OpenEMR 3.0.1 Appliance Manual

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[LINK TO MANUAL IN PDF FORMAT](#)

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OpenEMR 3.0.1 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.

The goal of this project is to maintain a comprehensive Open Source Medical Practice Management Software Appliance, which provides office scheduling, electronic medical records, prescriptions, insurance billing, accounting, and access controls. This appliance has 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.

This version of the OpenEMR Appliance is markedly different than previous versions. OpenEMR is now installed on the Ubuntu 8.04 Server Edition operating system, and is a vast improvement over the previous Mandriva operating system. For users whom require a GUI desktop, the Ubuntu Server edition OS (8.04) does not come with a desktop, however it is easy to install and is described in this manual. The administration in the Ubuntu Server can be mostly done via Webmin, which is described in this manual.

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 and administration 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 configure and administer OpenEMR and the appliance. There are instructions

describing how to set up a printer, an email server, and an automated backup scheme. This chapter also describes how to choose the visual layout of OpenEMR and how to add the pharmacy dispensary module along with other instructions on setting up a static IP address, installing a desktop environment, setting the time, changing the password, and safely shutting the appliance down.

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

Online Demo

Here are online demos of the OpenEMR 3.0.1 appliance:

With the new frames look:
http://OpenSourceEMR.com:2090/openemr/   (Main OpenEMR program)

With the traditional look:
http://OpenSourceEMR.com:2091/openemr/   (Main OpenEMR program)

These are fully functional demos, 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). The 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 8:00AM(new frames appliance) and 9:00AM(traditional look appliance) Pacific Time. Have fun. (If demo is not working email me at brady@sparmy.com)

Download the OpenEMR Appliance and VMware Player

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

2. Download the FREE OpenEMR Appliance.

   1. You can download Appliance via Direct Download or Torrent (file is 760MB, which extracts to 2GB):

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

      2. Torrent file link: http://www.bradymd.com/OpenEMR-3-0-1-appliance-1.torrent (If you need a torrent software client, then try: http://azureus.sourceforge.net/)

Start the OpenEMR Appliance

Windows

1. Unpackage the OpenEMR-3-0-1-appliance-1.zip file.

2. Run VMware Player (screenshot below).

3. Start up the OpenEMR Appliance by opening the OpenEMR-3-0-1-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 (see screenshot below). Select 'I copied it' and click the 'OK' button.

5. Several windows may also pop up explaining that certain drives or sound drivers are not gonna work. Just click 'ok' and continue.

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


This is the introduction screen. Note that it automatically displays the IP address of your appliance, along with links to OpenEMR and Webmin. These links are customized for you depending on your IP address. The initial important user names and passwords are also displayed. To use appliance, proceed to the 'Using the OpenEMR Appliance' section below.

Linux

1. Unpackage the OpenEMR-3-0-1-appliance-1.zip file (use the 'unzip OpenEMR-3-0-1-appliance-1.zip' command).

2. Run VMware Player.

3. Start the OpenEMR appliance by opening the OpenEMR-3-0-1-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:
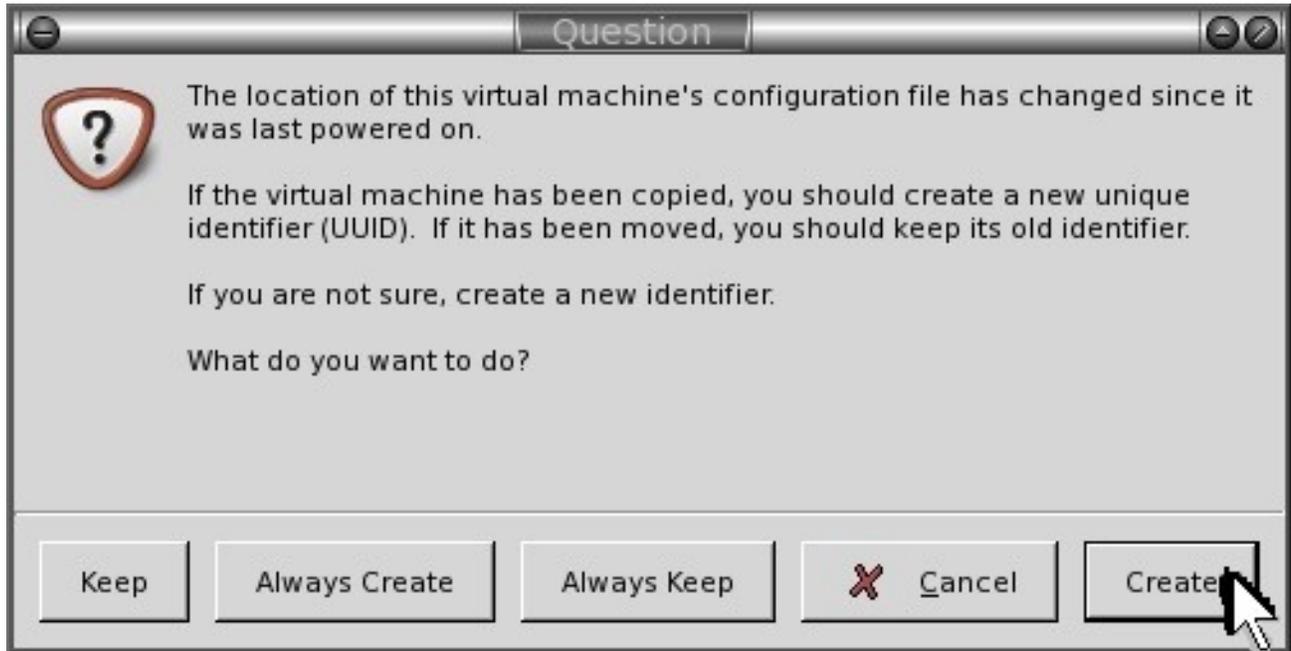
You will only see this window the first time you start the appliance. Click 'Create'.

5. Several windows may also pop up explaining that certain drives or sound drivers are not gonna work. Just click 'ok' and continue.

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

This is the introduction screen. Note that it automatically displays the IP address of your appliance, along with links to OpenEMR and Webmin. These links are customized for you depending on your IP address. The initial important user names and passwords are also displayed. To use appliance, proceed to the 'Using the OpenEMR Appliance' section below.

Using the OpenEMR Appliance

Main TOC Link

Using OpenEMR Appliance

Main TOC Link

1. You connect with the OpenEMR Appliance through a web browser. You can get the Appliance IP address along with links to OpenEMR and Webmin on the above introduction screen. Use those links as the web address on another computer's web browser. (If you get a security error in your web browser, then first follow the instructions in below appendix section 'Configuring client web browser for https' to configure your web browser.)

   1. OpenEMR at https://*Appliance_IP_address*/openemr
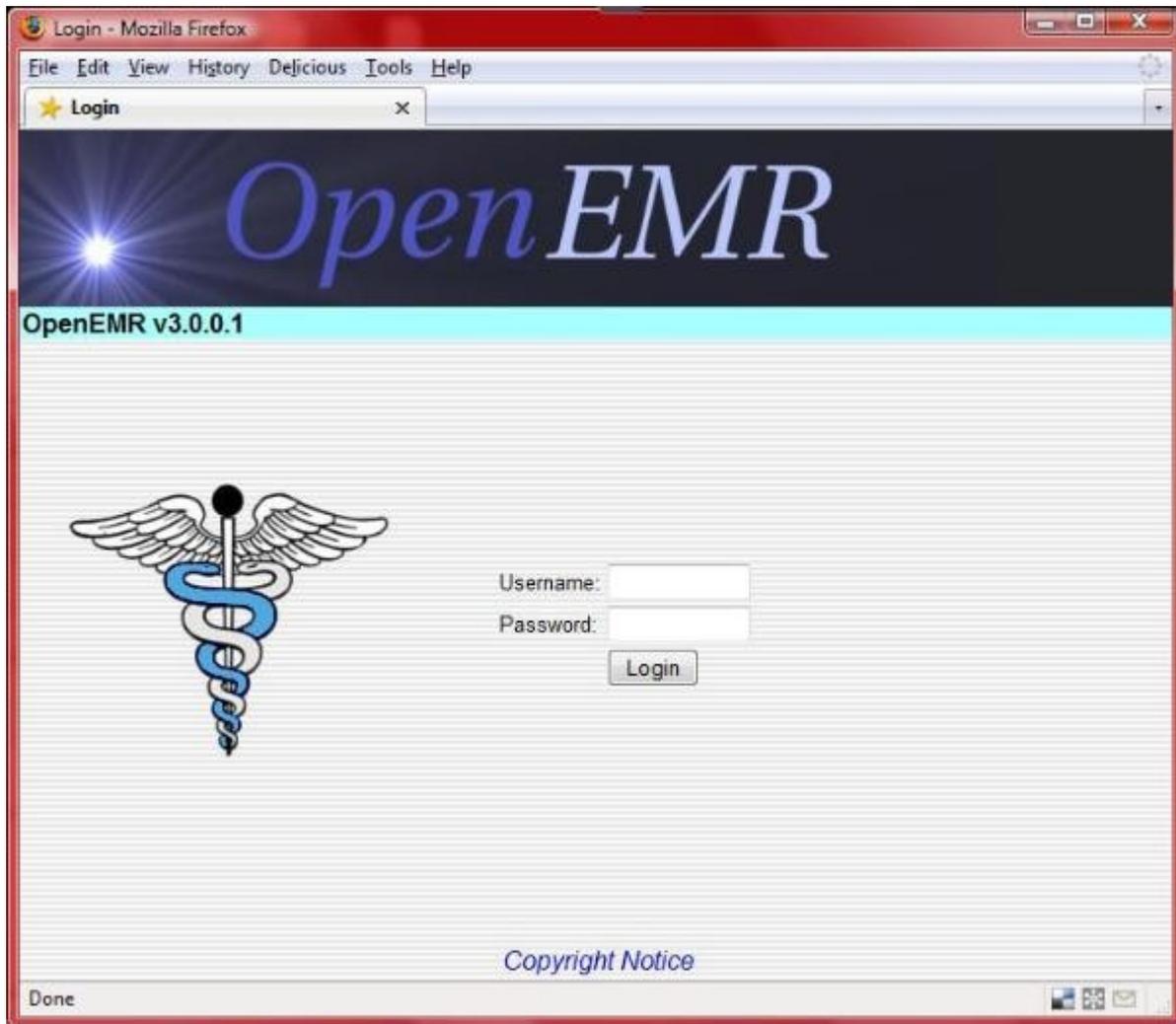
2. Webmin at https://*Appliance_IP_address*:10000/

3. 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. Directions to to do this are in the 'Static IP Address Setup' section.

OpenEMR User Training

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

Helpful Tips

1. **NEED** to ensure clock is set correctly (Virtual computer time should not differ from the host computers, or there will be cron scheduling problems)

List of Login Names and Passwords

1. Ubuntu user -> user: 'openemr' password: 'openemrcool'
2. Ubuntu sudo command -> password: 'openemrcool'
3. Webmin -> user: 'openemr' password: 'openemrcool'
4. OpenEMR -> user: 'admin' password: 'pass'
5. MySQL user -> user: 'openemr' password: 'openemr'
6. MySQL admin -> user: 'root' NO PASSWORD

Configuration of the OpenEMR Appliance

## OpenEMR Visual Layout Configuration

1. OpenEMR has three visual layouts to choose from; the traditional layout, a frames layout with radio buttons, and a frames layout with a tree view menu. We will first show screenshots of the available layouts, and then will show how to configure this option.
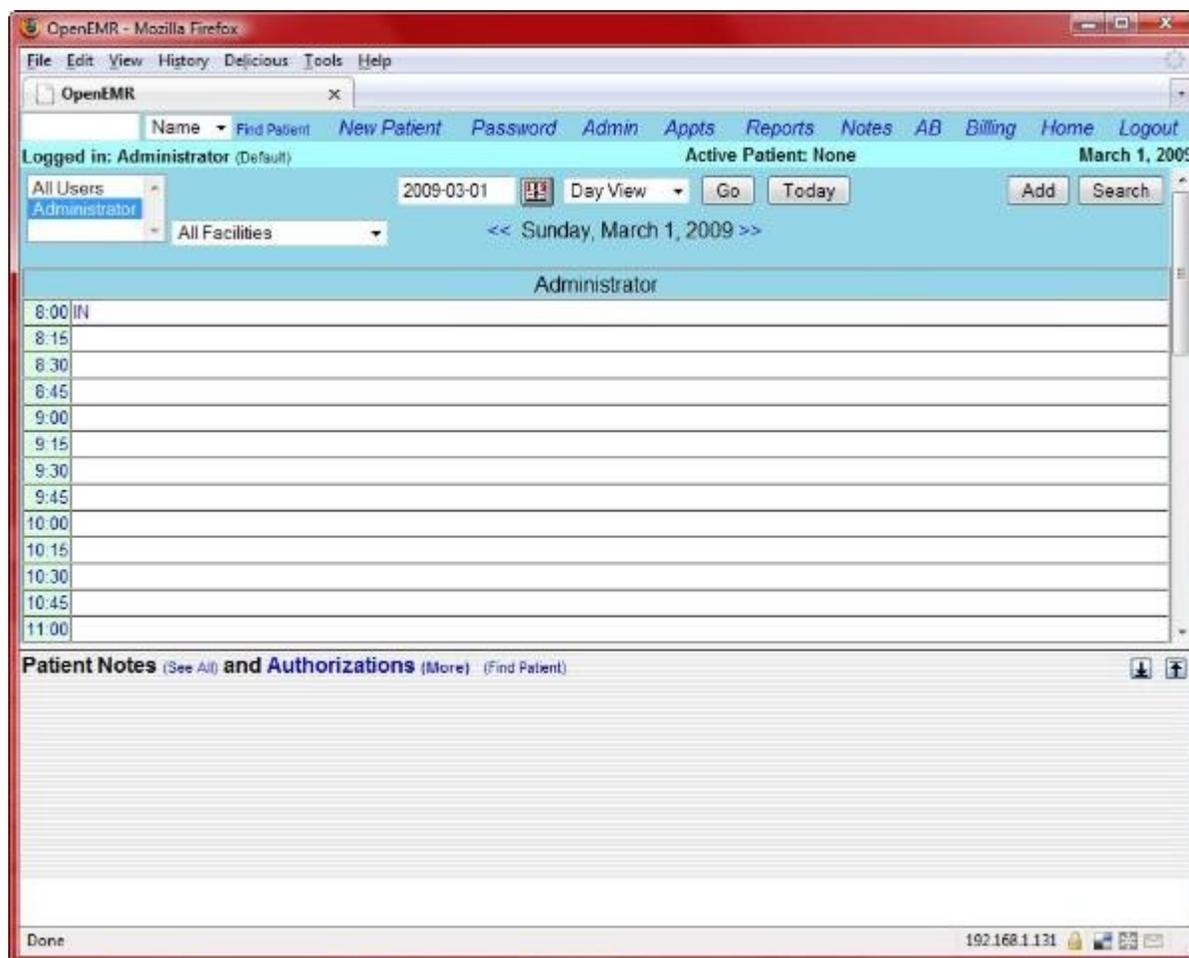
Traditional view (also called old-style layout).

Frames with navigation by radio buttons.
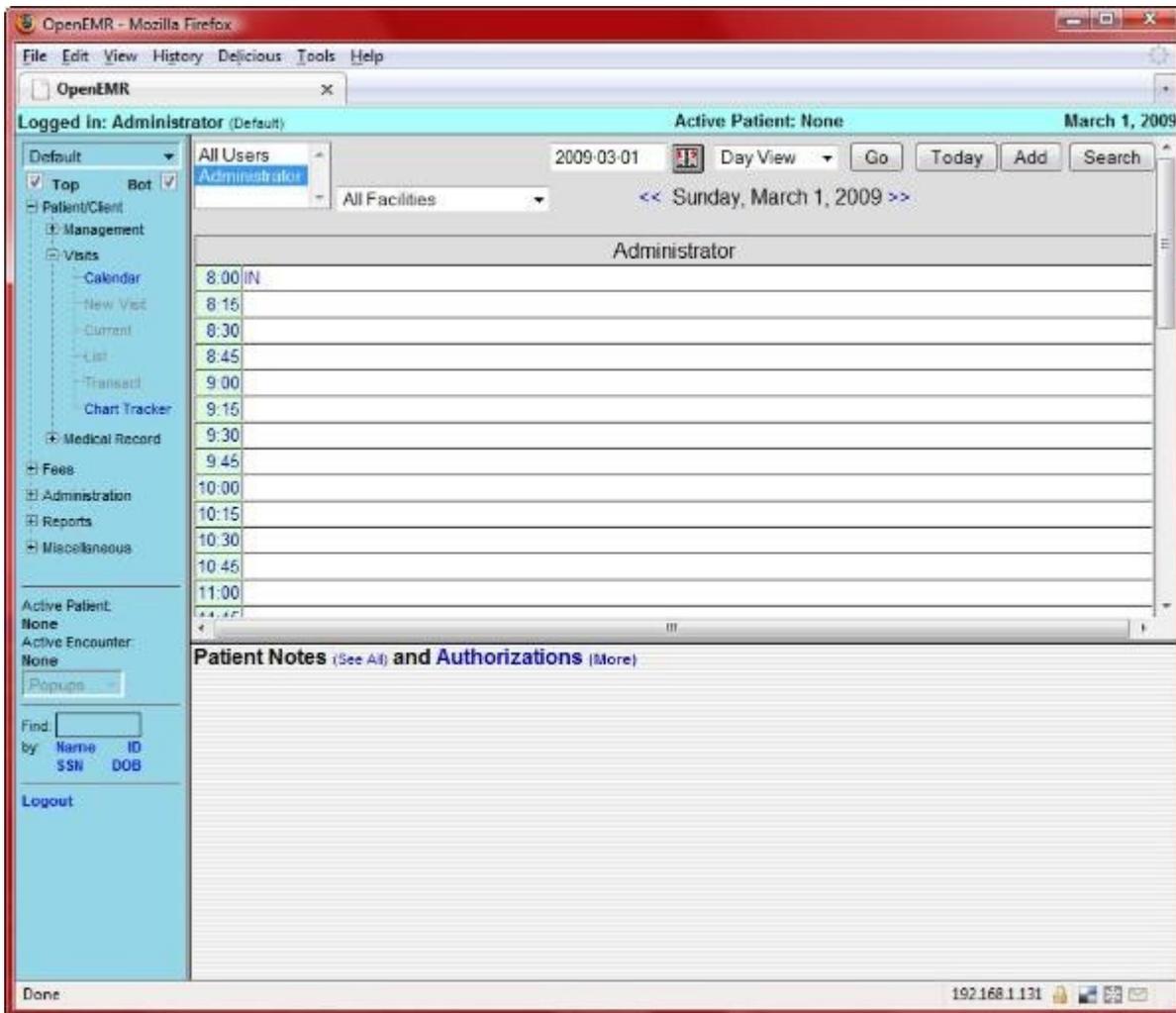
Frames with navigation by a tree view menu.

2. Enter below **bolded** instructions on command line (if prompted to give password during the sudo command, then type in your user password):

> #edit the file /var/www/openemr/interface/globals.php:
> **sudo jed /var/www/openemr/interface/globals.php**
> > #change below **bolded** number to desired layout :
> > // Set this to 1 or 2 to activate support for the new frame layout.
> > // 0 = Old-style layout
> > // 1 = Navigation menu consists of pairs of radio buttons
> > // 2 = Navigation menu is a tree view
> > //
> > $GLOBALS['concurrent_layout'] = **1**;
> **TEXT EDITOR SAVE AND EXIT**

Pharmacy Dispensary Module Configuration

1. The pharmacy dispensary module will allow you to dispense and keep track of your own med/herbs/supplement dispensary. It will also create bottle labels of the drugs you dispense.
2. Turn on the pharmacy dispensary module in the OpenEMR configuration file. Enter below **bolded** instructions on command line (if prompted to give password during the sudo command, then type in your user password):

   > #edit file /var/www/openemr/interface/globals.php:
   > **sudo jed /var/www/openemr/interface/globals.php**
   > #edit the following **bolded** variable :
   > $GLOBALS['inhouse_pharmacy'] = **true**;

   TEXT EDITOR SAVE AND EXIT

1. Here are some quick OpenEMR screenshots (note these were taken from version 2.8.3 with the Traditional View) that show how to navigate to the pharmacy dispensary module for administrative purposes:

Click 'Administration'

Click 'Drugs'.

Click 'Add Drug', enter stuff and play around to figure out how to use.

Quick OpenEMR screenshots of prescribing drugs with the dispensary:

Robert Crawford (ID: 1, DOB: 1974-02-12, Age: 33, Home: 123-214-3543) **Logged in as: Clinical Director EncounterSun A**

This Encounter for Robert Crawford:

Clinical Director SOAP

Subjective: itchy foot

Objective: red foot

Assessment: athletes foot

Plan: anti-fungal cream

Clinical Director Patient Encounter

category ▼

◄ | ►

Coding

   Superbill
   ICD9 Search
   CPT4 Search
   HCPCS Search
   Copay
   Other

Prescriptions

   List Prescriptions
   Add Prescription

Billing (More)   Justify

[Receipt]

         5466 Foot Rub 2200.00

CPT4 ☐   (**416.0**)

      total: 2200.00

ICD9 ☐ **416.0** Prim Pulm Hypertension

Click 'Add Prescription'.

Note the things circled in red, which are part of the pharmacy dispensary module. Note that in version 3.0.1 the 'Prescribe and Dispense' button is now labeled 'Save and Dispense'.

