configuration file**

Edit /etc/httpd/conf/httpd.conf such that:

```
User asterisk
Group asterisk
```

and:

```
#Password protect /var/www/html/admin
<Directory /var/www/html/admin>
AuthType Basic
AuthName "Restricted Area"
AuthUserFile /usr/local/apache/passwd/wwwpasswd
Require user wwwadmin
</Directory>
```

To create the wwwpasswd file:

```
[root@pbx asterisk]# mkdir /usr/local/apache
[root@pbx asterisk]# mkdir /usr/local/apache/passwd
[root@pbx asterisk]# htpasswd -c /usr/local/apache/passwd/wwwpasswd wwwadmin
New password:
Re-type new password:
Adding password for user wwwadmin
```

19. amportal control script

Version 1.10.004 of AMP provided a new control script. The functionality of which is to start, stop or kill services in the AMP environment, or to set permissions on directories/files in the AMP environment:

```
[root@pbx root]# amportal

-----AMP Control Script-----
Usage: amportal start|stop|kill|chown

start: Starts Asterisk and Flash Operator Panel server
stop: Gracefully stops Asterisk and the FOP server
kill: Kills Asterisk and the FOP server
chown: Sets appropriate permissions on files
```

The amportal script is the recommended way to stop and start asterisk:

```
[root@pbx root]# /usr/sbin/amportal stop
[root@pbx root]# /usr/sbin/amportal start
```

20. Automatic start-up

The module/driver that you load at boot time depends upon whether you are using a TDM400P or TE110P. The wcfxs module should be loaded for the former and the wcte11xp module should be loaded for the latter. (In recent Asterisk code the functionality provided by wcfxs is provided in wctdm. At the time of this writing the AMP/Asterisk build does indeed use wcfxs for the TDM400P telephony card.)

Edit /etc/rc.d/rc.local to include the following for the TDM400P:

```
#!/bin/sh
#
# This script will be executed *after* all the other init scripts.
# You can put your own initialization stuff in here if you don't
# want to do the full Sys V style init stuff.

touch /var/lock/subsys/local
echo Loading wcfxs
/sbin/modprobe wcfxs
/usr/sbin/ampportal start
```

Edit /etc/rc.d/rc.local to include the following for the TE110P:

```
#!/bin/sh
#
# This script will be executed *after* all the other init scripts.
# You can put your own initialization stuff in here if you don't
# want to do the full Sys V style init stuff.

touch /var/lock/subsys/local
echo Loading wctellxp
/sbin/modprobe wctellxp
/usr/sbin/ampportal start
```

21. Ensure services are starting at boot time and reboot

In order to access and use AMP we will want both Apache (httpd) and MySQL (mysqld) to be started at boot. You can check to see if they are setup to start at boot by using chkconfig:

```
[root@pbx root]# chkconfig --list | grep httpd
httpd          0:off  1:off  2:off  3:off  4:off  5:off  6:off
[root@pbx root]# chkconfig --list | grep mysqld
mysqld        0:off  1:off  2:off  3:off  4:off  5:off  6:off
```

Here we see that both httpd and mysqld have “off” across the board (runlevels). chkconfig can be used to turn on a particular service but in order to avoid a discussion about runlevels we will use WBEL's “setup” program for this purpose:

```
[root@pbx root]# setup
```

