OpenEMR 2.8.1 Appliance Manual

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[LINK TO MANUAL IN PDF FORMAT](#)

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SECURITY PATCHES: [here](#) (Appendix A.)

OpenEMR 2.8.1 Appliance Manual Table of Contents

Introduction

The clinical benefits of computerized medical records are clear, however, the costs of current proprietary systems are large. This high cost precludes many small practices from transitioning to computerized medical records. Open Source medical record systems are quickly becoming a viable, cost effective alternative. Comprehensive open source medical practice management software suites consist of several independent software packages, which can make them more difficult to install/evaluate than their proprietary counterparts. This obstacle can easily be circumvented with a pre-installed Appliance.

The goal of this project was to build a comprehensive Open Source Medical Practice Management Software Appliance, which provides office scheduling, electronic medical records, prescriptions, insurance billing, accounting, inventory, and access controls. This appliance will have many possible applications, such as a fully functional demo, a testing/developing platform, and as the starting point in real world clinic applications. It can be run on any operating system that supports the *VMware Player*. The detailed building instructions of this appliance are also included in this manual, which will allow easy modification/updates of appliance and will allow simple transition to a native server, if required.

OpenEMR is installed, along with FreeB, SQL-Ledger, and php-GACL. They are installed on the Mandriva2006 operating system. OpenEMR is the practice management software. FreeB is the insurance billing/printing software. SQL-Ledger is the accounting software. Php-GACL is the access control software.

This manual contains instructions on downloading, starting, and using the OpenEMR Appliance, OpenEMR user manual web links, helpful tips on OpenEMR use, instructions for configuration of the Appliance, and full detailed instructions on how the Appliance was built.

The *Download the OpenEMR Appliance and VMware Player* chapter contains how and where to download software from.

The *Start the OpenEMR Appliance* chapter contains information on starting the OpenEMR Appliance.

The *Using the OpenEMR Appliance* chapter contains information on how to use the OpenEMR Appliance, web links to User Manuals, helpful tips, and all the login names and passwords that will be needed while using the appliance.

The *Configuration of the OpenEMR Appliance* chapter describes how to set up a printer, an email server, and an automated backup scheme which

incorporates encryption.

The *Instructions for Building the OpenEMR Appliance* chapter describes in detail how this Appliance was built.

Online Demo

Main TOC Link

Here's an online demo of the OpenEMR 2.8.1 appliance:
https://OpenSourceEMR.com:2083/openemr/   (Main OpenEMR program)

https://OpenSourceEMR.com:2083/sql-ledger/   (Sql-Ledger accounting)
https://OpenSourceEMR.com:2083/phpgacl/admin   (php-GACL access controls)

This is a fully functional demo, which allows you to play around with all the software packages in the appliance. It uses all the same logins and passwords as the appliance(refer to 'Login Name and Password' section). Some simple configuration has been added for clearer demonstration of OpenEMR, Sql-Ledger, FreeB, and php-GACL. OpenEMR users were added to demonstrate the access controls:

-**Login name**------**Password**---------**Description**
1. admin_____pass_____Administrator
2. physician_____physician_____Physician(more access than clinician)
3. clinician_____clinician_____Clinician(less access than physician)
4. accountant_____accountant_____Accountant
5. receptionist_____receptionist_____Front desk receptionist

Don't worry about breaking it, because it resets itself to its original state every day at midnight(Pacific Time). Have fun. (If demo is not working email me at brady@sparmy.com)

Download the OpenEMR Appliance and VMware Player

Main TOC Link

1. Download and install the FREE VMware Player at:
   http://www.vmware.com/products/player/

2. Download the FREE OpenEMR Appliance. The file is 984.2 MB, and will

extract to 3 GB.

1. You can download Appliance via Direct Download or Torrent:

    1. Direct Download from Sourceforge:
       http://sourceforge.net/project/showfiles.php?group_id=167832

    2. Torrent file link: http://www.bradymd.com/OpenEMR-2-8-1-Appliance-1.torrent (If need a torrent software client, then try: http://azureus.sourceforge.net/)

Start the OpenEMR Appliance

Windows

1. Unpackage the OpenEMR-2-8-1-Appliance-1.tgz file (Use WinZip, WinRAR, or 7-Zip).

2. Run VMware Player.

3. Start up the OpenEMR Appliance by opening the OpenEMR-2-8-1-Appliance-1.vmx file in the VMware Player.

4. If this is your first time starting the OpenEMR Appliance, then a window will pop up explaining some nonsense about the changing location of a configuration file. Just click 'Create'.

5. Several windows will pop up explaining that /dev/hdc, /dev/hdd, and sound drivers are not gonna work. Just click 'ok' several times and continue.

6. Mandriva will now boot up, just give it some time. After boot up you will see the following login screen:
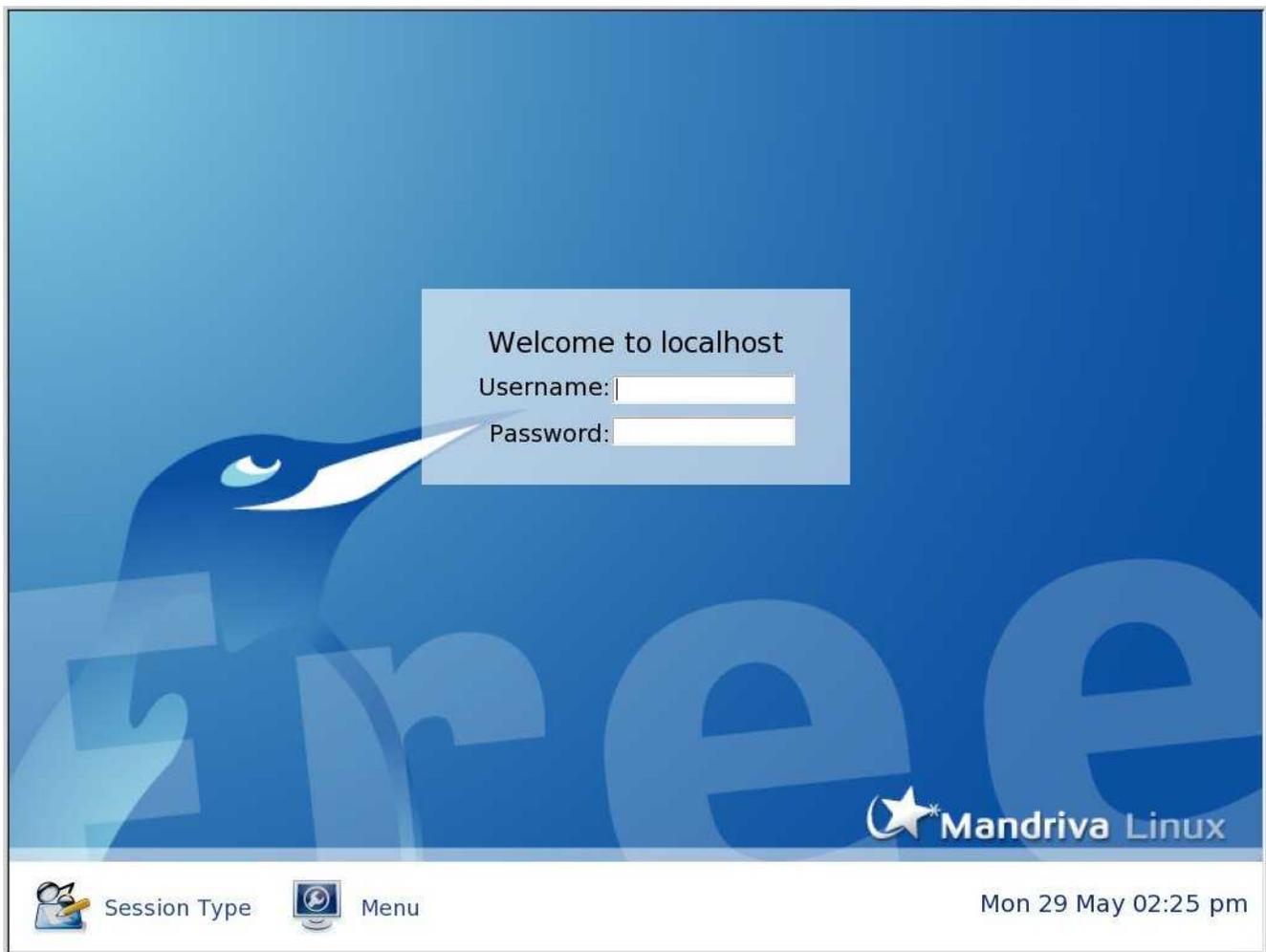
This is the login screen. To log in, proceed to the 'Log In to Appliance'
section below.

## Linux

1. Unpackage the OpenEMR-2-8-1-Appliance-1.tgz file.

2. Run VMware Player.

3. Start the OpenEMR appliance by opening the OpenEMR-2-8-1-Appliance-1.vmx file in the VMware Player.

4. If this is your first time starting the OpenEMR Appliance, then the below window will pop up:

The location of this virtual machine's configuration file has changed since it was last powered on.

If the virtual machine has been copied, you should create a new unique identifier (UUID). If it has been moved, you should keep its old identifier.

If you are not sure, create a new identifier.

What do you want to do?

Keep   Always Create   Always Keep   ✗ Cancel   Create

You will only see this window the first time you start the appliance. Click 'Create'.

5. Several windows may pop up explaining that /dev/hdc, /dev/hdd, and/or sound drivers are not gonna work. Just click 'ok' several times and continue.

6. Mandriva will now boot up, just give it some time. After boot up you will see the following login screen:

This is the login screen. To log in, proceed to the '' section below.

Using the OpenEMR Appliance

Main TOC Link

Log In to Appliance

Main TOC Link

1. The first time you use the appliance, you will login with user 'openemr' and password 'openemr'. You will be forced to change the password during your first login (detailed instructions below):
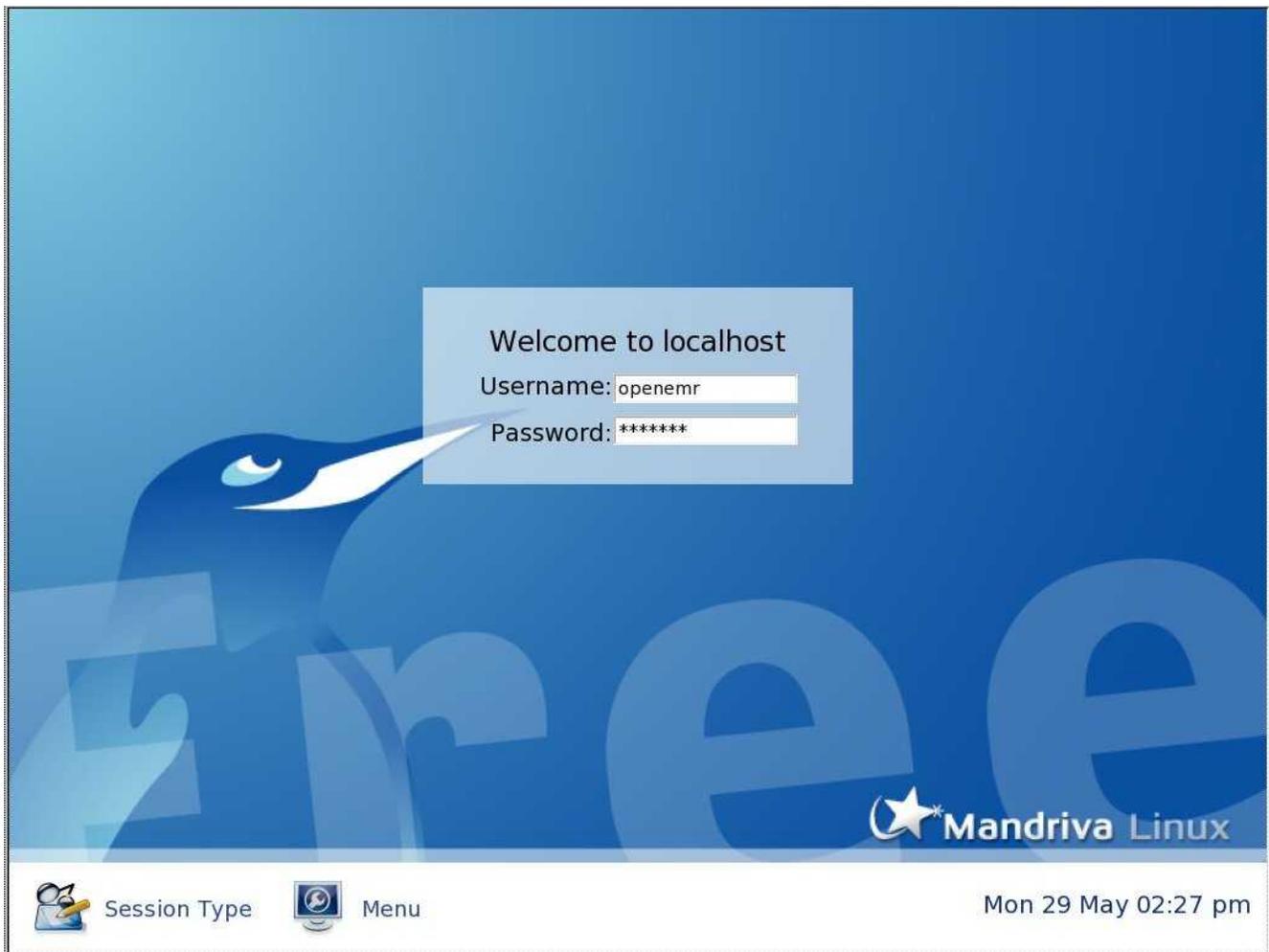
Enter 'Username' -> 'openemr'. Enter 'Password' -> 'openemr'(NOTE that this password will be changed after your first login). When done, hit the ENTER key.

If this is your first login, then you will be prompted to change your password:

Click 'OK'.

Enter and confirm a new password. This will be your new 'openemr' user password. **REMEMBER** this password!
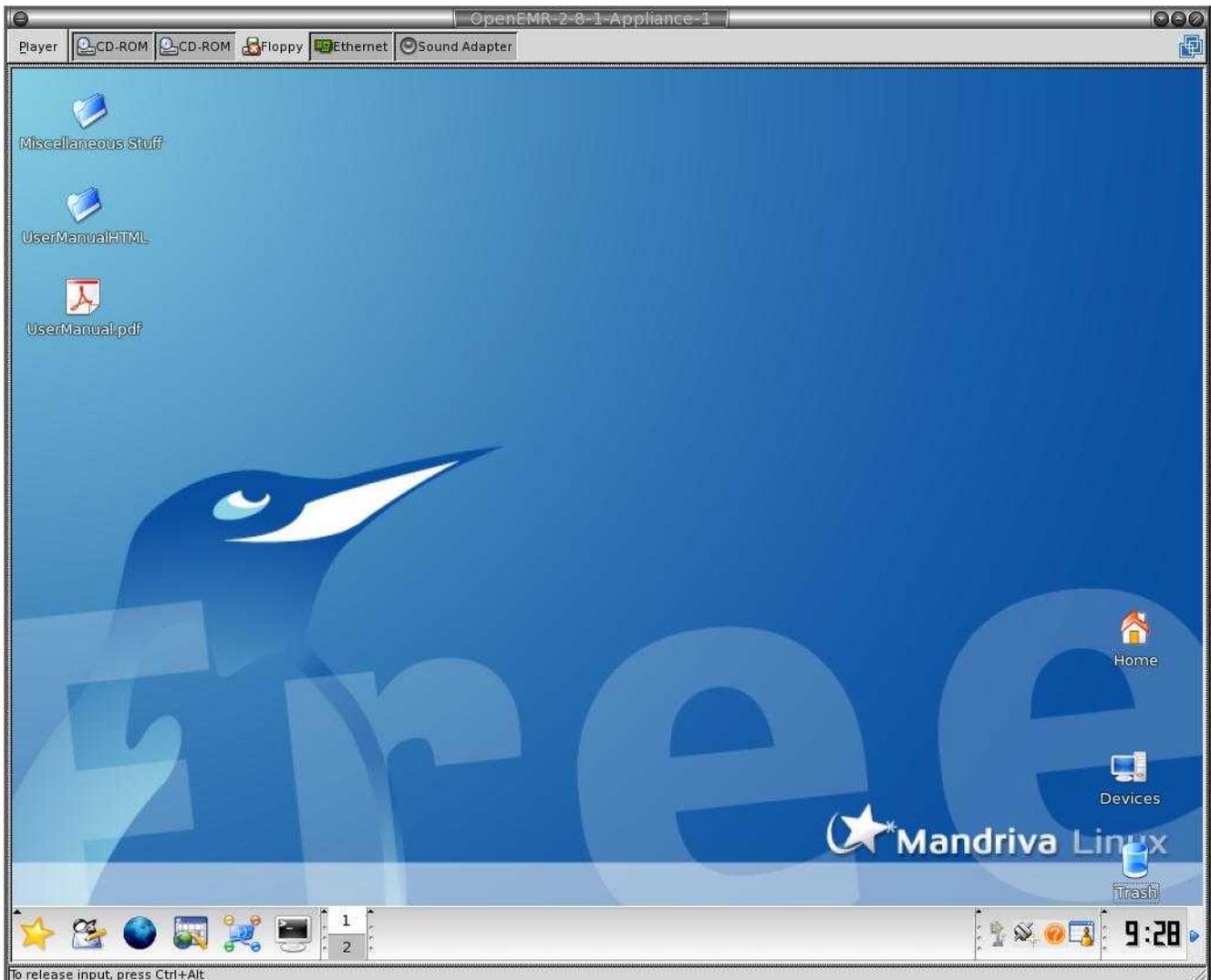
Congratulations. You successfully logged in.

Using OpenEMR in Appliance

1. Use OpenEMR with the user name 'admin' and default password 'pass' via web browser at: https://localhost/openemr
2. Use SQL-Ledger with the user name 'openemr' and password 'openemr' via web browser at: https://localhost/sql-ledger
3. Use php-GACL with user name 'admin' and password 'admin' via web browser at: https://localhost/phpgacl/admin
4. Note that the full list of application login names and passwords can be found in the 'Login Name and Password' section below.

Using OpenEMR from another/virtual computer

1. Networking with the Virtual computer over a LAN. You can get the current IP address thru Mandriva settings, and then use that IP address as the web address on another computers(including virtual) web browser.
   1. First, get your virtual server IP address:
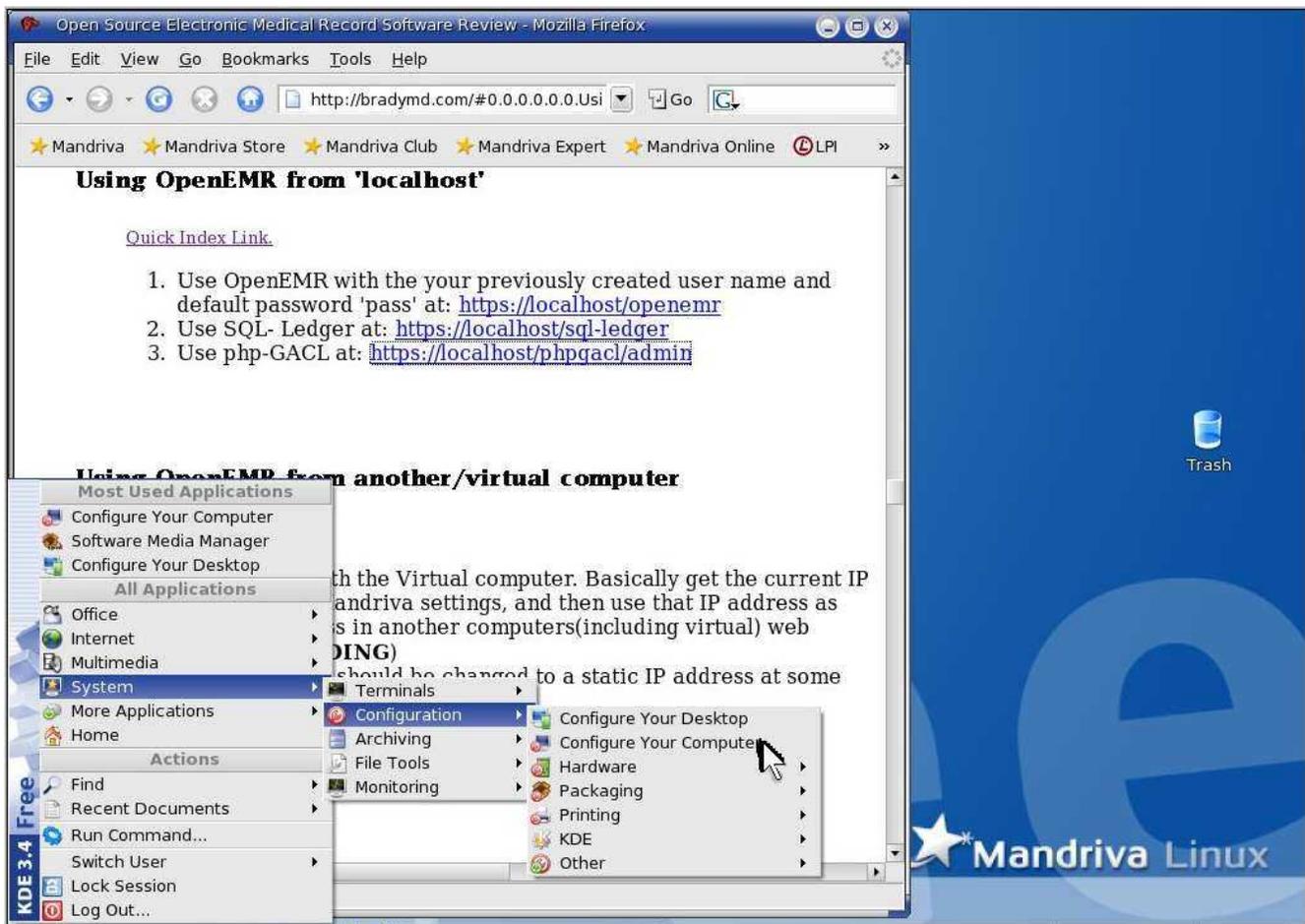
Click 'System' -> 'Configuration' -> 'Configure Your Computer'.

Enter 'root' user password. Then click 'OK'.

IMPORTANT, if you have not created a new 'root' user password, you need to proceed to Appendix B. 'Change Mandriva's expired 'root' user password' **NOW**. (The default 'root' password is expired and will no longer work) When your done updating the password, then

type your new password here.
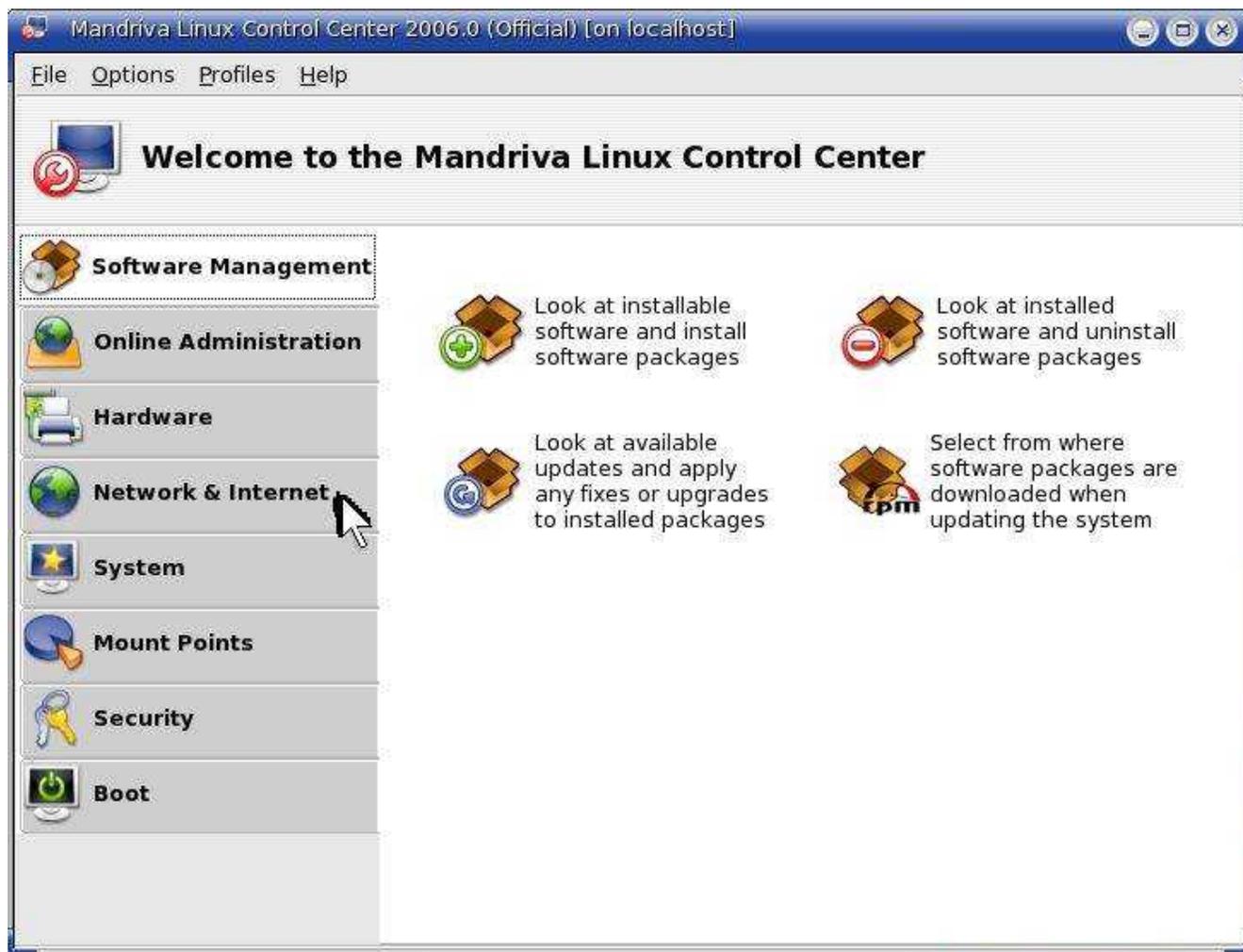
Click 'Network & Internet'.
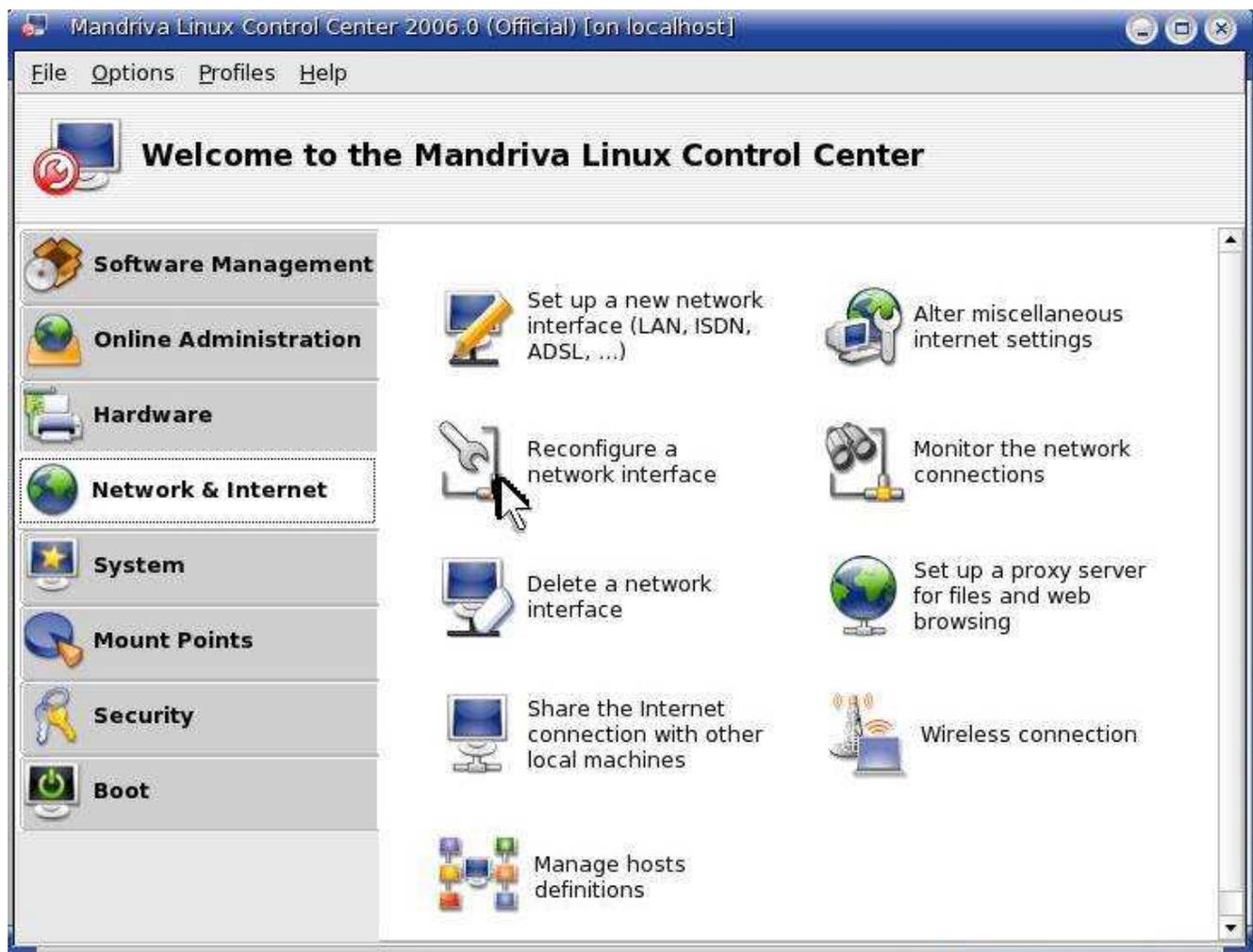
Click 'Reconfigure a network interface'.
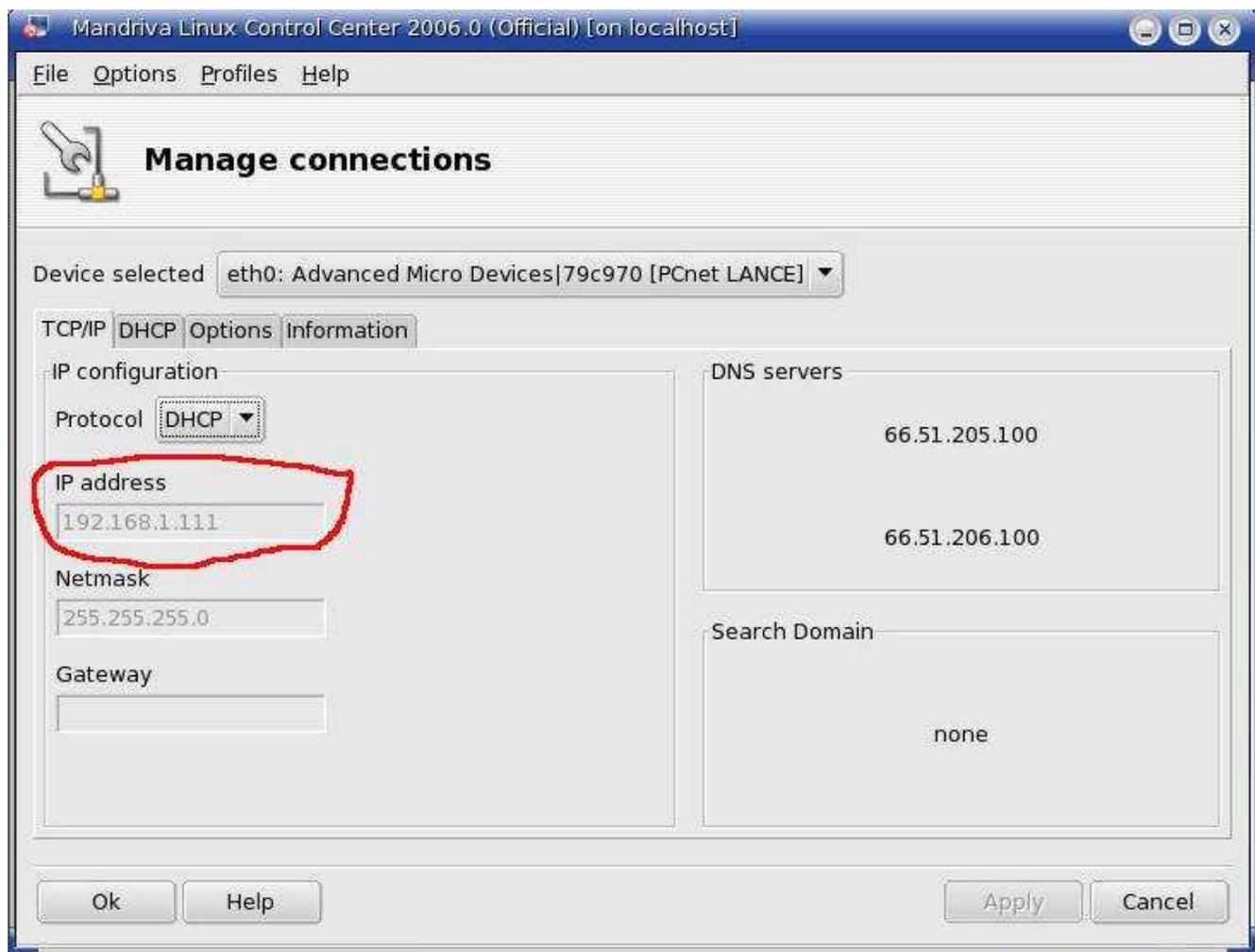
The circled number above is your *Your_Current_IP_address*.