Printer Setup

Main TOC Link

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 this 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. Now, you need to add the printer . It would be great if we could add and administer the printer through webmin, but I was unable to get this to work. So we will add a new printer to CUPS directly. To do this, we will actually use a text based browser from the commandline (yes, you are now entering nerd world).   Enter below **bolded** instructions on command line:

> #open up web page with text based browser (use up/down arrow keys or 'tab' key to scroll thru links and hit 'enter' key to select a link)
> **lynx http://localhost:631**
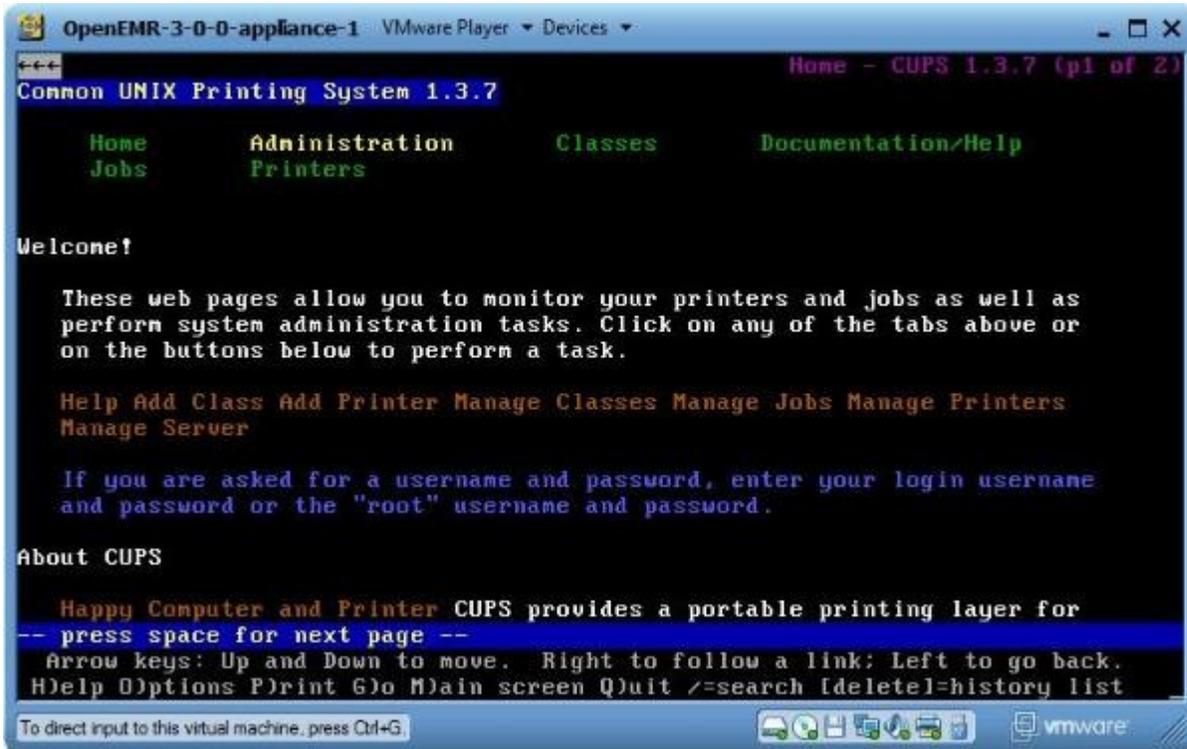
Select 'Administration'.
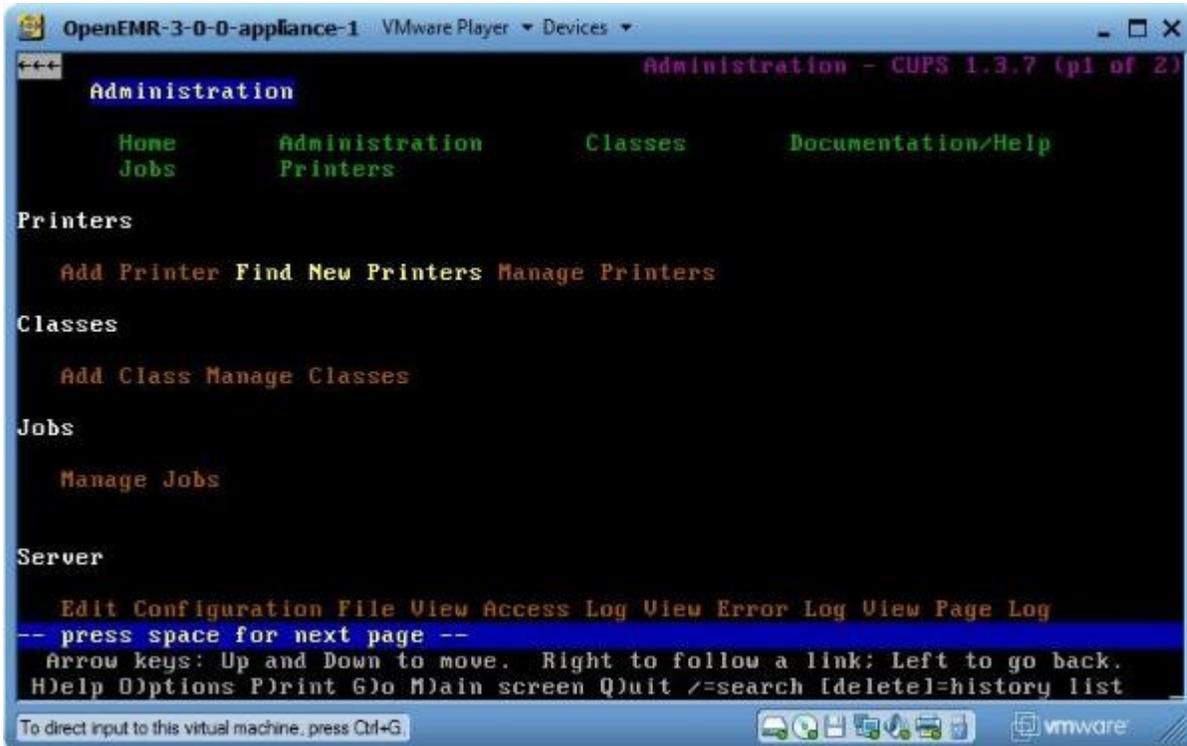
Select 'Find New Printers'. (it will take a bit of time to load next page)
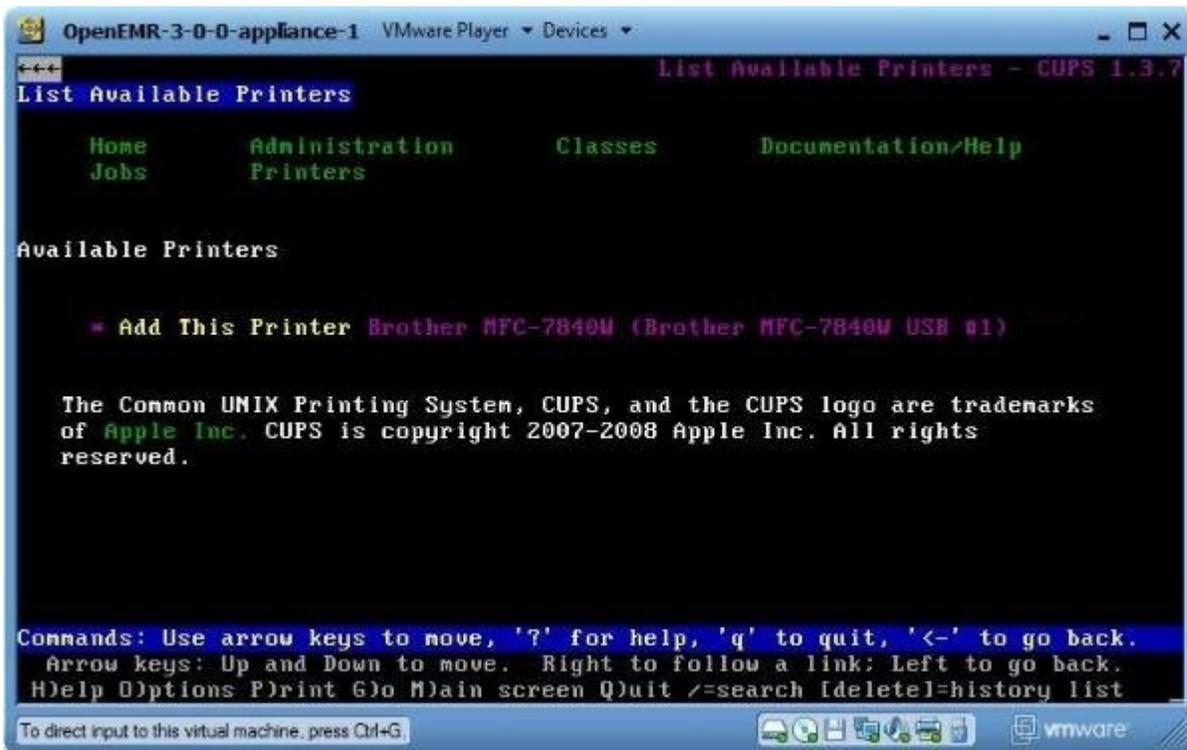
Select the printer you want to add.
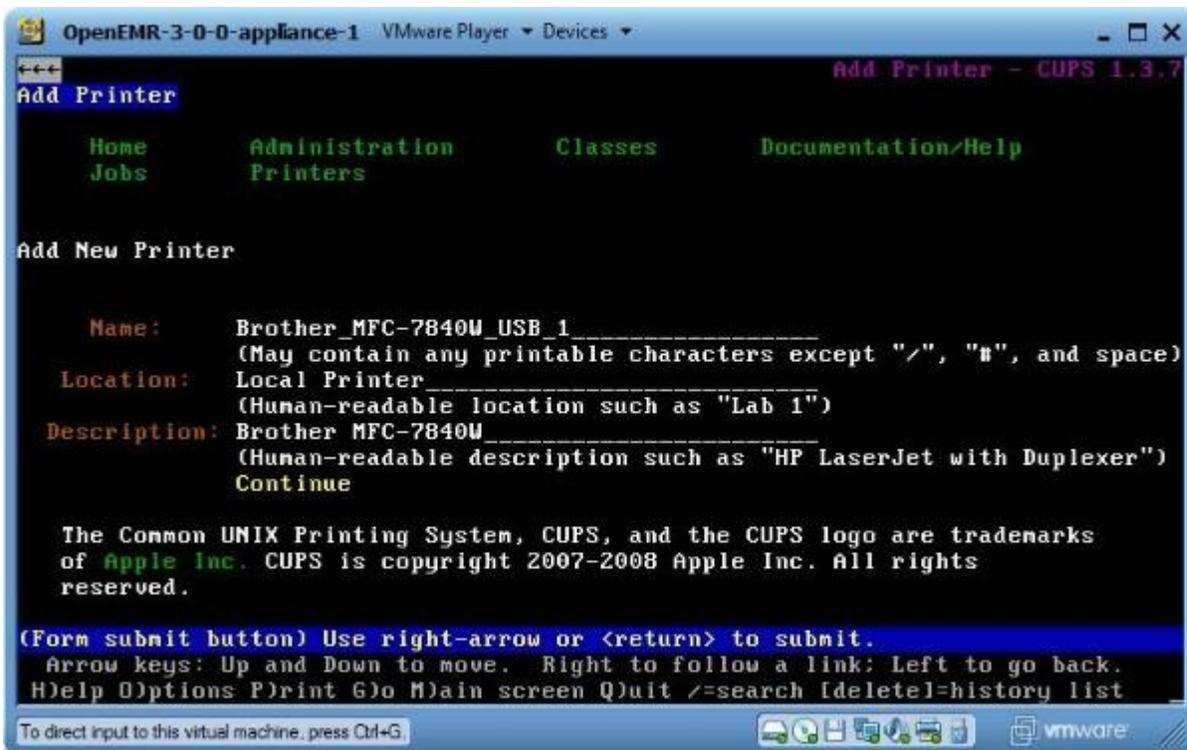
Follow instructions to fill out 'Name:', 'Location:', and 'Description:' fields.
Then select 'Continue'. (it will take a bit of time to load next page)
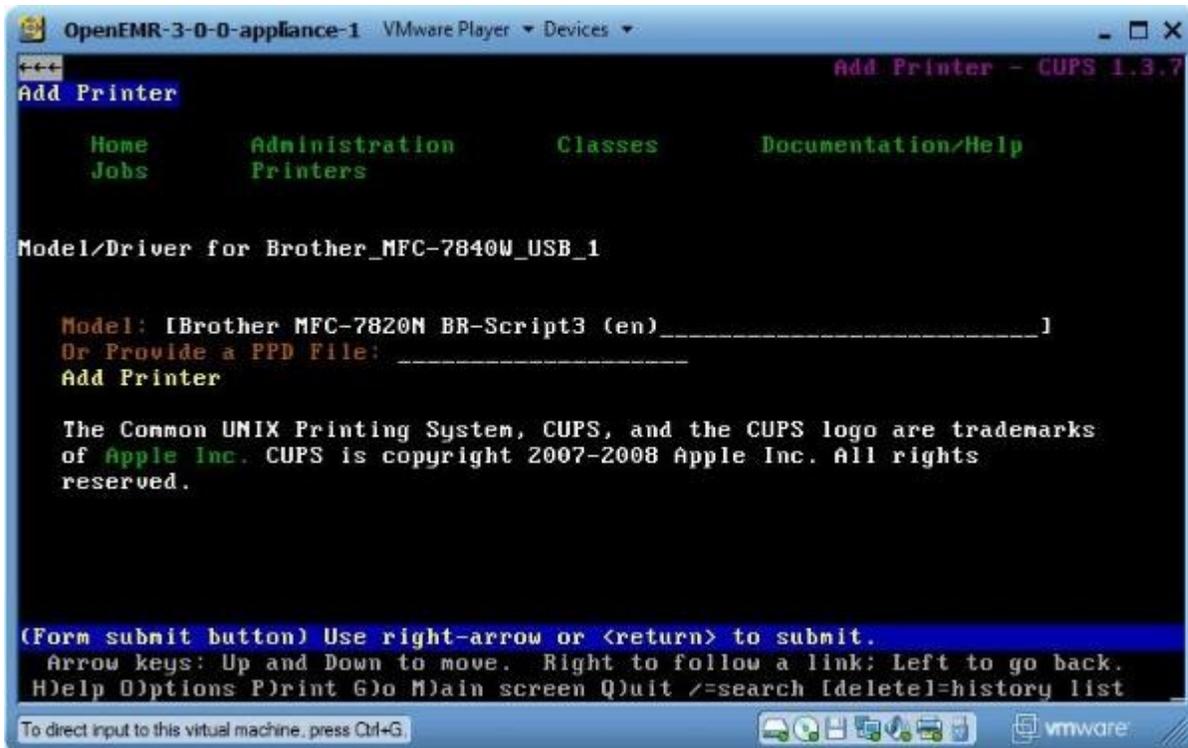
Choose the 'Model:' (use right-arrow key to show the menu after you select this field). Then select 'Add printer'. (it will take a bit of time to load next page)

Enter username 'openemr'.
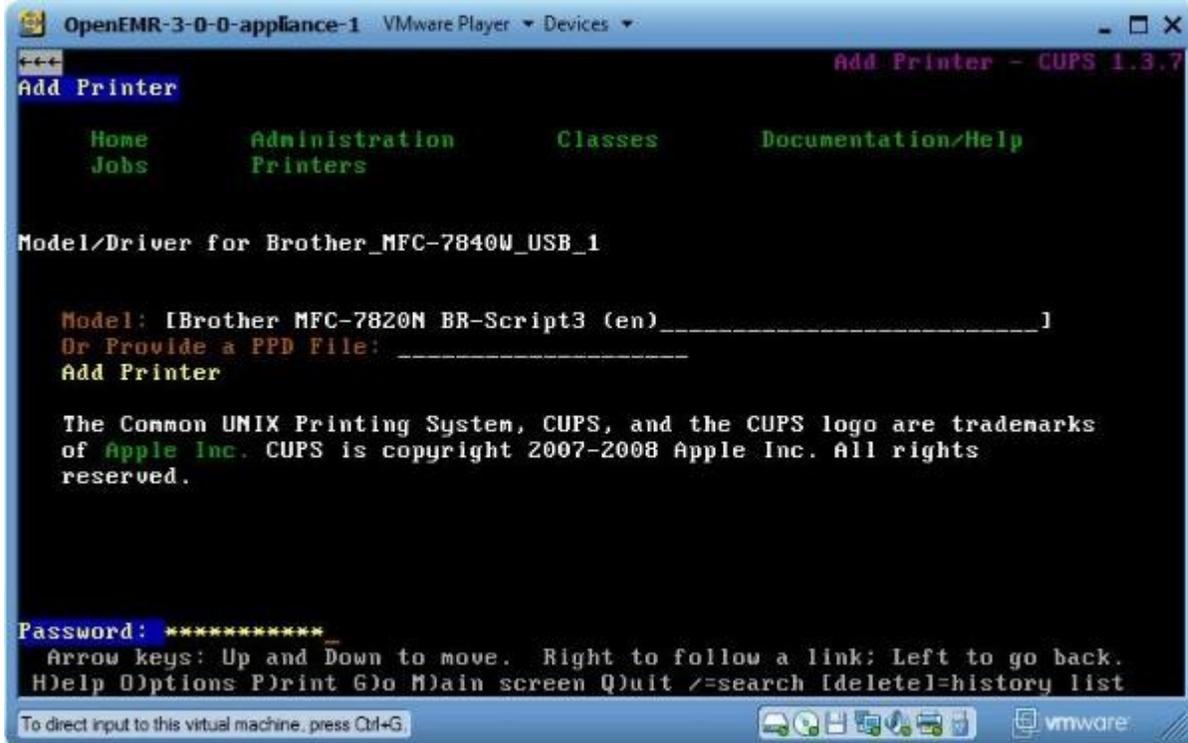
Enter your 'openemr' user password.
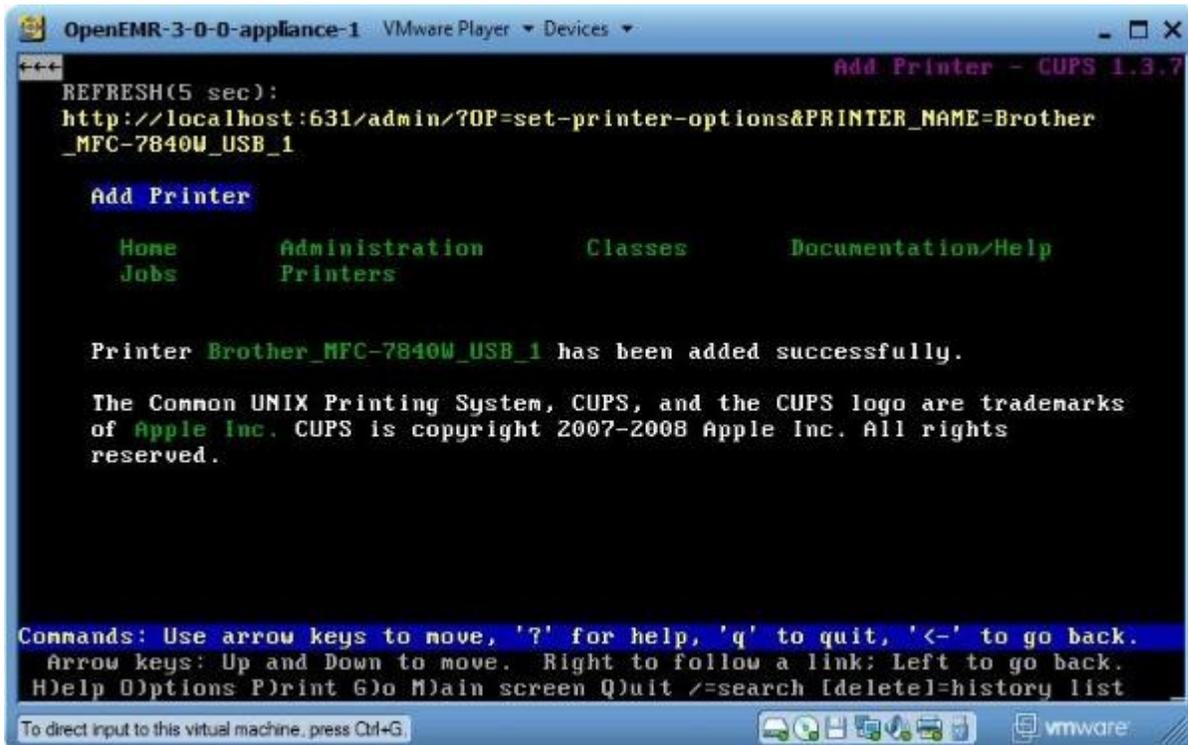
Shows printer was successfully added. Type 'q' to quit.

3. Now that the printer has been added, we can print a test page and learn how to administer the printer.   Again, it would be great if we could do this through Webmin, but I was unable to get this to work. So we will go back to using CUPS directly through our text-based browser.

> #open up web page with text based browser (use up/down arrow keys or 'tab' key to scroll thru links and hit 'enter' key to select a link)
> **lynx http://localhost:631**

Select 'Printers'

Printers

Home   Administration   Classes   Documentation/Help
Jobs   Printers

                          Search in Printers:
_____   Search
                              Clear

                    Showing 1 of 1 printer.

    Sort Descending

Brother_MFC-7840W_USB_1

    Description: Brother MFC-7840W
    Location: Local Printer
    Printer Driver: Brother MFC-7820N BR-Script3
    Printer State: idle, accepting jobs, published.
(NORMAL LINK) Use right-arrow or <return> to activate.
    Arrow keys: Up and Down to move. Right to follow a link; Left to go back.
    H)elp O)ptions P)rint G)o M)ain screen Q)uit /=search [delete]=history list

To direct input to this virtual machine, press Ctrl+G.   vmware

Use down arrow key to scroll below the shown printer.

Device URI: usb://Brother/MFC-7840W

Print Test Page Stop Printer Reject Jobs Move All Jobs Cancel All Jobs
Unpublish Printer Modify Printer Set Printer Options Delete Printer Set
As Default Set Allowed Users
    Sort Descending

The Common UNIX Printing System, CUPS, and the CUPS logo are trademarks
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reserved.

Commands: Use arrow keys to move, '?' for help, 'q' to quit, '<-' to go back.
    Arrow keys: Up and Down to move. Right to follow a link; Left to go back.
    H)elp O)ptions P)rint G)o M)ain screen Q)uit /=search [delete]=history list

To direct input to this virtual machine, press Ctrl+G.   vmware

Select 'Print Test Page' (also note all the other administration options in
case you need them in the future).

Confirmation of print job is shown. A test page should be sent to your printer. Type 'q' to quit. You are now officially a nerd.

Email Server Setup

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

2. Enter below **bolded** instructions on command line (if prompted to give password during the sudo command, then type in your user password):

    #log into root
    sudo aptitude install postfix
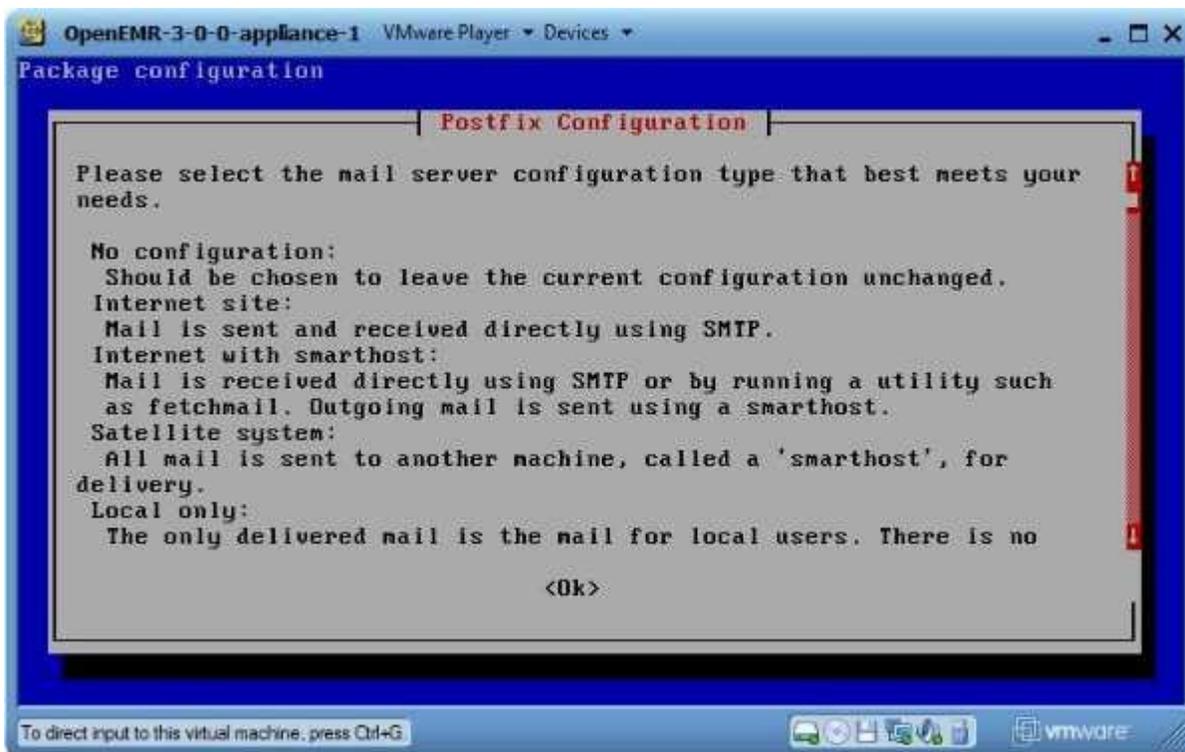
-Hit 'tab' key to select 'Ok'.

Select 'Internet Site', then select 'OK'.

Enter the domain name that is put in the from field of your outgoing emails, for example ouroffice.com . (don't worry, this can always be changed after installation). Then select 'OK'.

3. Now we can configure the mail server in Webmin. First we will start the Postfix module in Webmin, and hen we will configure it. Point a web browser outside your appliance to the Webmin link reported in your appliance introduction screen.