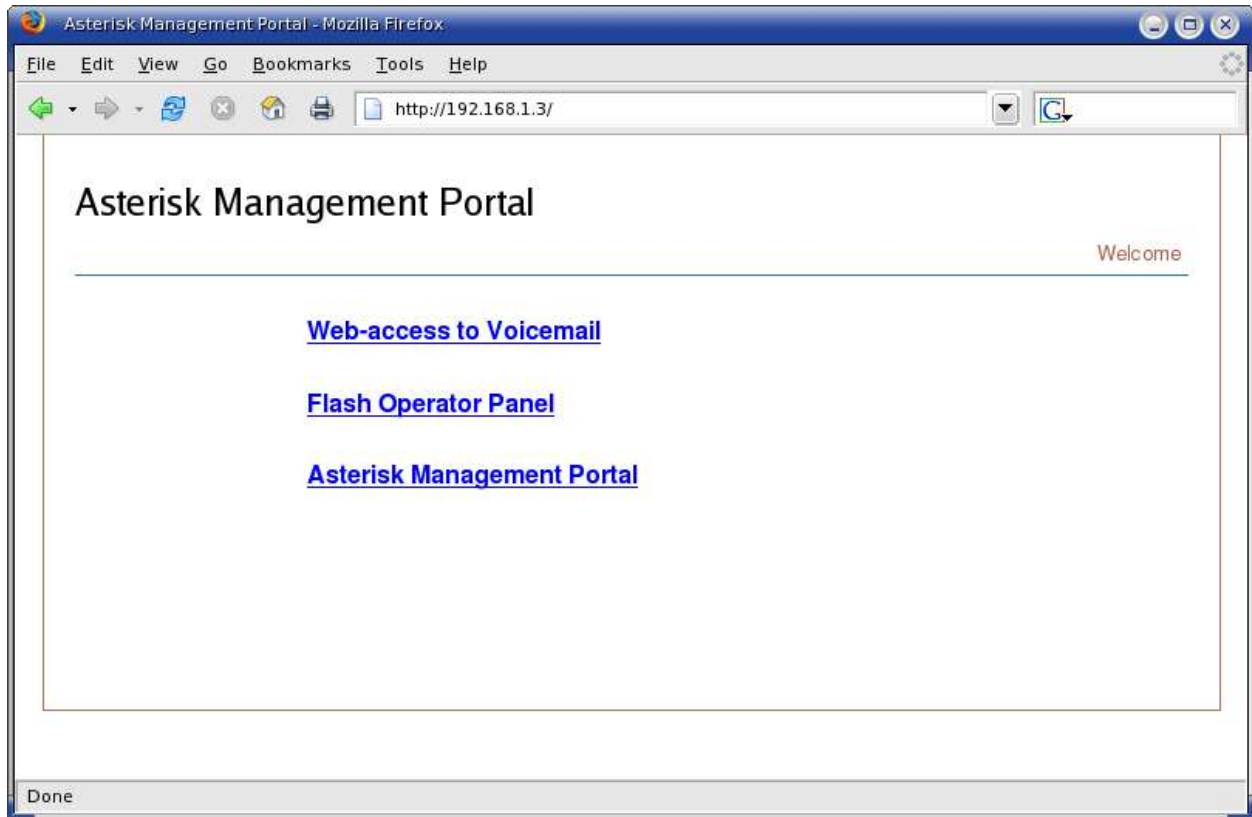
Down-arrow to “System Services”, then hit “Tab” and <Enter> on “Run Tool”. Then down-arrow until you reach “httpd” and press the space bar to select this service to be automatically started at boot time. Down-arrow until you reach “mysqld” and press the space bar to select this service to be automatically started at boot time as well. Then “Tab” and hit <Enter> on “Ok”. Then hit “Tab” and <Enter> on “Quit” to leave the setup program. (If you run the chkconfig

commands above again you will see that the service is now turned on under runlevel 3.)

22. Reboot and access the AMP administration interface

```
[root@pbx root]# reboot
```

Access AMP with your web browser:



The first time you click on the Asterisk Management Portal link you will be prompted for a username and password:



From here you can setup Extensions, Ring Groups, create IVRs (Digital Receptionist), upload custom On Hold Music and view Call Detail Reports.

Please send comments/feedback on this manual to info@coalescentsystems.ca . If you found this documentation helpful please consider making a donation to the AMP (amportal) project:

http://sourceforge.net/project/project_donations.php?group_id=121515

-END-