2. Then you can use below links to connect to your virtual server
   1. OpenEMR at https://*Your_Current_IP_address*/openemr
   2. SQL-Ledger at https://*Your_Current_IP_address*/sql-ledger
   3. php-GACL at https://*Your_Current_IP_address*/phpgacl/admin
   4. For the list of application login names and passwords go to the '[Login Name and Password](#)' section below.

2. You can also change your IP address to a static one, so it doesn't change after your virtual server is turned off or re-started. I'm out of time, so can't go thru it. You'll have to Google this one (Quickly, it can be changed in above window by clicking on the Protocol toggle and selecting static, then you can choose an IP address. However, you then need to type in DNS servers and you need to ensure your router does not assign any other computers your chosen static IP address)

OpenEMR User Training

1. There is an excellent web site for learning how to use all of the components of OpenEMR at: http://www.sunsetsystems.com/node/8
2. The above link is also mirrored at the following wiki site, which means it could theoretically contain updates: http://www.oemr.org/modules/cjaycontent/index.php?id=2
3. There is also an older user manual in the /var/www/html/openemr/Documentation directory which can be helpful.
4. You can ask question at the SourceForge OpenEMR forum at: http://sourceforge.net/forum/?group_id=60081
5. The OpenEMR home page is here with a wiki: http://www.oemr.org/
6. The most current version of this appliance user manual will hopefully always be available at: http://www.bradymd.com/appliance

Helpful Tips

1. **NEED** to mark bills as 'cleared' (even after hfca processing) on the billing menu to send data to sql-ledger.
2. N**EED** to leave the the 'Prior Authorization Form' installed and **disabled** for the hfca form printing to work.
3. **NEED** to also create your new OpenEMR users in php-GACL or strange things will happen. (I refer you to above OpenEMR User Training section on how to do this.)
4. **NEED** to ensure clock is set correctly (Virtual computer time should not differ from the host computers, or there will be cron scheduling and sql-ledger problems)
5. **NEED** to ensure your provider is authorized or you won't be able to send bills to sql-ledger. It's confusing because there are two different separate authorization options. Screenshots below go thru the process:

Click 'Administration'.

File   Edit   View   Go   Bookmarks   Tools   Help

http://192.168.1.113/openemr/interface/usergroup/usergroup.php   ▼   Ⓞ Go   Ⓖ

| Users & Groups | Forms | Practice | Calendar | Database | BatchCom | Language | Logs | Back |

Logged in: Administrator   **Mon March 20th 2006**

User & Group Administration

New Facility Information: Name: [_____]   Phone: [_____]
                               Address: [_____]   City: [_____]
                               State: [_____]   Zip Code: [_____]
                               Country: [_____]   Federal EIN: [_____]
                               [Add Facility]

Edit Facilities: Your Clinic Name Here(Edit)

New User: Username: [_____]   Password: [_____]
               Groupname: [Healthy Choice ▼]   Authorized: ☐
               First Name: [_____]   Middle Name: [_____]
               Last Name: [_____]   Default Facility: [Your Clinic Name Here ▼]
               Federal Tax ID: [_____]   Federal Drug ID: [_____]
               UPIN: [_____]   See Authorizations: [None ▼]
               Additional Info:
               [_____]
               [Add User]

New Group: Groupname: [_____]   Initial User: [admin ▼]   [Add Group]

Add User To Group: User: [admin ▼]   Groupname: [Healthy Choice ▼]   [Add User To Group]

Username Real Name Info Authorized?
admin(Edit) Administrator   yes

Healthy Choice
admin(Remove)

Click 'edit' for the user.

Ensure the 'Authorized:' toggle is on. Ensure the 'See Authorizations:' is set to 'All' or 'only mine'. Then click 'Save Changes'.

List of Login Names and Passwords

1. Mandriva2006 user -> user: 'openemr' password: 'openemr' (this password will be changed during first login)
2. Mandriva2006 admin -> user: 'root' password: 'rootroot' (this password will be changed by user also)
3. OpenEMR -> user: 'admin' password: 'pass'
4. SQL-Ledger user -> user: 'openemr' password: 'openemr'
5. SQL-Ledger admin -> password: 'admin'
6. php-GACL -> user: 'admin' password: 'admin'
7. PostgreSQL -> user: 'sql-ledger' password: 'sqlledger'
8. MySQL user -> user: 'openemr' password: 'openemr'
9. MySQL admin -> user: 'root' NO PASSWORD

Configuration of the OpenEMR Appliance

Printer Setup

1. For USB printers, you will need to connect the device by clicking on printer on top of window. Your host computer may no longer be able to see the printer after this step(not permanent, but can be a pain).


In my case I click on the 'Hewlett-Packard...' button at top of VMware window.

This is just to demonstrate that the 'Hewlett-Packard...' button is now shaded.

2. Then install software and printer via Mandriva Control Center, which will first install CUPS, and then look for printers. If your lucky, Mandriva will see your printer.

Click 'System' -> 'Configuration' -> 'Configure Your Computer'.

Enter 'root' user password. Then click 'OK'.

IMPORTANT, if you have not created a new 'root' user password, you need to proceed to Appendix A. 'Change Mandriva's expired 'root' user password' **NOW**. (The default 'root' password is expired and will no longer work) When your done updating the password, then

type your new password here.

Click 'Hardware'

Mandriva Linux Control Center 2006.0 (Official) [on localhost]

File   Options   Profiles   Help

Welcome to the Mandriva Linux Control Center

Software Management

Online Administration

Hardware

Network & Internet

System

Mount Points

Security

Boot

Look at and configure the hardware

Configure your monitor

Change the screen resolution

Set up TV card

Set up the keyboard layout

Set up the pointer device (mouse, touchpad)

Set up the printer (s), the print job queues, ...

Set up scanner

Click 'Set up the printer(s)...'.

Printerdrake

There are no printers found which are directly connected to your machine (Make sure that all your printers are connected and turned on).

Do you want to enable printing on printers in the local network?

NOTE: Depending on the printer model and the printing system up to 80 MB of additional software will be installed.

Yes   Quit

Click 'Yes'.

Local CUPS printing system or remote CUPS server?

The CUPS printing system can be used in two ways:

1. The CUPS printing system can run locally. Then locally connected printers can be used and remote printers on other CUPS servers in the same network are automatically discovered. Disadvantage of this approach is, that more resources on the local machine are needed: Additional software packages need to be installed, the CUPS daemon has to run in the background and needs some memory, and the IPP port (port 631) is opened.

2. All printing requests are immediately sent to a remote CUPS server. Here local resource occupation is reduced to a minimum. No CUPS daemon is started or port opened, no software infrastructure for setting up local print queues is installed, so less memory and disk space is used. Disadvantage is that it is not possible to define local printers then and if the specified server is down it cannot be printed at all from this machine.

How should CUPS be set up on your machine?

○ Local CUPS printing system

○ Remote server, specify Name or IP here:

[   ]

[Ok]   [Cancel]

Select 'Local CUPS printing system'. Then click 'Ok'.

You are about to install the printing system CUPS on a system running in the high security level.

This printing system runs a daemon (background process) which waits for print jobs and handles them. This daemon is also accessible by remote machines through the network and so it is a possible point for attacks. Therefore only a few selected daemons are started by default in this security level.

Do you really want to configure printing on this machine?

Yes   No

Click 'Yes'.

Just twiddle your thumbs and wait, it takes a while.

Click 'Add Printer'.

Add a new printer

Welcome to the Printer Setup Wizard

This wizard will help you to install your printer(s) connected to this computer, connected directly to the network or to a remote Windows machine.

Please plug in and turn on all printers connected to this machine so that it/they can be auto-detected. Also your network printer(s) and your Windows machines must be connected and turned on.

Note that auto-detecting printers on the network takes longer than the auto-detection of only the printers connected to this machine. So turn off the auto-

✖ Auto-detect printers connected to this machine

✖ Auto-detect printers connected directly to the local network

Cancel   Next

Select both auto-detect options. Then Click 'Next'.

No big deal. Close the windows and we will install the printer below thru CUPS.

3. If the above step found your printer, then you can skip to the section below which will have you place the name of the printer into the openemr config file (this will allow printing while creating billing forms via freeb). If Mandriva can't find the printer, don't worry, we will install it via CUPS directly at: http://localhost:631/
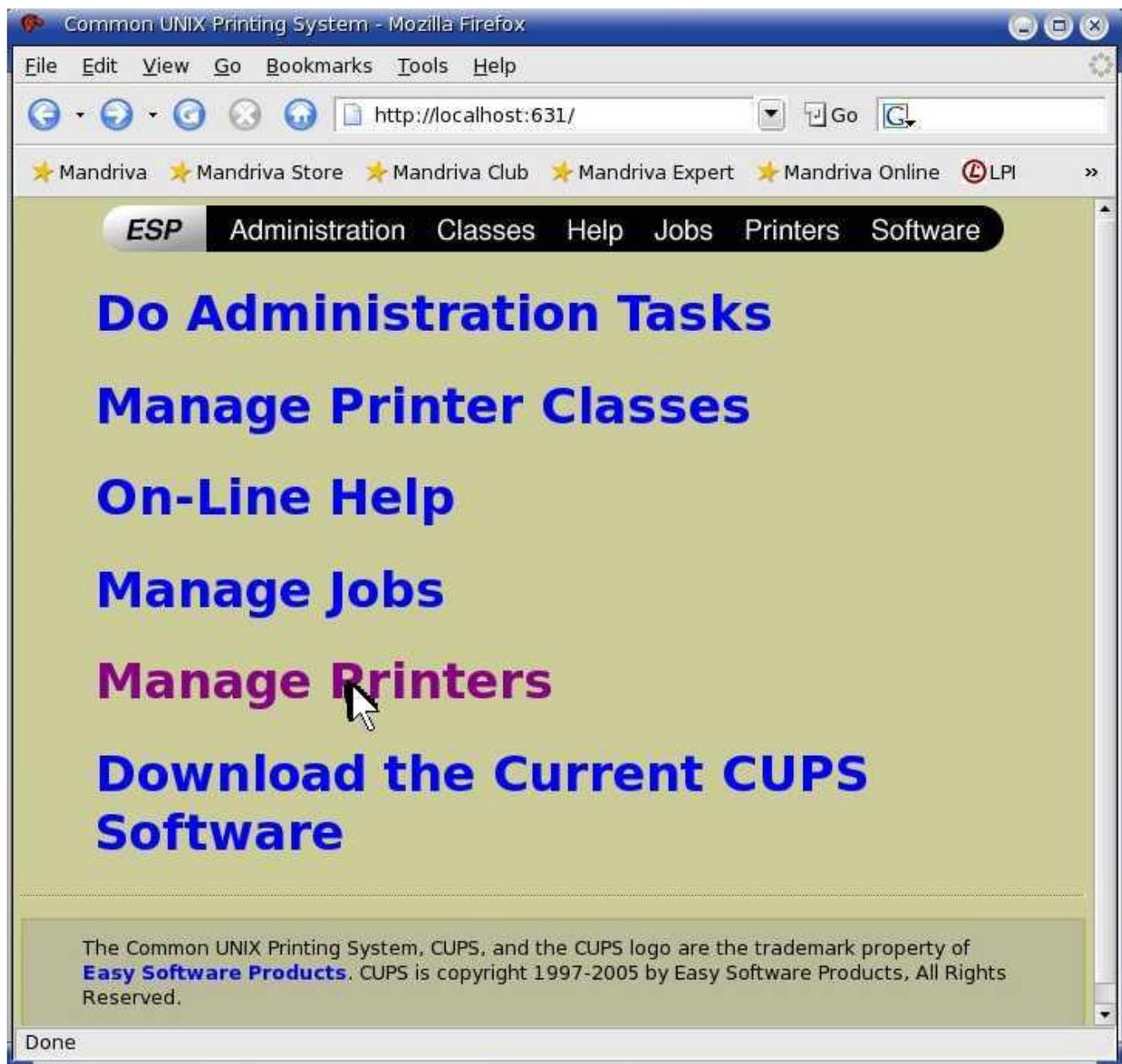
Click 'Manage Printers'.
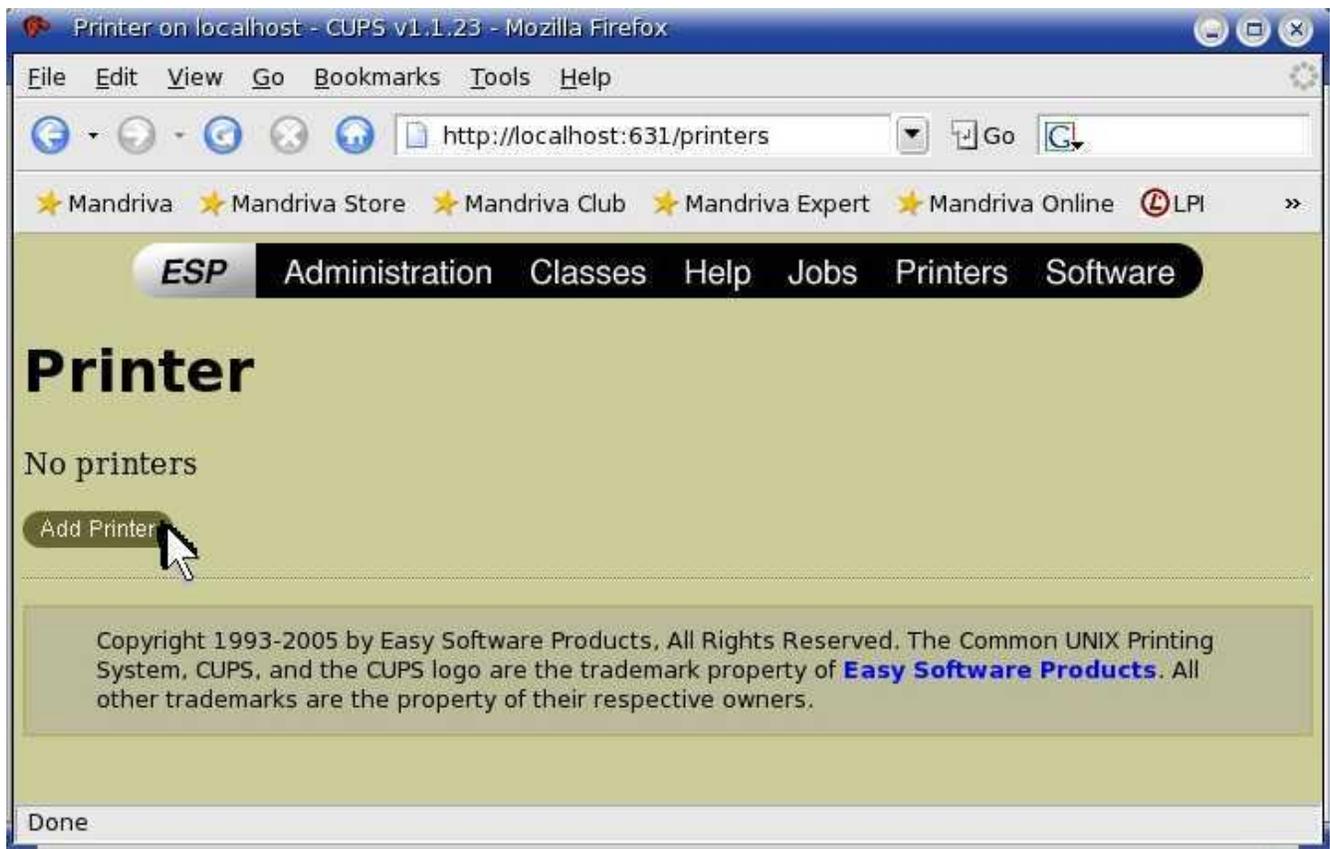
Click 'Add Printer'.

Enter 'User Name' -> 'root'. Enter the root password. Then click 'OK'.
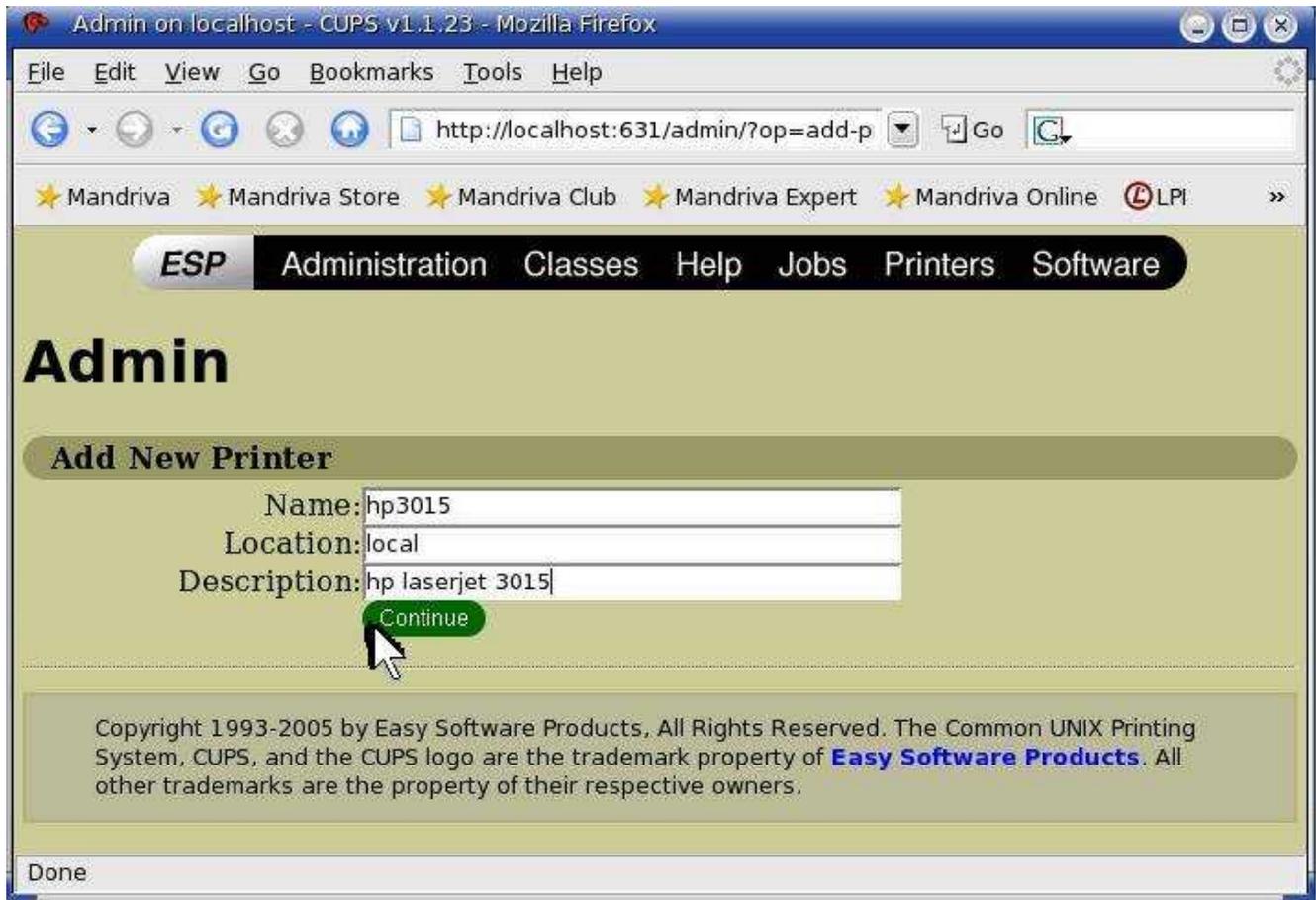
Fill in form, and then click 'Continue'. The only important field is the 'Name'. This will be used later when configuring printer for freeb/openemr.
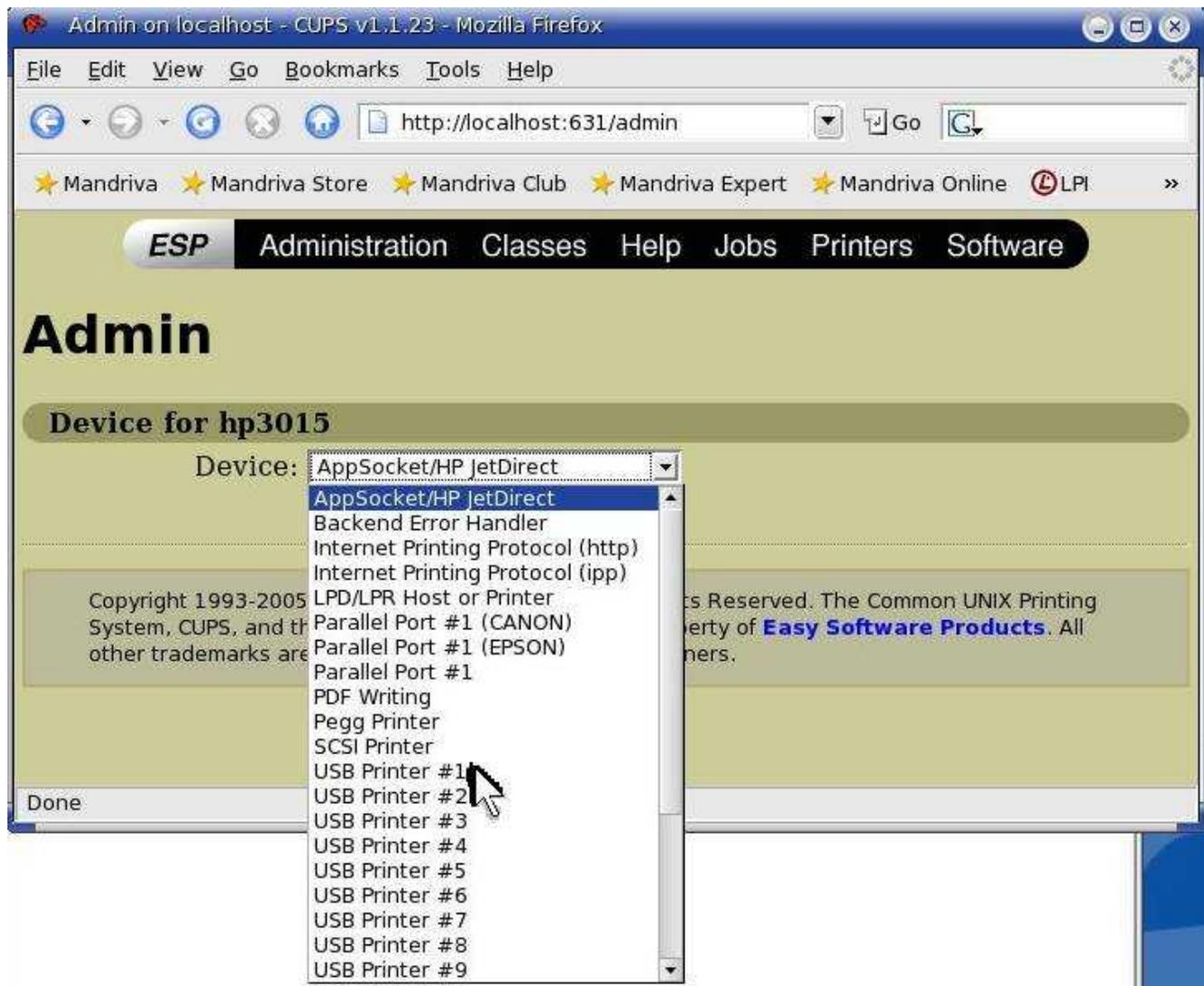
In my case I am selecting the 'USB Printer #1'. If your using a USB printer, this will likely work.