(If you are getting a certificate security error, then first follow the instructions in below appendix section 'Configuring client web browser for https' to configure your web browser.)

Login.
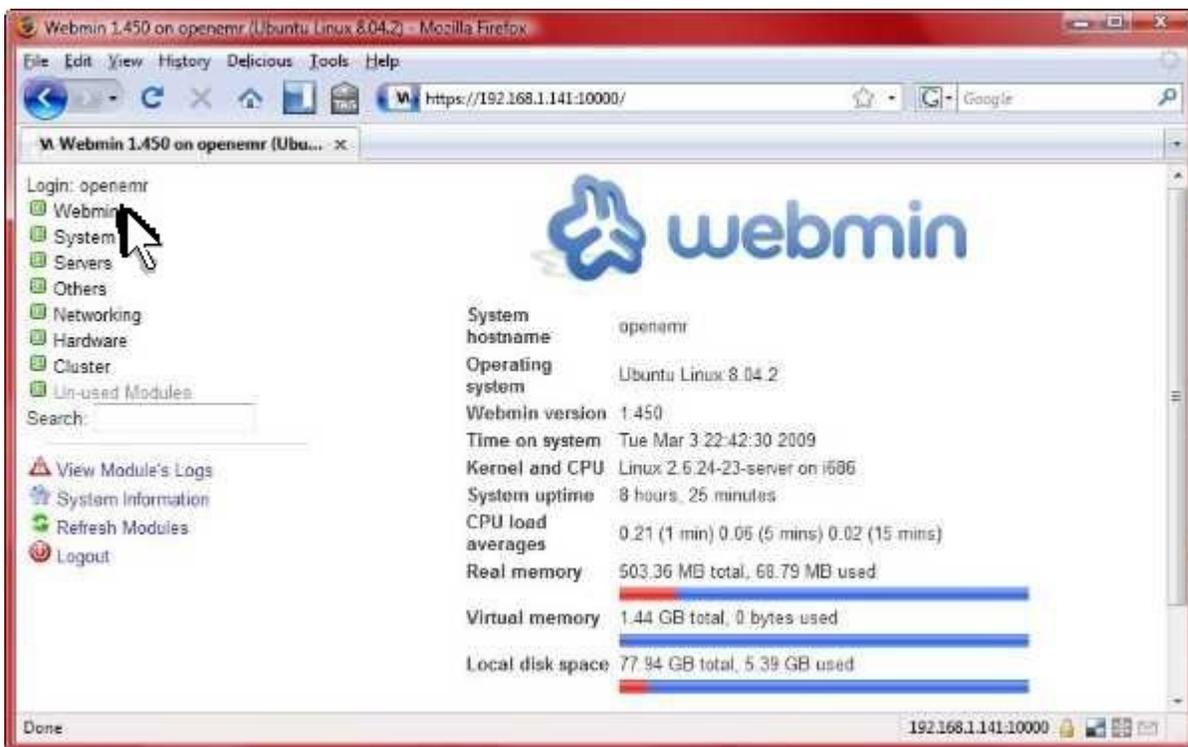
Click 'Webmin'.
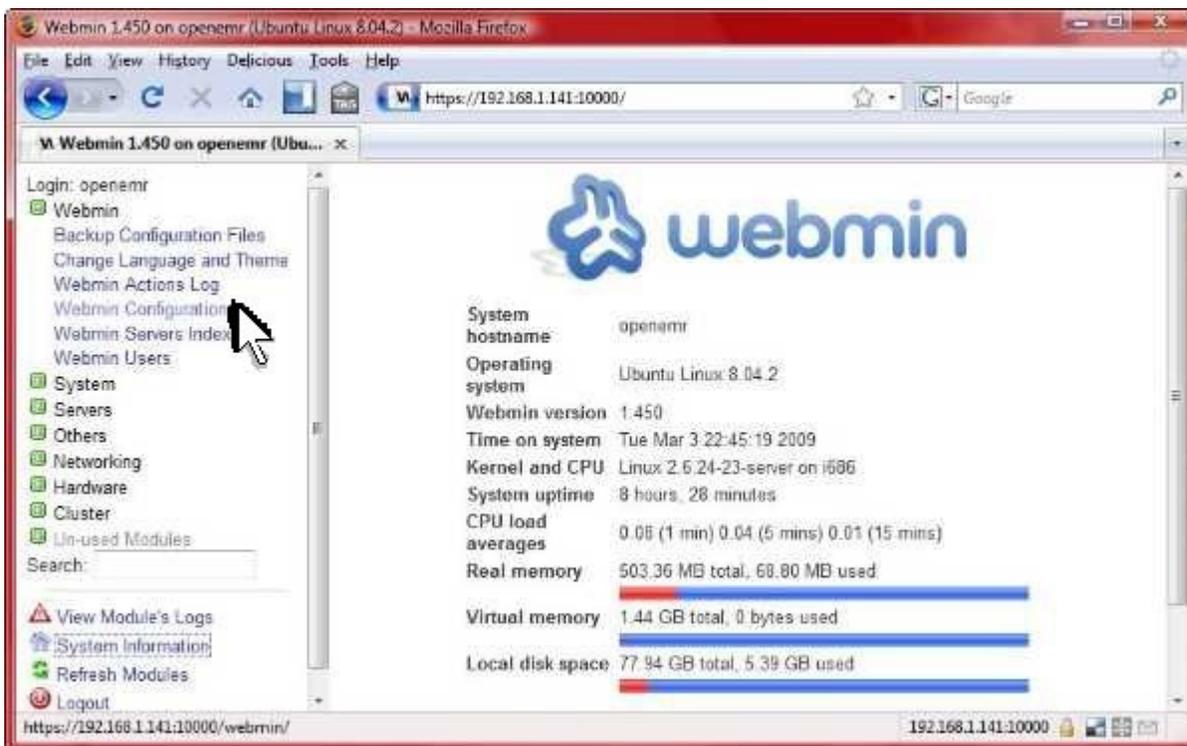
Click 'Webmin Configuration'
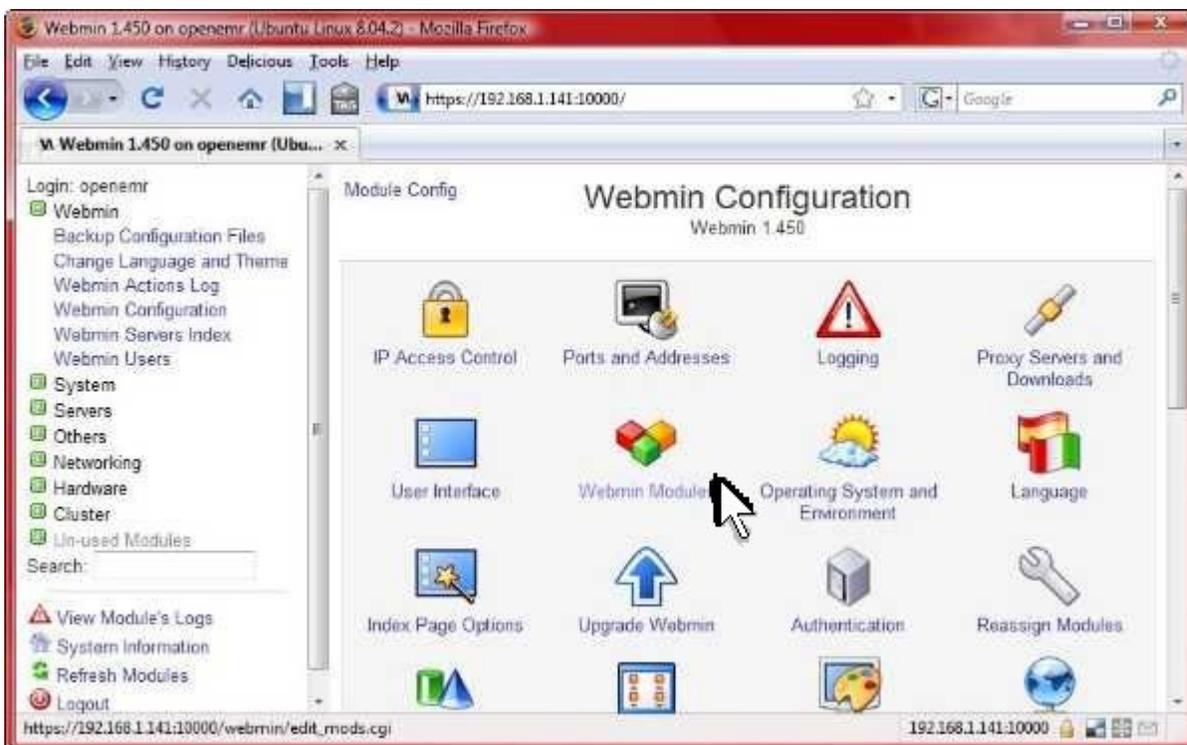
Click 'Webmin Modules'.
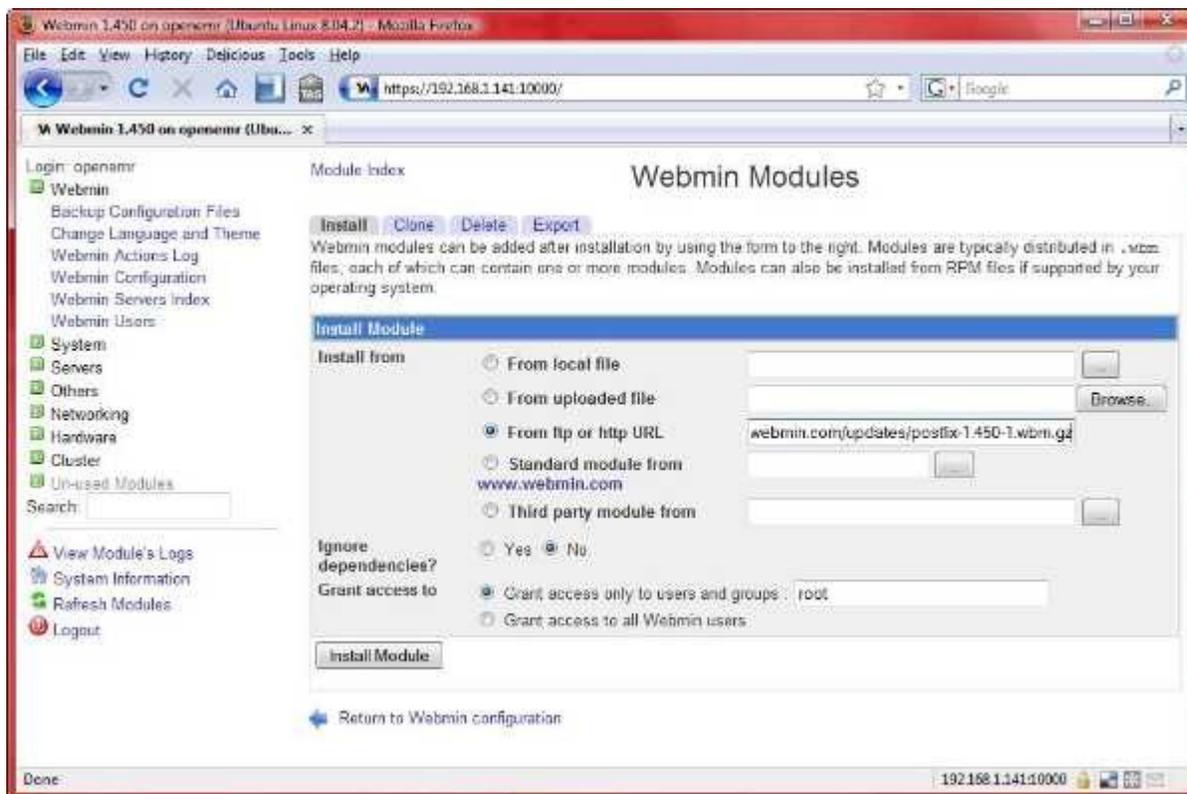
Toggle on 'From ftp or http url', then enter 'http://www.webmin.com/updates/postfix-1.450-1.wbm.gz'. Then click 'Install Module'. (We can't use the usual standard postfix module because of a bug in mail aliases).
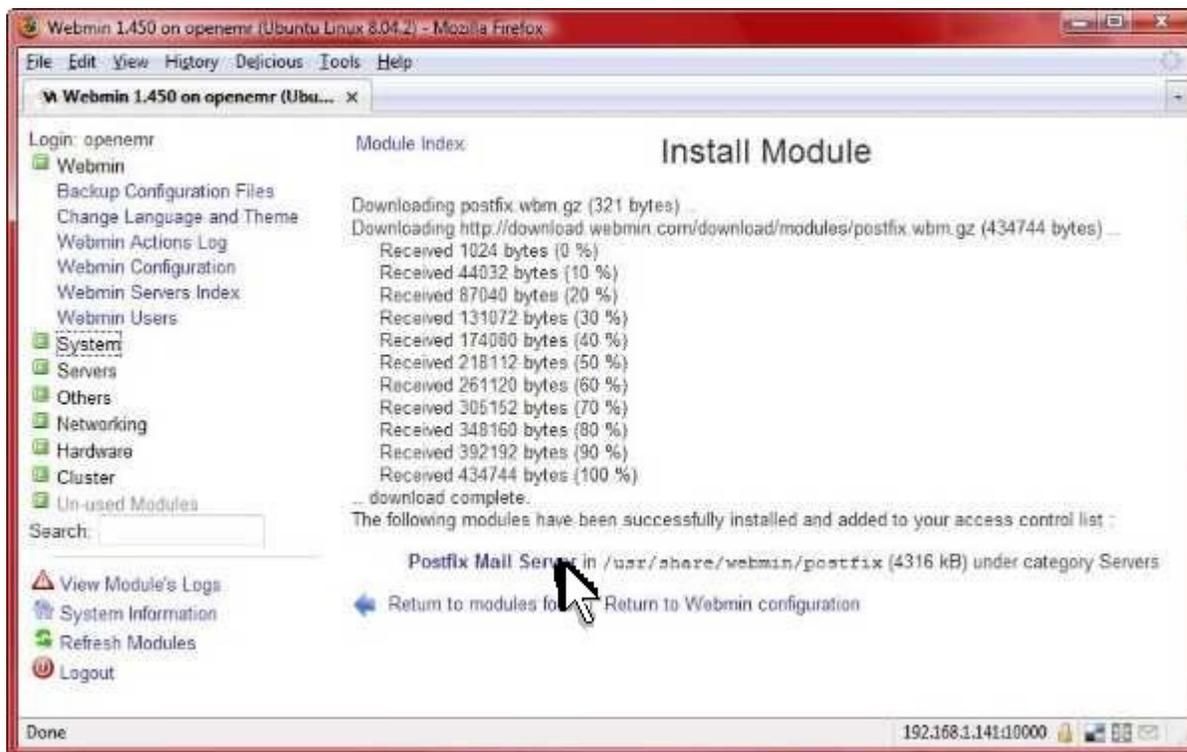
Confirmed successful installation. Then click 'Postfix Mail Server'.

Click 'General Options'.
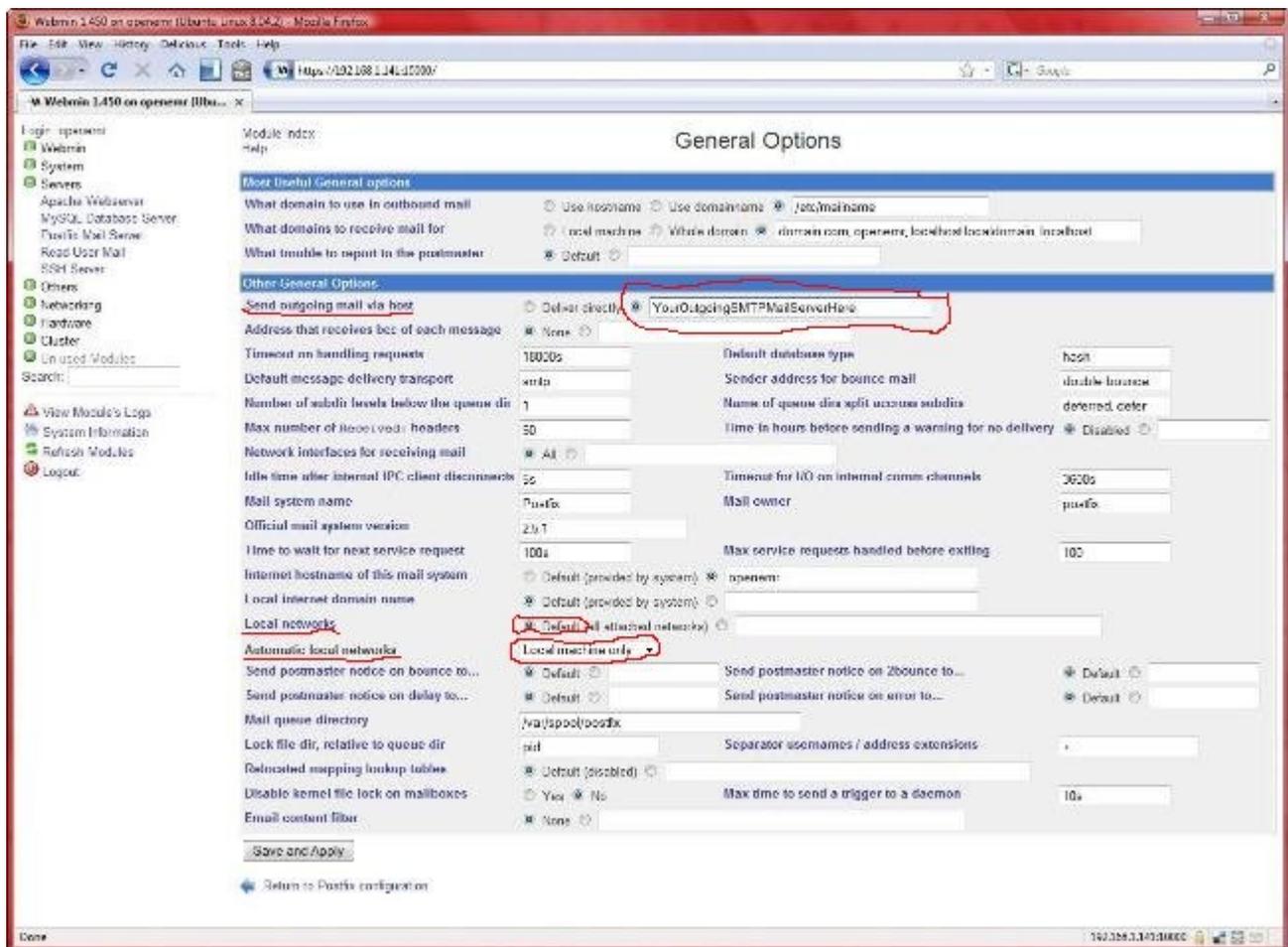
Sorry about the poor quality screenshot. Only several changes need to be made here (circled in red), which are all detailed directly below.

1) In 'Send outgoing mail via host', type your outgoing smtp mail server here (this should be given by your internet service provider).

2) In 'Local networks', toggle on 'Default'.

3) In 'Automatic local networks', choose 'Local machine only'.

4) Click the 'Save and Apply' button.

Click 'Mail Aliases'.

Click 'root'.
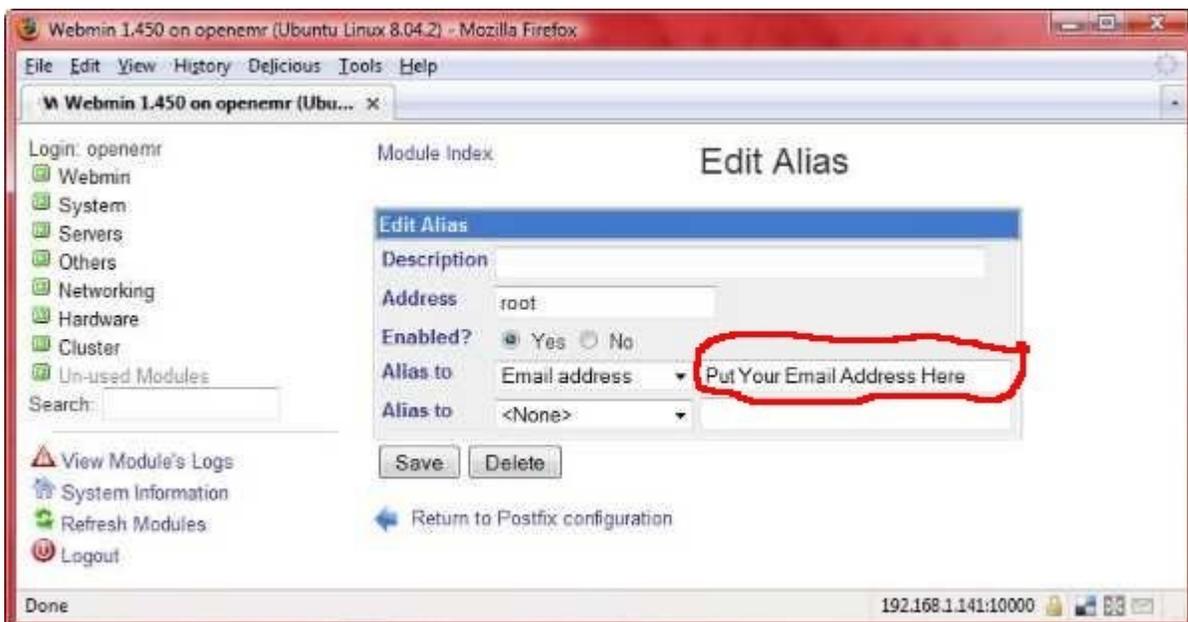
This is where you can direct all the administrative messages created by

your appliance to your email address. Enter your email address in the field circled in red. Then click 'Save'.

It worked, click 'Return to Postfix Configuration' to restart Postfix.
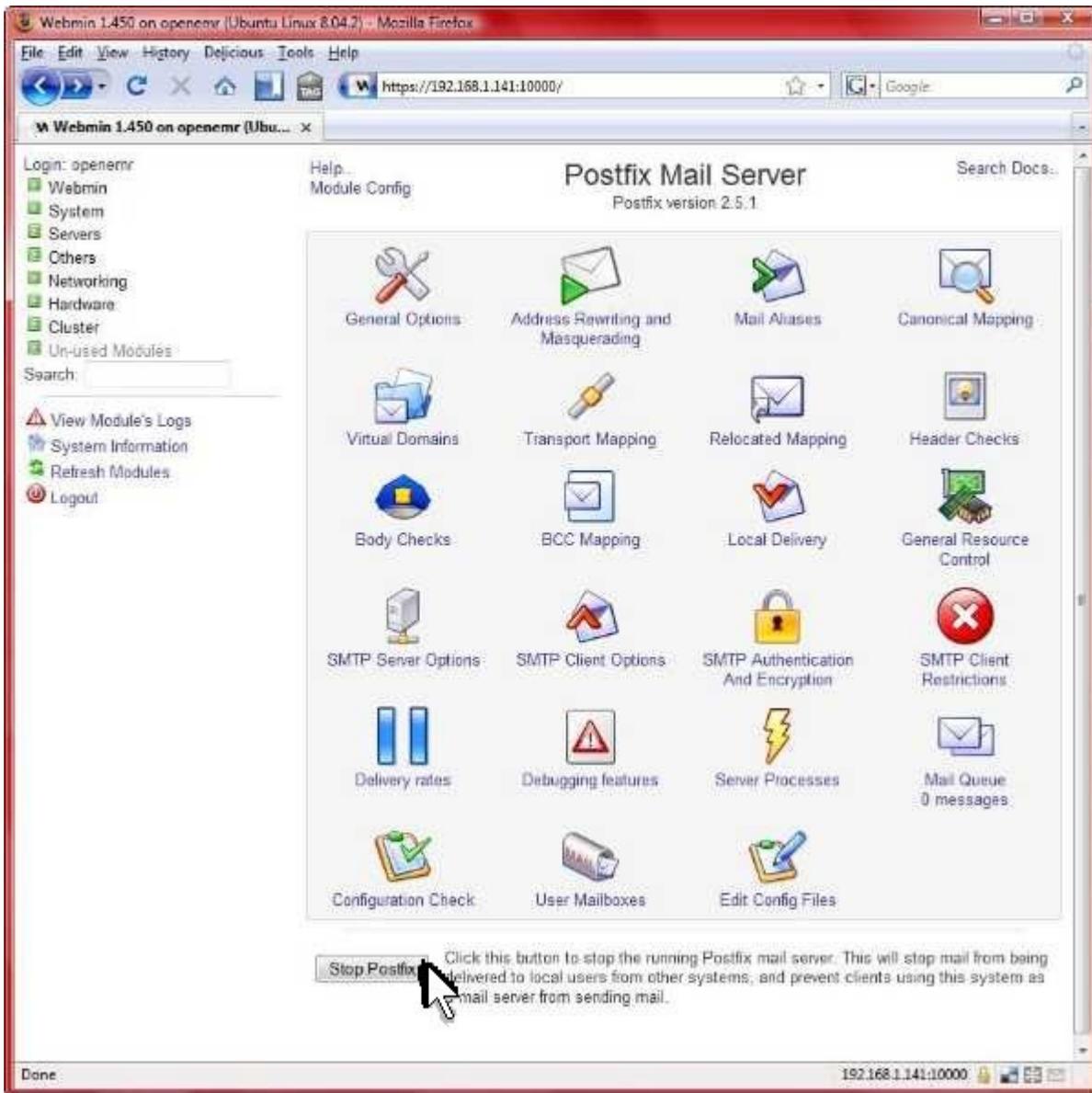
At bottom of page click 'Stop Postfix'.
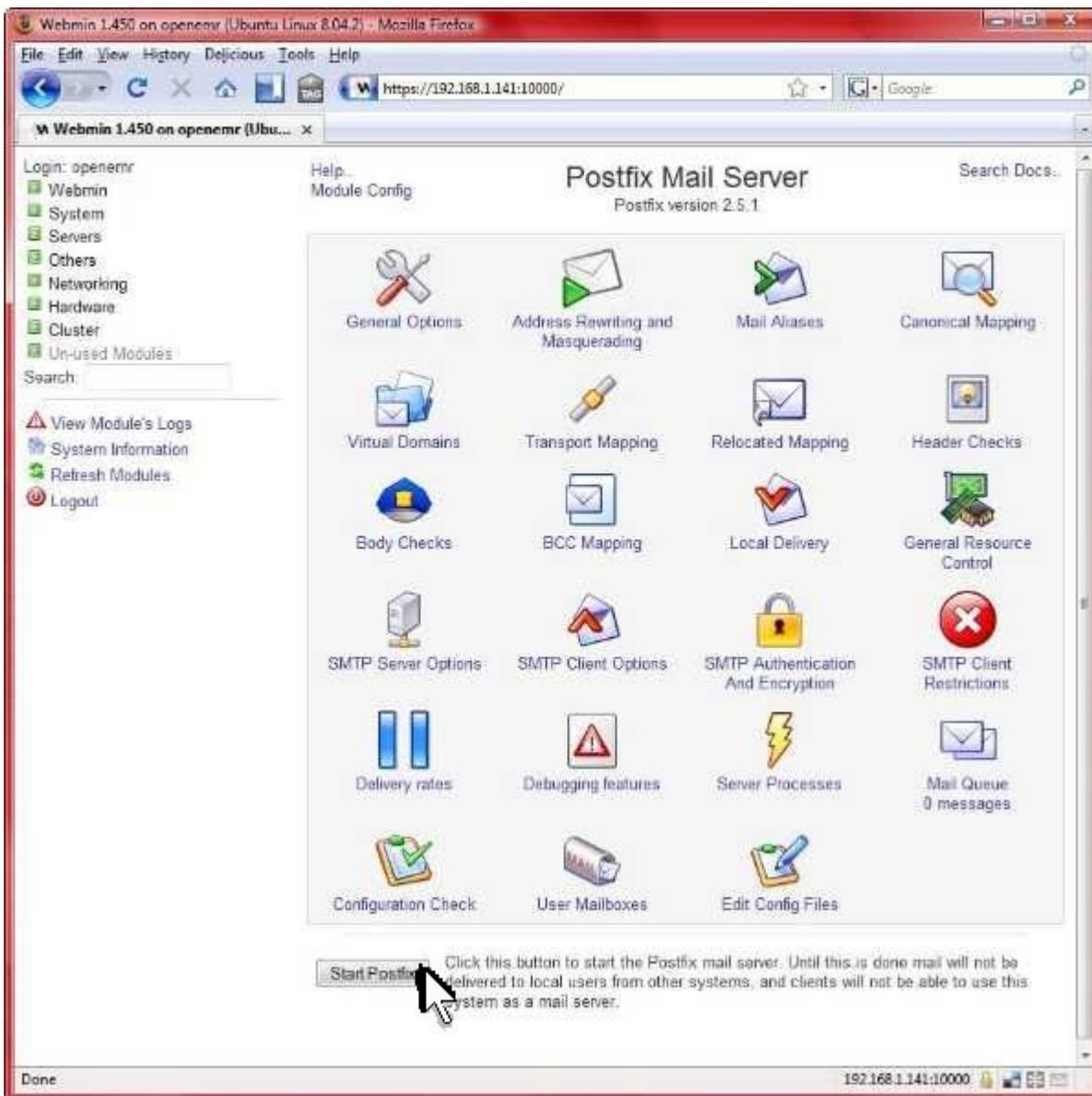
At bottom of page click 'Start Postfix'.
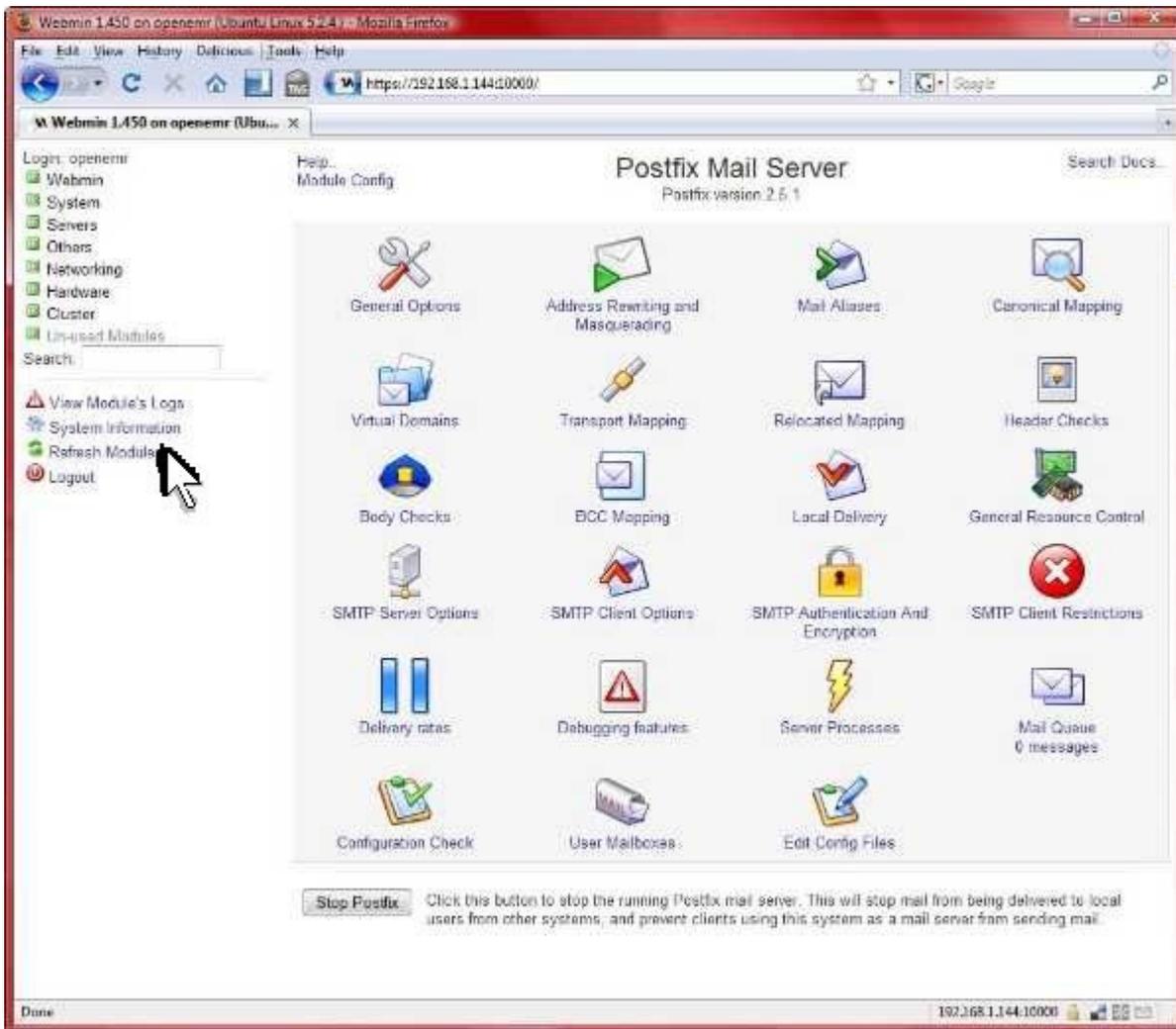
Click 'Refresh Modules'.
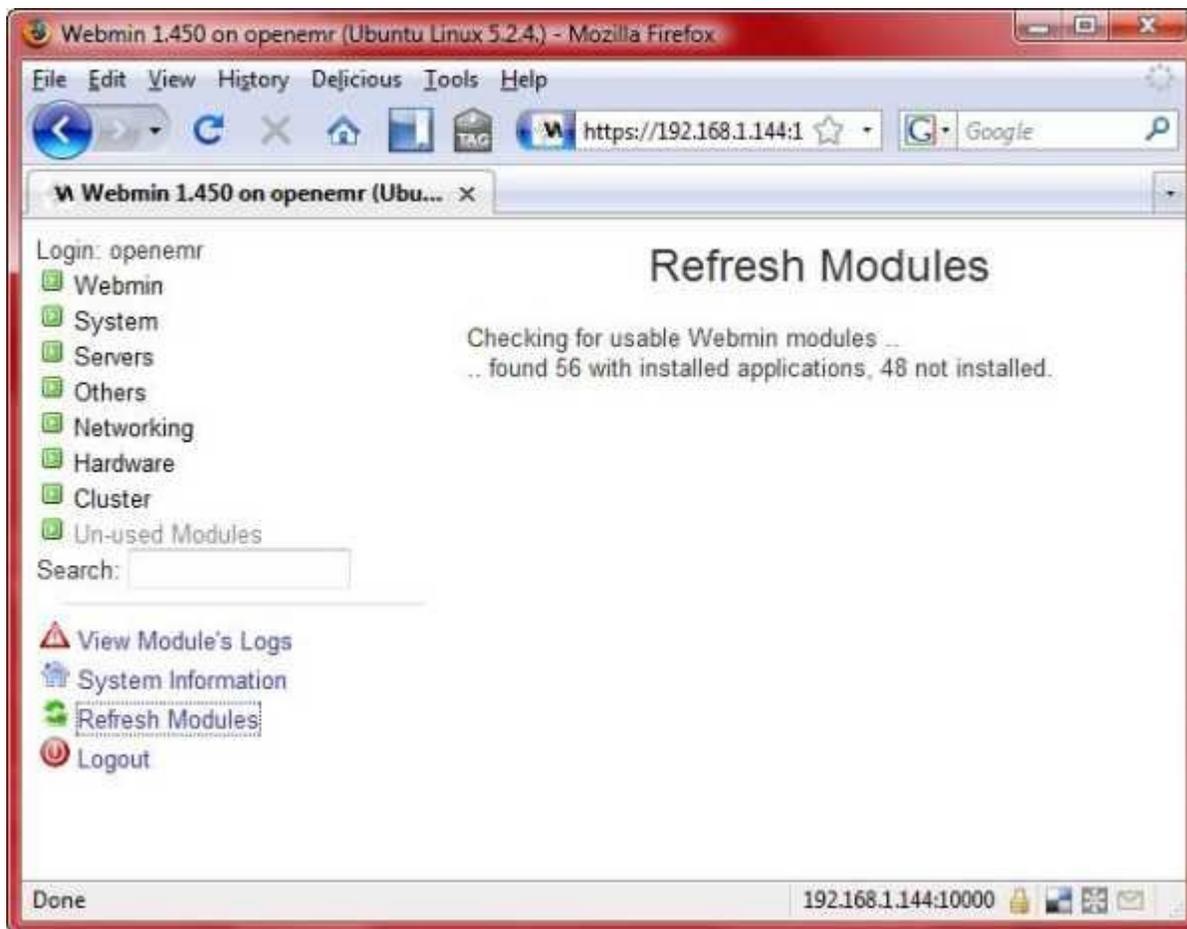
After done, then refresh browser (this will place a postfix link into Webmin's menu in the 'Servers' section).

4. You are now done. For the future you can now get to the postfix configuration menu in Webmin in the 'Servers' section.

Backup (Automatic) Setup

1. Automatic backups are extremely important. There are numerous strategies and tools to do this. You can back up the entire appliance (turn it off first), you can use tools in Webmin, or you can use scripts/tools in linux. There is no absolute right way to do it (many administrators will employ more than one mechanism), but you have to do it. Imagine the horror if you walked into your clinic one day, and all of your data was gone. Considering the sensitivity of data, it is also a good idea to consider encryption with some backup schemes. The things that need to be backed up in the OpenEMR 3.0.0 Appliance are the openemr MySQL database and the openemr web directory.

2. The script provided will enable a daily backup of the openemr database in the MySQL server and the OpenEMR web 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 database is gzipped and the OpenEMR web directory is tarred and gzipped.

3. Configure file encryption package:
   1. Enter below **bolded** instructions on command line (if prompted to give password during the sudo command, then type in your user password):

      #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.
      cd /home/openemr
      sudo 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 **/home/openemr/.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 (if prompted to give password during the sudo command, then type in your user password):

        #install the DVD burner software
        sudo aptitude install dvd+rw-tools
        -y to packages

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

        #download and move the backup script to /root , secure it, and
          allow execution
        wget http://www.bradymd.com/fullbackup3.sh
        sudo mv fullbackup3.sh /root
        sudo chown root:root /root/fullbackup3.sh
        sudo chmod 700 /root/fullbackup3.sh

        #edit file /root/dailybackup3.sh:
        sudo jed /root/fullbackup3.sh
            #**edit** the below DVDDEVICE line to what the
            #device for the DVD writer is. In the appliance (3.0.0)
            #it should be '/dev/scd0'.
            DVDDEVICE=***/dev/scd0***

            #**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/jed
        sudo crontab -e
            #**paste** below line at end of file (also ensure you add a new
            line(enter key) after this line):
            02 1 * * * /root/fullbackup3.sh
            TEXT EDITOR SAVE AND EXIT

Static IP Address Setup

1. These are instructions for setting up a static IP address for your appliance using Webmin.

2. First, you should record the required IP addresses (example form below). The 'Appliance IP Address' is going to be the IP address of your appliance (within your network). The 'Subnet Mask' is 255.255.255.0 in most cases. The 'Broadcast IP Address' can be calculated by comparing the 'Appliance IP Address' and the 'Subnet Mask'. For example, if the 'Appliance IP Address' is 192.168.1.114 and the 'Subnet Mask' is 255.255.255.0, then the 'Broadcast IP Address' is 192.168.1.255. There is also a Subnet calculator that can calculate the 'Broadcast IP Address' at http://www.subnet-calculator.com/ . The 'Gateway IP Address' is the IP address of your gateway. The 'DNS server IP Address' entries are the IP addresses of your DNS servers (the DNS server IP addresses are generally supplied by your internet service providers, and there are usually two of them).

Appliance IP Address:_____

Subnet Mask:_____

Broadcast IP Address:_____

Gateway IP Address:_____

DNS server IP Address:_____

DNS server IP Address:_____

3. Point a web browser outside your appliance to the Webmin link reported in your appliance introduction screen.

(If you are getting a certificate security error, then first follow the instructions in below appendix section 'Configuring client web browser for https' to configure your web browser.)

Login.

Click 'Networking'.

Click 'Network Configuration'.