Click 'Continue'.
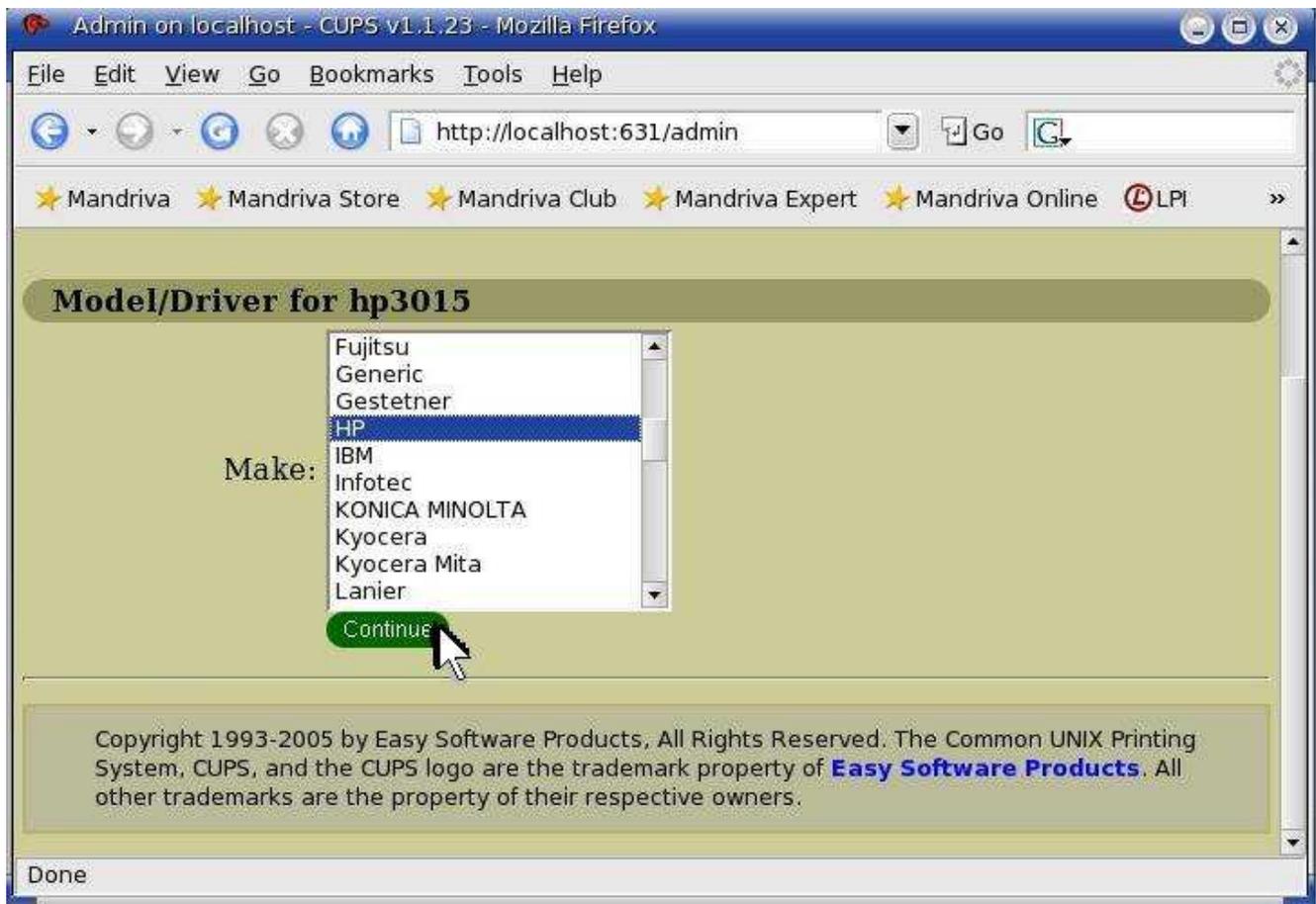
Select the make of your printer. Then click 'Continue'.
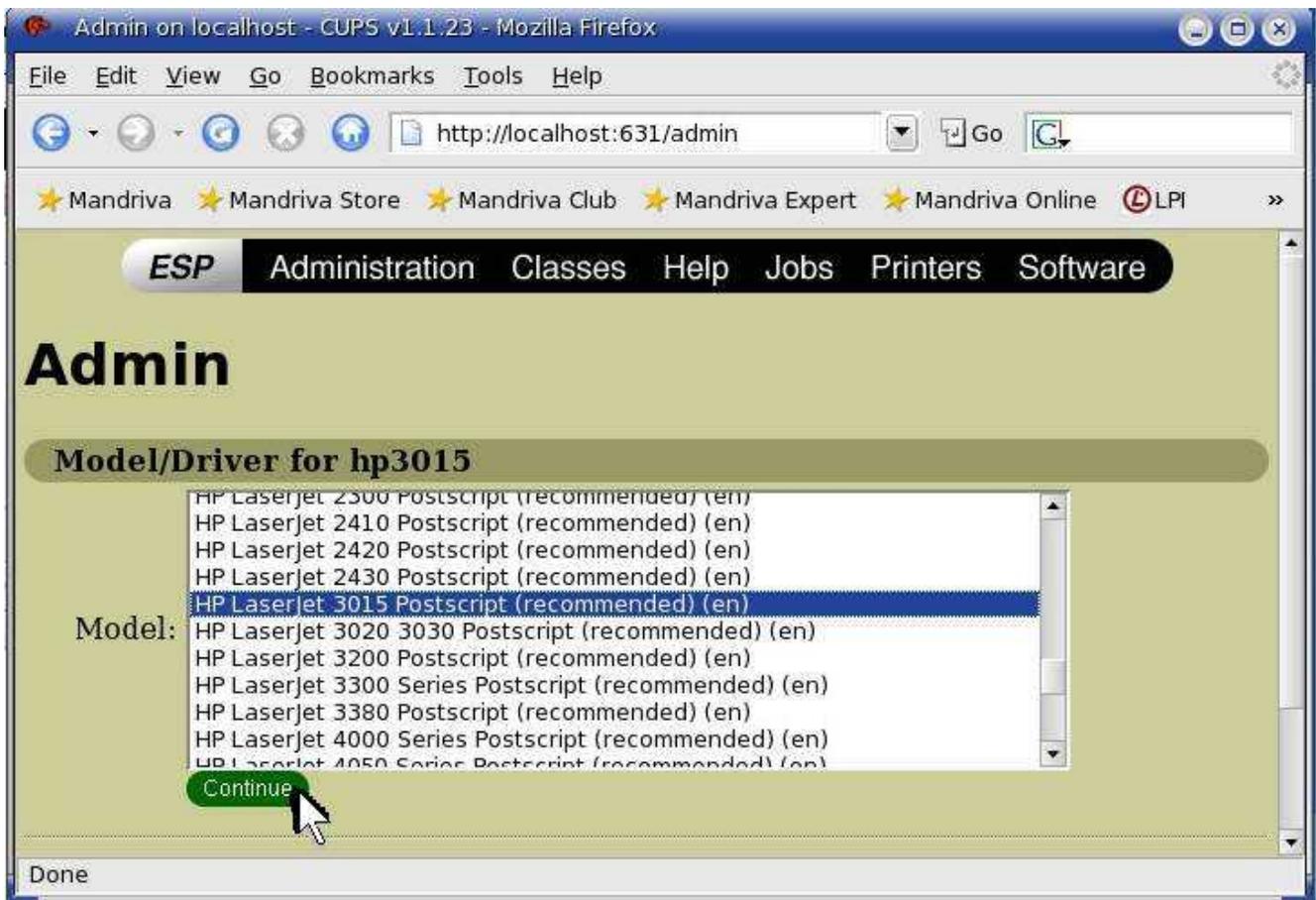
Select the model of your printer. Then click 'Continue'.
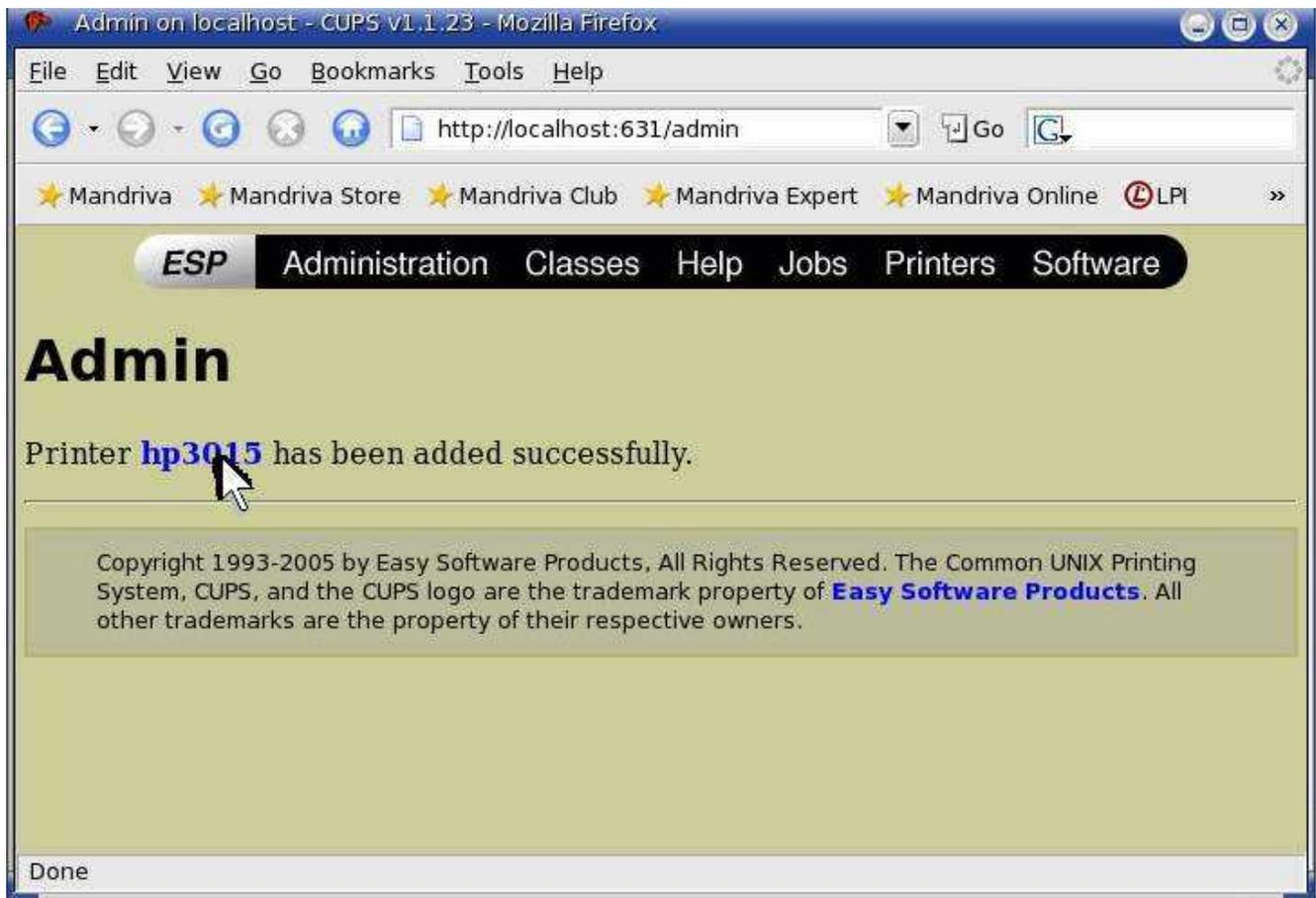
It Worked!! Click printer name to see more specifics on your newly added printer.

Done installing printer. I'd rec. testing it with 'Print Test Page'.

4. Confirm that your printer is seen by Mandriva and get your printer name:
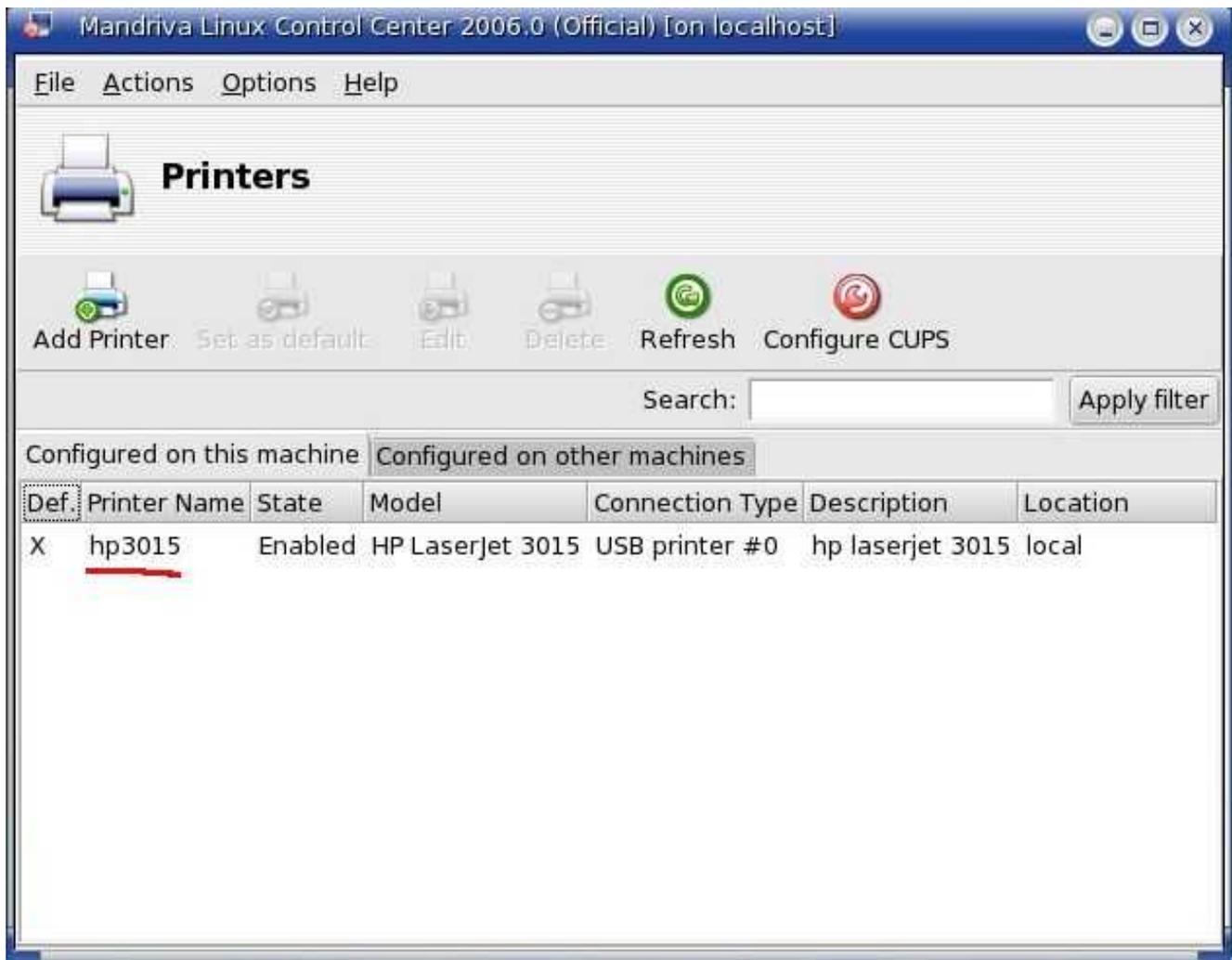
Your printer name is underlined with red line. This will be typed into the
below freeb/openemr configuration file.

5. Enter below **bolded** instructions on command line as root user:

#log into root
su

#edit file /var/www/html/openemr/includes/config.php:
mcedit /var/www/html/openemr/includes/config.php
#change **bolded** variable to the **name** of your **printer**
$GLOBALS['oer_config']['freeb']['printer_name'] =
"YourPrinterName";
TEXT EDITOR SAVE AND EXIT

Email Server Setup

1. This will allow only locally produced emails (such as "status" emails during the below 'backup script', or emails originating from OpenEMR) to be sent over the internet.

2. Need to update a package called 'msec' if you want to avoid an error email every minute(not exaggerating)
   1. Enter below **bolded** instructions on command line as root user:

      #log into root
      su

      #Start MandrivaUpdate
      MandrivaUpdate

Click 'Yes'.

Click 'Yes'.
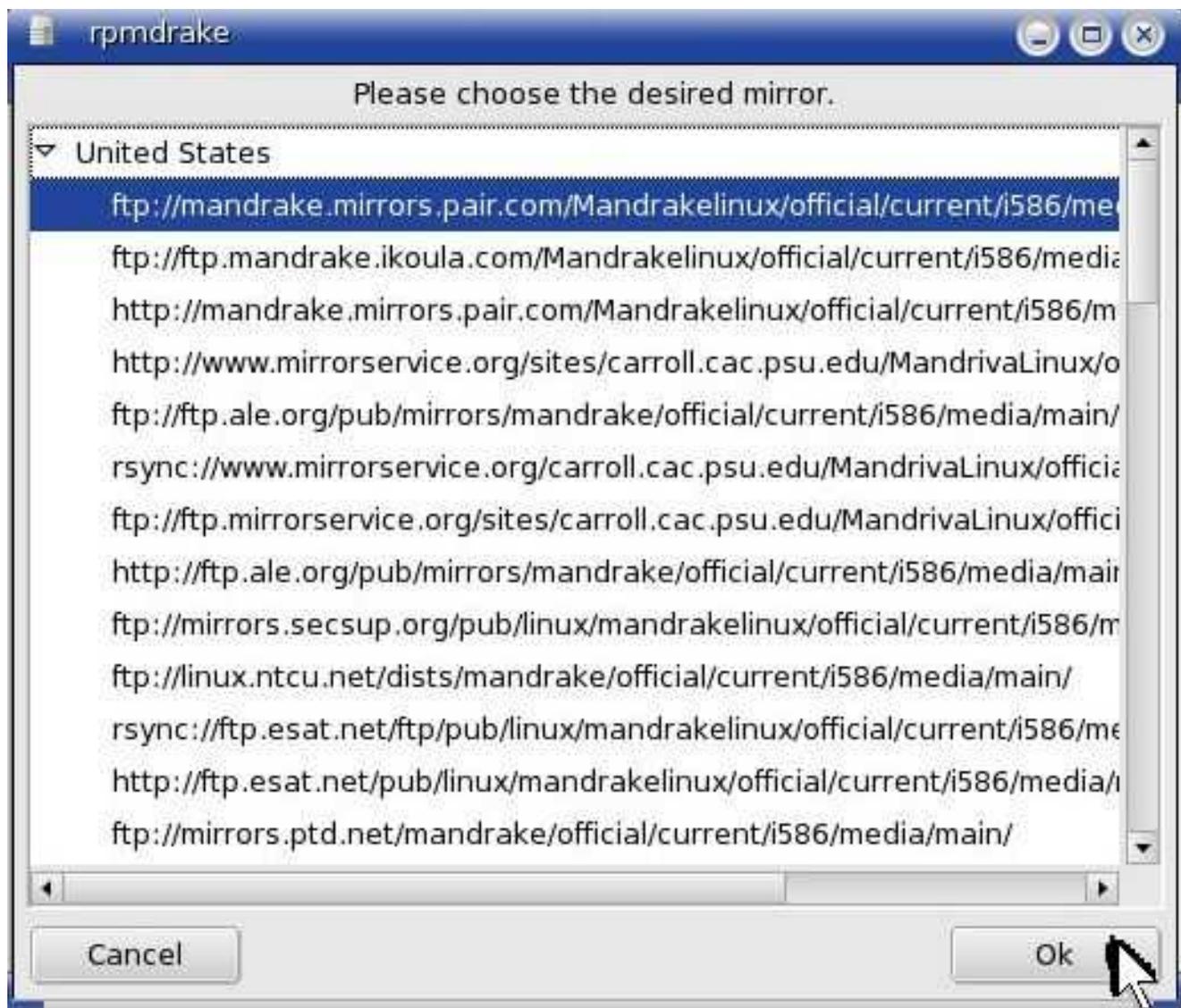
Click 'Ok'. (just select the default mirror)
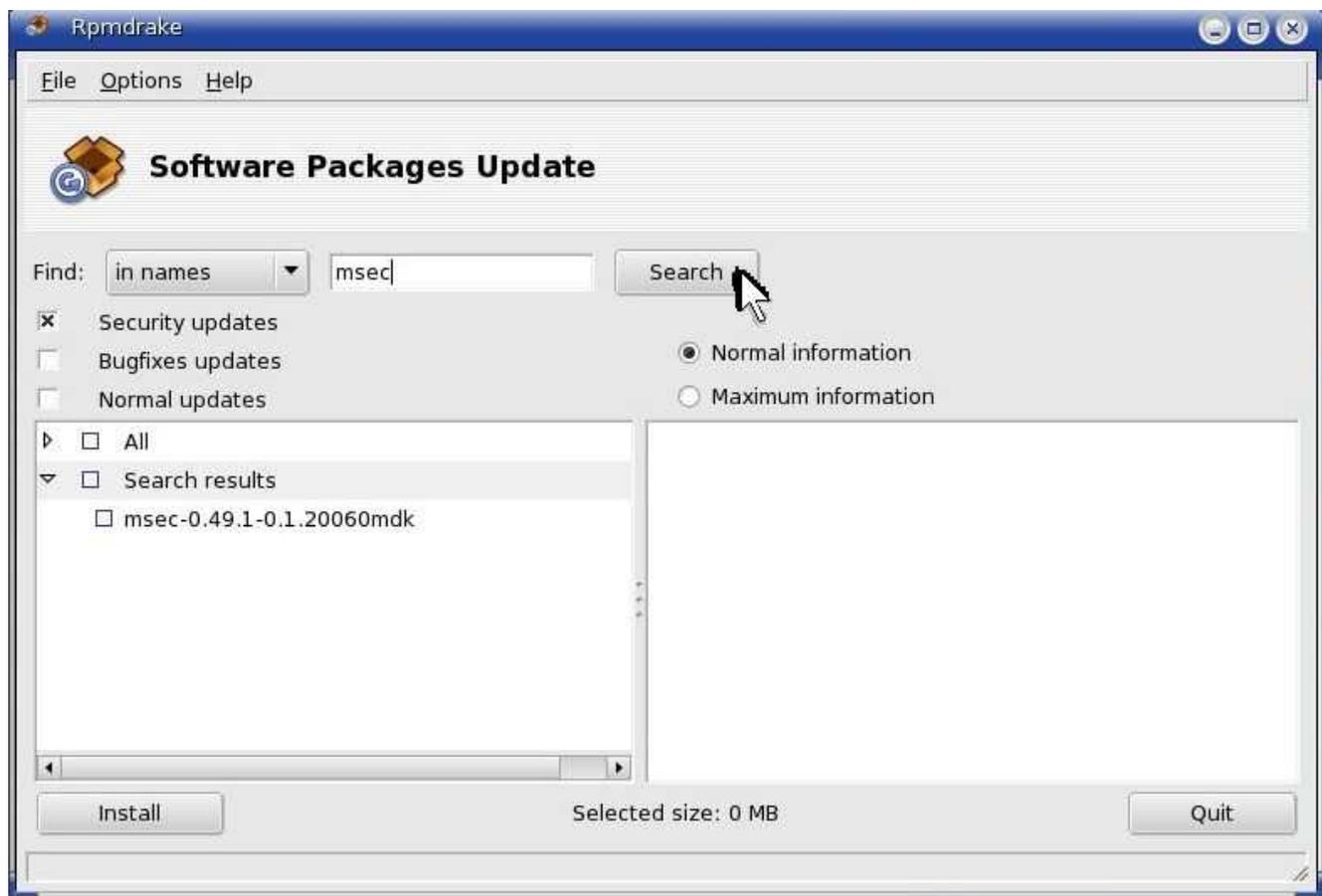
Type 'msec' and click 'Search'.
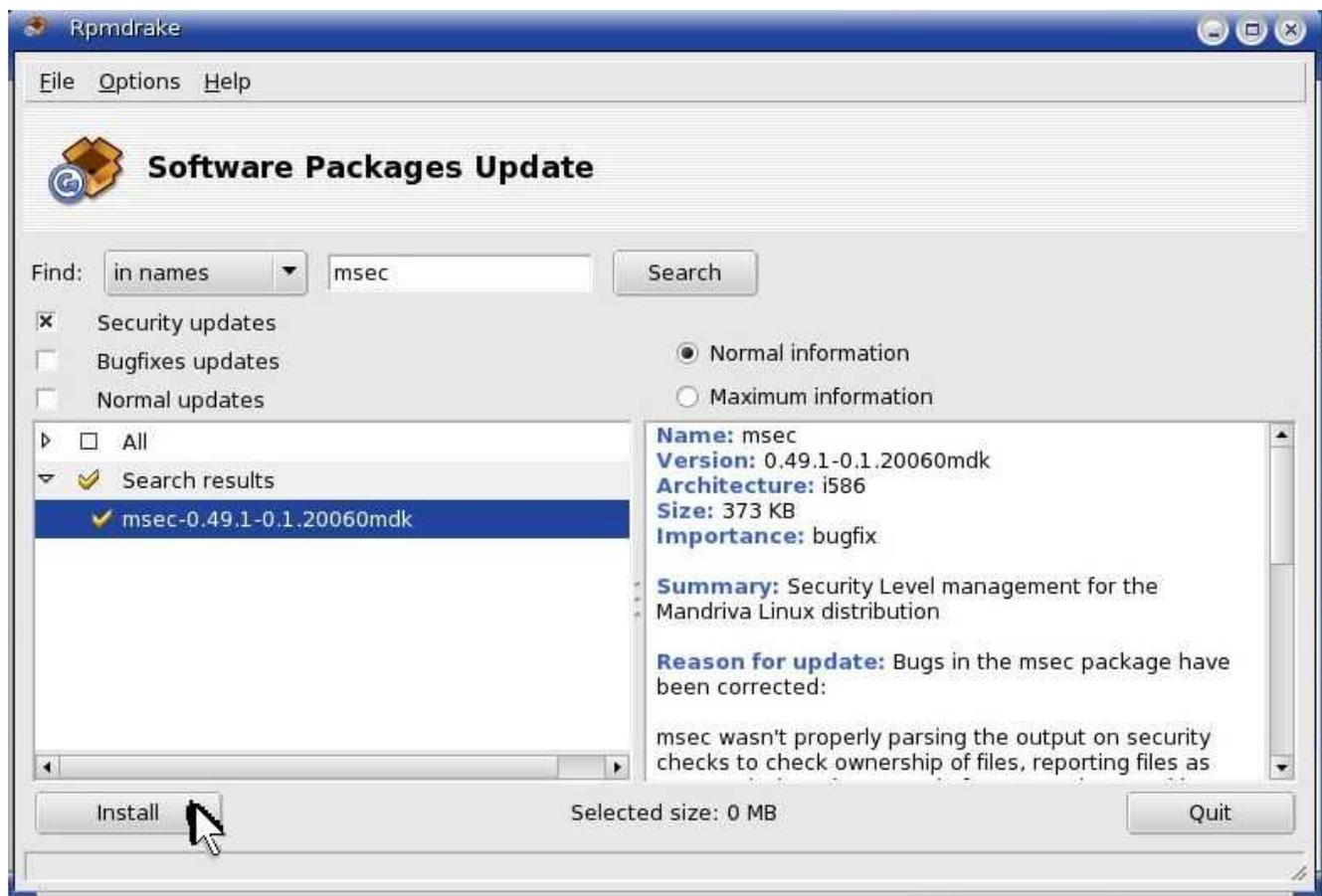
Select 'msec-0.49.1-...'. Then click 'Install'.
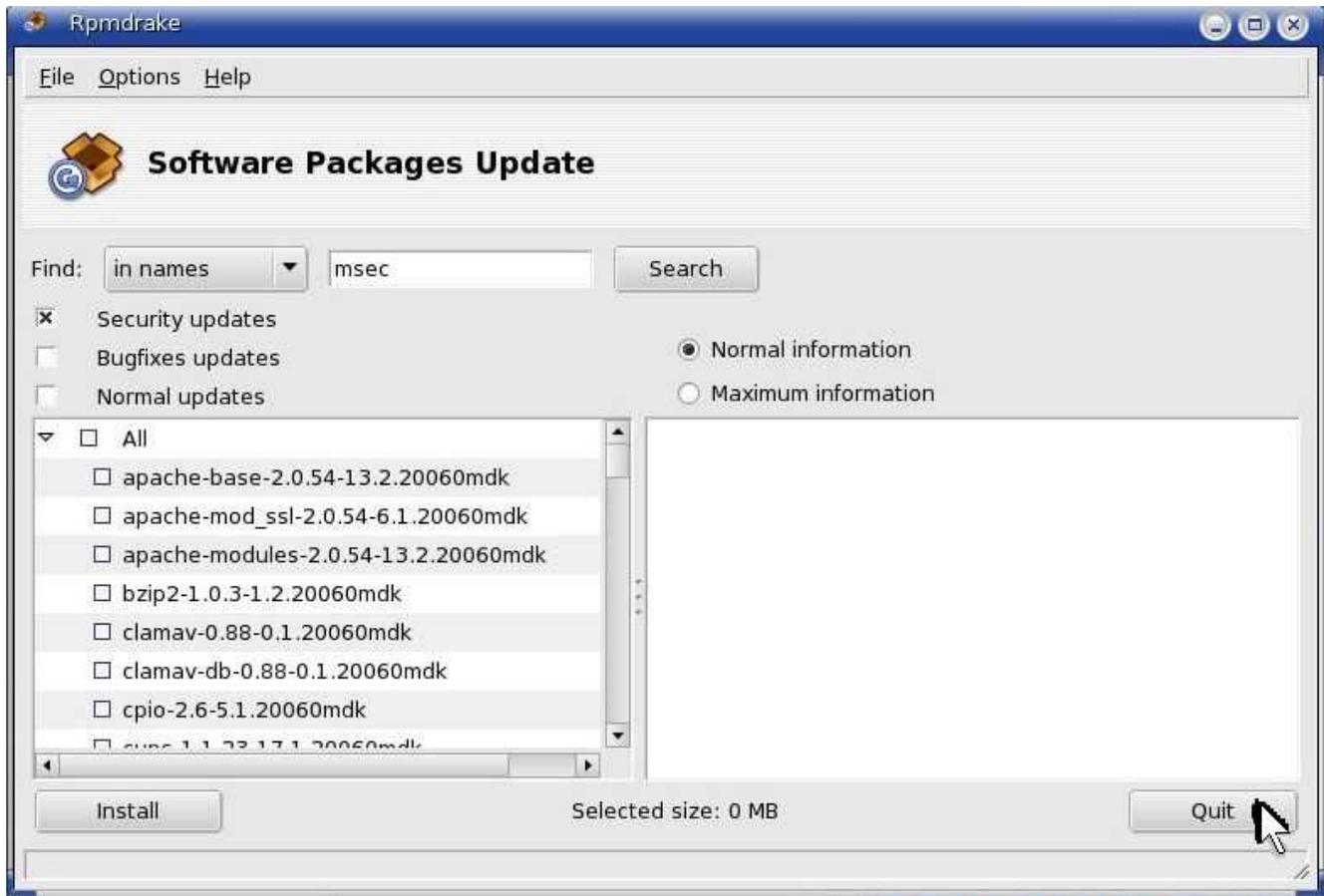
Your done. Close the window.

3. Enter below **bolded** instructions on command line as root user:

> #log into root
> **su**
>
> #This will allow outgoing mail from server.
> # Just made up virtual.org, this can be
> # anything since this is only an outgoing
> # email server. (It does not need to match
> # your domain or server name.)
> #edit config file /etc/postfix/main.cf:
> **mcedit /etc/postfix/main.cf**
> > #add to end of file
> > mydomain = virtual.org
> > myhostname = $mydomain
> > myorigin = $mydomain
> > relayhost = *YourOutgoingSMTPMailServerHere*
>
> #This will forward the root's email to

># the below email address (needed to
># monitor server emails such as below
># backup script status)
>#edit aliases file /etc/postfix/aliases:
>**mcedit /etc/postfix/aliases**
>####edit near end of file:
>root: *YourFullEmailAddressHere*
>
>#start postfix service and configure to start on computer boot up
>**service postfix start**
>**chkconfig --add postfix**

Automatic Backup Setup

1. This will enable a full daily backup of the MySQL server, PostGreSQL server, OpenEMR patient documents directory, and FreeB billing documents directory. The script will place a non-encrypted backup in the local hard drive secured /backup directory, and will also copy an encrypted backup to a DVD. The DVD copy works via multi-session, so you basically just need to leave one DVD in the DVD writer until it fills up. Do NOT use RW DVD. This script will work and should be used with R only DVD's. The output of the automated backup script will be emailed to the person's email entered in above email server setup.
    1. The local /backup directory will have to be manually cleaned up occasionally. I'd recommend deleting old backup sub-directories on a monthly basis or so. (of course, a script could be written for this)
    2. There is no restore script yet, will have to be done manually.
    3. The MySQL and PostGreSQL are gzipped. The ...openemr/documents and .../freeb/public backups are compressed via DAR (NOT tar).