Click 'Network Interfaces'.
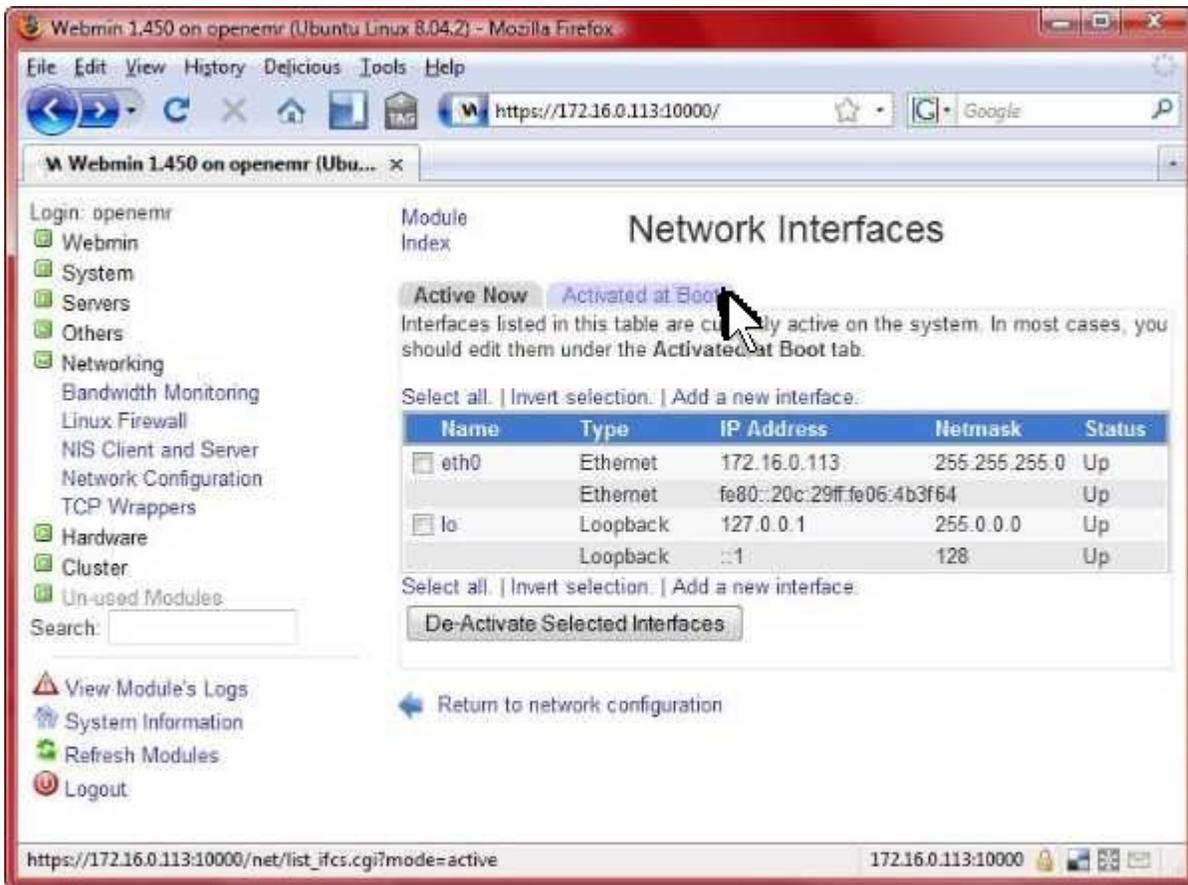
Click the 'Activated at Boot' tab.
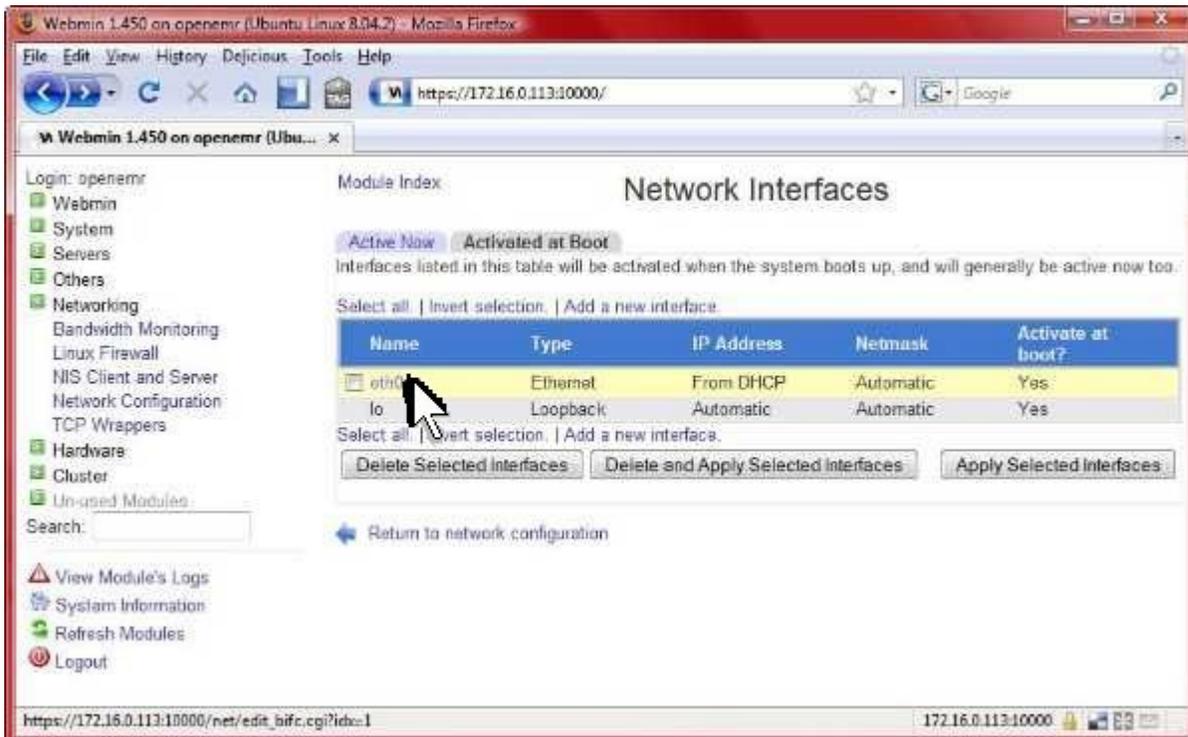
Click 'eth0'.
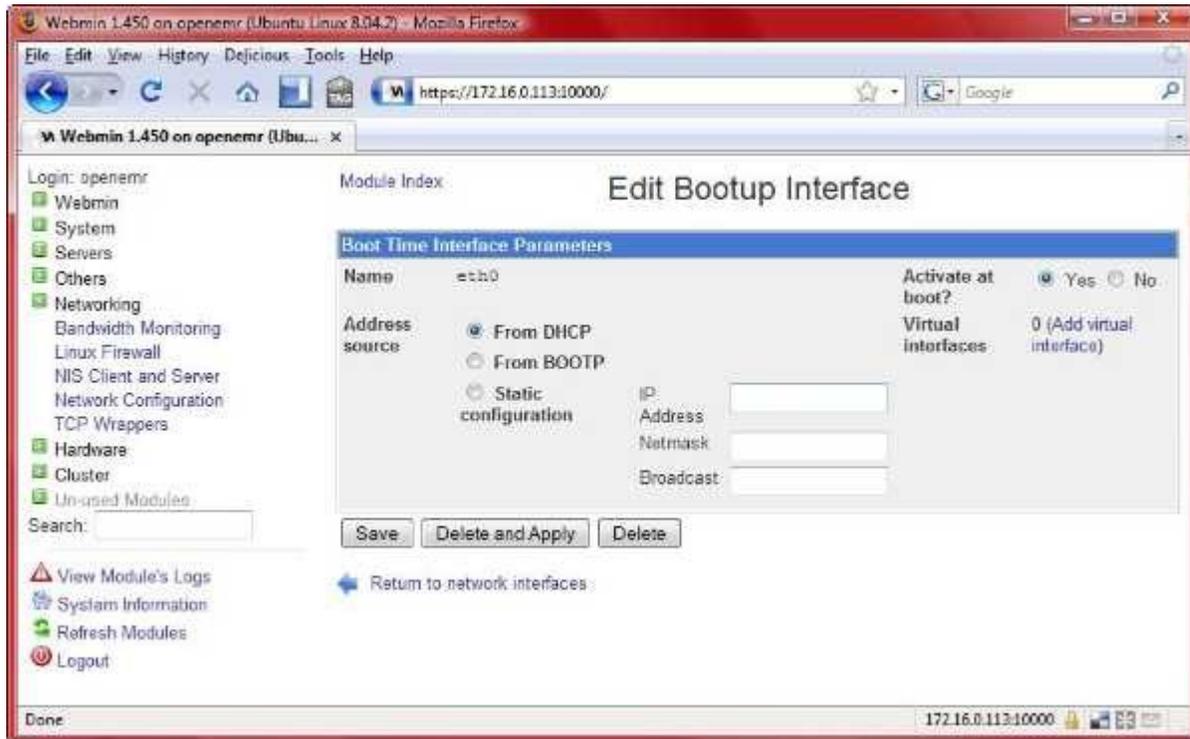
1) Toggle on 'Static configuration'.
2) Enter 'Appliance IP Address' into 'IP Address' field.
3) Enter 'Subnet Mask' into 'Netmask' field.
4) Enter 'Broadcast IP Address' into 'Broadcast' field.
5) Click 'Save'.
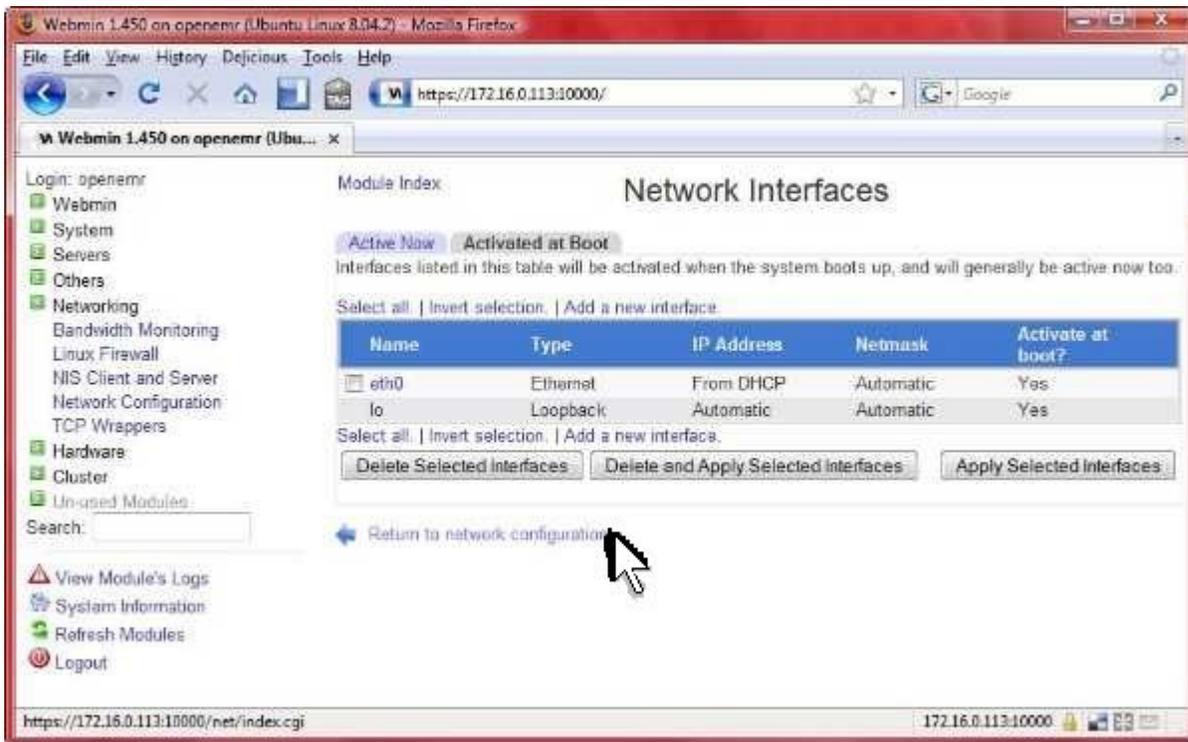
Click 'Return to network configuration'.
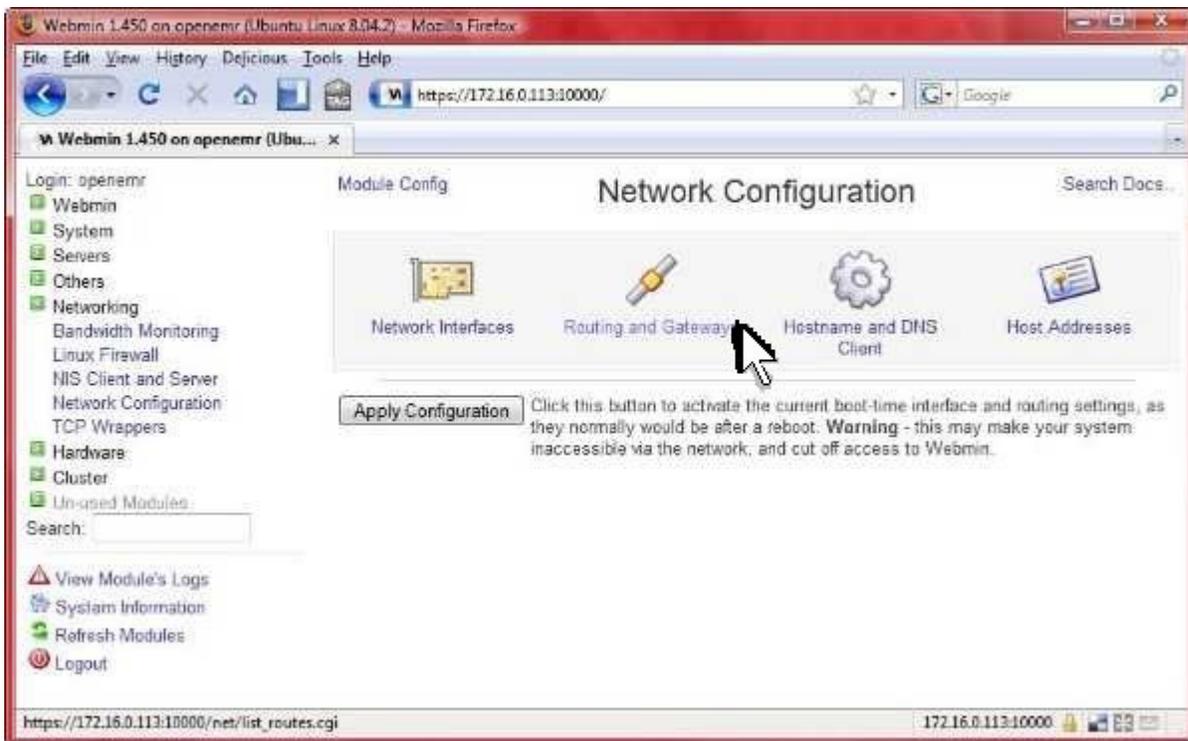
Click 'Routing and Gateways'.

1) Toggle on 'Gateway'
2) Enter the 'Gateway IP Address' into 'Gateway' field
3) Click 'Save'.

Click 'Hostname and DNS client'.
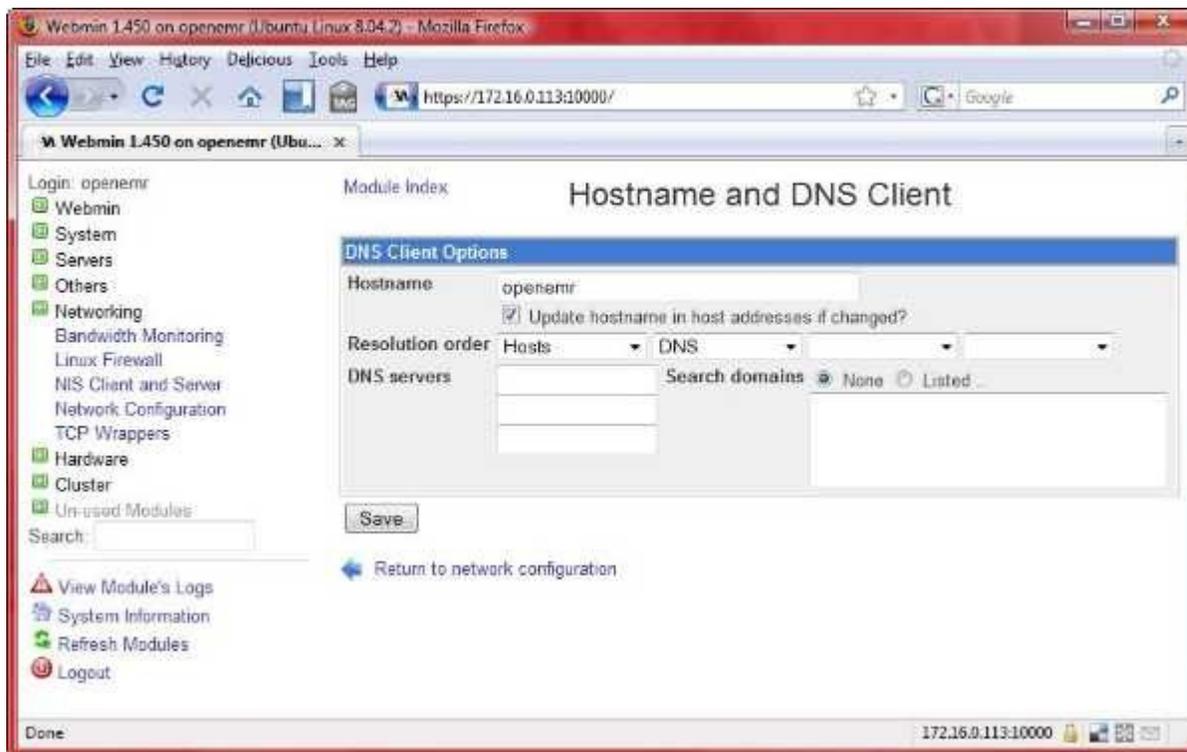
Enter the 'DNS server IP Address' values into the 'DNS servers' fields, then click 'Save'.

Click 'System Information'.

4. Then reboot the appliance per the instructions found in the 'Reboot or Shutdown Appliance' section.

Change Clock

1. These are instructions on changing the time in your appliance using Webmin.

2. Point a web browser outside your appliance to the Webmin link reported in your appliance introduction screen.

(If you are getting a certificate security error, then first follow the instructions in below appendix section 'Configuring client web browser for https' to configure your web browser.)

Login.

Click 'Hardware'.

Click 'System Time'.

Set the time and timezone of your appliance here. Do **NOT** set up a 'time server sync'; this will screw up your appliance.

Change Appliance Password

1. These are instructions for changing the password to the 'openemr' user in your appliance using Webmin. This is important to secure your appliance. It will effectively change the 'openemr' user password for logging into Webmin, logging into your appliance's commandline, and to confirm usage of the 'sudo' command.

2. Point a web browser outside your appliance to the Webmin link reported in your appliance introduction screen.

(If you are getting a certificate security error, then first follow the instructions in below appendix section 'Configuring client web browser for https' to configure your web browser.)

Login.
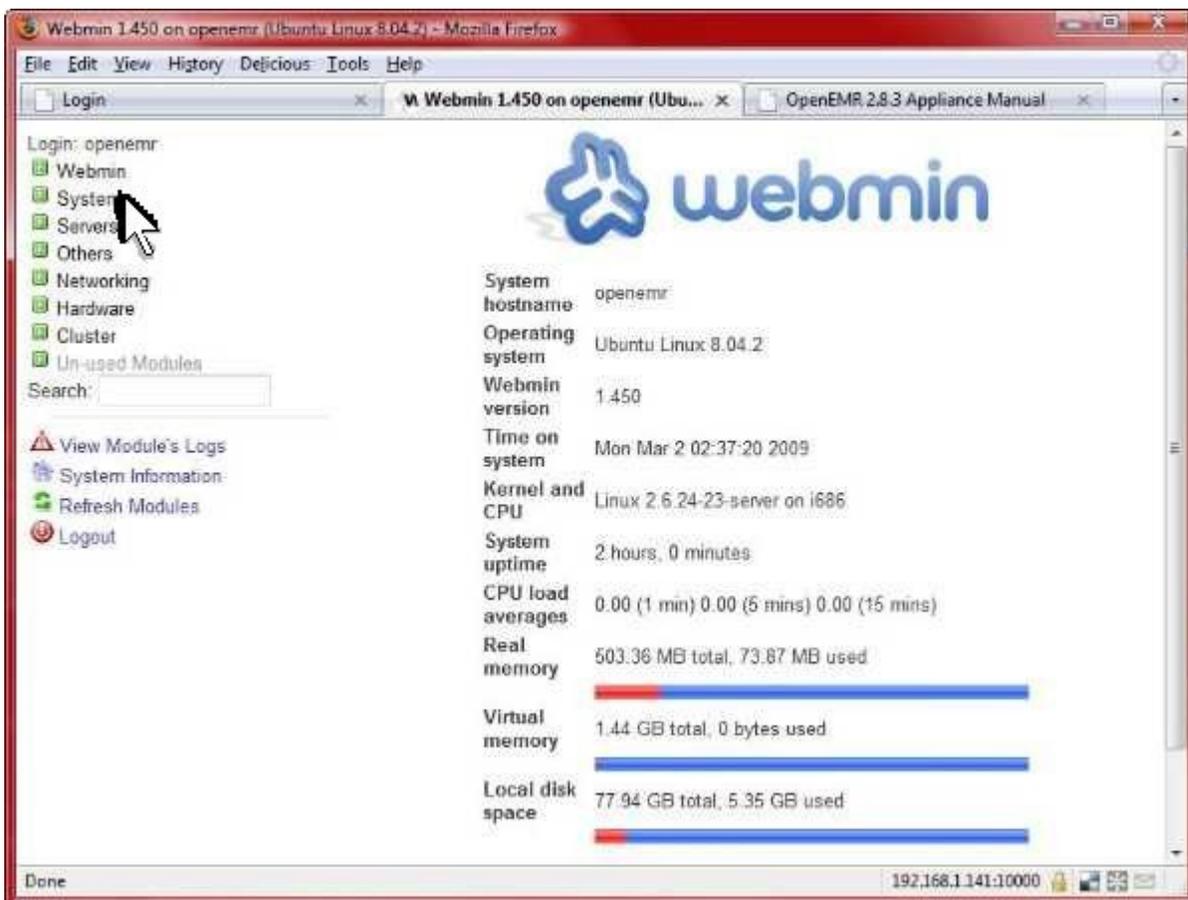
Click 'System'
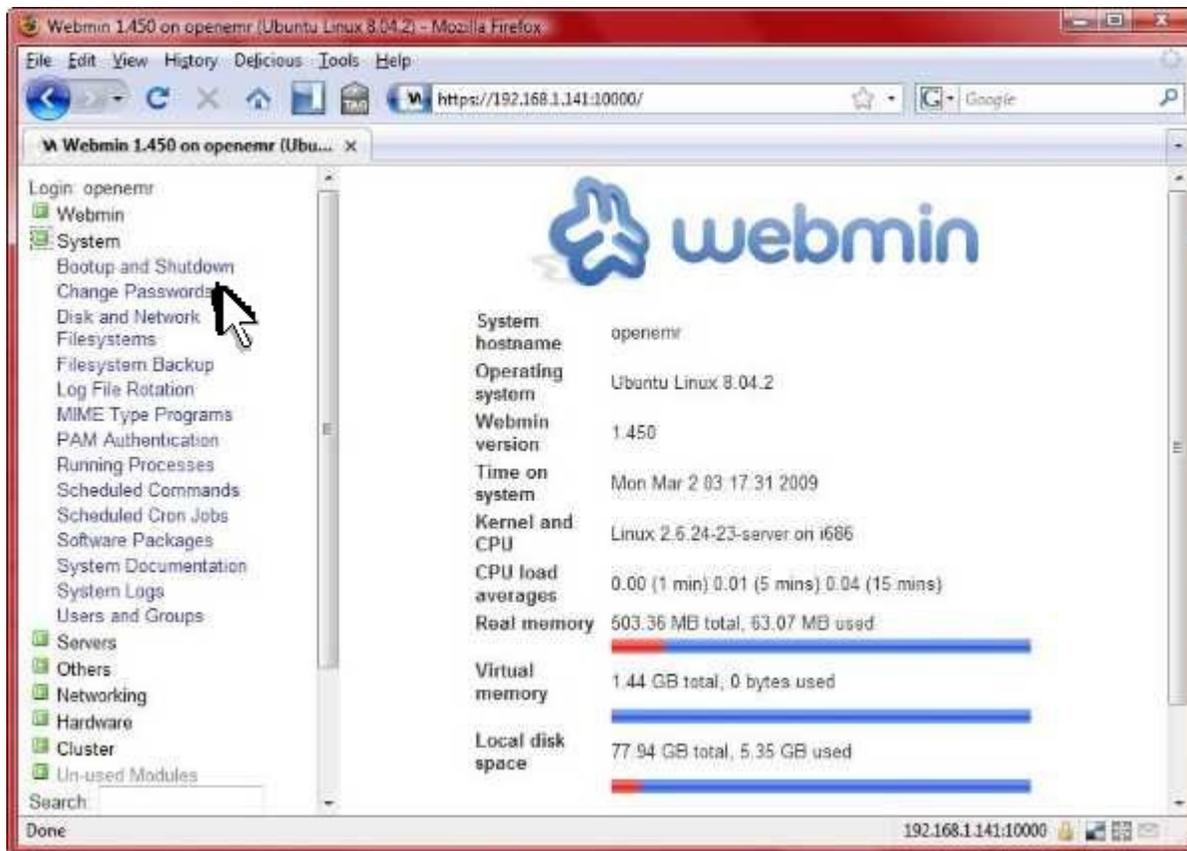
Click 'Change Passwords'.

Click 'openemr'.

Type and confirm new password, then click 'change'

Reboot or Shutdown Appliance

1. These are instructions on how to shutdown or restart your appliance using Webmin.

2. Point a web browser outside your appliance to the Webmin link reported in your appliance introduction screen.

(If you are getting a certificate security error, then first follow the instructions in below appendix section 'Configuring client web browser for https' to configure your web browser.)


Login.

Click 'System'.

Click 'Bootup and Shutdown'.
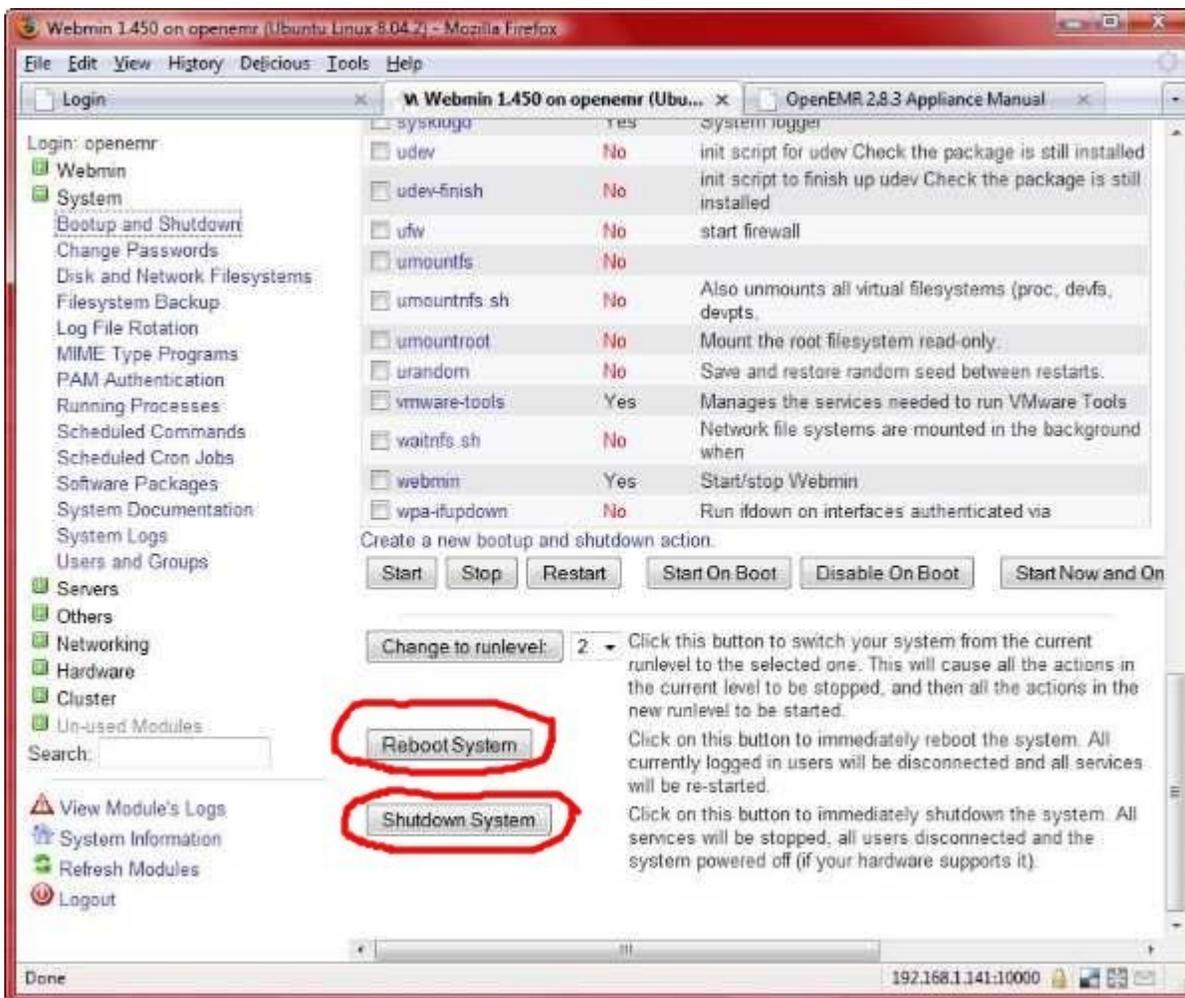
Scroll to bottom of page. To reboot your appliance, click the 'Reboot System' button. To shutdown your appliance, click the 'Shutdown System' button. You will be asked to confirm this on the next screen.

Desktop Installation

1. This is for those wimps whom are having difficulty with administration of the appliance via commandline and/or Webmin. These are instructions to install the KDE desktop (includes all the thrills such as OpenOffice etc.) on your appliance. This will increase the size of your appliance by 1.6 GB.

2. Enter below **bolded** instructions on command line (if prompted to give password during the sudo command, then type in your user password):

   #install kubuntu desktop
   sudo apt-get install kubuntu-desktop

-enter Y to continue
-(this will take awhile)
#install the x-windows manager and start it
sudo apt-get install gdm
-enter Y to continue
-enter 'ok'
-select 'kdm'

#restart computer (will now boot into the KDE desktop)
sudo shutdown -r now

Instructions for Building the OpenEMR Appliance

Main TOC Link

LINK TO MANUAL IN PDF FORMAT

Instructions for Building the OpenEMR Appliance Chapter Index

## Software
Main TOC Link
Chapter Index Link
1. Ubuntu Server Edition (8.04)
2. Apache (2.2.8), MySQL (5.0.51a), and PHP (5.2.4)
3. Webmin (1.470)
4. OpenEMR (3.0.1)

Install the Ubuntu 8.04 Server Virtual Computer
Main TOC Link
Chapter Index Link

1. You can use either VMware Workstation or VMware Server to build the Ubuntu 8.04 Server Appliance.
2. Download Ubuntu Server Edition 8.04 installation ISO file from http://www.ubuntu.com/getubuntu/download .
3. Ubuntu Server Edition 8.04 Appliance Installation with Vmware Workstation version 6.5:
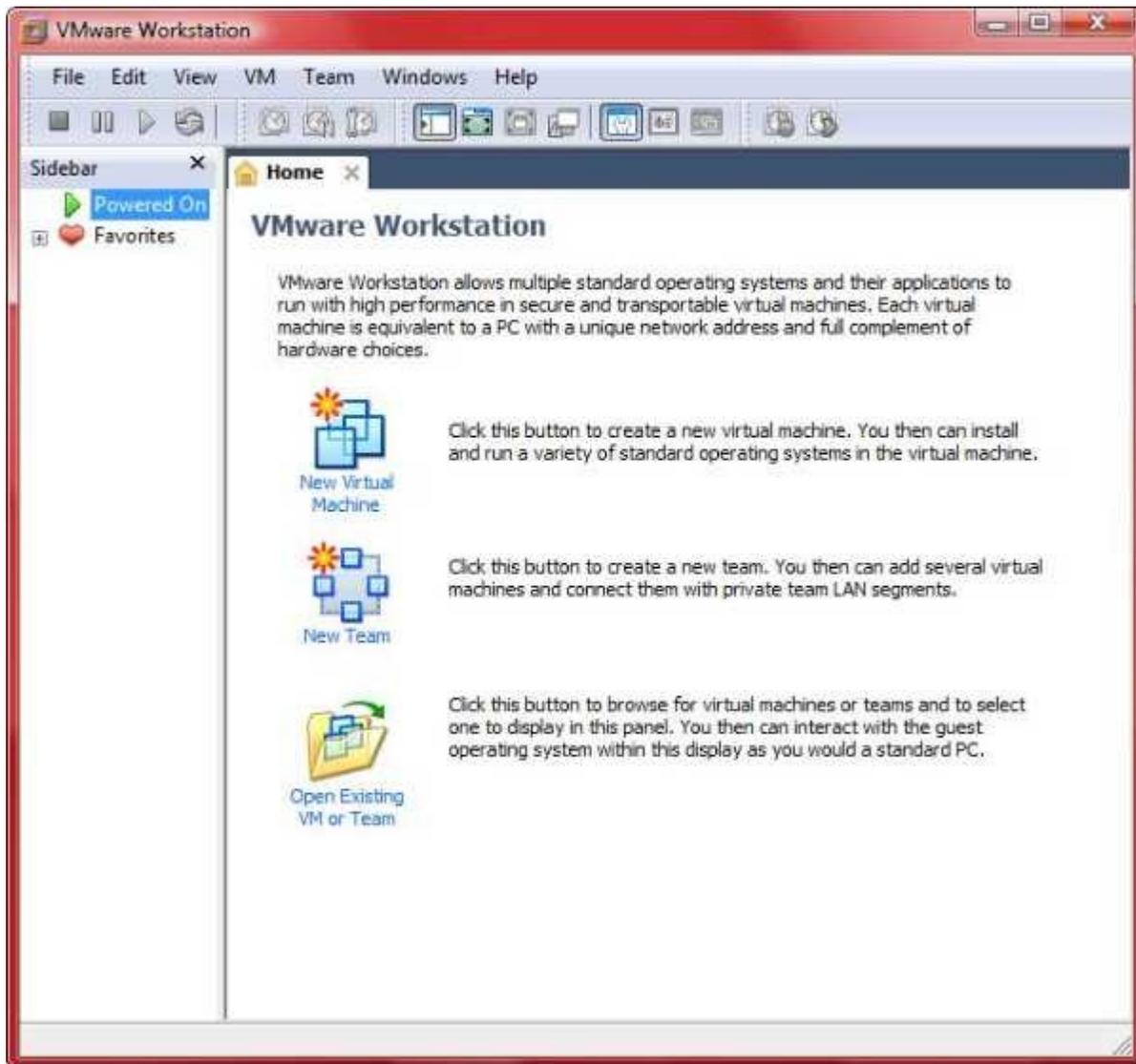
Click 'New Virtual Machine'.

Select 'Typical', then Click 'Next'.
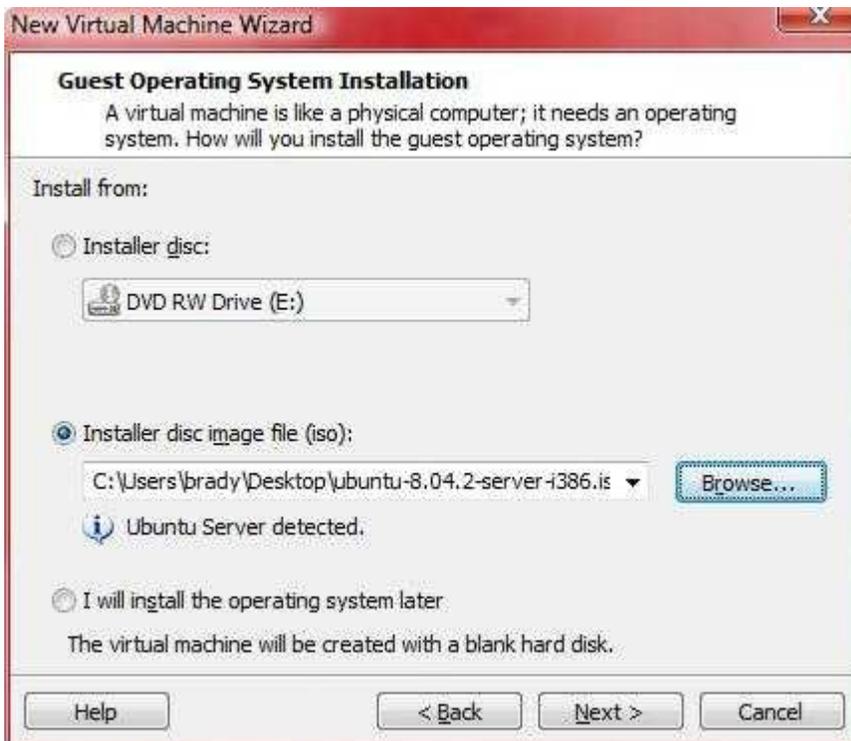
Browse and select ubuntu-8.04.2-server-i386.iso file, then click 'Next'.
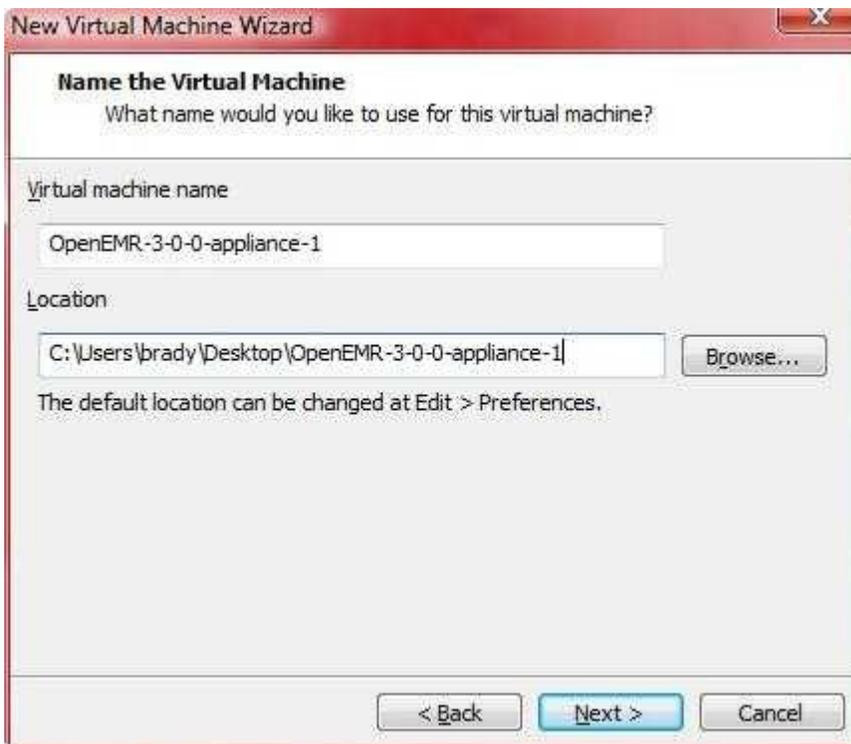
Type in name of appliance and location to save it to, then click 'Next'. I typed OpenEMR-3-0-1-appliance-1.

Set maximum disk size to 80GB, select 'Split virtual disk into 2GB files', then click 'Next'.