2. Download the script file [fullbackup.sh](http://bradymd.com/fullbackup.sh). File can be found at: http://bradymd.com/fullbackup.sh (to download file, you may need to Right-Click the link and select 'Save Link As...')

3. Configure file encryption package:
    1. Enter below **bolded** instructions on command line as root user:

    #log into root
    su

    #Configure file encryption. If you want to be able to decrypt your encrypted files you need to remember (case sensitive) the

passphrase that you type below. I'd also remember all the other info you type below.

gpg --gen-key
-'ENTER' to default of 1 for key selection
-'ENTER' to default 2048 keysize bits
-'ENTER' to default '0' so key does not expires
-Type 'Y' to confirm above
-Type your real full name
-Type your real email address
-Type 'openemr secure backup key'
-Type 'O' to confirm
-Type a very secure and long 'passphrase' (the longer your passphrase is the more secure, go for at least 15 characters with numbers, different cases, and strange characters)

#IMPORTANT!!! You **NEED** to backup the entire contents of directory **/root/.gnupg** on the most indestructible disk(s) you can find and then keep in a secure place. This directory contains your secret key file, and without this you will be unable to restore from your encrypted data backup!!! You also need to **remember** your **passphrase**, or you won't be able to restore your backed up data.

#The decrypt command, in case you need at some point:
#gpg -o *OutputFilename* -d *InputFilename*

4. Configure backup script and automate it:
   1. Enter below **bolded** instructions on command line as root user:

      #log into root
      su

      #install the DAR backup package
      urpmi dar
      -yes to packages

      #create a secure backup directory
      mkdir /backup
      chown root:root /backup
      chmod 700 /backup

      #move the backup script to /root , secure it, and allow execution
      mv /location/to/file/fullbackup.sh /root
      chown root:root /root/fullbackup.sh
      chmod 700 /root/fullbackup.sh

      #edit file /root/dailybackup.sh:
      mcedit /root/fullbackup.sh

#edit the below DVDDEVICE line to what the
#device for the DVD writer is. It is likely going to
#be /dev/hda , /dev/hdb , /dev/hdc ... A very
#non-scientific way to figure this out is to put
#a DVD with files in the DVD writer, go to root
#command line and then use the
#'mount /dev/hda /mnt/cdrom1'
#command then 'ls /mnt/cdrom1', and continue
#this until you get the right device,
#don't forgot to 'umount /mnt/cdrom1':
DVDDEVICE=***/dev/hdb***

#edit full name you entered **above** for **encryption** key:
YOURFULLNAME='***Brady Miller***'
TEXT EDITOR SAVE AND EXIT

#Automate script to cron for a daily run at 1:02 AM. WARNING:
This script needs to finish and start on the same day since it
plays around with file names using the date command.
Basically, don't start this script before midnight unless you are
sure it will finish before midnight. This is why I have it set for
1:02AM.
export EDITOR=/usr/bin/mcedit
crontab -e
#paste below into empty file:
02 1 * * * . /root/fullbackup.sh
TEXT EDITOR SAVE AND EXIT

Instructions for Building the OpenEMR Appliance

LINK TO MANUAL IN PDF FORMAT

Instructions for Building the OpenEMR Appliance Chapter Index

Required Software

1. Apache (2.0.54), MySQL (4.1.12), and PHP (4.4.0)
2. OpenEMR (2.8.1)
3. FreeB (0.11) – Insurance billing software
4. PostgreSQL (8.0.3) – Database program required by SQL-ledger
5. SQL-Ledger (2.6.3) – Billing, Accounting, and Inventory software
6. php-GACL (3.3.6) – Access Control software

Important Issues

1. Complete all of the steps before entering any data into OpenEMR. The SQL-Ledger and OpenEMR software may communicate in strange ways if you enter data into OpenEMR before installing SQL-Ledger.
2. Passwords can be confusing during the SQL-Ledger installation. To avoid any confusion it is helpful to know that during the installation you will create a PostGreSQL user called 'sql-ledger' with a password. This user/password combination will be used frequently, and the password will be referred to as '*sql-ledger-password*' throughout this document to avoid confusion.

Install the Mandriva 2006 Virtual Computer

1. You can use either VMware Workstation or VMware Server to build the Mandriva 2006 Virtual Computer.
2. VMware Workstation Configuration:
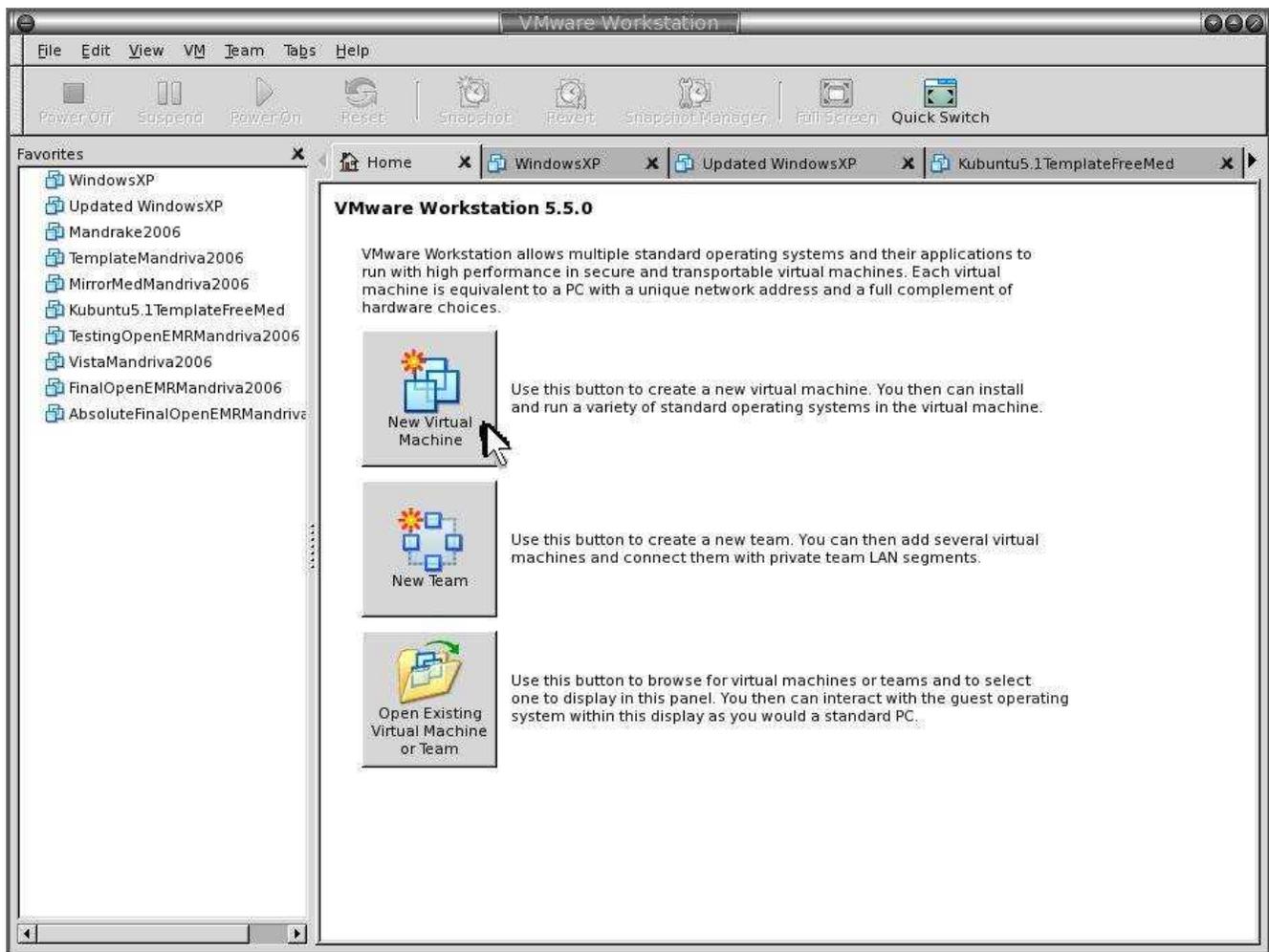
Click 'New Virtual Machine'.

Select 'typical'. Then click 'Next'.
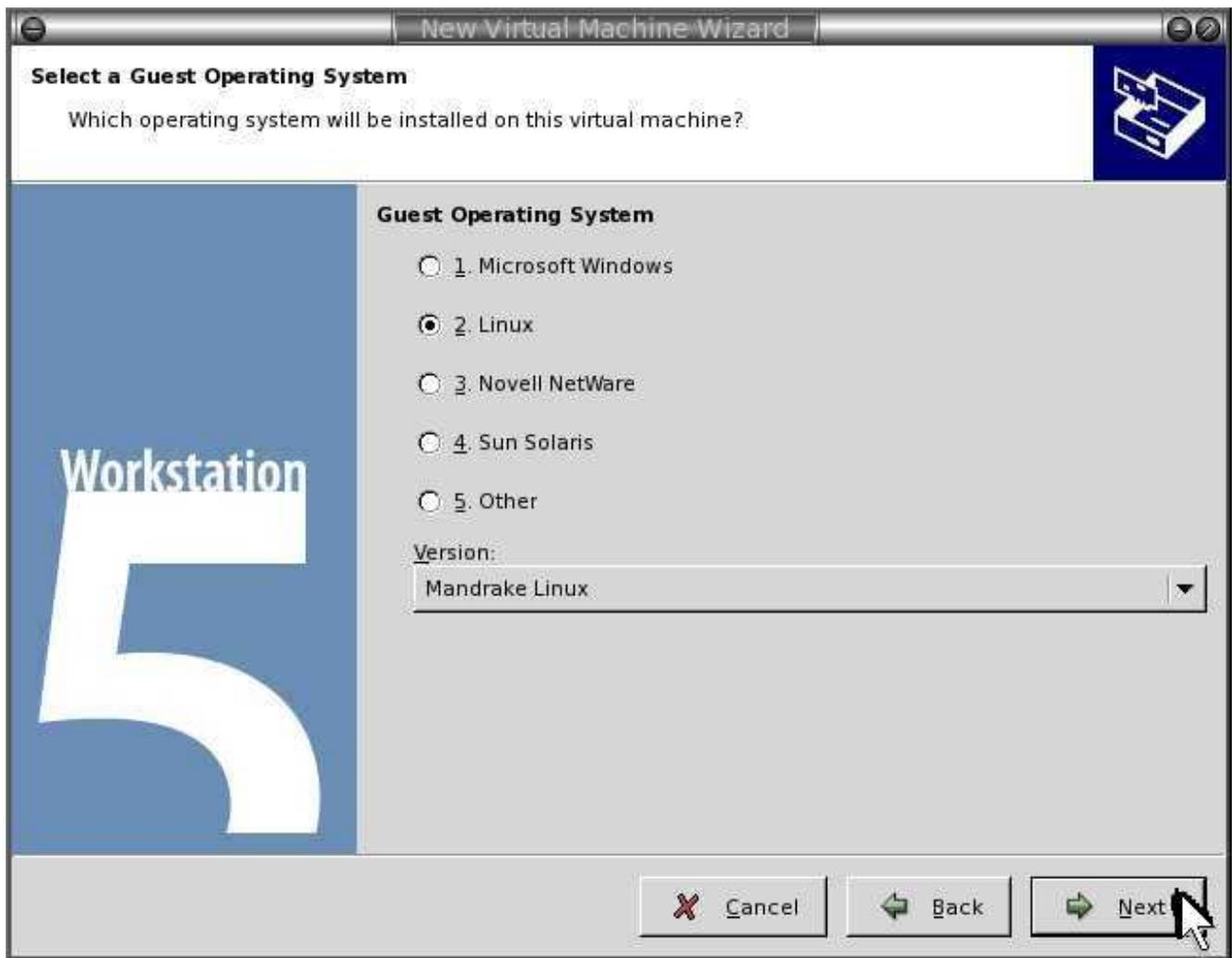
Select 'Linux' and 'Mandrake Linux'. Then click 'Next'.

Select 'Use bridged networking'. Then click 'Next'.

Specify Disk Capacity

How large do you want this disk to be?

New Virtual Machine Wizard

Disk Size

Virtual disk files are quite small at first, then grow as you add files to them. This virtual disk can never be larger than the maximum size that you set here.

Disk size (GB): 40.0

☐ Allocate all disk space now

By allocating the full capacity of the virtual disk, you enhance performance of your virtual machine. However, the disk will take longer to create and there must be enough space on the host's physical disk. If you do not allocate disk space now, your virtual disk files will start small, then become larger as you add applications, files, and data to your virtual machine.

☑ Split disk into 2GB files

✗ Cancel   ⇐ Back   ⟳ Finish

Enter 'Disk Size'->'20 GB'. Select 'Split disk into 2GB files'. Then click 'Finish'.

3. Insert the Mandriva2006 DVD/CD.

4. Click 'Power On' via Vmware.

5. Install Mandriva2006:

Change 'Security Level' -> 'Higher'. Type in an administrator log in
name. Then click 'Next'.
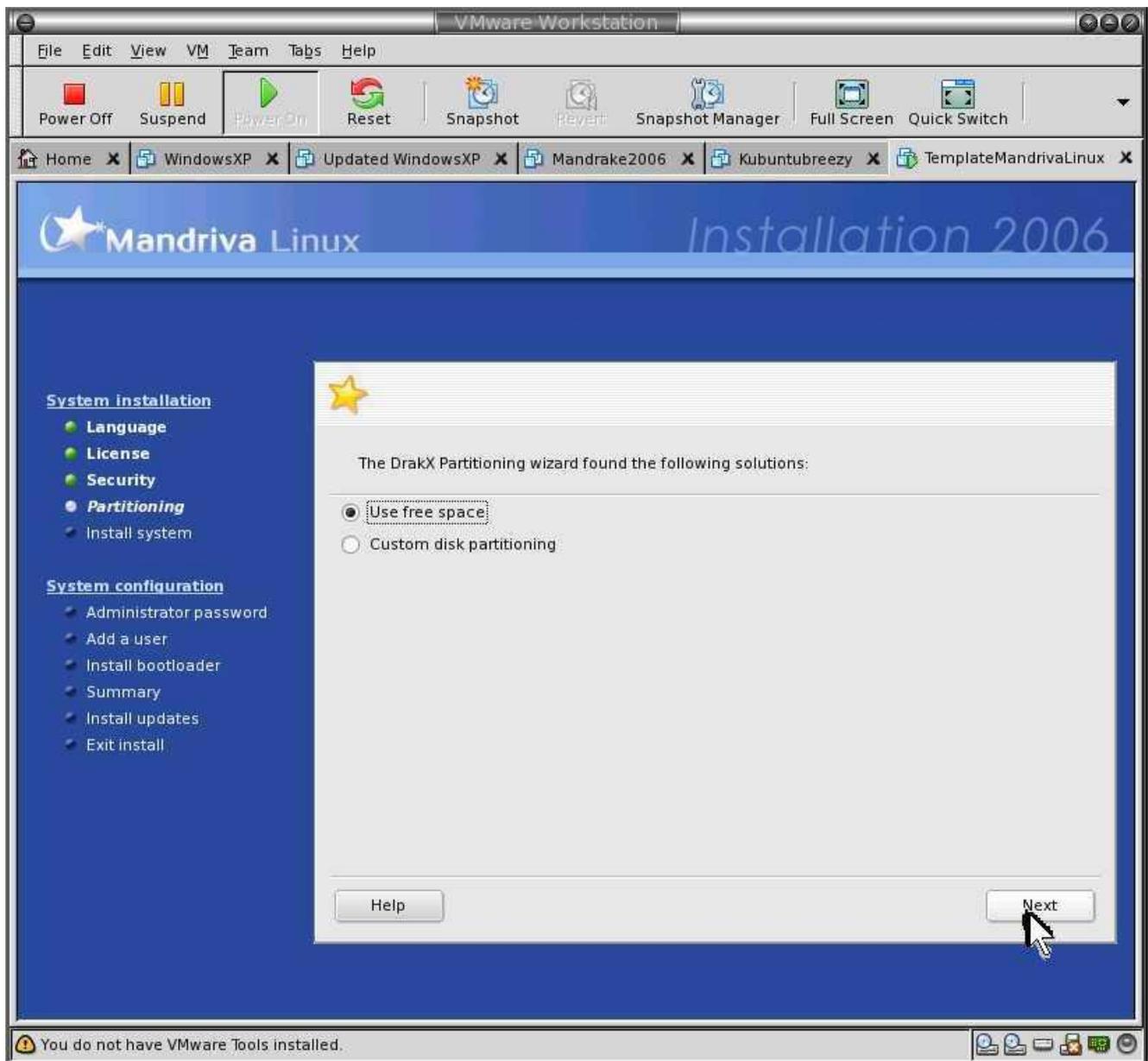
Select 'Use free space'. Then click 'Next'.

Mandriva Linux   *Installation 2006*

System installation
- Language
- License
- Security
- *Partitioning*
- Install system

System configuration
- Administrator password
- Add a user
- Install bootloader
- Summary
- Install updates
- Exit install

Please wait

The following installation media have been found.
If you want to skip some of them, you can unselect them now.

☒ Installation Free DVD

You have the option to copy the contents of the CDs onto the hard drive before installation.
It will then continue from the hard drive and the packages will remain available once the system is fully installed.

☐ Copy whole CDs

Next

Click 'Next'.

System installation
- ● **Language**
- ● **License**
- ● **Security**
- ● *Partitioning*
- ⟳ Install system

System configuration
- ⟳ Administrator password
- ⟳ Add a user
- ⟳ Install bootloader
- ⟳ Summary
- ⟳ Install updates
- ⟳ Exit install

The following media have been found and will be used during install: Installation Free DVD.

Do you have a supplementary installation media to configure?

- ● None
- ○ CD-ROM
- ○ Network (HTTP)
- ○ Network (FTP)
- ○ Network (NFS)

Ok

Click 'Ok'.
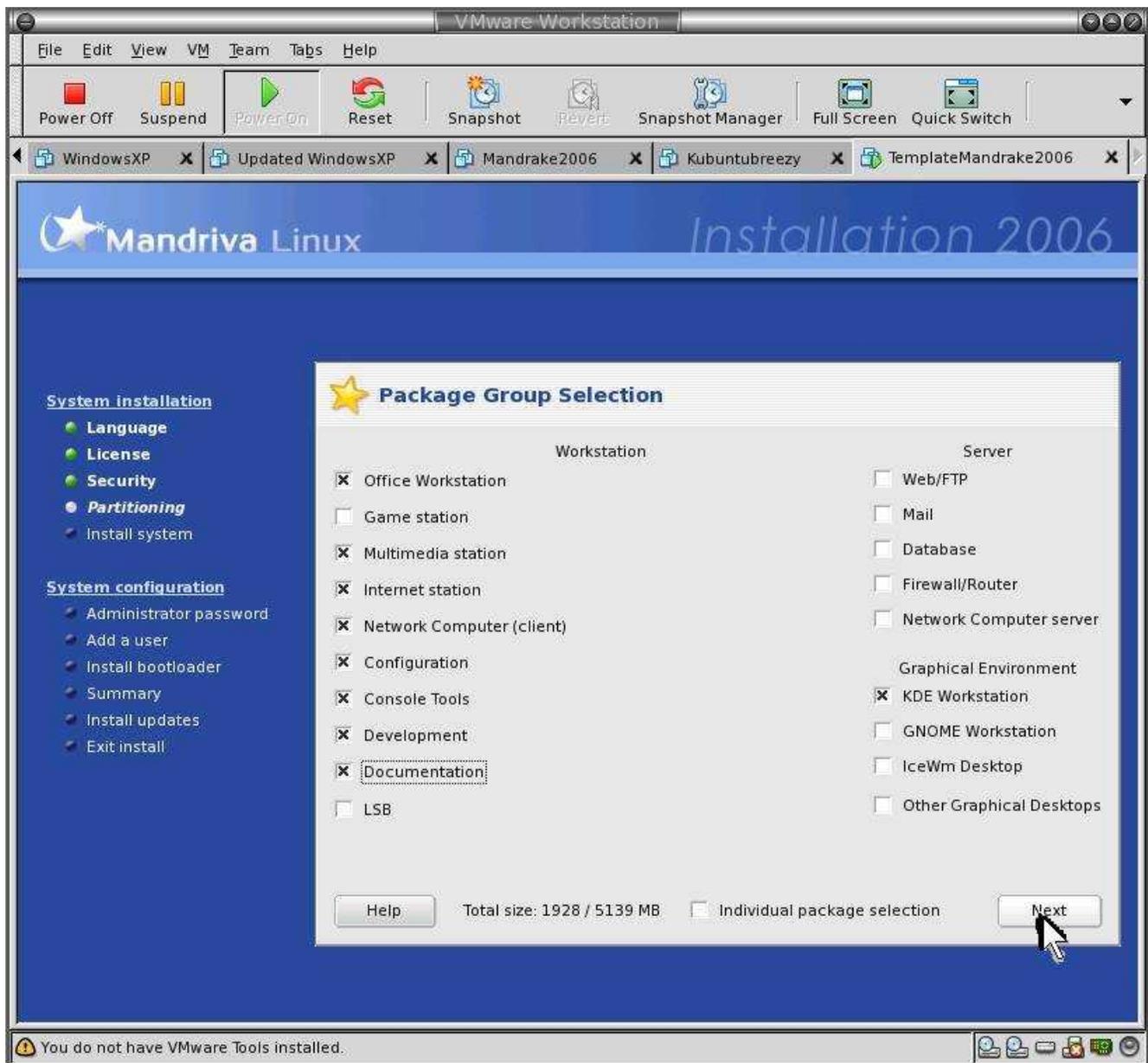
Select 'Office Workstation', 'Multimedia Station', 'Internet Station', 'Network Computer(client)', 'Configuration', 'Console Tools', 'Development', 'Documentation', 'KDE Workstation'. Do NOT select any Server selections. Then click 'Next'.

Enter a secure password. Then click 'Next'.

Type in a 'Name', 'Login name', and 'Password'. Toggle ON 'xgrp', 'rtools', and 'wheel'. Then click 'Accept user'.

Click 'Next'.