Click 'Customize Hardware...'.
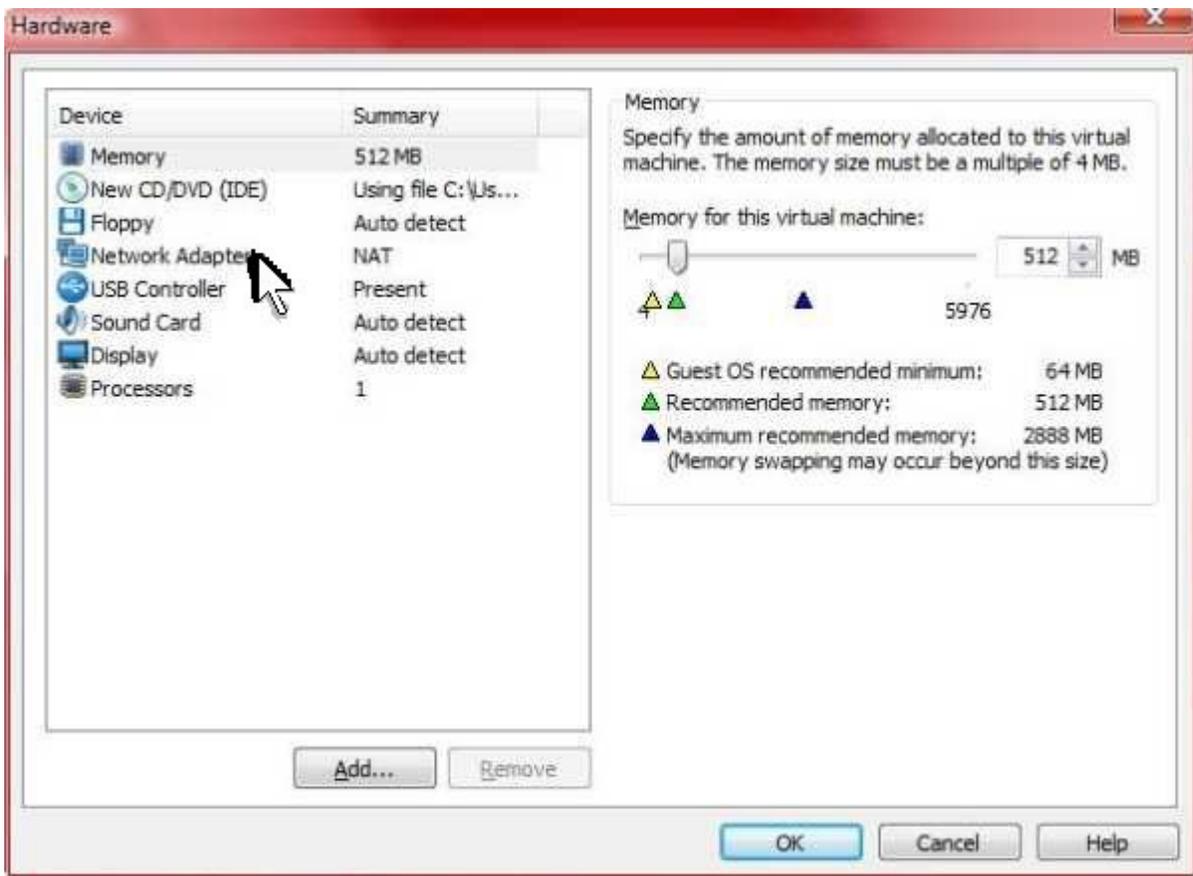
Click 'Network Adapter'.
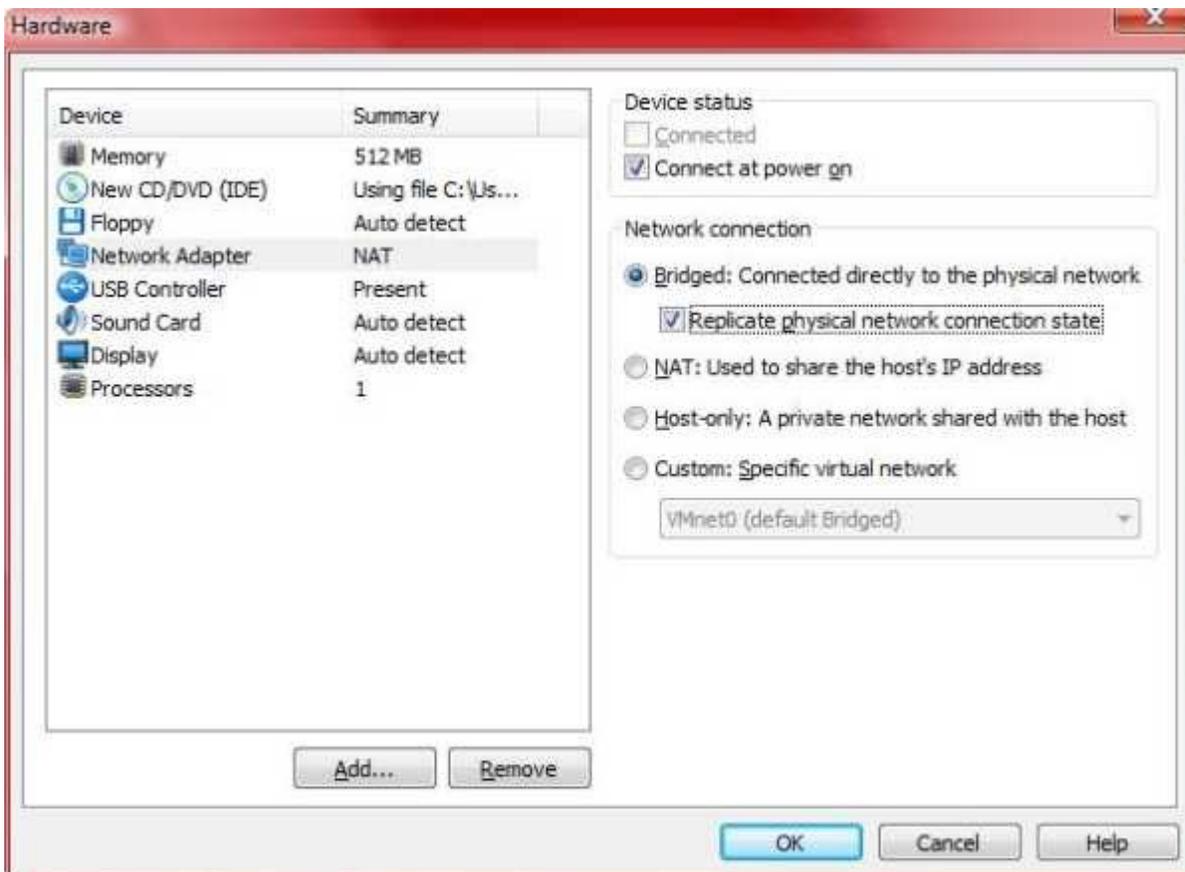
Select 'Bridged: Connected directly to the physical network' and check 'Replicate physical network connection state', then click 'OK'.
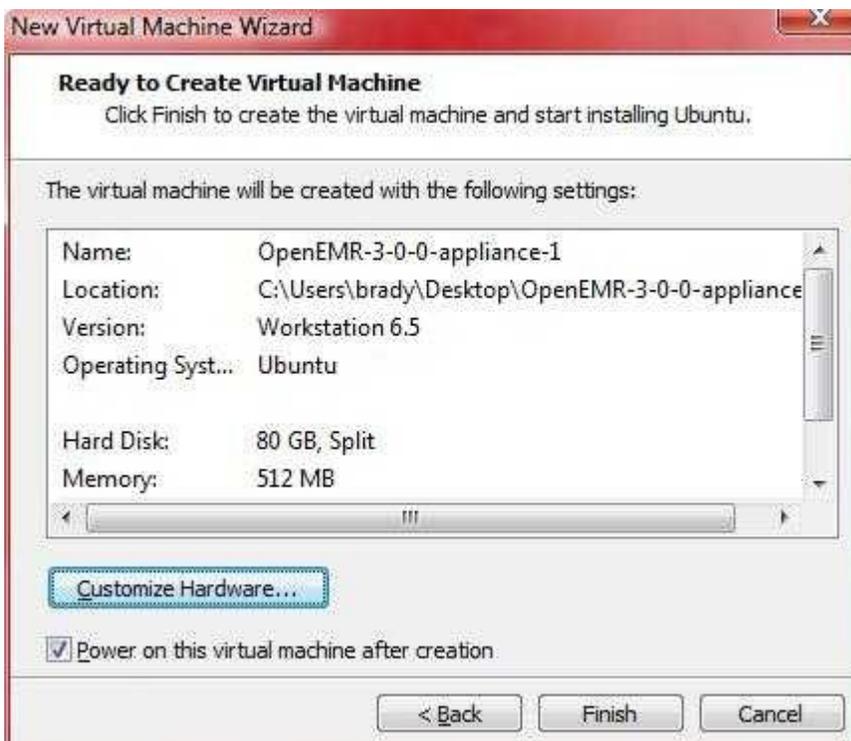
Click 'Finish'.
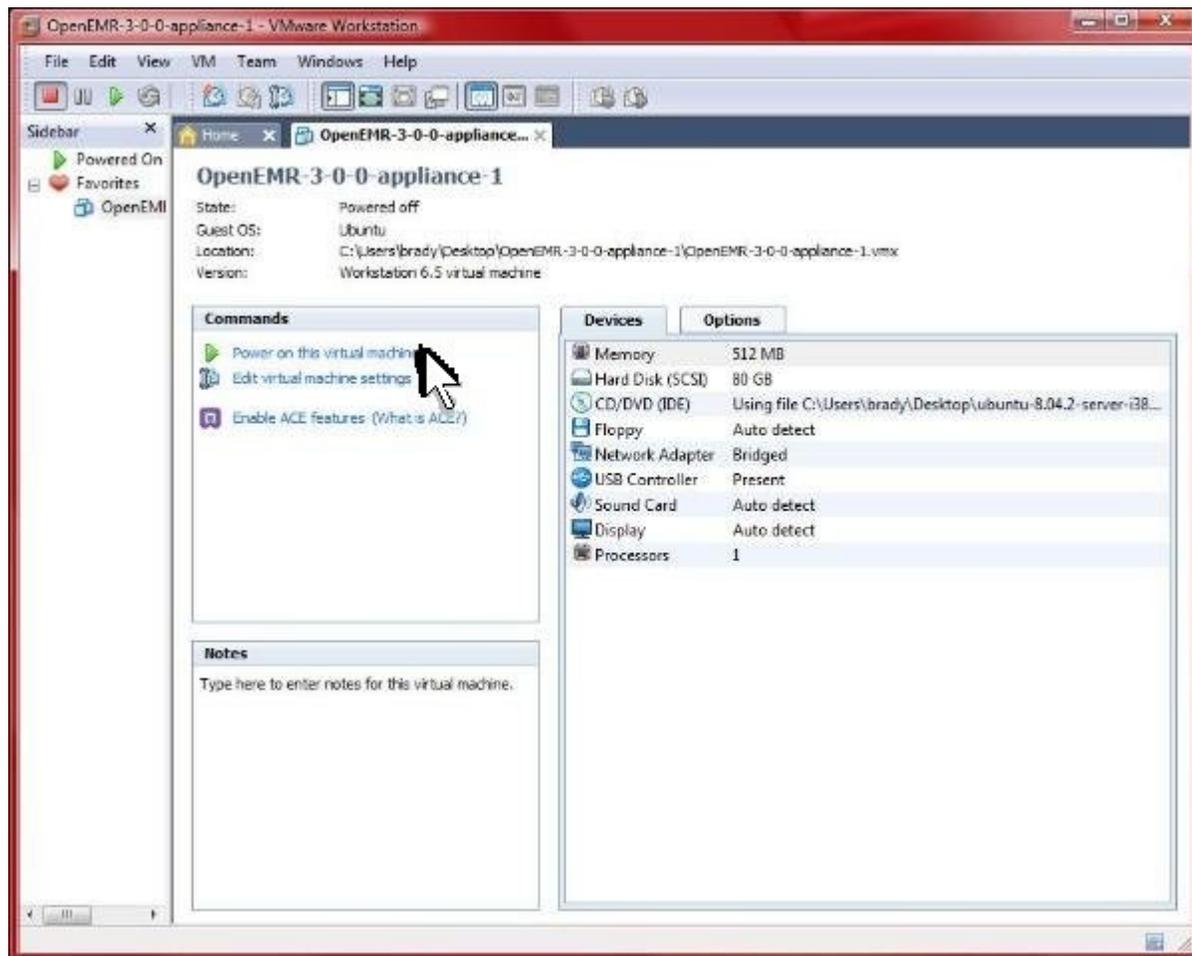
Click 'Power on this virtual machine'.
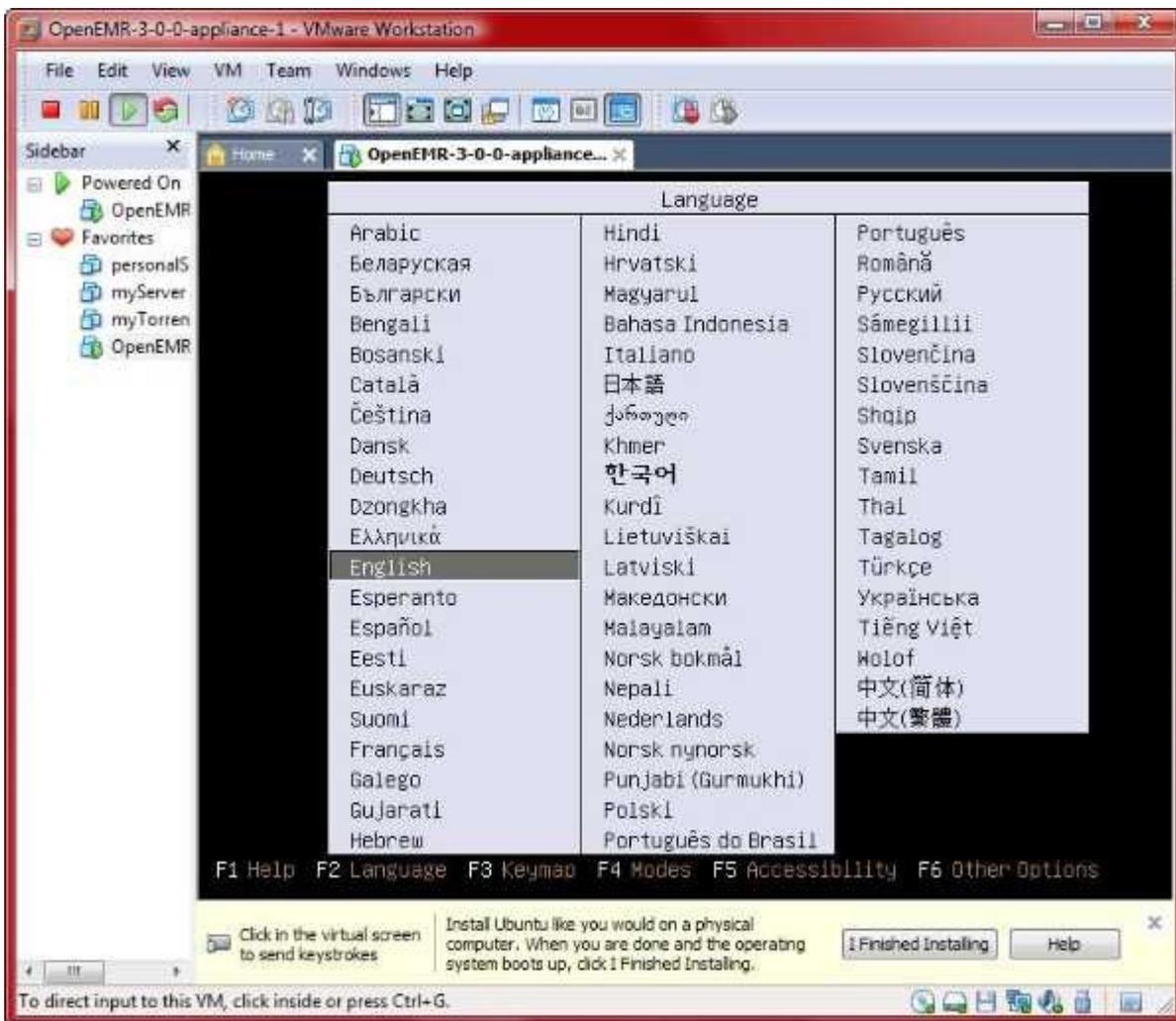
Select language.
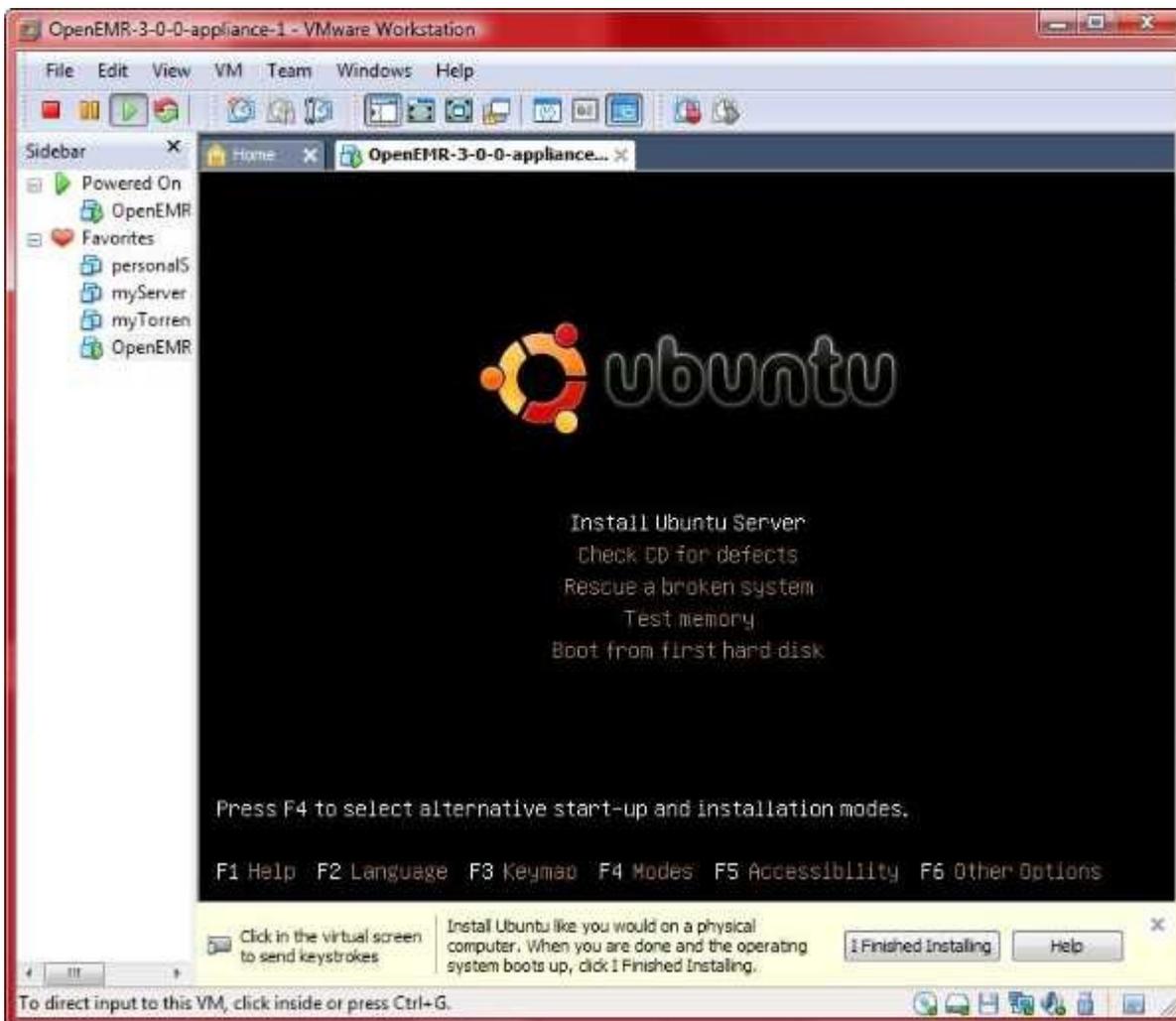
Select 'Install Ubuntu Server'.
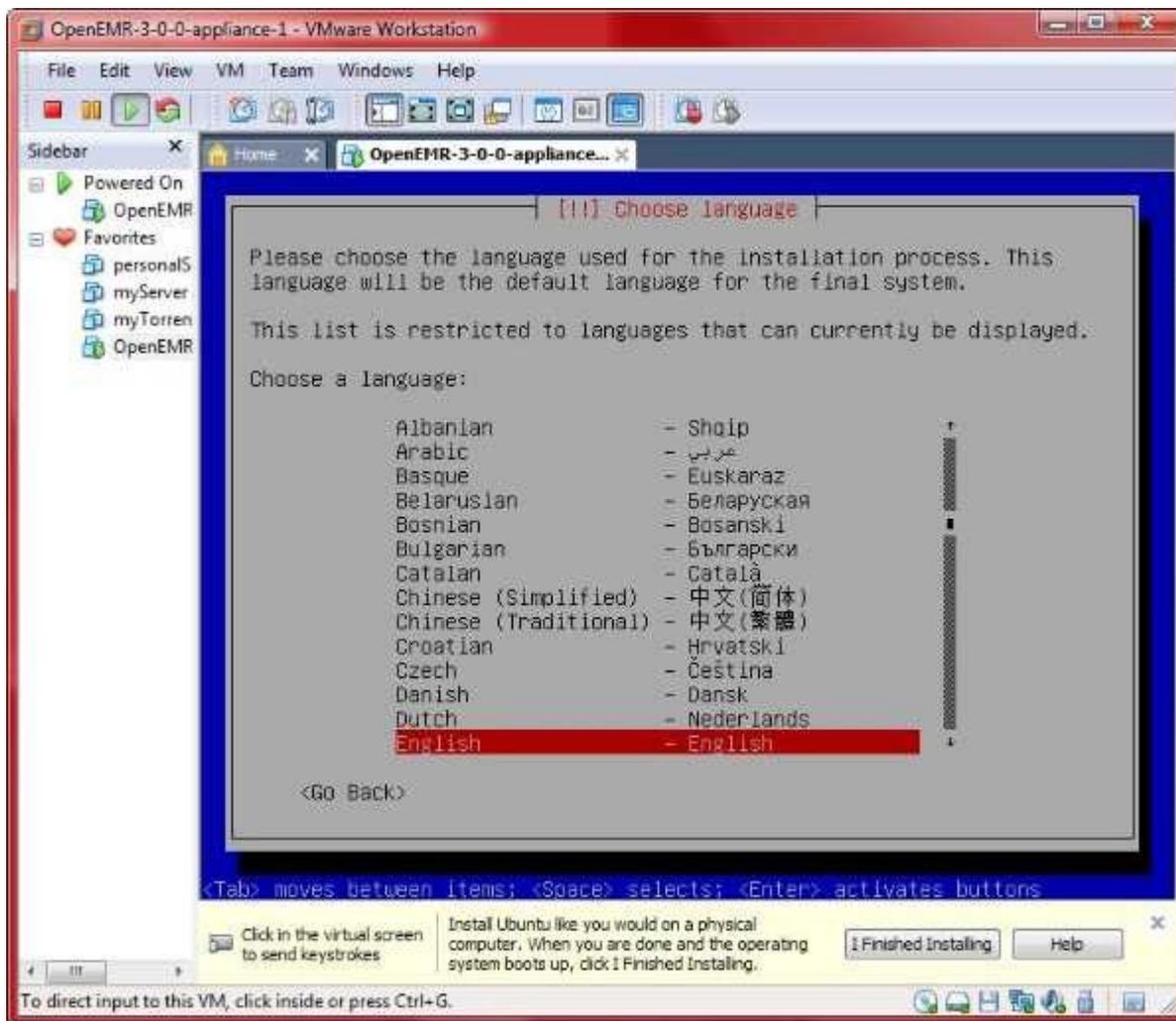
Select language.
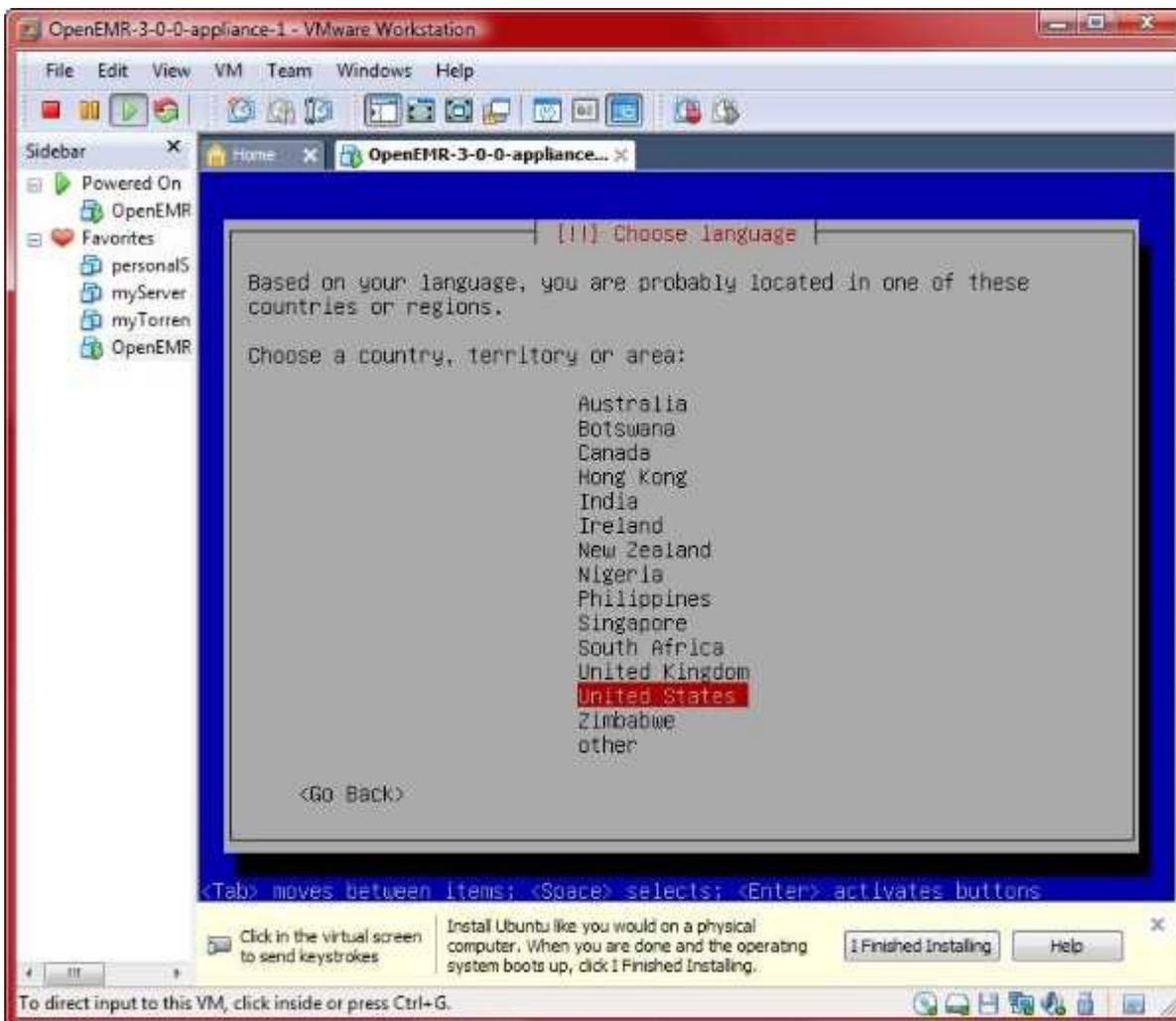
Select country.
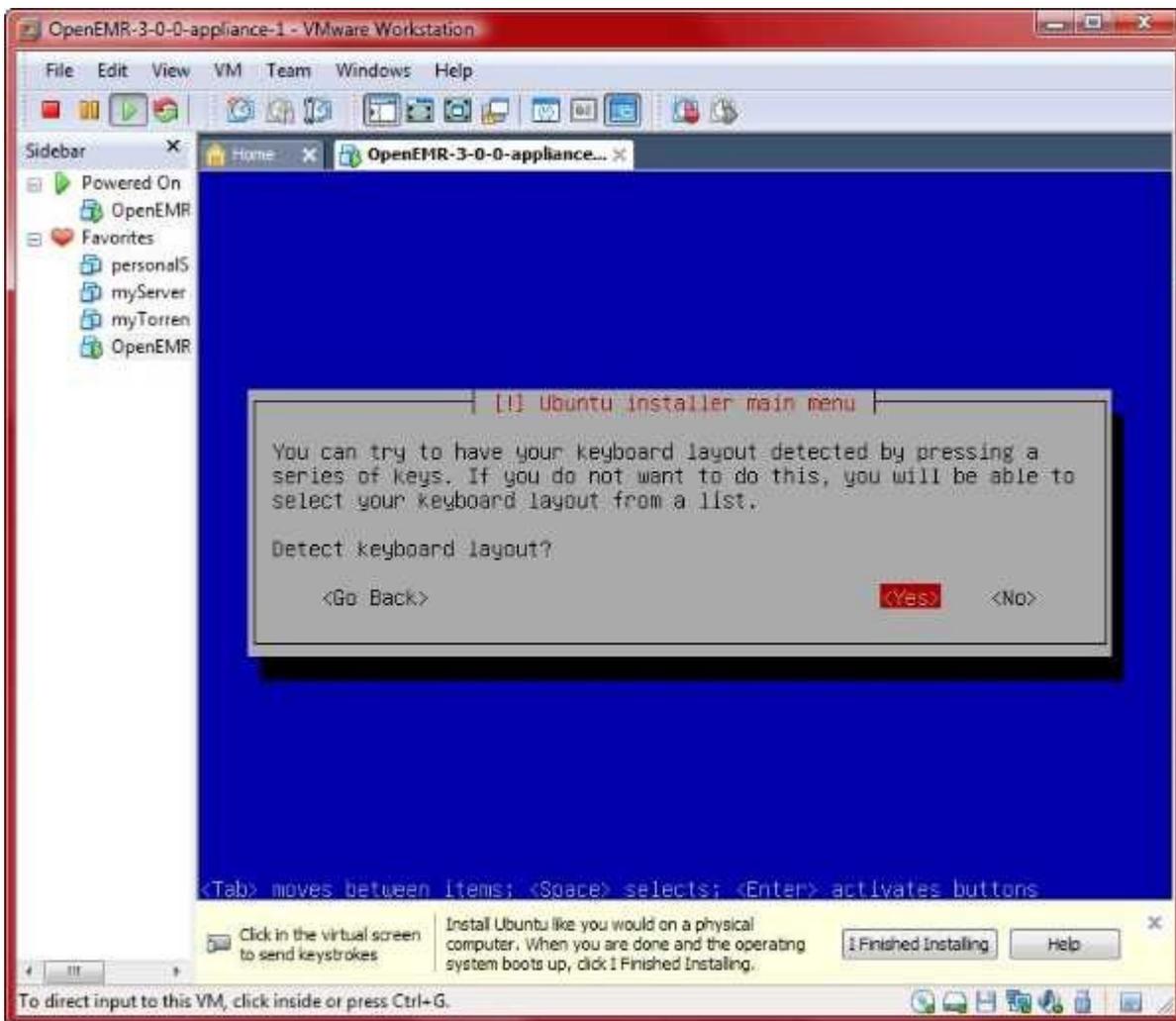