At 'Graphical Interface', click 'Configure'.
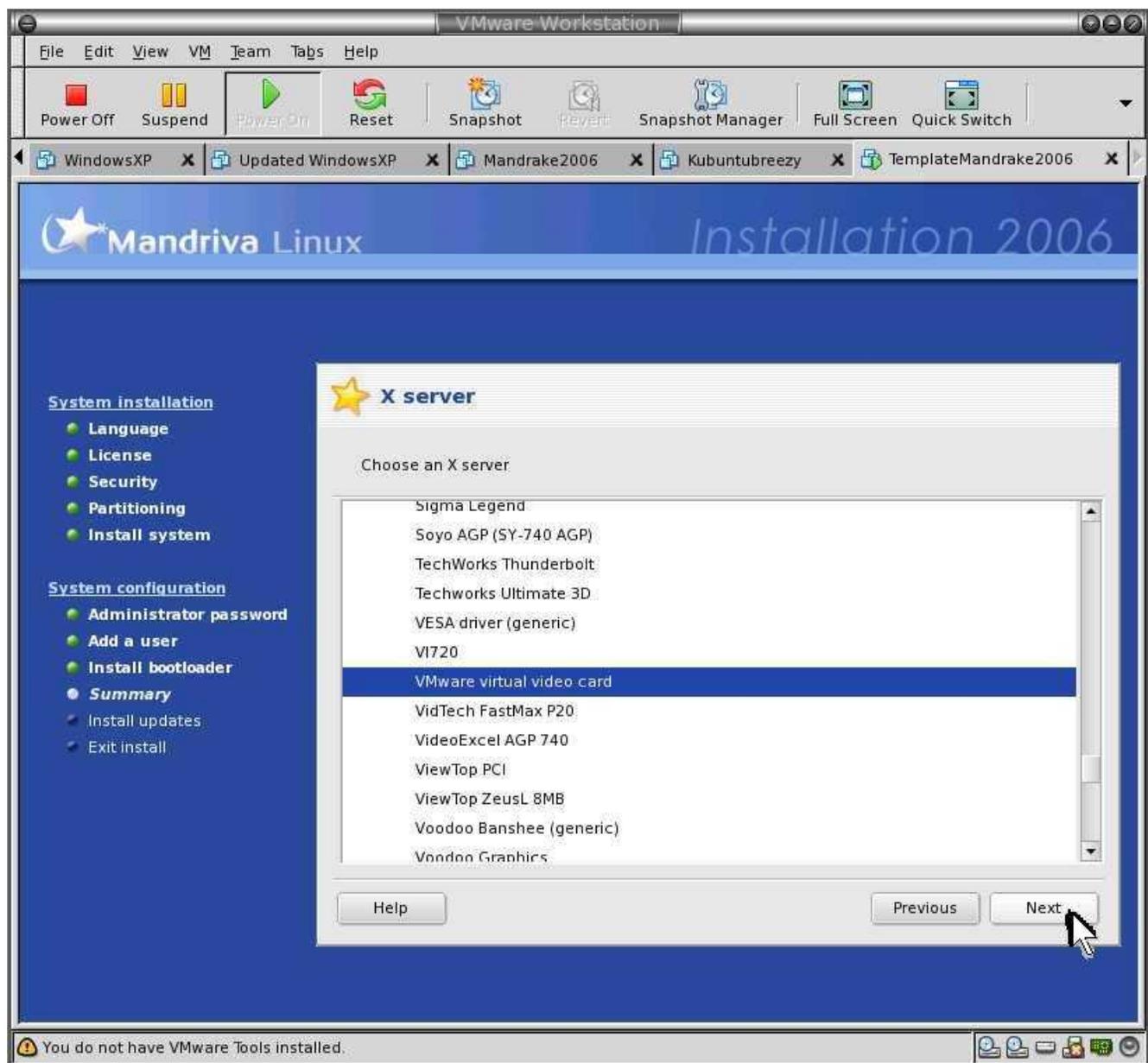
Select 'VMware virtual video card'. Then click 'Next'.
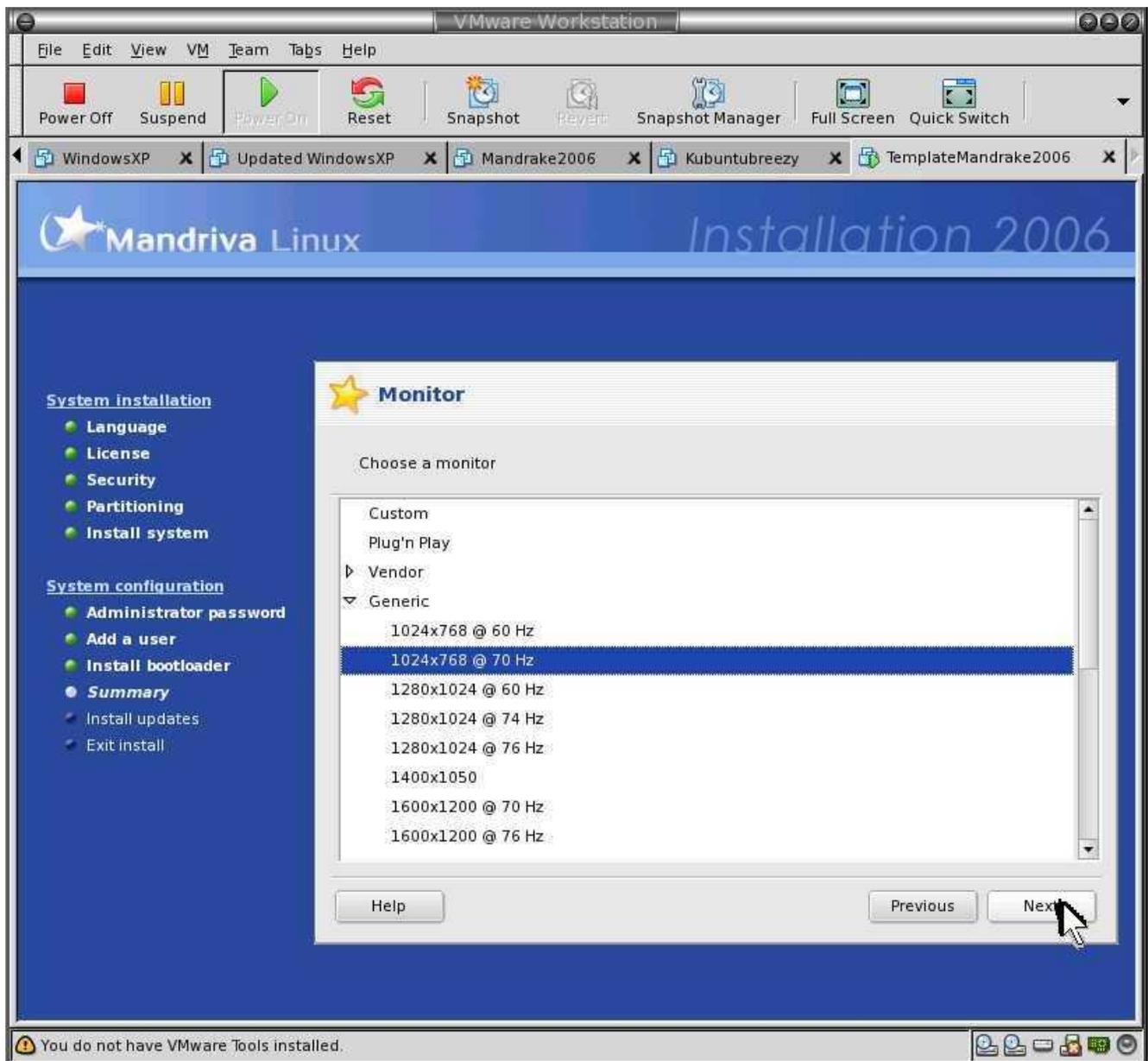
Select '1024x768'. Then click 'Next'.
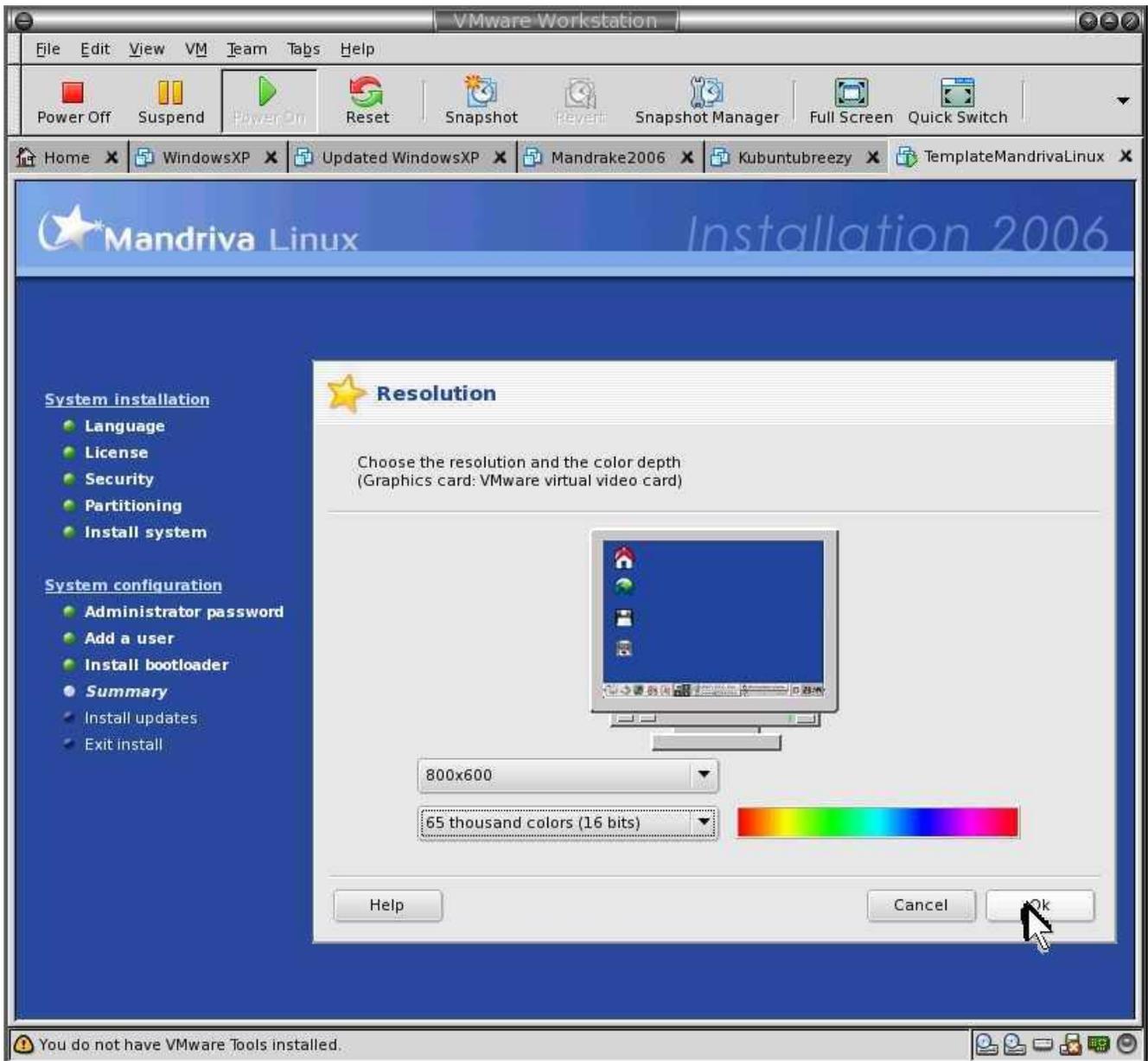
Select '800x600'. Then click 'OK'.
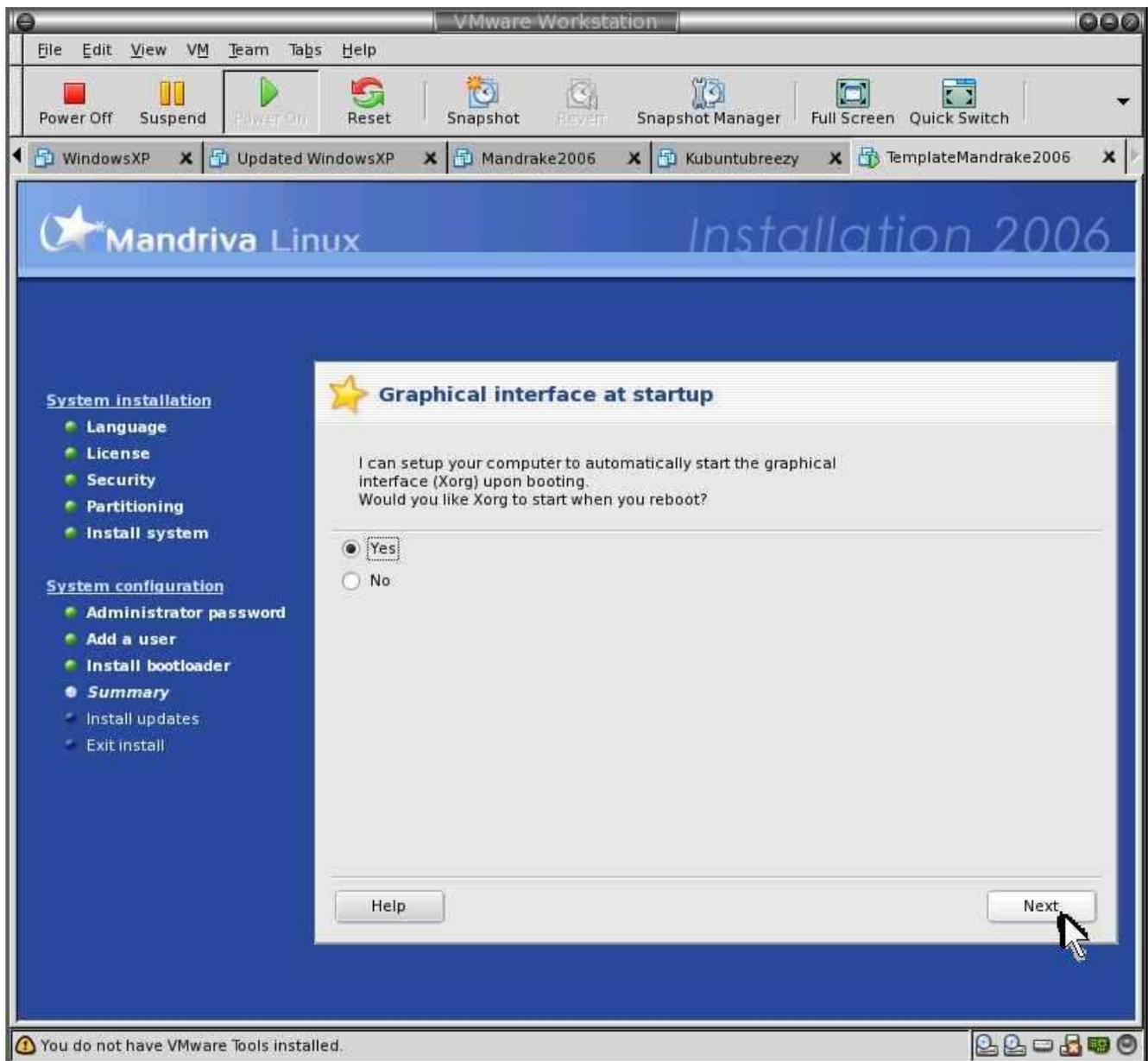
Select 'Yes'. Then click 'Next'.
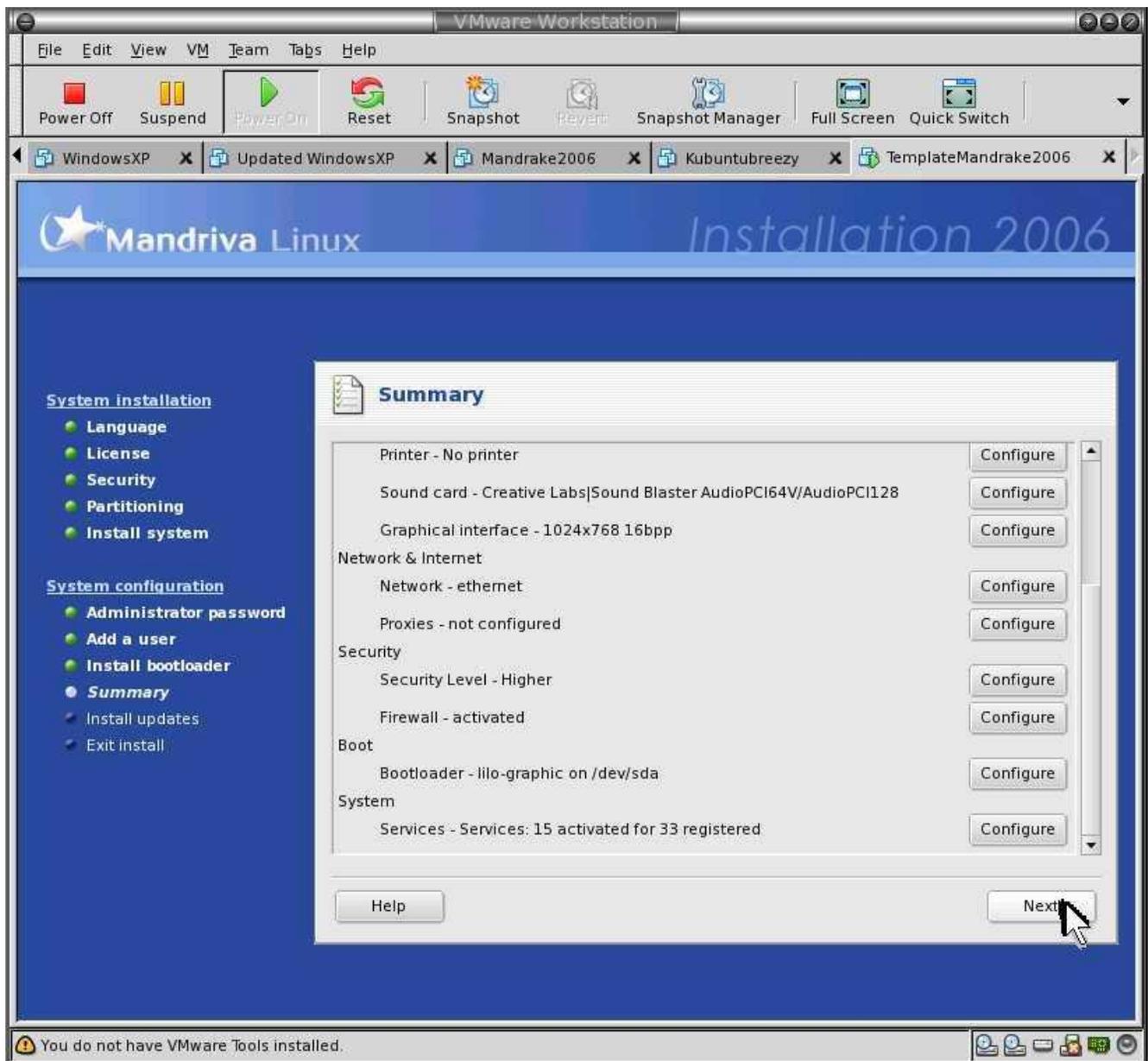
Click 'Next'.
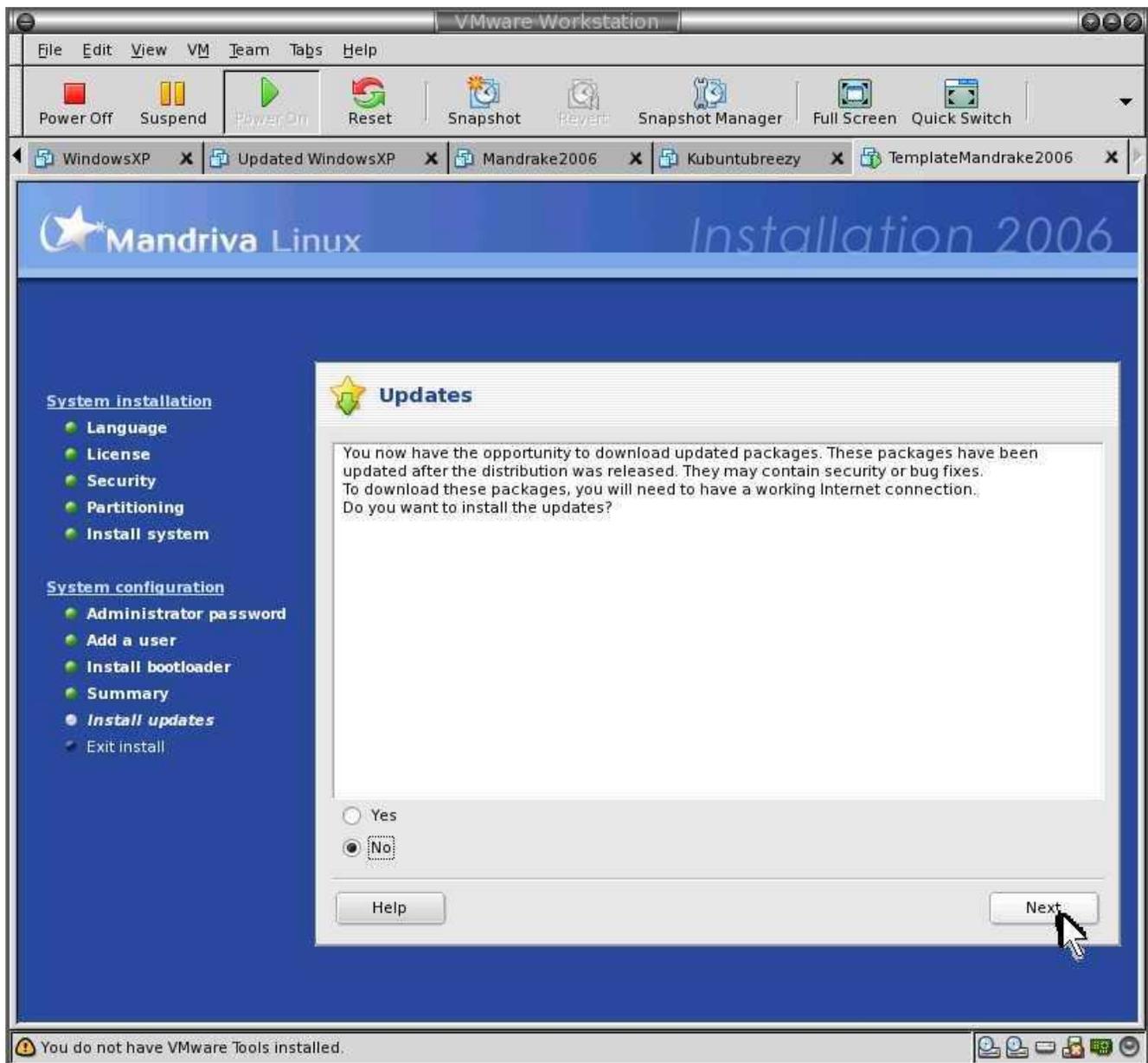
Select 'No'. Then click 'Next'.
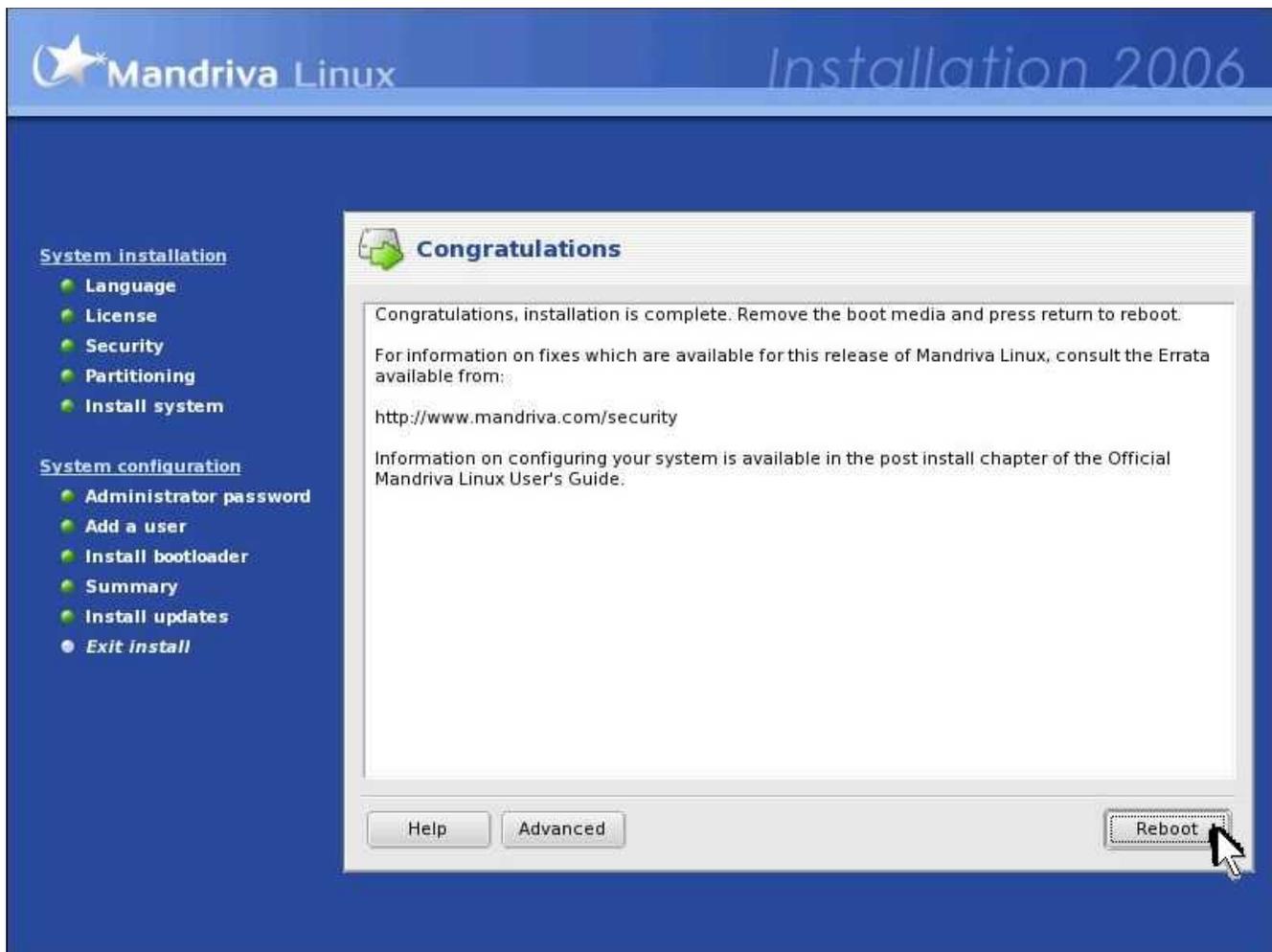
Click 'Reboot'.

6. Install VMtools (Required by VMware software)
    1. This will require installation of kernel source/headers files
    2. Re-insert the Mandriva2006 CD/DVD
    3. Install kernel source/headers files:
   1. Enter below **bolded** instructions on command line as root user

        #log into root
        su

        #install the kernel header/source files
        urpmi kernel-source

    4. Set up Vmware:
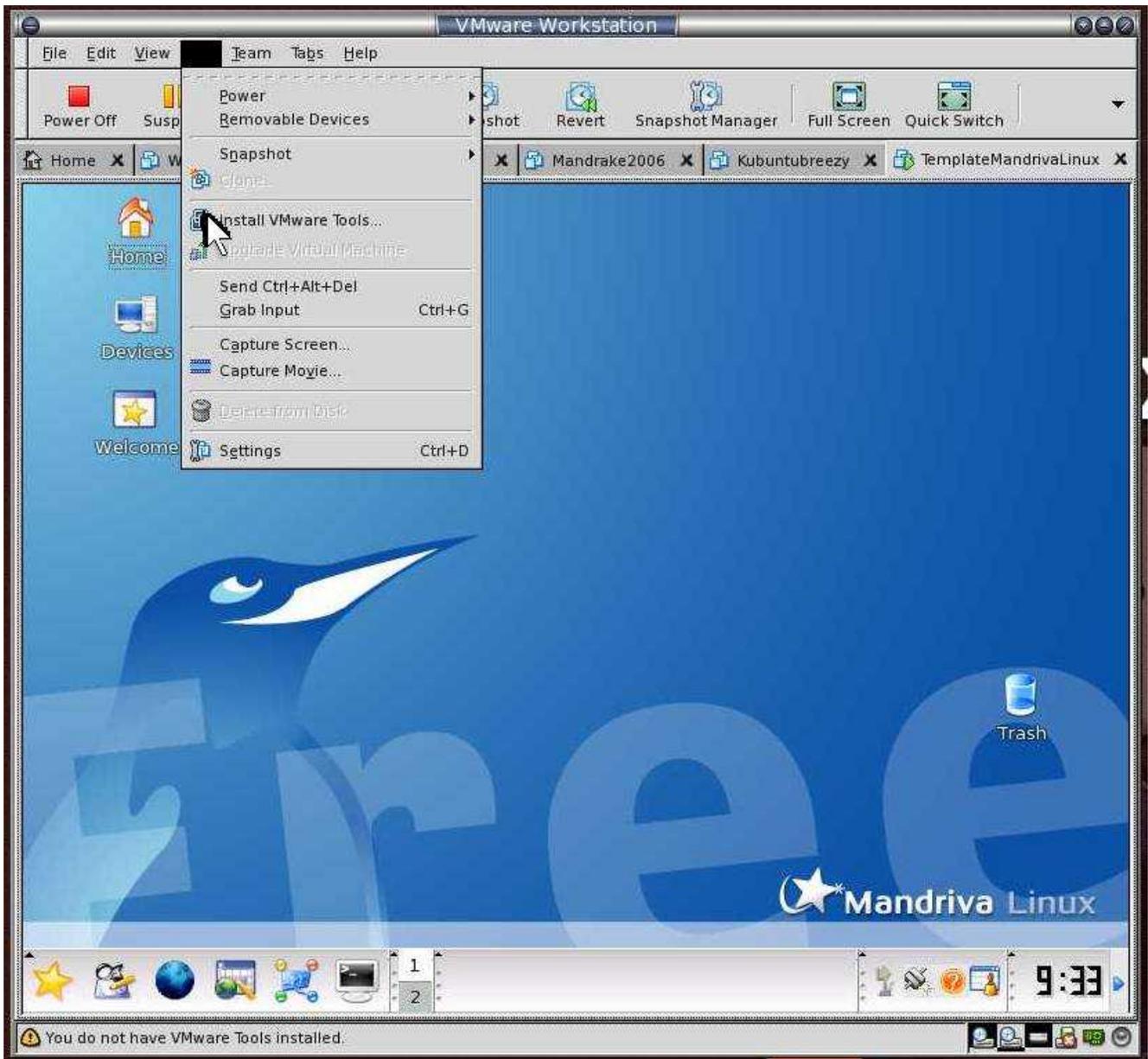
Click above 'Install Vmware Tools'.
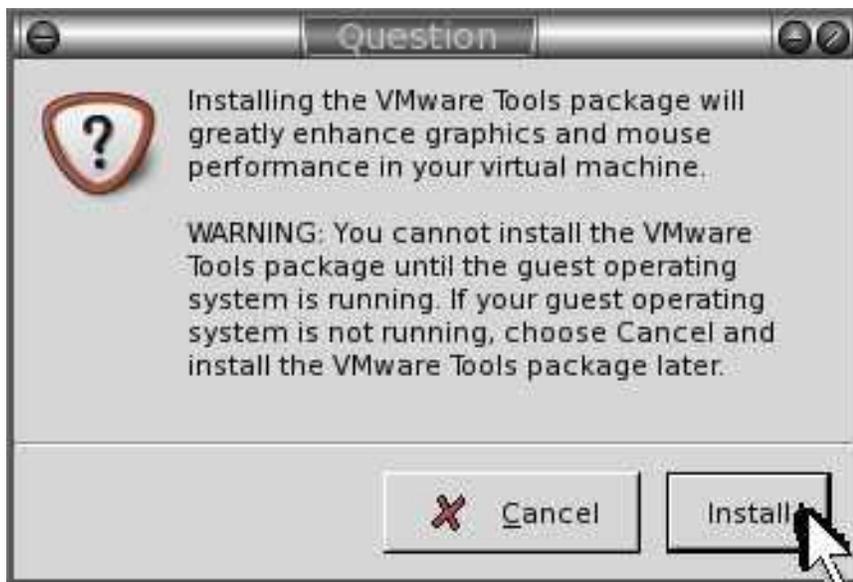
Click 'Install'.

5. Install the VMTools on Mandriva
6. Enter below **bolded** instructions on command line as root user:

> #log into root
> **su**
>
> #if below doesn't work, try replacing /dev/hda with /dev/cdrom, /dev/hdb, /dev/hdc etc.
> **mount /dev/hda /mnt/cdrom**
>
> #unpack and move file
> **cd /tmp**
> **tar zxpf /mnt/cdrom/VMwareTools-5.5.0-*.tar.gz**
> **umount /mnt/cdrom**
> **cd vmware-tools-distrib**
>
> #install the software
> **./vmware-install.pl**
> *-answered all questions with defaults*
> *-answered 3 for video mode("1024x768")*
>
> #need to re-boot or else weird stuff happens
> **shutdown -r now**

8. Enable software package installation over internet:
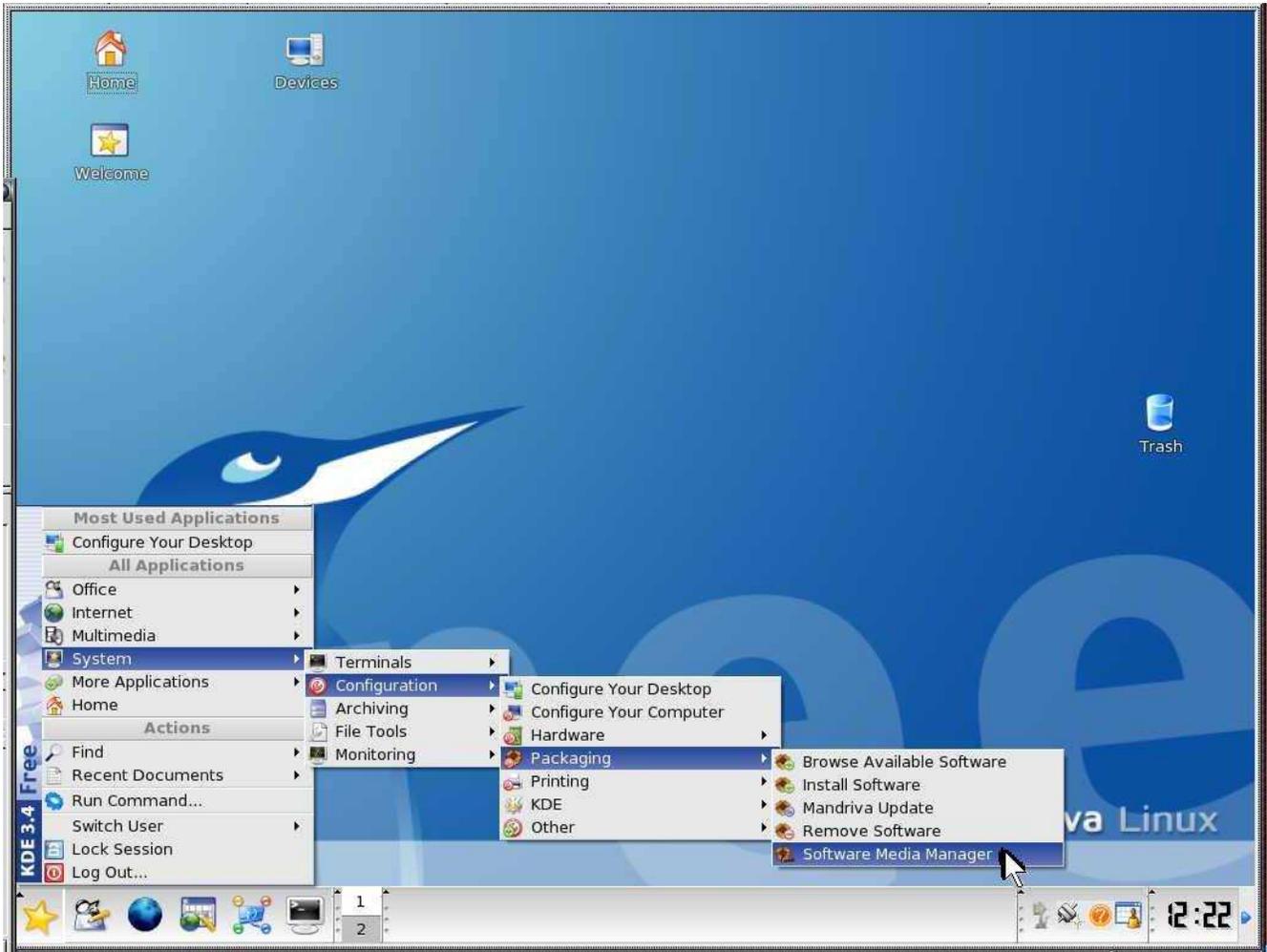
Click 'System' -> 'Configuration' -> 'Packaging' -> 'Software Media Manager'.

Enter 'root' user password. Then click 'OK'.
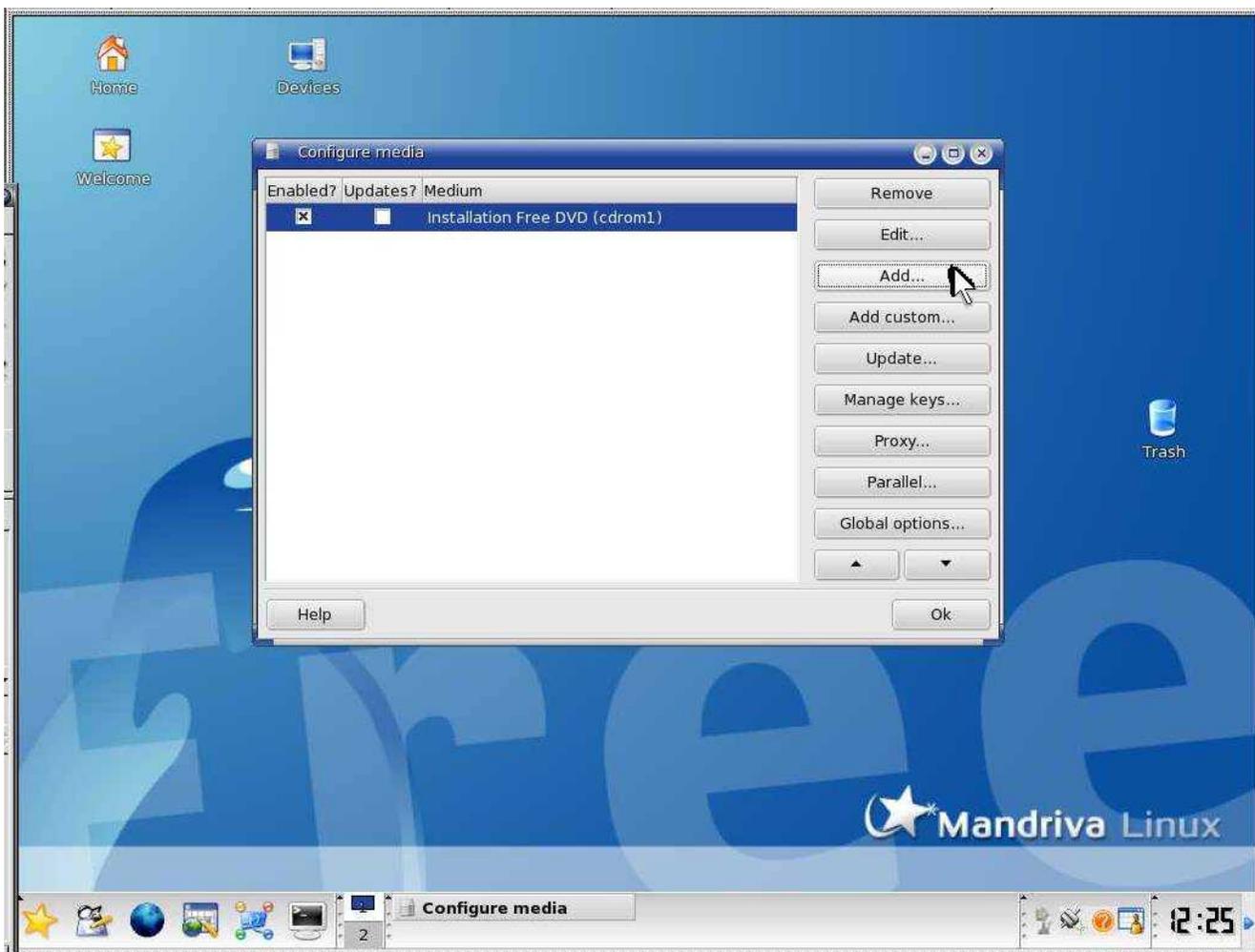
Click 'Add...'.
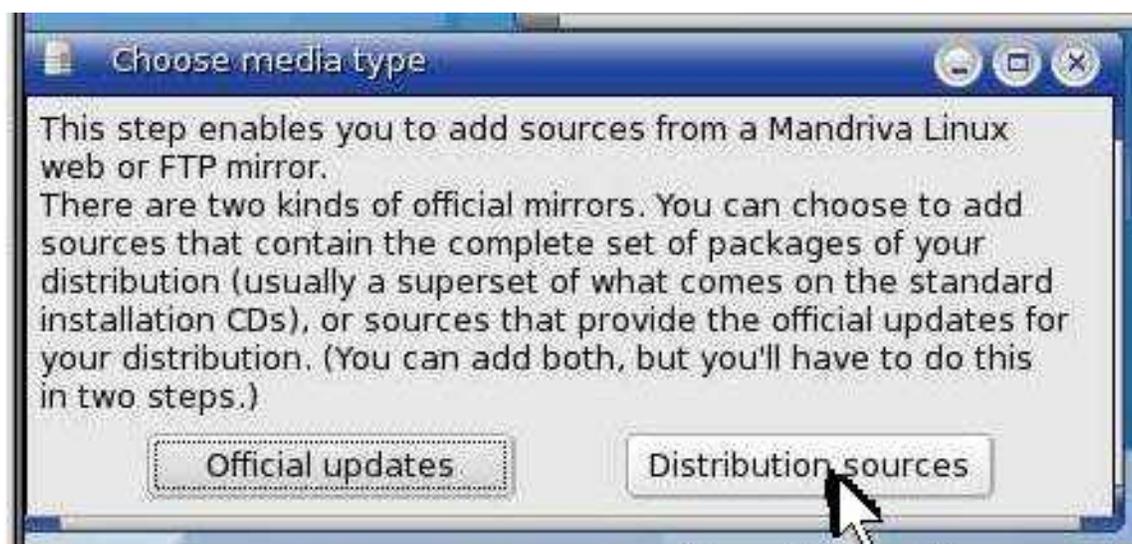
Click 'Distribution sources'.
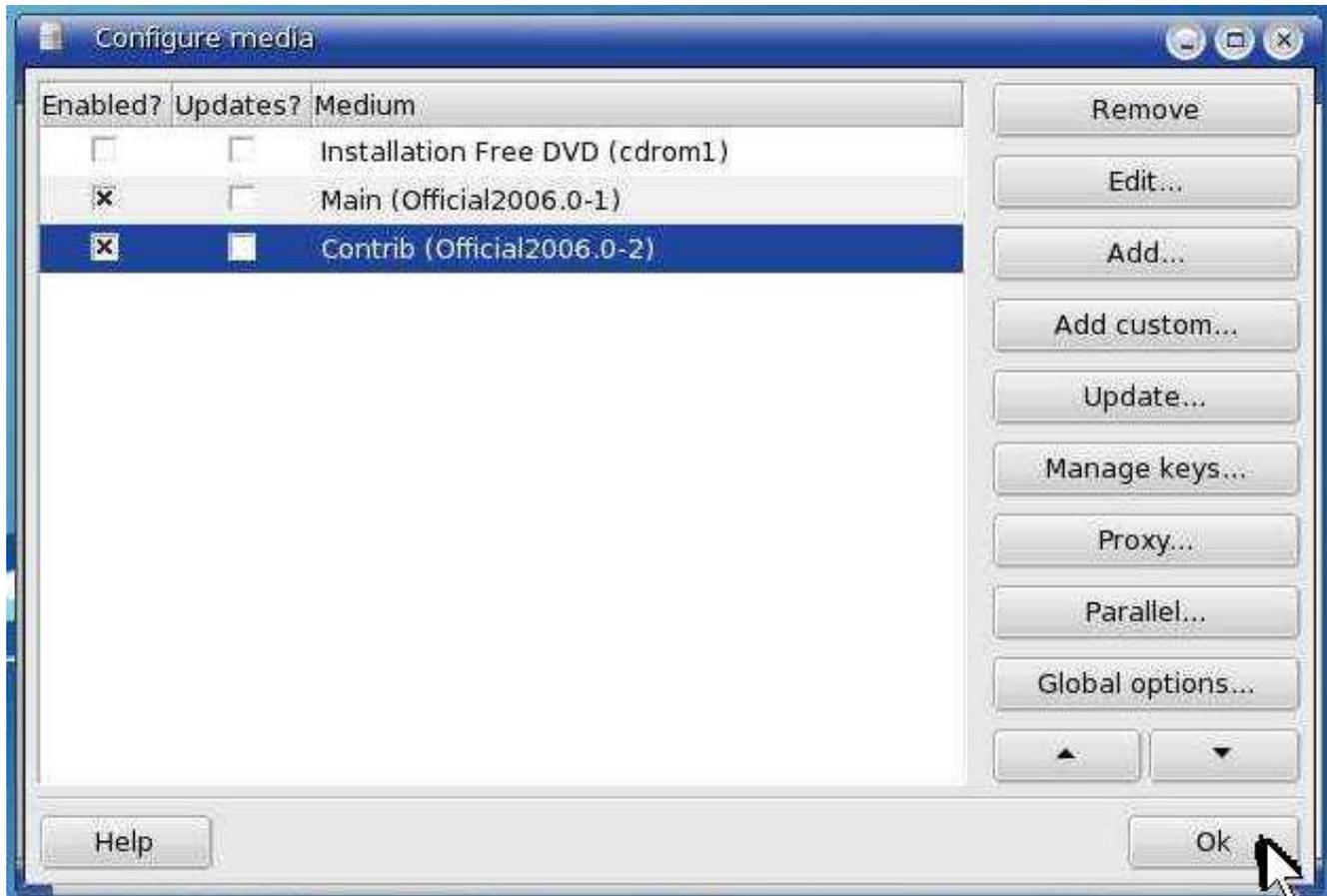
Select as above. Then click 'Ok'.

9. Disable the screensaver(it's annoying).

Install Apache, MySQL, and PHP4

1. OpenMed requires PHP4. You shouldn't of installed PHP5, since you should not of selected any server packages during the Mandriva install(then you can disregard this, and skip to step 2). However if you have PHP5 on your system, then remove it using below **bolded** instructions on command line as root user:

    #log into root
    su

    #list all the php5 packages
    urpme php

#remove them all by pasting in all of the php5 packages
   below
urpme (paste)

2. Enter below **bolded** instructions on command line as root user :

   #log into root
   su

   #Install apache, php, mysql
   **urpmi apache php4-cli apache-mod_php4 apache-
      mod_ssl php4-mysql php4-xml php4-xmlrpc htmldoc
      mysql**
   -I chose 1- apache-mpm-prefork-2.0.54-13mdk.i586
   -I chose 1- MySQL-4.1.12-3mdk.i586
   -choose Yes to packages

   #start apache and mysql
   service httpd start
   service mysqld start

   #enables apache and mysql to start during boot-up
   chkconfig --add httpd
   chkconfig --add mysqld

3. Open the firewall for the web server:
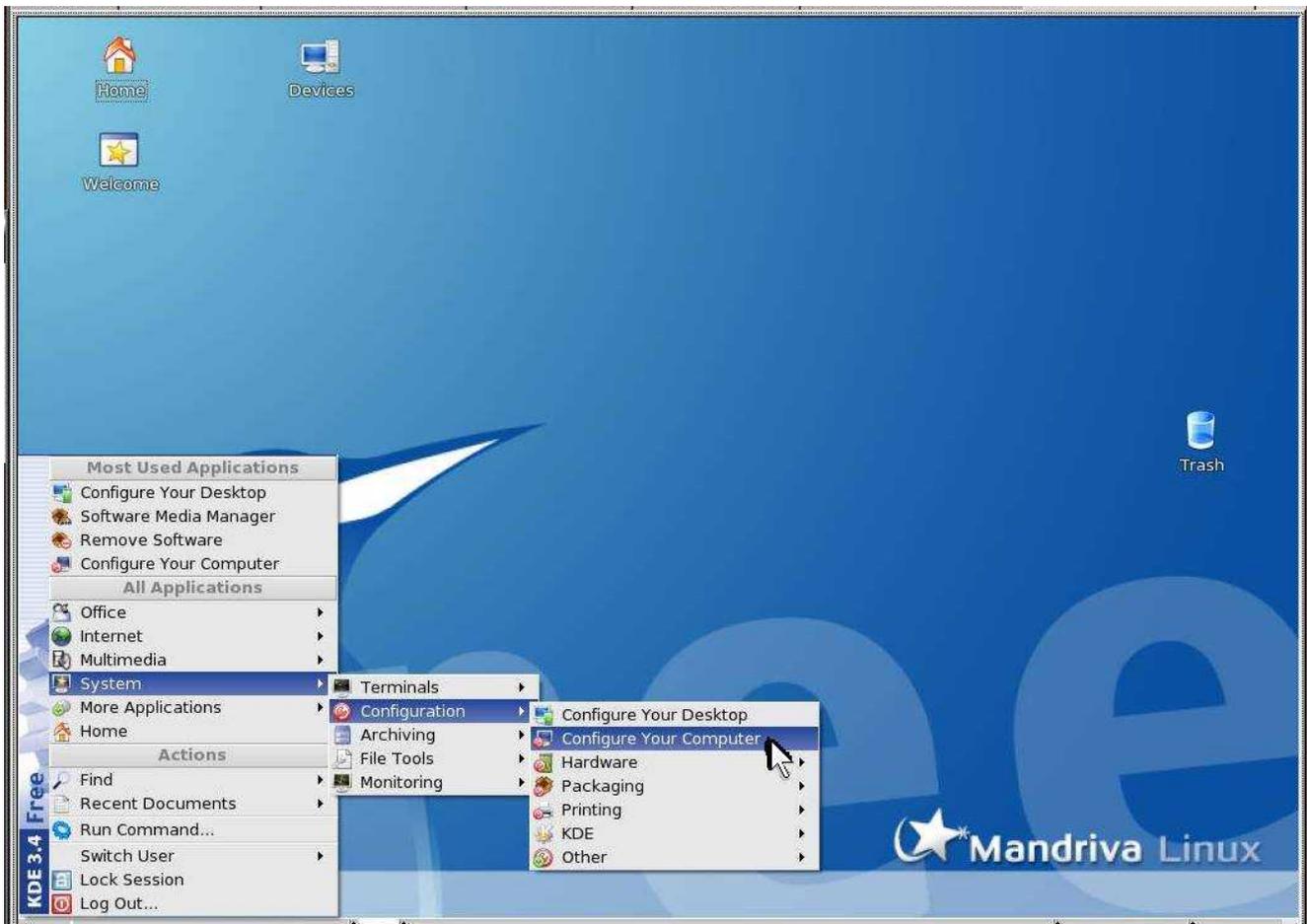
Click 'System' -> 'Configuration' -> 'Configure Your Computer'.

Enter 'root' user password. Then click 'OK'.

Click 'Security'.

Click 'Set up a personal firewall...'.

Select 'Web Server'. Then click 'OK'.

Click 'OK'.

Firewall

Please enter the name of the interface connected to the internet.

Examples:
    ppp+ for modem or DSL connections,
    eth0, or eth1 for cable connection,
    ippp+ for a isdn connection.

Net Device   eth0: Advanced Micro Devices|79c970 [PCnet LANCE]

Ok
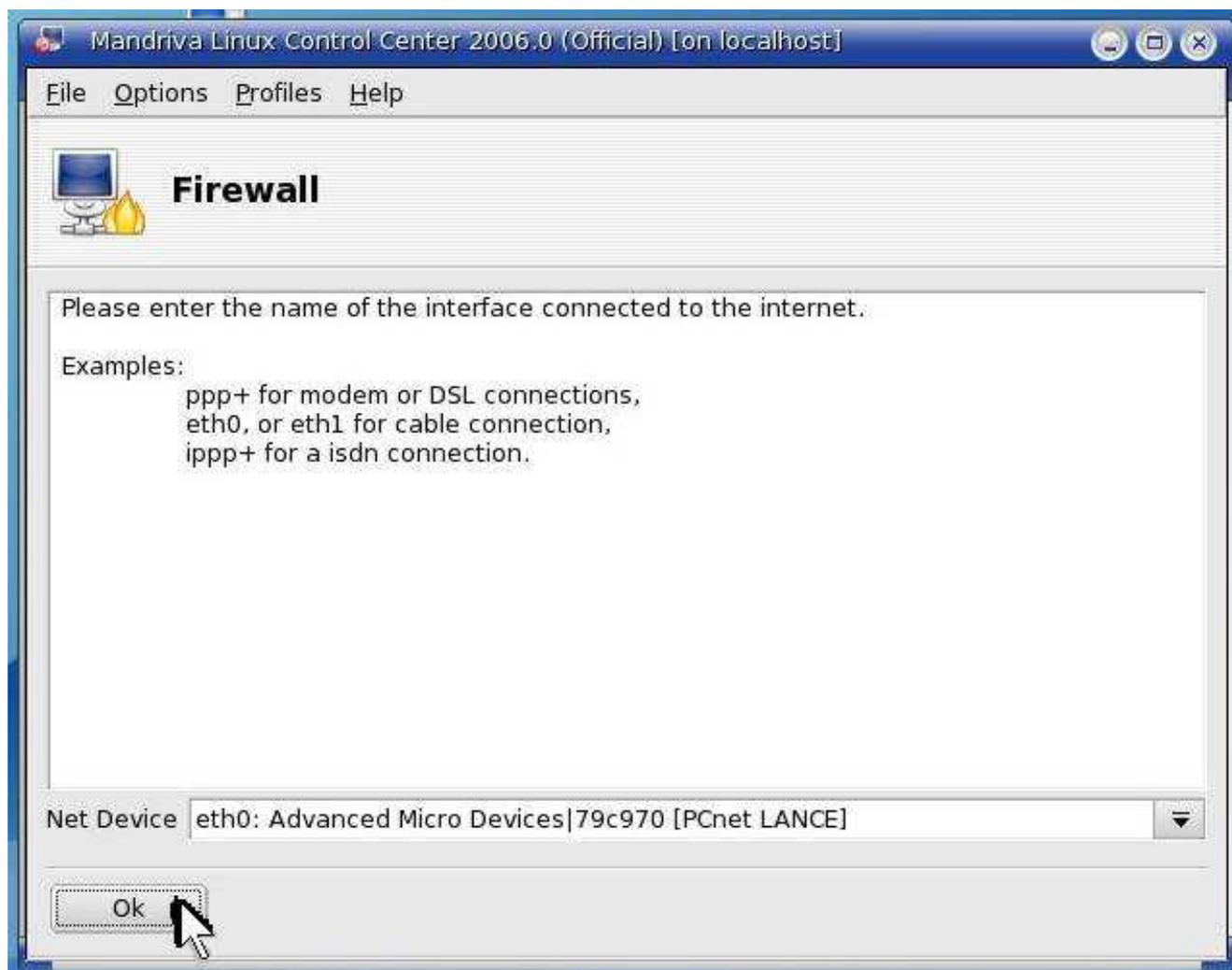
Click 'Ok'. Keep defaults.

You are done. Close the window.

Install OpenEMR

1. Download openemr-2.8.1.tar.gz (version 2.8.1) from sourceforge at :
   http://sourceforge.net/project/showfiles.php?group_id=60081

2. Enter below **bolded** instructions on command line as root user:

   #log into root
   su

   #edit file /etc/php4.ini:
   mcedit /etc/php4.ini
           #edit following variables:
           post_max_size = **30M**

upload_max_filesize = **30M**
memory_limit = **128M**
max_execution_time = **45**
magic_quotes_gpc = **off**

PLEASE NOTE THAT IN THE RELEASED OPENEMR 2.8.1 APPLIANCE, register_globals is ON, however for security it should be turned OFF as below (see Appendix A. SECURITY PATCHES for reason)

register_globals = **off**
TEXT EDITOR SAVE AND EXIT

#Ensure the following lines are included at the end of the /etc/httpd/conf/httpd.conf file (This was not in original OpenEMR Appliance and has been listed as a security patch; it is required to not allow unauthorized access to confidential patient medical records).

mcedit /etc/httpd/conf/httpd.conf

#Ensure below is included at end of file (if not found, then paste below into end of file)
<Directory "/var/www/html/openemr/documents">
order deny,allow
Deny from all
</Directory>
<Directory "/var/www/html/openemr/edi">
order deny,allow
Deny from all
</Directory>

TEXT EDITOR SAVE AND EXIT

#restart httpd
service httpd restart

#put the OpenEMR program in its place
cd /var/www/html
tar pxzvf /location/to/tar/openemr-*.tar.gz
mv openemr-* /var/www/html/openemr
chown -Rf root:root openemr

#Prepare for install
chmod 666 /var/www/html/openemr/library/sqlconf.php

3. Then use Auto-installer at: http://localhost/openemr/setup.php
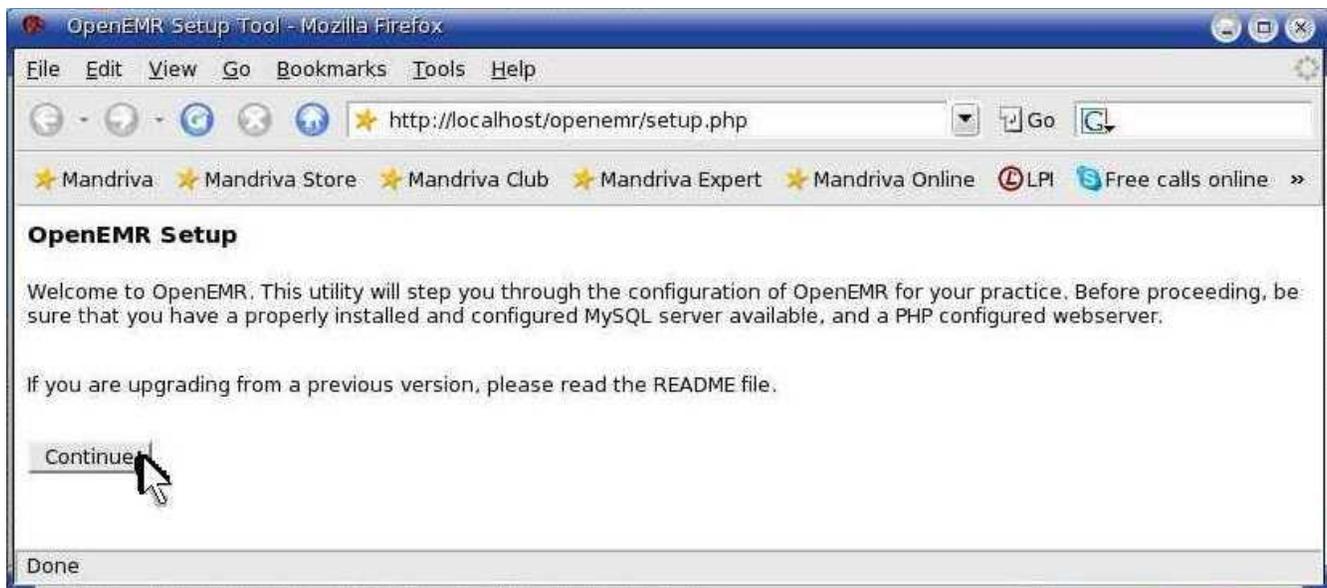
Click 'Continue'.

Select 'Have setup create the databases'. Then click 'Continue'.

In SERVER section: enter 'Password' -> secure password, otherwise keep defaults. In CLIENT section: keep defaults. In USER section: enter 'Initial User' -> new user login name, Enter 'Initial User's Name' ->new user name, enter 'Initial Group' -> name of practice. (I would recommend keeping the 'Initial User' -> 'admin' and the 'Initial User's Name' -> 'Administrator' to ensure easy installation of the php-GACL software.) Then Click 'Continue'.
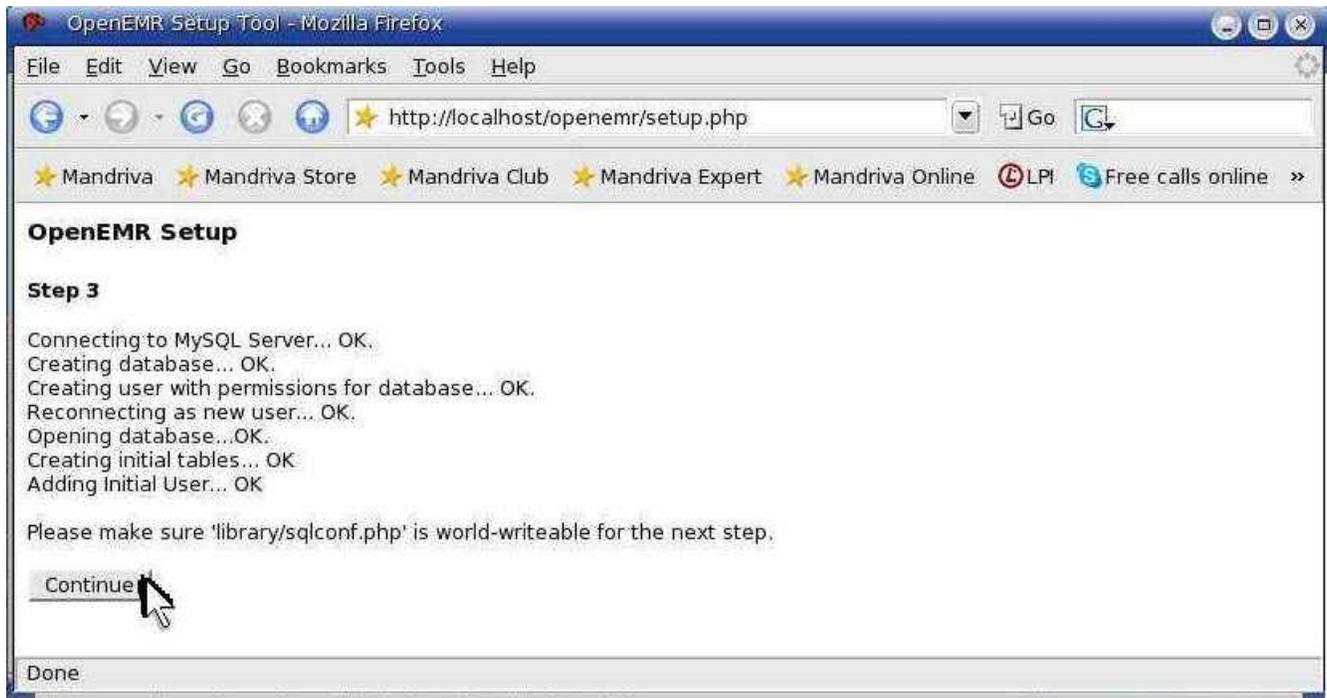
Click 'Continue'. (Don't worry, we have already made the mentioned file world-writeable)
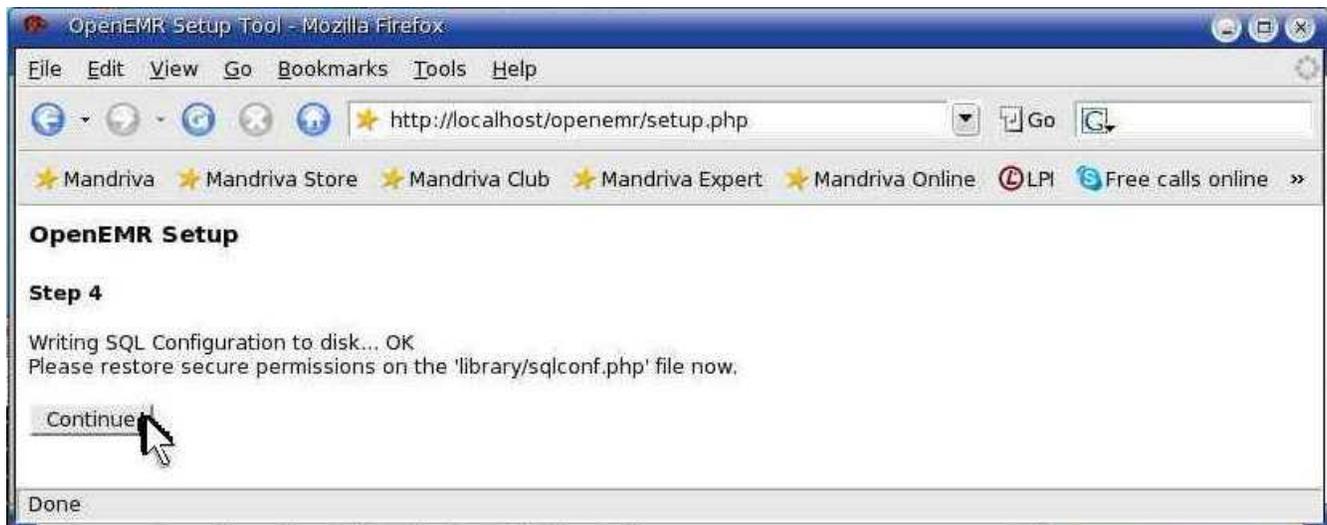
Click 'Continue'. (Don't worry, we will 'restore secure permissions' of file later)
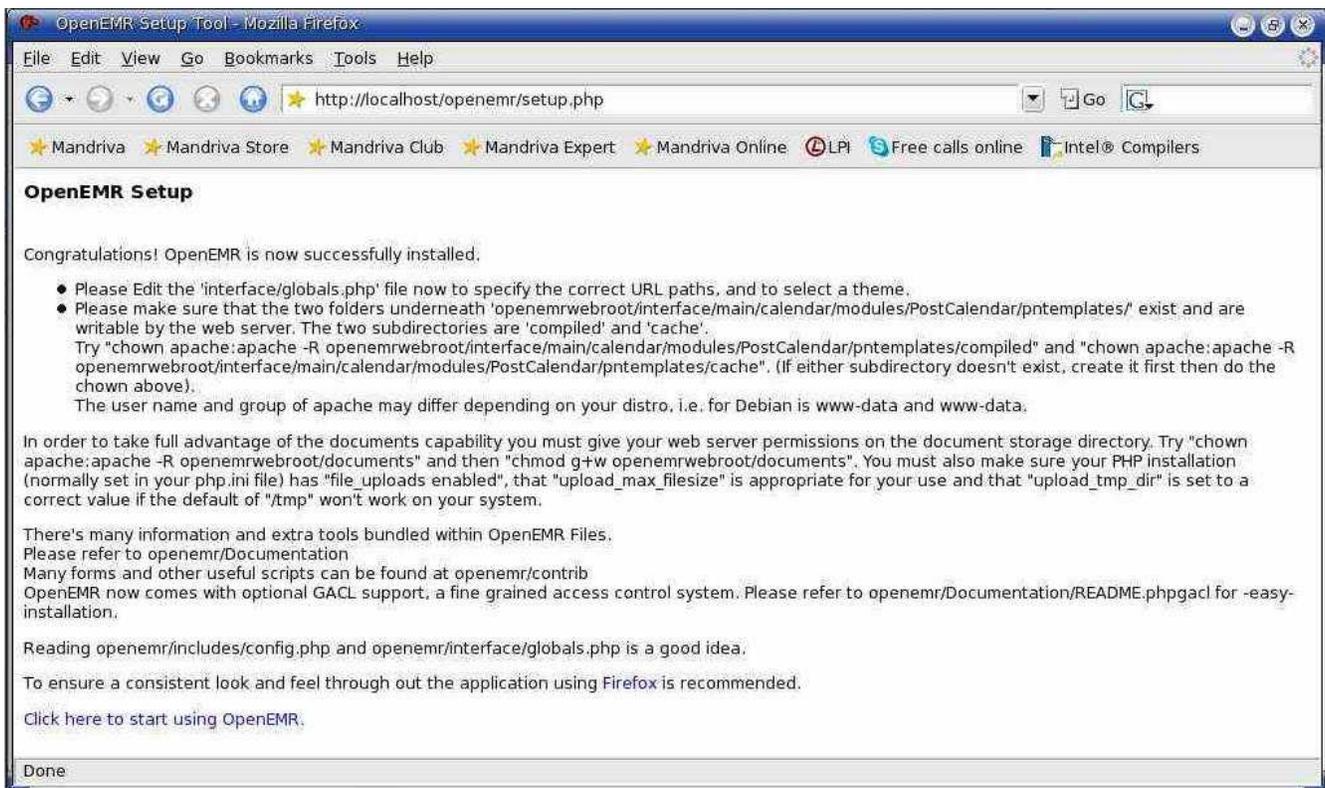
This page list some additional instructions. Again, don't worry, we will do all of this stuff in next section below. You can close your browser window now and move onto the next section.

4. Enter below **bolded** instructions on command line as root user:

#log into root
su

#Re-secure the sqlconf.php file
chmod 644 /var/www/html/openemr/library/sqlconf.php

#Need to change some file/folder ownerships
chown apache:apache -R /var/www/html/openemr/interface/main/calendar/modules/PostCalendar/pntemplates/cache
chown apache:apache -R /var/www/html/openemr/interface/main/calendar/modules/PostCalendar/pntemplates/compiled
chown apache:apache -R /var/www/html/openemr/documents

Install FreeB

1. Download freeb-0.11.tar.gz (version 0.11) from sourceforge:
    http://sourceforge.net/project/showfiles.php?group_id=60081

2. Enter below **bolded** instructions on command line as root user :

    #log into root
    su

    #put the program in its place
    cd /usr/share
    tar xzvf /location/to/tar/freeb-*.tar.gz
    mv freeb-* /usr/share/freeb

    #secure it
    chown root:root -R /usr/share/freeb

    #install the necessary packages
    urpmi perl-Config-General perl-Date-Calc
    -*choose yes to packages*

    #need to install several PERL modules
    perl -MCPAN -e shell
    -*Answer NO to first question, and then it will be auto-configured.*
    At cpan> prompt type:
    install PDF::Create
    install ConfigFile
    install Frontier::Daemon
    exit

    #create a directory that apache can write to
    mkdir /usr/share/freeb/public
    chown apache:apache -R /usr/share/freeb/public

    #change ownership of following directory
    chown apache:apache -R
       /var/www/html/openemr/library/freeb

    #this will allow the user to use freeb while in openemr
    cp /usr/bin/php4 /usr/bin/php

3. Configure FreeB as a service
    1. Download freeb file, which is an init.d script. I wrote this file,
        and it seems to work alright. But I have to say, please use at
        your own risk. File can be found at: http://bradymd.com/freeb
        (to download file, you may need to Right-Click the link and

select 'Save Link As...')

2. Enter below **bolded** instructions on command line as root user :

> #log into root
> **su**
>
> #move file and change ownership/permissions
> **mv /location/to/file/freeb /etc/init.d/**
> **chown root:adm /etc/init.d/freeb**
> **chmod 740 /etc/init.d/freeb**
>
> #start service
> **service freeb start**
> *-After 'before server setup', just hit 'enter' key once to get back to the prompt. If you saw 'before server setup', then it worked.*
>
> #configure freeb to start automatically during computer startup
> **chkconfig --add freeb**
>
> #You are done installing service, it will now start
> #up automatically during computer start up.
> #If the above service is not working, you can
> #manually start the FreeB server by typing:
> #'/usr/share/freeb/bin/FreeB_Server.pl &'

4. Next, need to do below "work-around"(Bug in OpenEMR) in order for HCFA billing to work.

Log in to OpenEMR with previously created username and default password 'pass' at http://localhost/openemr:

Click 'Administration'.

Click 'Forms'.

Click 'register' at 'prior_auth' entry.
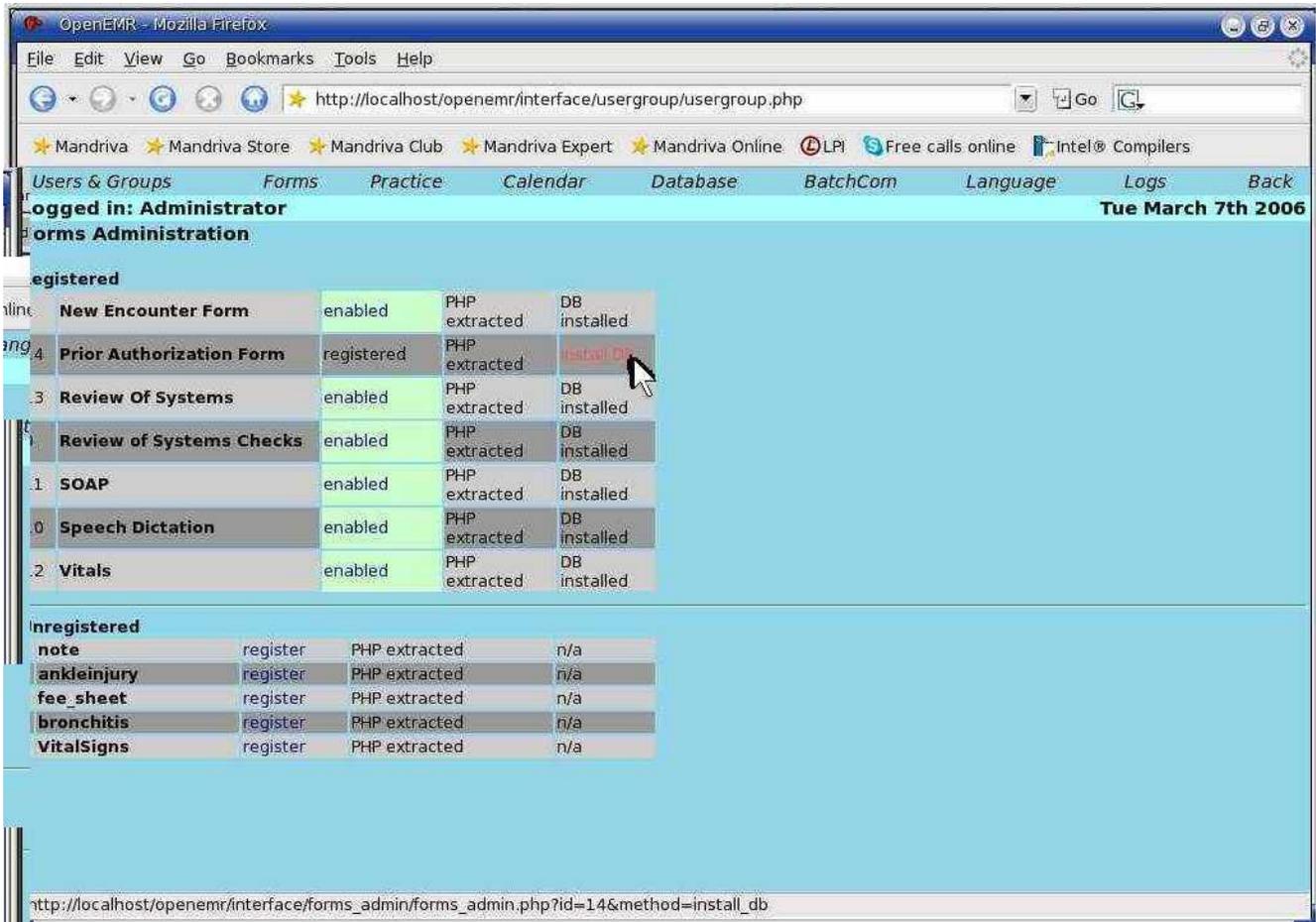
Click 'Install DB' at 'Prior Authorization Form' entry.

WARNING!! Do NOT click anything on screen below, read below the screenshot first.
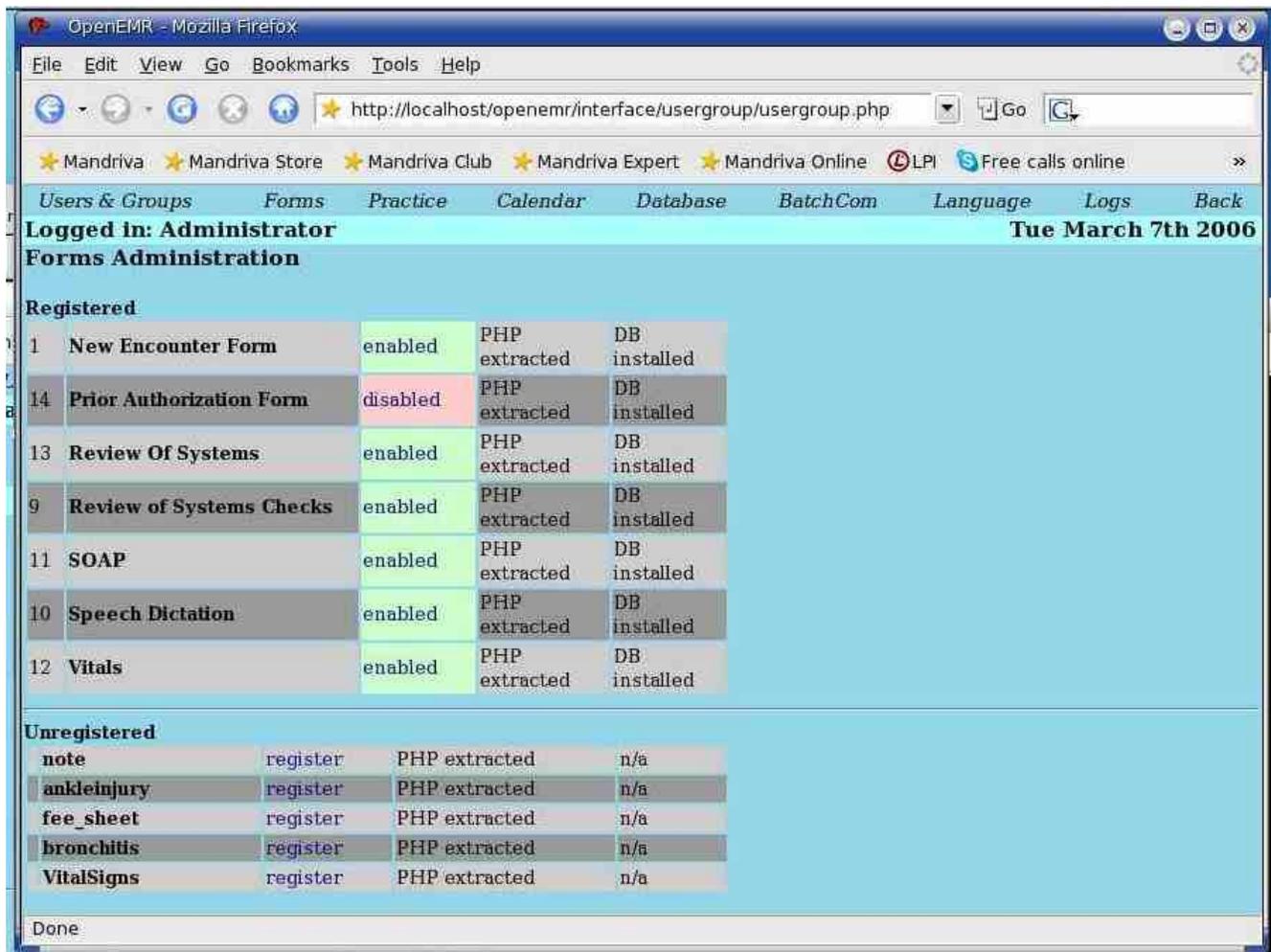
Do **NOT** click the disabled button. You are done with OpenEMR for now. Basically this 'prior_auth' form has to be in the database and **disabled** for program to function normally. Log out and move on to the next section.(continue to research)

lnstall PostgreSQL

1. Enter below **bolded** instructions on command line as root user :

   #log into root
   su

   #install postgresql and needed packages
   urpmi postgresql postgresql-devel postgresql-server postgresql-docs postgresql-pl php4-pg
   -yes to packages

#start service and also have it start at computer boot-up
service postgresql start
chkconfig --add postgresql

Install SQL-Ledger

1. We will do a manual install with version 2.6.3. I'd recommend installing this version also, since we know it works.
2. Download sql-ledger-2.6.3.tar.gz file from: http://sourceforge.net/project/showfiles.php?group_id=4320

3. Enter below **bolded** instructions on command line as root user :

   #log into root
   su

   #install the needed dependencies
   urpmi perl-DBD-Pg LaTeX perl-DBI
   -yes to packages

   #put the SQL-Ledger program in its place
   cd /usr/local
   tar xzvf /location/to/file/sql-ledger-2.6.3.tar.gz
   mv sql-ledger/sql-ledger.conf.default sql-ledger/sql-ledger.conf

   #edit file /usr/local/sql-ledger/sql-ledger.conf:
   mcedit /usr/local/sql-ledger/sql-ledger.conf

   #add the following to the vars section on first line of file (you must place this within the first line) For example: 'use vars qw($oemr_ar_acc ...)':

   $oemr_ar_acc $oemr_cash_acc $oemr_due_days $oemr_username $oemr_services_partnumber

   #Paste the entire section below into file:

   #Some constants relevant to OpenEMR import.
   #sql-ledger user
   $oemr_username = 'openemr';
   #acc num for acc receivable
   $oemr_ar_acc = '1200';
   # acc num for check/copay
   $oemr_cash_acc = '1060';

```
# creating a services item for medical services
#  OpenEMR billing "part number" here:
$oemr_services_partnumber = 'MS';

# Num of days added to OpenEMR transaction date to
# create the invoice due date when insurance. This affects
    the
# pat. portion of outstanding balance shown in OpenEMR
# summary, and also SQL-Ledger reports and statements.
$oemr_due_days = 40;
```
TEXT EDITOR SAVE AND EXIT

#create and edit file /etc/httpd/conf/sql-ledger-httpd.conf:
mcedit /etc/httpd/conf/sql-ledger-httpd.conf

#Paste the entire section below into empty file:

```
Alias /sql-ledger /usr/local/sql-ledger/
<Directory /usr/local/sql-ledger>
AllowOverride All
AddHandler cgi-script .pl
AddDefaultCharset On
Options ExecCGI Includes FollowSymlinks
Order Allow,Deny
Allow from All
</Directory>

<Directory /usr/local/sql-ledger/users>
Order Deny,Allow
Deny from All
</Directory>
```
TEXT EDITOR SAVE AND EXIT

#edit file /etc/httpd/conf/httpd.conf:
mcedit /etc/httpd/conf/httpd.conf
        #add following line to bottom of file
        include /etc/httpd/conf/sql-ledger-httpd.conf
        TEXT EDITOR SAVE AND EXIT

 #change permissions
 cd /usr/local/sql-ledger
 chown -hR apache:apache users templates css spool

#restart httpd service
service httpd restart

#Set up PostgreSQL user(use 'sql-ledger'), password, and

database
su postgres
createuser -d -P sql-ledger
-type a good password for the sql-ledger user on PostgreSQL
(this password is IMPORTANT and to avoid any severe confusion
*it will be referred to as the '**sql-ledger-password**' during the*
rest of the install documentation. I mean it, this is important
to remember. This password will be typed in many times
during instructions below.)
-type y to allow user to make more users
createlang plpgsql template1
exit

1. Load your web browser and connect to: http://localhost/sql-ledger/admin.pl

There is no default password. Just click 'Login'.

Click 'Change Admin Password'.

Enter a secure password. Then click 'Change Password'.

Click 'Pg Database Administration'.

Enter 'User' -> 'sql-ledger'. Enter 'Password' -> '**sql-ledger-password**'.
Otherwise keep above defaults. Then click 'Create Dataset'.
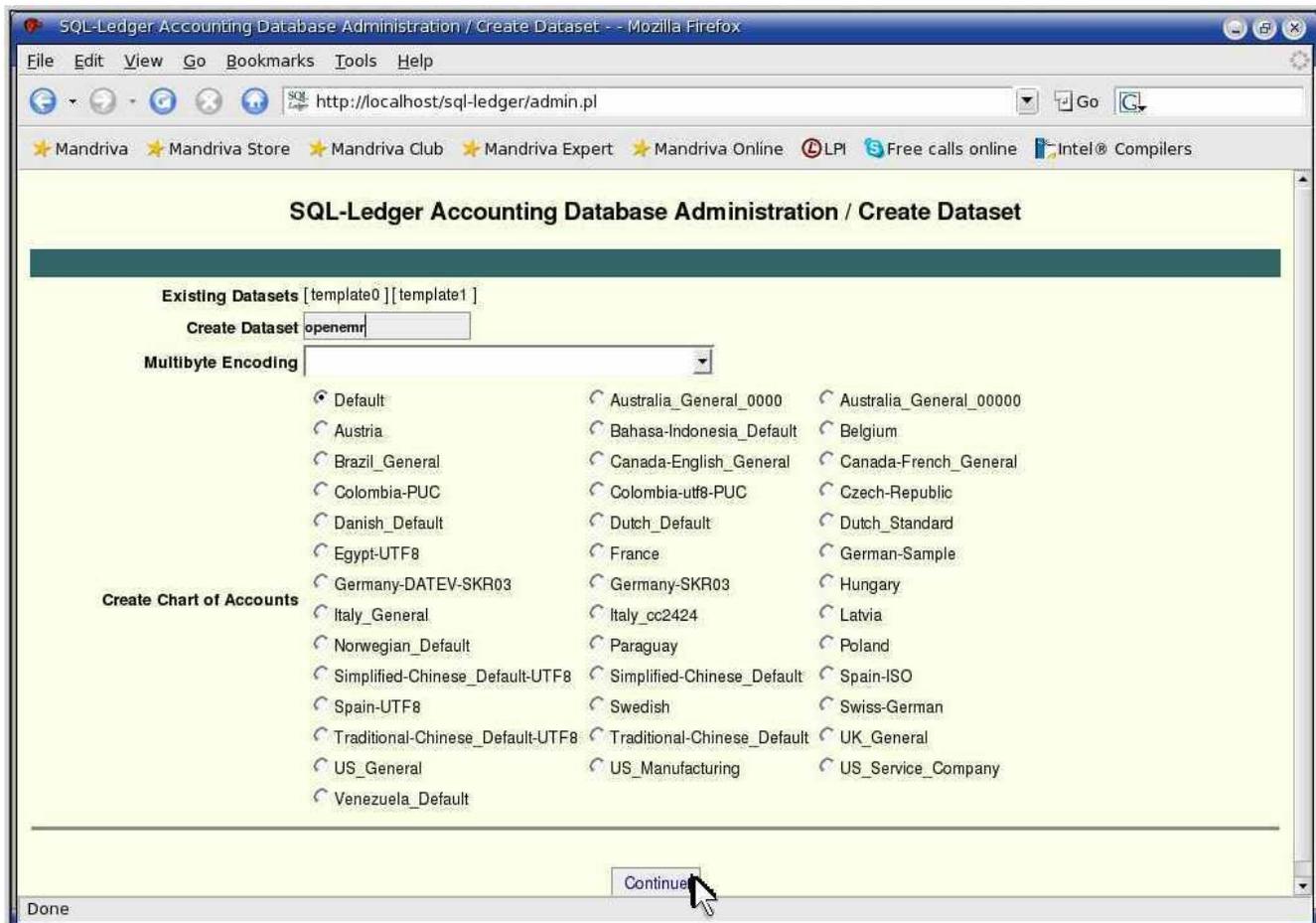
Enter 'Create Dataset' -> 'openemr'. Toggle 'Create Chart of Accounts' -> 'Default'. Then click 'Continue'.

Click 'Continue'.

Click 'Add User'.

Enter 'Login' ->'openemr'. Enter a secure 'Password'->'*openemrpassword'.*
Enter 'Name'-> 'openemr'. At the 'Database' section: ensure the 'Driver
Pg' is toggled to ON , set 'Dataset'->'openemr', set 'User'->'sql-ledger',
set 'Password'->'**sql-ledger-password**'. Keep above defaults for other
above entries. Scroll to bottom of page and click 'Save'.

Click 'Logout' and continue below.

1. Enter below **bolded** instructions on command line as root user:

#log into root
su

#Copy and rename openemr perl script to sql-ledger directory
cp /var/www/html/openemr/accounting/ws_server_26.pl
/usr/local/sql-ledger/ws_server.pl

#edit file /usr/local/sql-ledger/ws_server.pl:
mcedit /usr/local/sql-ledger/ws_server.pl

#edit the following **bolded** path:
use lib qw (**/usr/local/sql-ledger)**;
TEXT EDITOR SAVE AND EXIT

#edit file /var/www/html/openemr/interface/globals.php
mcedit /var/www/html/openemr/interface/globals.php

#edit the following **bolded** variables :
$sl_income_acc = '**4320**';
$sl_services_id = 'MS';
$sl_dbname = '**openemr**';
$sl_dbuser = 'sql-ledger';
$sl_dbpass = '***sql-ledger-password***';
TEXT EDITOR SAVE AND EXIT

#edit file /var/www/html/openemr/includes/config.php:
mcedit /var/www/html/openemr/includes/config.php

#edit the following **bolded** variables:

$GLOBALS['oer_config']['ws_accounting']['enabled'] =
true;

$GLOBALS['oer_config']['ws_accounting']['username'] =
"**openemr**";

$GLOBALS['oer_config']['ws_accounting']['password'] =
"***openemrpassword***";

$GLOBALS['oer_config']['ws_accounting']['income_acct']
= "**4320**";
TEXT EDITOR SAVE AND EXIT

1. Finish up SQL-Ledger install, go to: http://localhost/sql-ledger/

Enter 'Name' -> 'openemr'. Enter password then click 'Login'.

Click 'Goods & Services'.

Click 'Add Services'.

Enter 'Number' -> 'MS'. Enter 'Description' -> 'Medical Service'. Choose 'Income' -> '4320—Consulting'. Remove checks on the three tax toggles. Otherwise, keep defaults. Then click 'Save'. Your done with SQL-Ledger install, you can log-out now.

Install php-GACL

1. Download phpgacl-3.3.6.tar.gz file from: http://sourceforge.net/project/showfiles.php?group_id=57103

2. Enter below **bolded** instructions on command line as root user:

   #log into root
   su

   #unpack and place program in its proper place
   cd /var/www/html
   tar xvzf /location/to/file/phpgacl-3.3.6.tar.gz

mv phpgacl-* phpgacl

#create the mySQL database
mysql
    At mysql> prompt type:
        CREATE DATABASE gacl;
        exit

3. Start phpGACL Installer via :
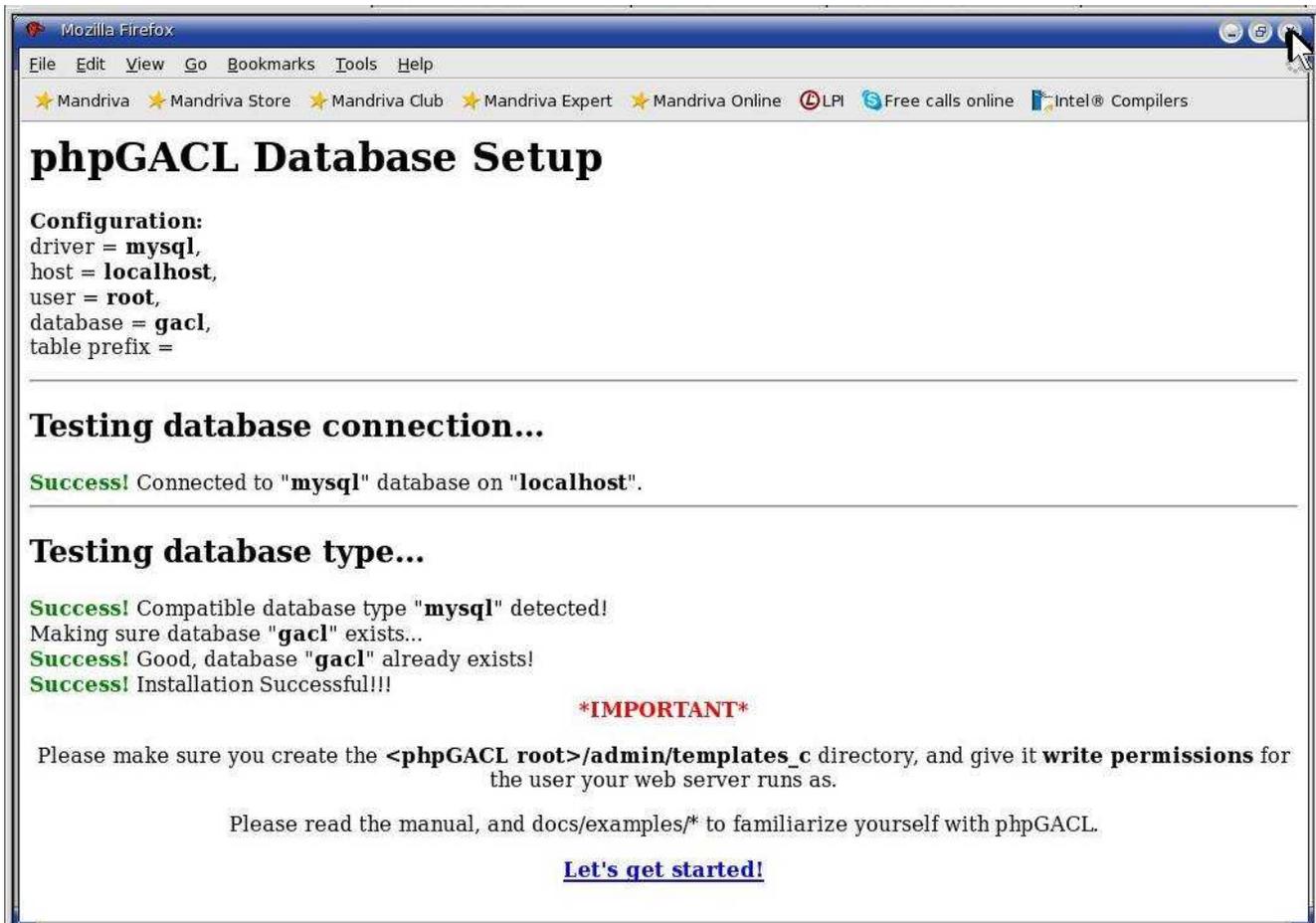
Close the window. (Don't worry, we will make the 'Important' directory below.)

4. Enter below **bolded** instructions on command line as root user:

#log into root
su

#make a phpgacl/admin/templates_c directory, and change
    owner
mkdir /var/www/html/phpgacl/admin/templates_c

chown -R apache:apache /var/www/html/phpgacl/admin/templates_c

#edit file /var/www/html/openemr/library/acl.inc:
mcedit /var/www/html/openemr/library/acl.inc
   #uncomment and **edit** following line:
   $phpgacl_location = "**/var/www/html/phpgacl**";
   TEXT EDITOR SAVE AND EXIT

#Password protect the /var/www/html/phpgacl/admin directory. Will need to: FIRST add entry to apache2 config file, SECOND create a password file, and THIRD re-start apache.

#FIRST, edit file /etc/httpd/conf/httpd.conf:
mcedit /etc/httpd/conf/httpd.conf
   #paste following section at end of file:
   <Directory "/var/www/html/phpgacl/admin">
      AuthType Basic
      AuthName "ACL Administrators"
      AuthUserFile
         /var/www/html/phpgacl/admin/.htpasswd
      Require valid-user
    </Directory>
   TEXT EDITOR SAVE AND EXIT

#SECOND, create the password file(file is .htpasswd and user is admin)
cd /var/www/html/phpgacl/admin
htpasswd -c /var/www/html/phpgacl/admin/.htpasswd admin
-Type in a secure password

#THIRD, Re-start apache
service httpd restart

5. Configure phpGACL to use OpenEMR via:
   http://localhost/openemr/acl_setup.php
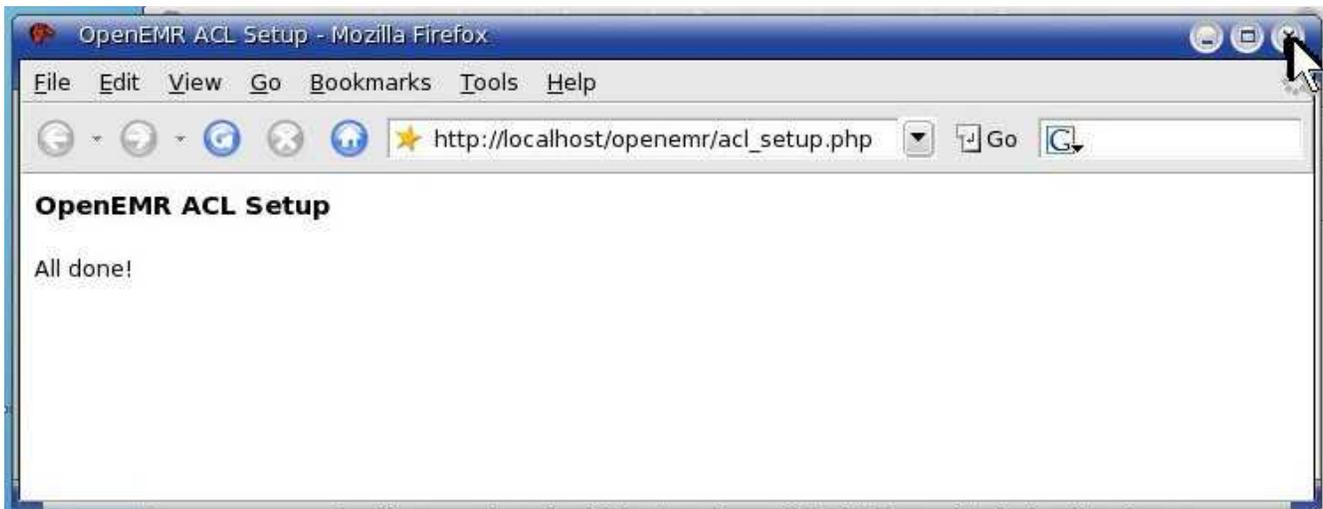
Close window.

6. Start phpGACL via: http://localhost/phpgacl/admin/acl_admin.php
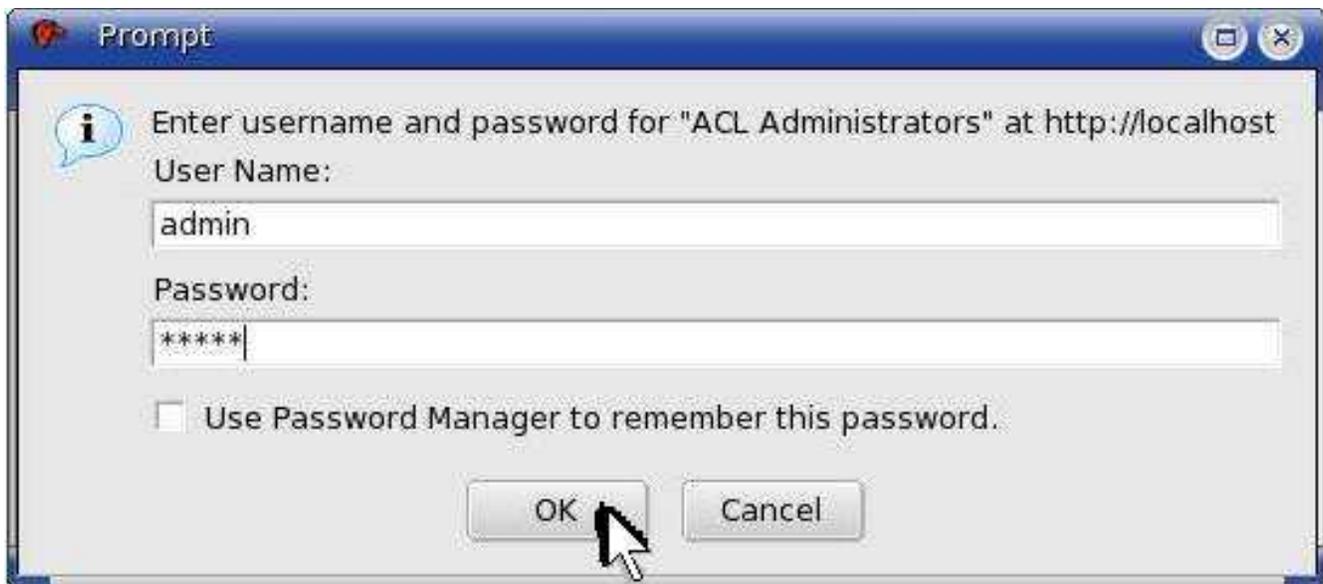
Log in as 'admin', and with password created by the above *htpasswd* command.
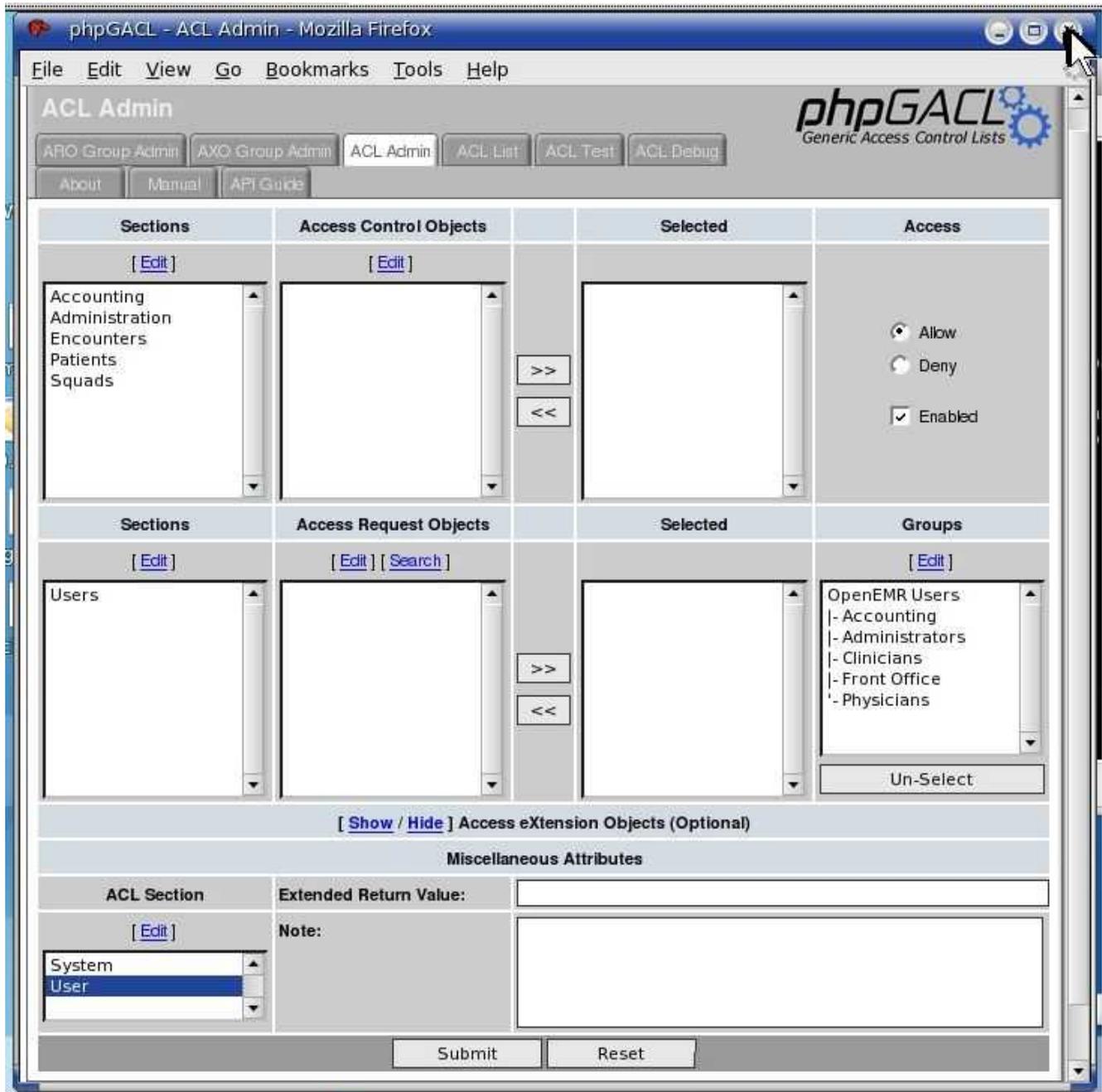
Close window. Learn how to use later. (Your OpenEMR 'admin' user is already configured as an administrator).

Configure SSL

1. SSL is very important, and will ensure encryption of all network traffic. This will allow safe use of a laptop over a wireless network. The protocol uses https instead of http and utilizes port 443 instead

of 80. Only two configuration files will need changing. We will also firewall port 80 to ensure that the only available option will be an encrypted connection.

2. Enter below **bolded** instructions on command line as root user:

    #log into root
    su

    #Edit file /var/www/html/openemr/includes/config.php. This will fix the SQL-Ledger link in the OpenEMR billing page.
    mcedit /var/www/html/openemr/includes/config.php
    #edit following line (yes, you're just adding an 's'):

    $GLOBALS['oer_config']['ws_accounting']['url_path'] = "**https://**" .
    $_SERVER["SERVER_NAME"] . "/sql-ledger/login.pl";
    TEXT EDITOR SAVE AND EXIT

    #Edit file /etc/httpd/modules.d/41_mod_ssl.default-vhost.conf. This will ensure only high level secure encryption is used.
    mcedit /etc/httpd/modules.d/41_mod_ssl.default-vhost.conf

        #REMOVE the entire line below:
        SSLCipherSuite
            ALL:!ADH:!EXPORT56:RC4+RSA:+HIGH:+MEDIUM:
            +LOW:+SSLv2:+EXP

        #PASTE all of below in place of the above removed line:
        SSLOptions +StrictRequire
        <Directory />
            SSLRequireSSL
        </Directory>
        SSLProtocol -all +TLSv1 +SSLv3
        SSLCipherSuite
            HIGH:MEDIUM:!aNULL:+SHA1:+MD5:+HIGH:+MED
            IUM
        TEXT EDITOR SAVE AND EXIT

    #Re-start apache
    service httpd restart

1. Firewall port 80
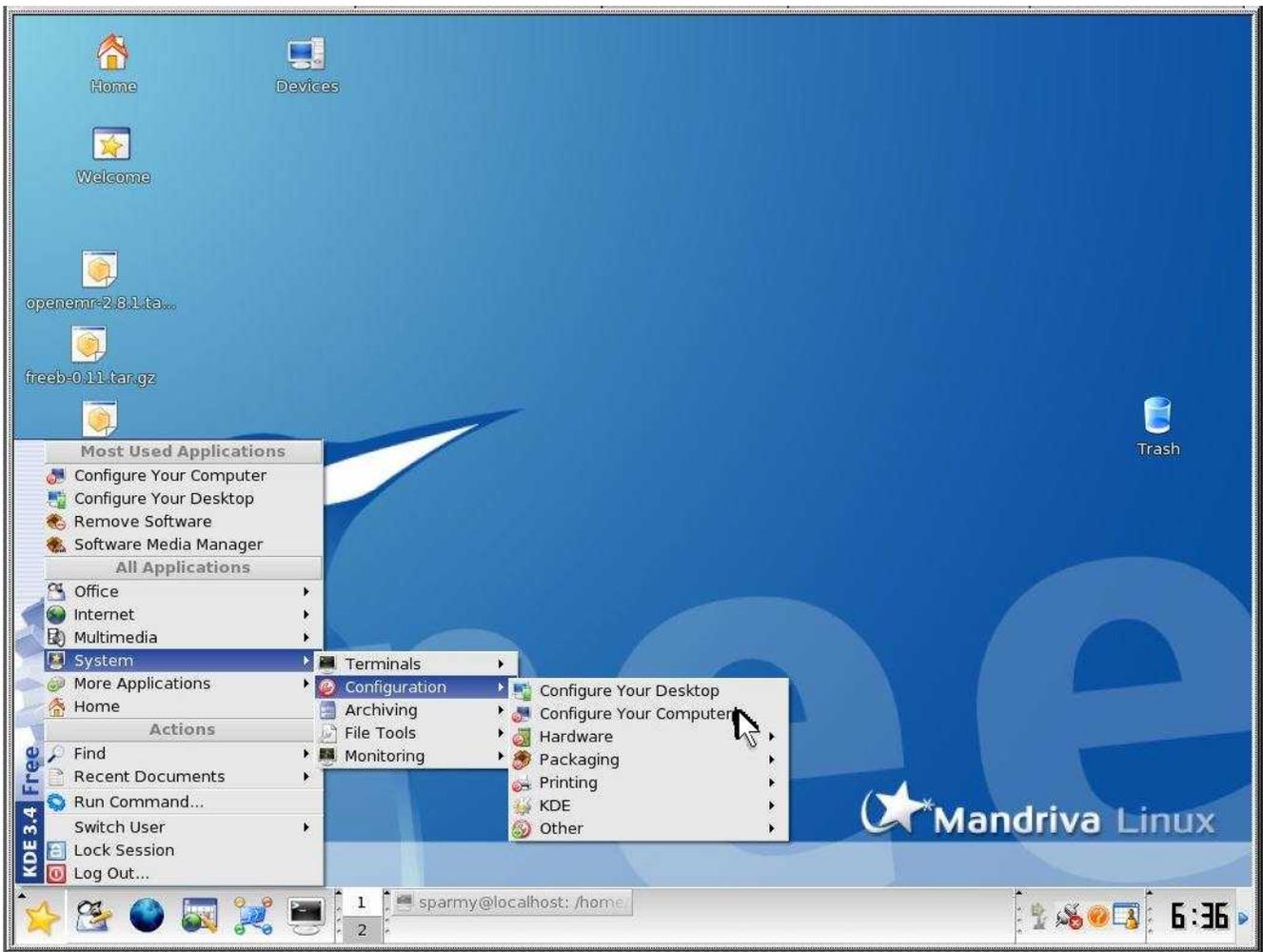
Click 'System' -> 'Configuration' -> 'Configure Your Computer'.

Enter 'root' user password. Then click 'OK'.

Click 'Security'.

Click 'Set up a personal...'

Ensure 'Web Server' is NOT selected. Then Click on 'Advanced'.

Enter 'Other ports' -> '**443/tcp 443/udp**'. Then click 'Ok'.

Click 'Ok'. Keep defaults.
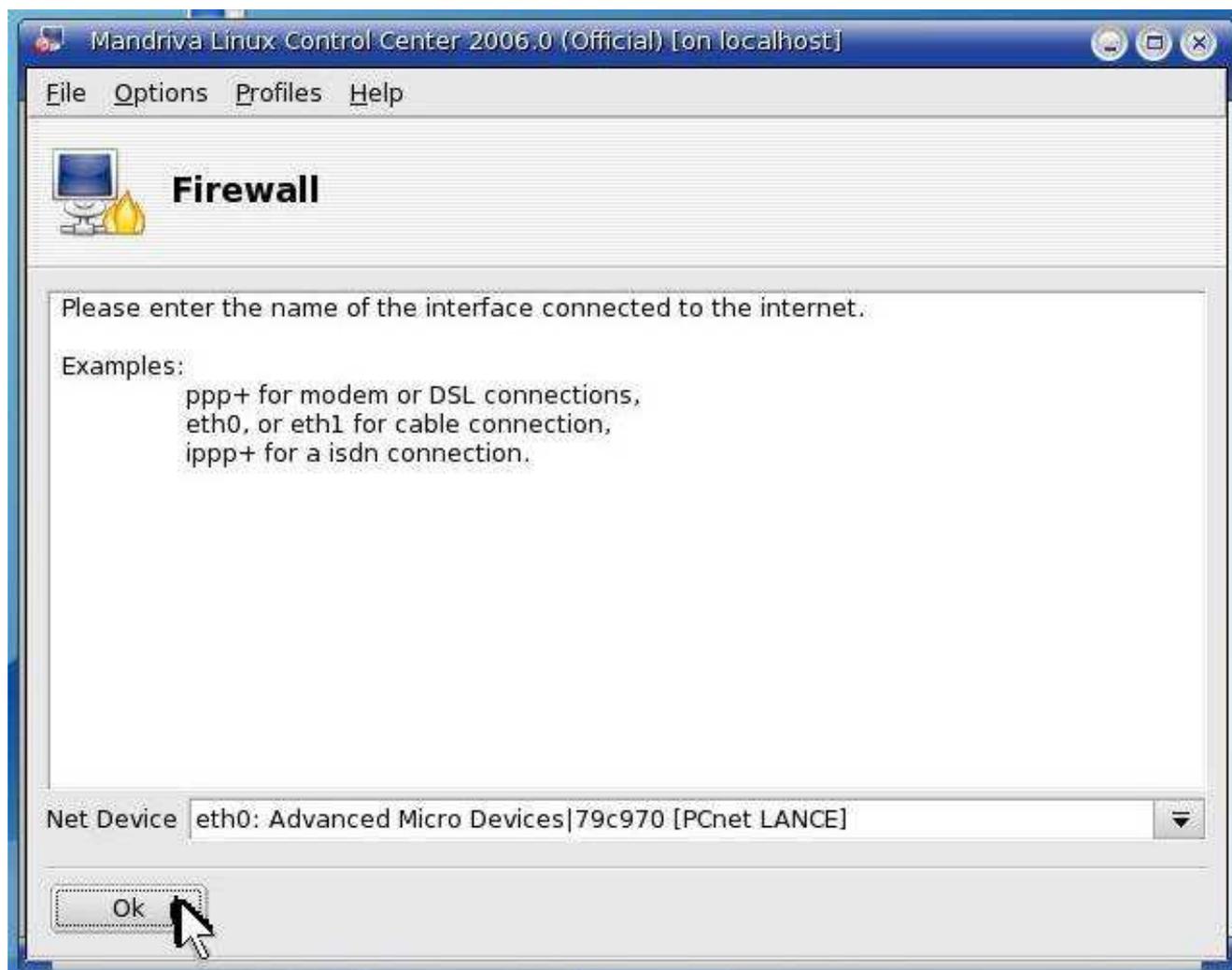
Click 'Ok'. Keep defaults.

You are done. Close the window.

Appendix

A. SECURITY PATCHES

1. **register_globals FIX**
   1. This OpenEMR Appliance has register_globals (this is a PHP configuration) turned ON by default. This is a huge security risk, and needs to be turned OFF (of course, if you're only using the appliance for demo purposes, then don't worry about it). Instructions on how to change register_globals to OFF is below.

1. Enter below **bolded** instructions on command line as root user:

    #log into root
    su

    #edit file /etc/php4.ini:
    mcedit /etc/php4.ini
        #EDIT the following variable:
        register_globals = **off**
        TEXT EDITOR SAVE AND EXIT

    #restart httpd
    service httpd restart

2. **FIX patient medical information directory security**
    1. The OpenEMR Appliance contains several directories(one in 2.8.1 and two in 2.8.2+), which contain confidential patient medical information. The below fix is to not allow unauthorized entry to these directories.
    2. Enter below **bolded** instructions on command line as root user:

    #log into root
    su

    #Ensure the following lines are included at the end of the /etc/httpd/conf/httpd.conf file).
    mcedit /etc/httpd/conf/httpd.conf
        #Ensure below is included at end of file (if not found, then paste below into end of file)
        <Directory "/var/www/html/openemr/documents">
        order deny,allow
        Deny from all
        </Directory>
        <Directory "/var/www/html/openemr/edi">
        order deny,allow
        Deny from all
        </Directory>
    TEXT EDITOR SAVE AND EXIT

    #restart apache
    service httpd restart

B. Change Mandriva's expired 'root' user password

1. This section describes how to change the 'root' user's password, which has expired. The default password is 'rootroot'. Don't worry, this is very quick and easy.

2. We will begin by opening a console window:

Click on the Konsole icon at bottom left of Desktop.
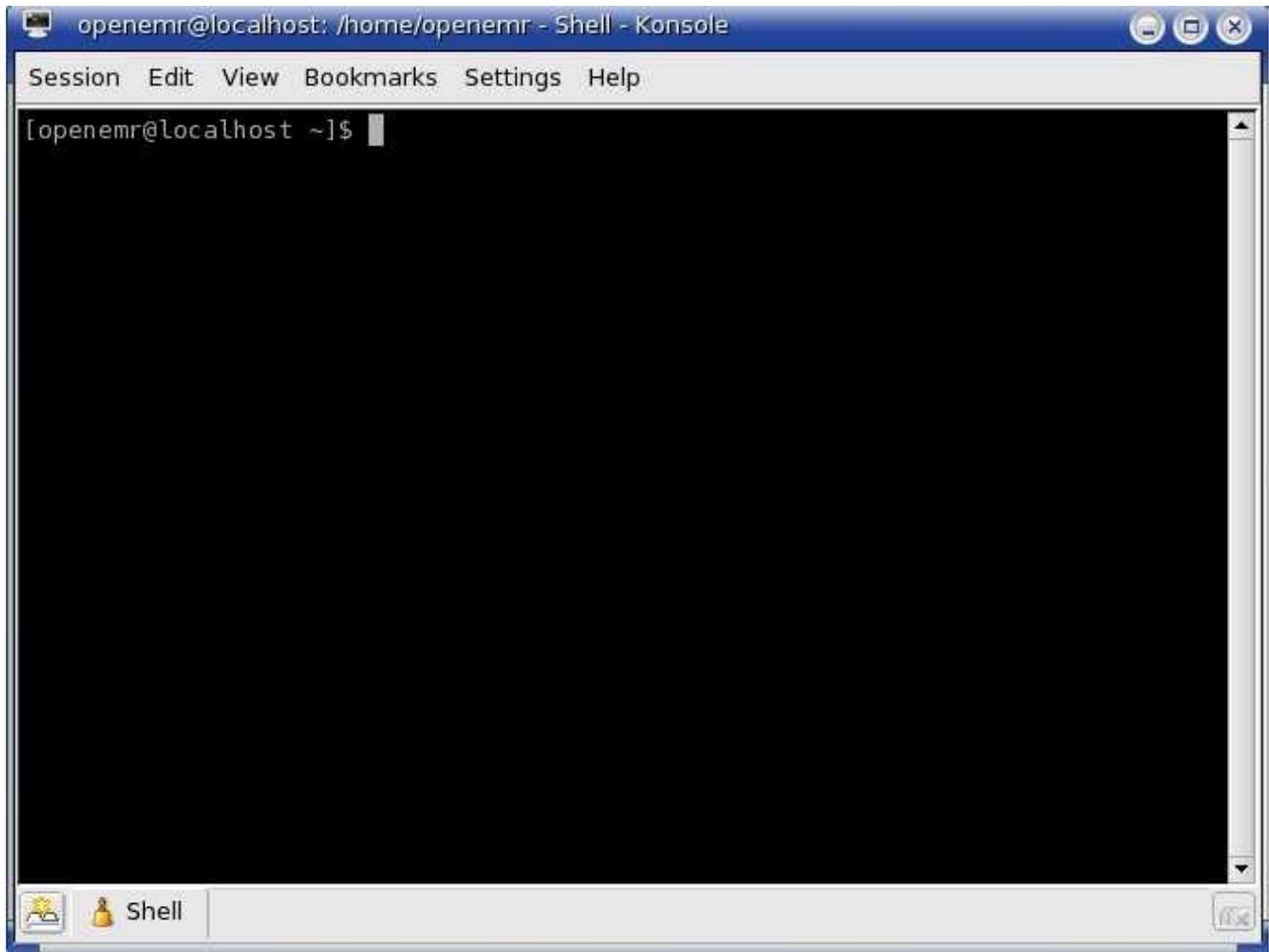
This is the console window, and where you type command line instructions. Move on to the next step.

First, login to 'root' user. At command line type: **su**

Enter in the default 'root' password. At command line type: **rootroot**

Password is expired, so it will mandate a password change. At command line type: **rootroot**

Enter a new 'root' password. At command line type: *A New Root Password*

Re-enter new password. At command line type: *A New Root Password*

Congratulations, you now have your own, secure 'root' password. This is a very important password, **DO NOT FORGET IT**. You can close the console window now.

C. Upgrade to OpenEMR Version 2.8.2

Main TOC Link

Please, back up all of your data, and use these instructions at your own risk.

1. First, upgrade OpenEMR:

    1. Download openemr-2.8.2.tar.gz (version 2.8.2) from sourceforge at: http://sourceforge.net/project/showfiles.php?group_id=60081

    2. Enter below **bolded** instructions on command line as root user:

        #log into root
        su

        #Ensure register globals in php is turned off.
        #edit file /etc/php4.ini:
        mcedit /etc/php4.ini
                #EDIT the following variable:
                register_globals = **off**
        TEXT EDITOR SAVE AND EXIT

        #restart httpd

service httpd restart

#make backup directories
mkdir /backupopenemrandfreeb
mkdir /backupopenemrandfreeb/2_8_1

#move old OpenEMR 2.8.1 to the backup directory
mv /var/www/html/openemr
  /backupopenemrandfreeb/2_8_1/openemr

#put the new OpenEMR 2.8.2 program in its place
cd /var/www/html
tar pxzvf /location/to/tar/openemr-2.8.2.tar.gz
mv openemr-2.8.2 /var/www/html/openemr

#secure OpenEMR
chown -Rf root:root openemr

#Need to change some file/folder ownerships
chown apache:apache -R
  /var/www/html/openemr/interface/main/calendar/mod
  ules/PostCalendar/pntemplates/cache
chown apache:apache -R
  /var/www/html/openemr/interface/main/calendar/mod
  ules/PostCalendar/pntemplates/compiled
chown apache:apache -R
  /var/www/html/openemr/library/freeb

#Restore the original scanned documents directory
cp -fr
  /backupopenemrandfreeb/2_8_1/openemr/documents
  /var/www/html/openemr/

#Change file-folder permissions of documents directory
chown apache:apache -R
  /var/www/html/openemr/documents

#Now for the hardest part of the upgrade; editing the new
  config files. There are five files that need to be compared to
  your old config files: **openemr/interface/globals.php**,
  openemr/library/sqlconf.php, openemr/library/sql-
  ledger.inc, **openemr/includes/config.php**, and
  openemr/library/acl.inc . The below instructions are
  specific for the openemr 2.8.1 appliance(only the **bolded**
  files above require changing or copying). If you have made
  your own changes to the config files, then I'd recommend
  comparing them to ensure no other changes are needed.
  We will replace one file with the previous 2.8.1 config file

and will edit three of the new 2.8.2 config files.

#replace new /var/www/html/openemr/library/sqlconf.php file
with the old 2.8.1 file
cp
**/backupopenemrandfreeb/2_8_1/openemr/library/sqlc
onf.php /var/www/html/openemr/library/sqlconf.php**

#edit file /var/www/html/openemr/interface/globals.php:
mcedit /var/www/html/openemr/interface/globals.php
#edit the following **bolded** variables :
$sl_dbname   = '**openemr**'; // sql-ledger database
name
$sl_dbpass   = '***sql-ledger-password***'; // sql-ledger
database login password (click link for default
above password, which is the PostgreSQL
database password, and should be 'sqlledger')
TEXT EDITOR SAVE AND EXIT

#edit file /var/www/html/openemr/includes/config.php:
mcedit /var/www/html/openemr/includes/config.php
#edit the following **bolded** variables :
$GLOBALS['oer_config']['ws_accounting']['enabled']
= **true**;
$GLOBALS['oer_config']['ws_accounting']['username']
= "**openemr**";
$GLOBALS['oer_config']['ws_accounting']['password']
= "***openemrpassword***"; (click link for default
above password, which is sql-ledger 'openemr'
user password, and should be "openemr")
$GLOBALS['oer_config']['ws_accounting']['url_path']
= "**https://**" .
$_SERVER["SERVER_NAME"] . "/sql-
ledger/login.pl";
TEXT EDITOR SAVE AND EXIT

#edit file /var/www/html/openemr/library/acl.inc:
mcedit /var/www/html/openemr/library/acl.inc
#uncomment below line and edit the **bolded** variable:
$phpgacl_location = "**/var/www/html/phpgacl**";
TEXT EDITOR SAVE AND EXIT

#Backup the mysql database into backup directory.
mkdir /backupopenemrandfreeb/2_8_1/mysqldatabase
**mysqldump --opt --all-databases | gzip >
/backupopenemrandfreeb/2_8_1/mysqldatabase/mysql
_backup.gz**

#Upgrade the mysql database
mysql openemr < /var/www/html/openemr/sql/2_8_1-to-2_8_2_upgrade.sql

#**OPTIONAL** If you want to change to the new "concurrent frames look"(check out the demos to decide), then you will need to edit the file /var/www/html/openemr/interface/globals.php:
mcedit /var/www/html/openemr/interface/globals.php
#edit the below **bolded** variable :
$GLOBALS['concurrent_layout'] = **true**;
TEXT EDITOR SAVE AND EXIT

2. Second, upgrade FreeB:

   1. Download freeb-0.12.tar.gz (version 0.12) from sourceforge:
   http://sourceforge.net/project/showfiles.php?group_id=60081

   2. Enter below **bolded** instructions on command line as root user:

      #log into root
      su

      #move old FreeB 0.11 to the backup directory
      mv /usr/share/freeb /backupopenemrandfreeb/2_8_1/freeB

      #put the new FreeB 0.12 program in its place
      cd /usr/share
      tar xzvf /location/to/tar/freeb-0.12.tar.gz
      mv freeb-* /usr/share/freeb

      #secure FreeB
      chown root:root -R /usr/share/freeb

      #create a directory that apache can write to
      mkdir /usr/share/freeb/public

      #restore original billing files(if they exist)
      cp -fr /backupopenemrandfreeb/2_8_1/freeb/public /usr/share/freeb/

      #Allow apache access to public directory
      chown apache:apache -R /usr/share/freeb/public

      #restart the freeb service
      service freeb stop
      service freeb start

YOU ARE DONE

D. Useful Websites

OpenEMR links:
1. http://www.oemr.org/ (Main OpenEMR website with a good Wiki and a new forum)

2. http://sourceforge.net/projects/openemr/ (Main OpenEMR forums are here)

3. http://www.bradymd.com/appliance/ (OpenEMR 2.8.1 Virtual Machine Manual)

Virtual Machine links:
1. http://www.vmware.com/ (VMware website)

2. http://www.vmware.com/appliances/ (VMware virtual appliance explanation)

3. http://www.vmware.com/vmtn/appliances/overview.html (Another VMware virtual appliance explanation)

General EMR links:
1. http://www.linuxmednews.com/ (Open Source EMR news)

2. http://www.emrupdate.com/ (Great site and forums which discusses proprietary and open source EMRs. It also has a great actively updated price comparison for most proprietary EMR's)

3. http://ehr.gplmedicine.org/ (Great detailed reviews of OpenEMR, MirrorMed, and FreeMed)

4. http://www.bradymd.com/ (Installation instructions and quick reviews of OpenEMR, MirrorMed, FreeMed, and VistA.)

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