Select 'Yes' to detect keyboard layout.
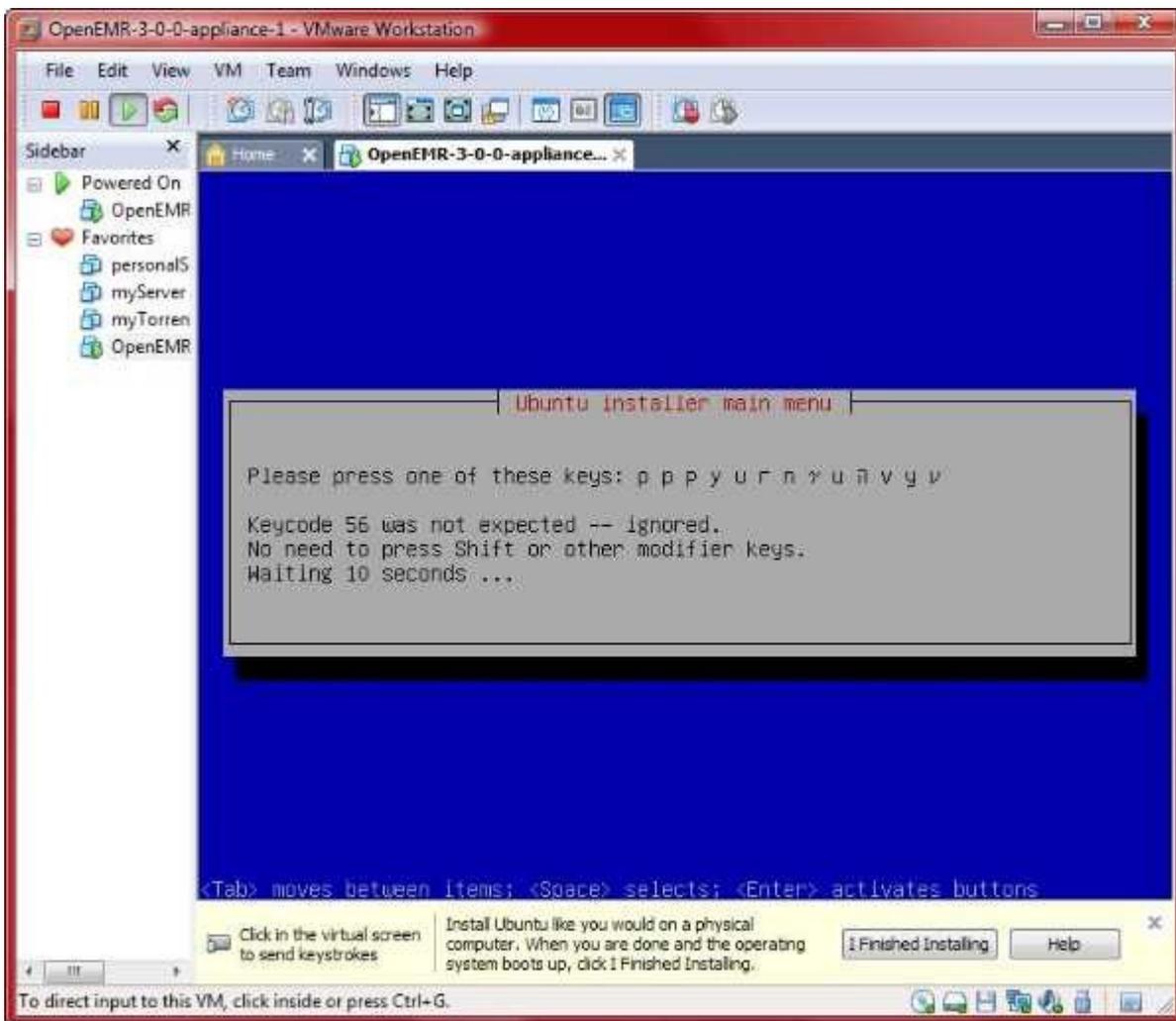
Go through bunch of screens like above to figure out keyboard.
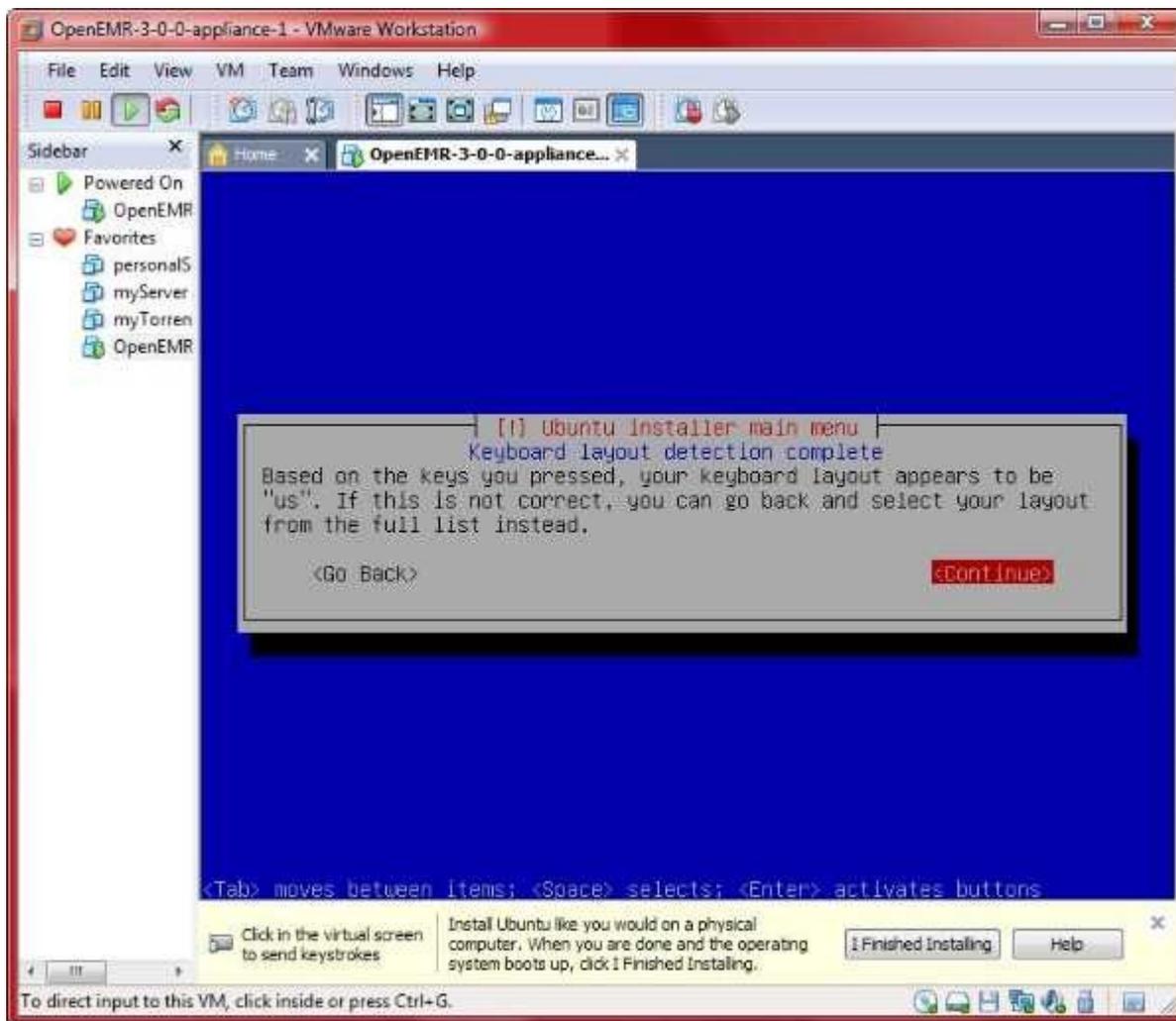
Select 'Continue' if detected correct keyboard.
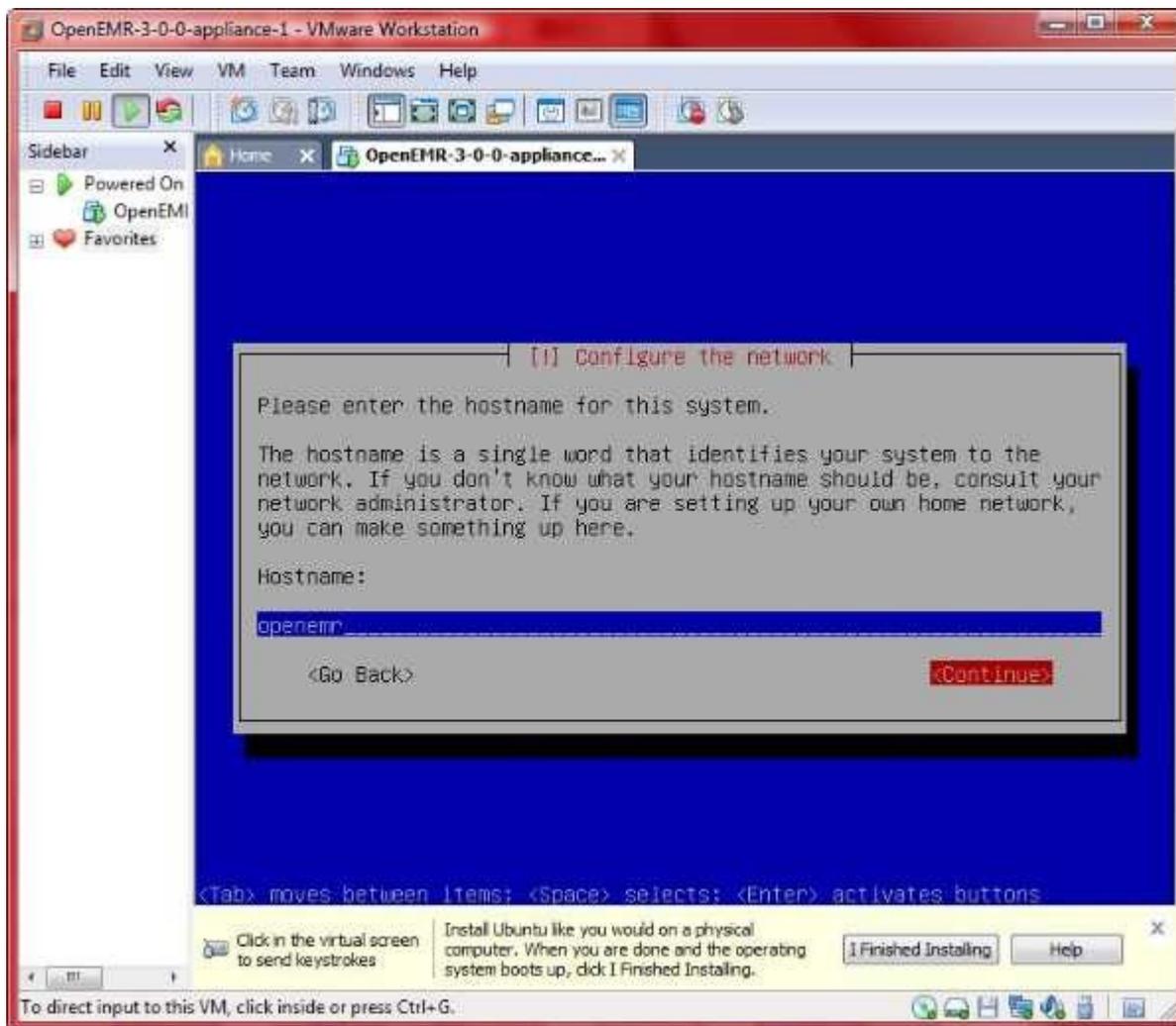
Type 'openemr' for Hostname, and then 'Continue'.
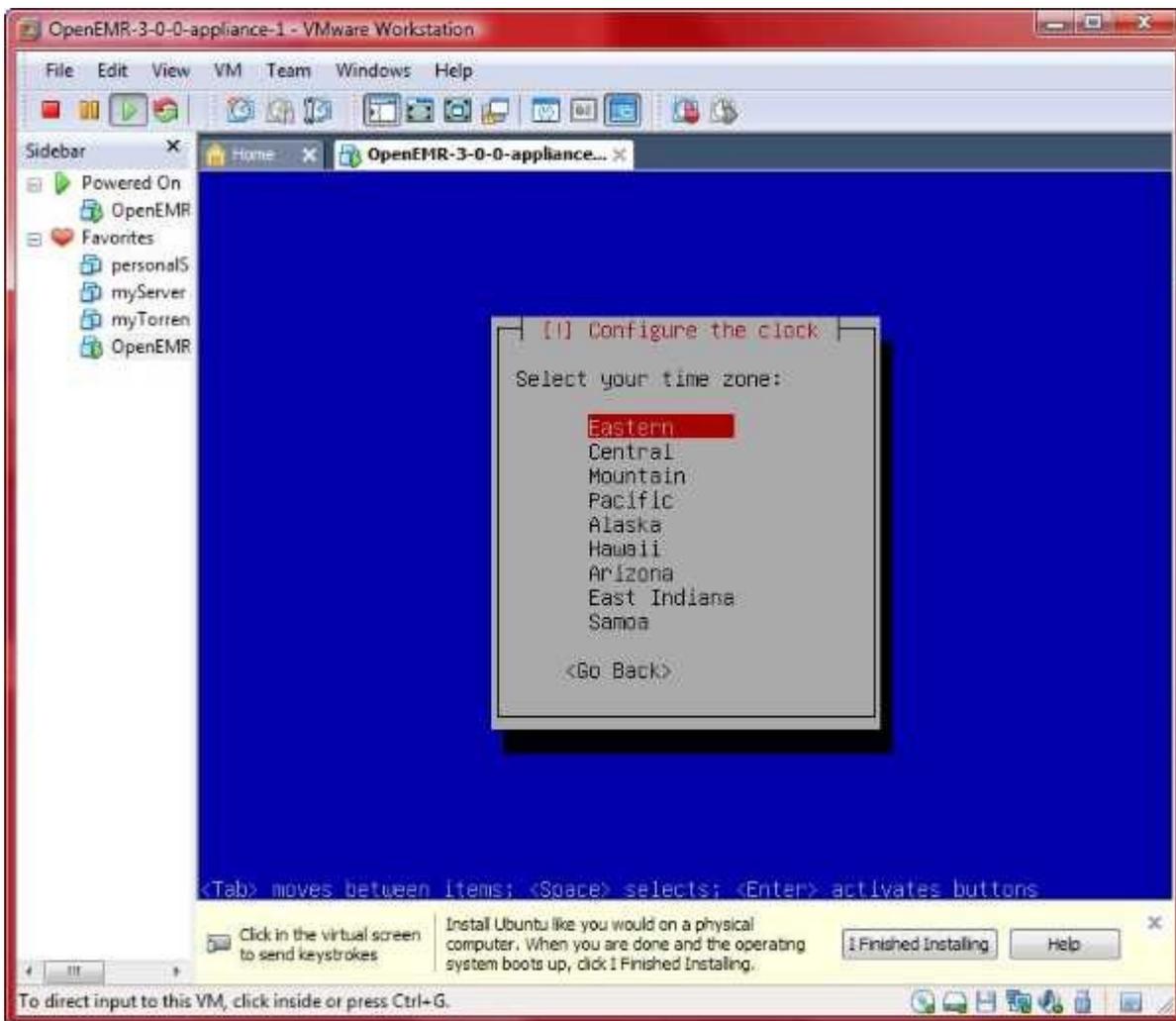
Select time zone, I chose 'Pacific'.
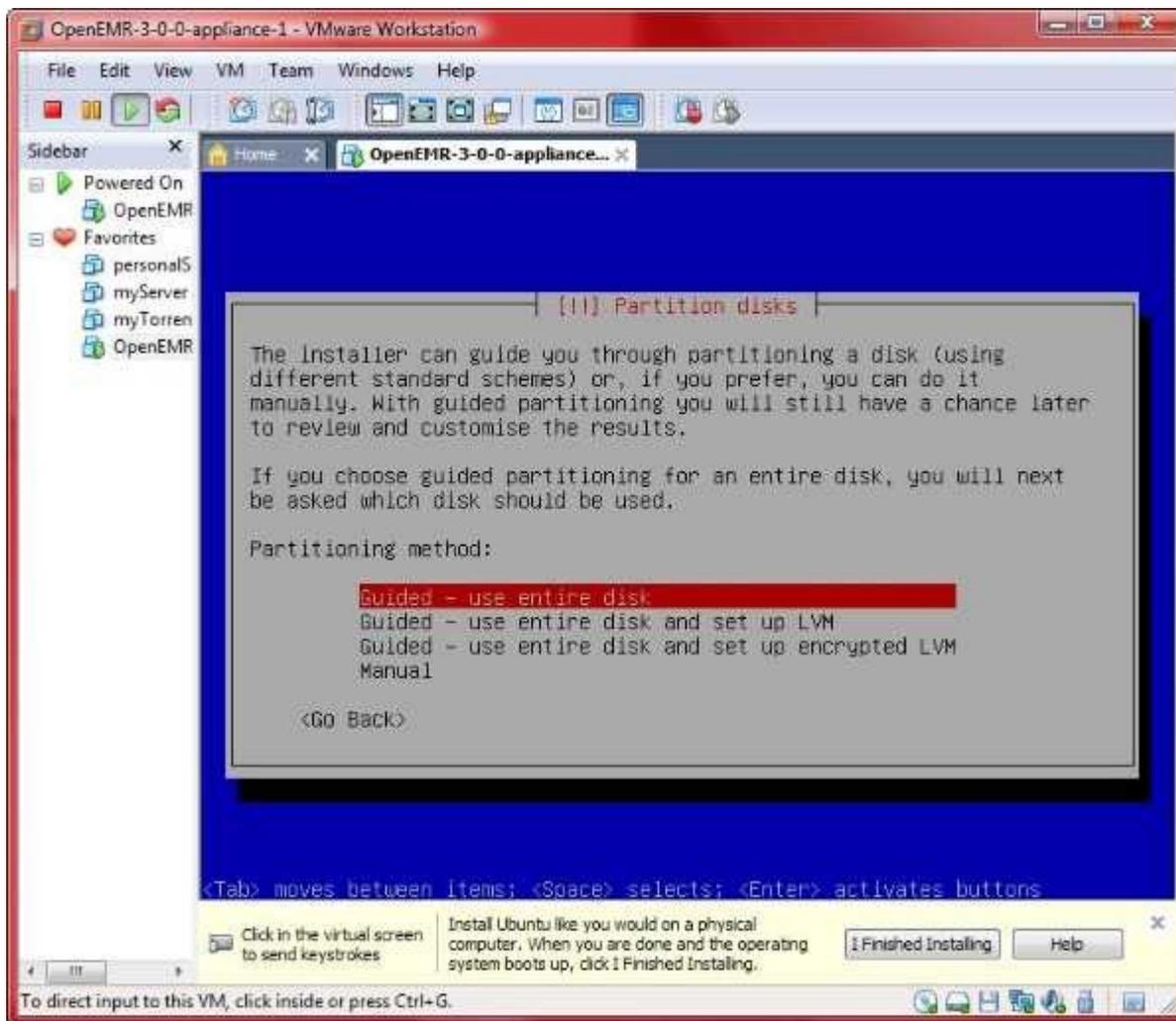
Select 'Guided - use entire disk'.
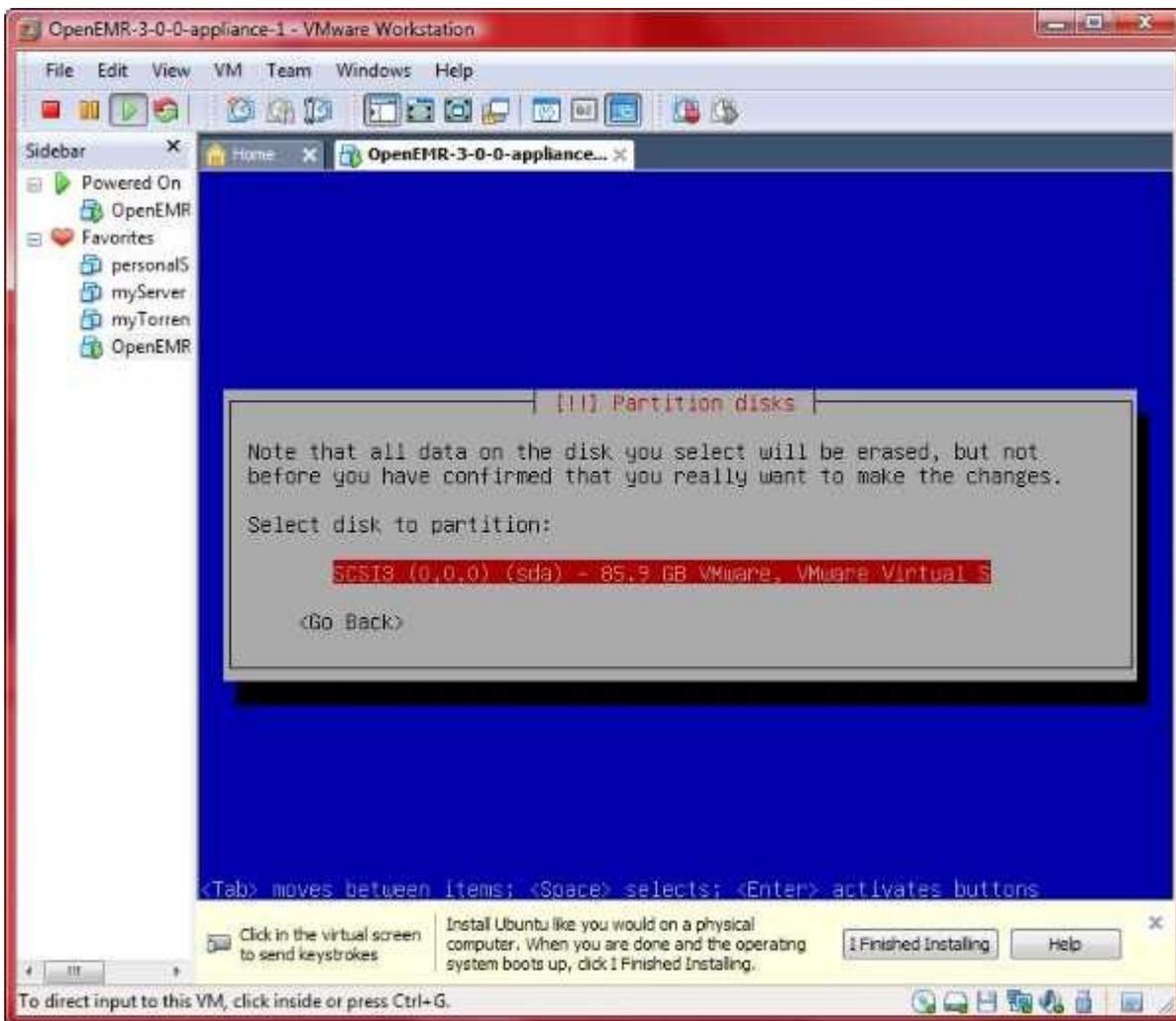
Select the highlighted disk.
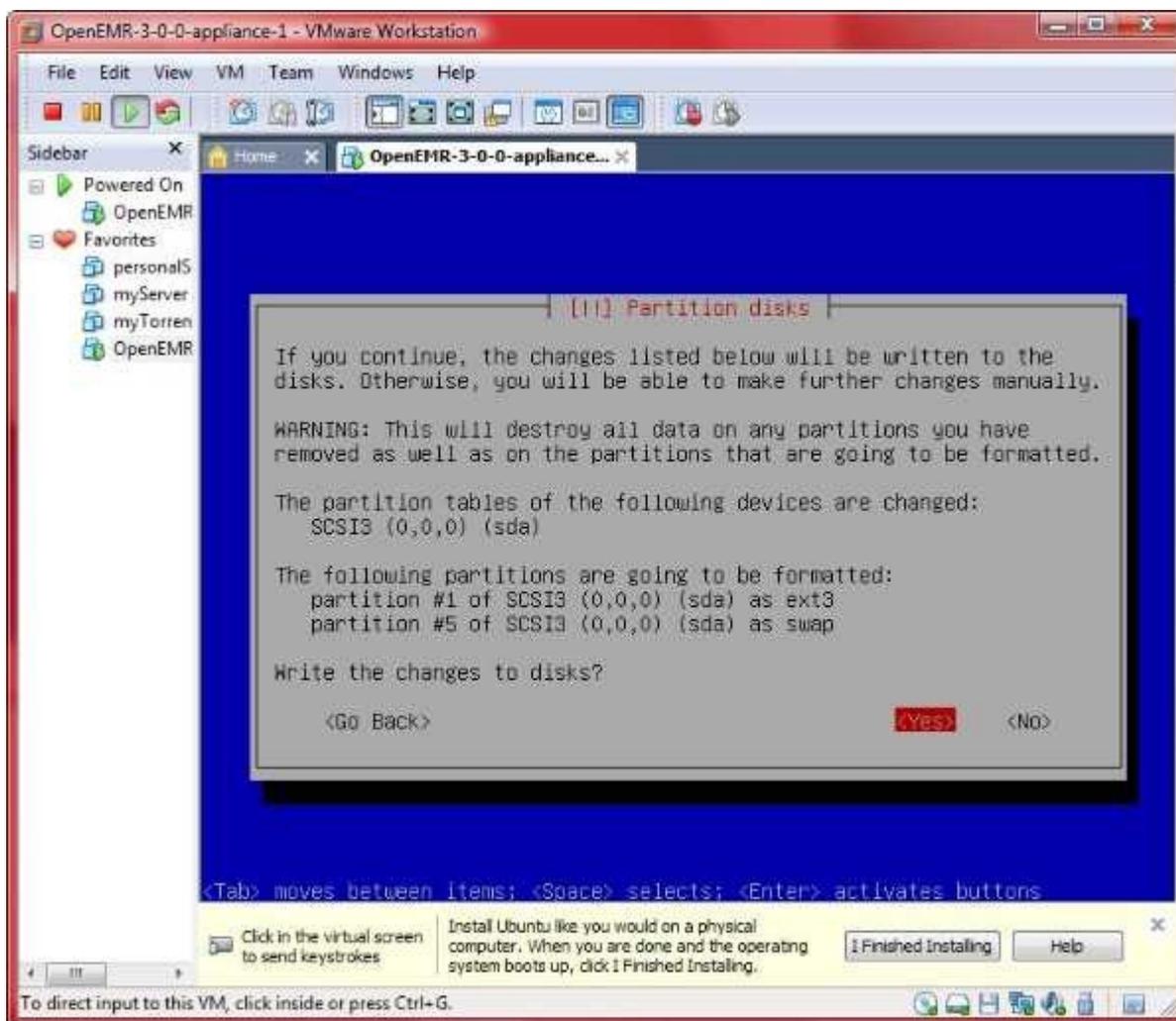
Select 'Yes'.
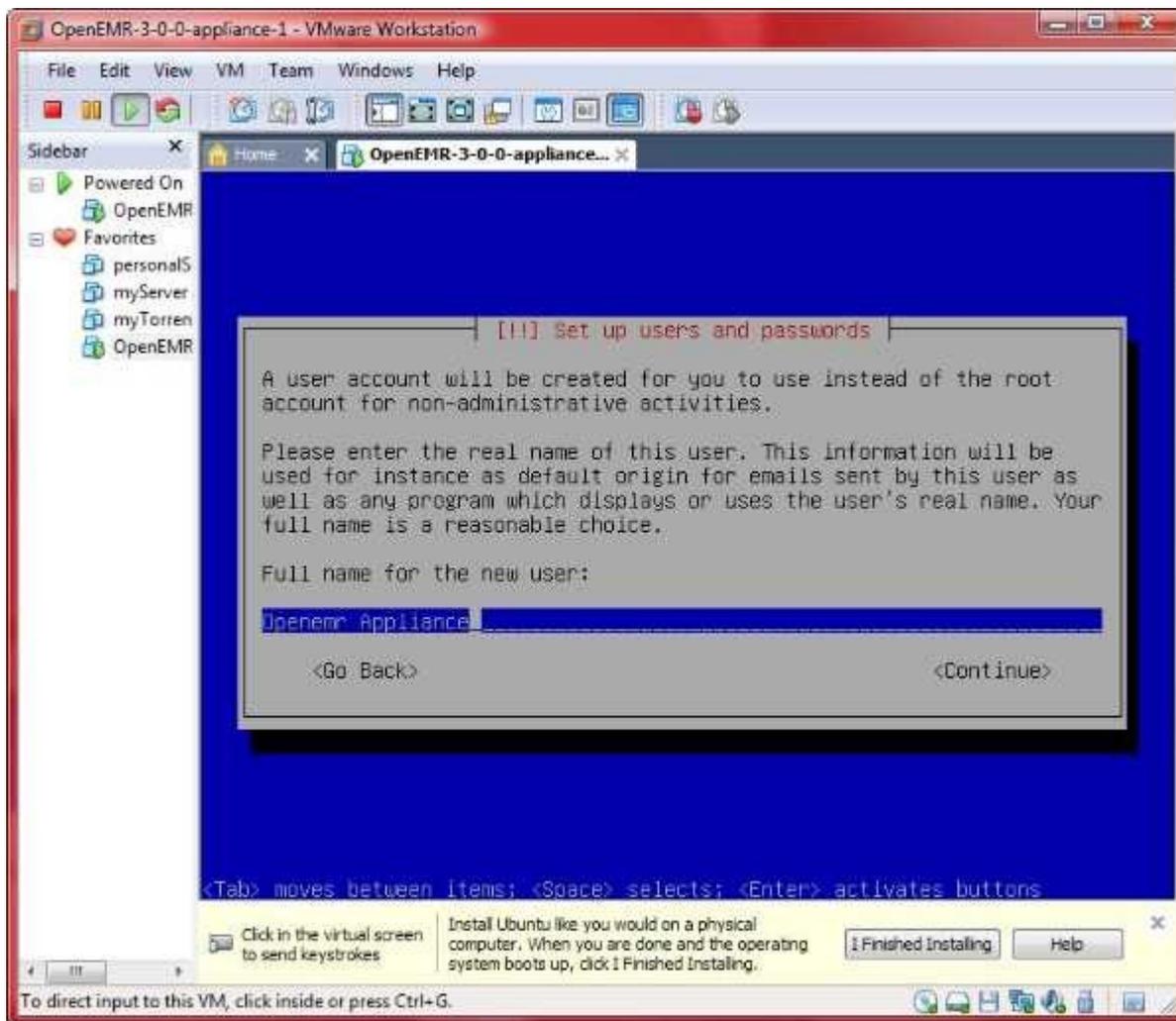
Type 'Openemr Appliance', then 'Continue'.
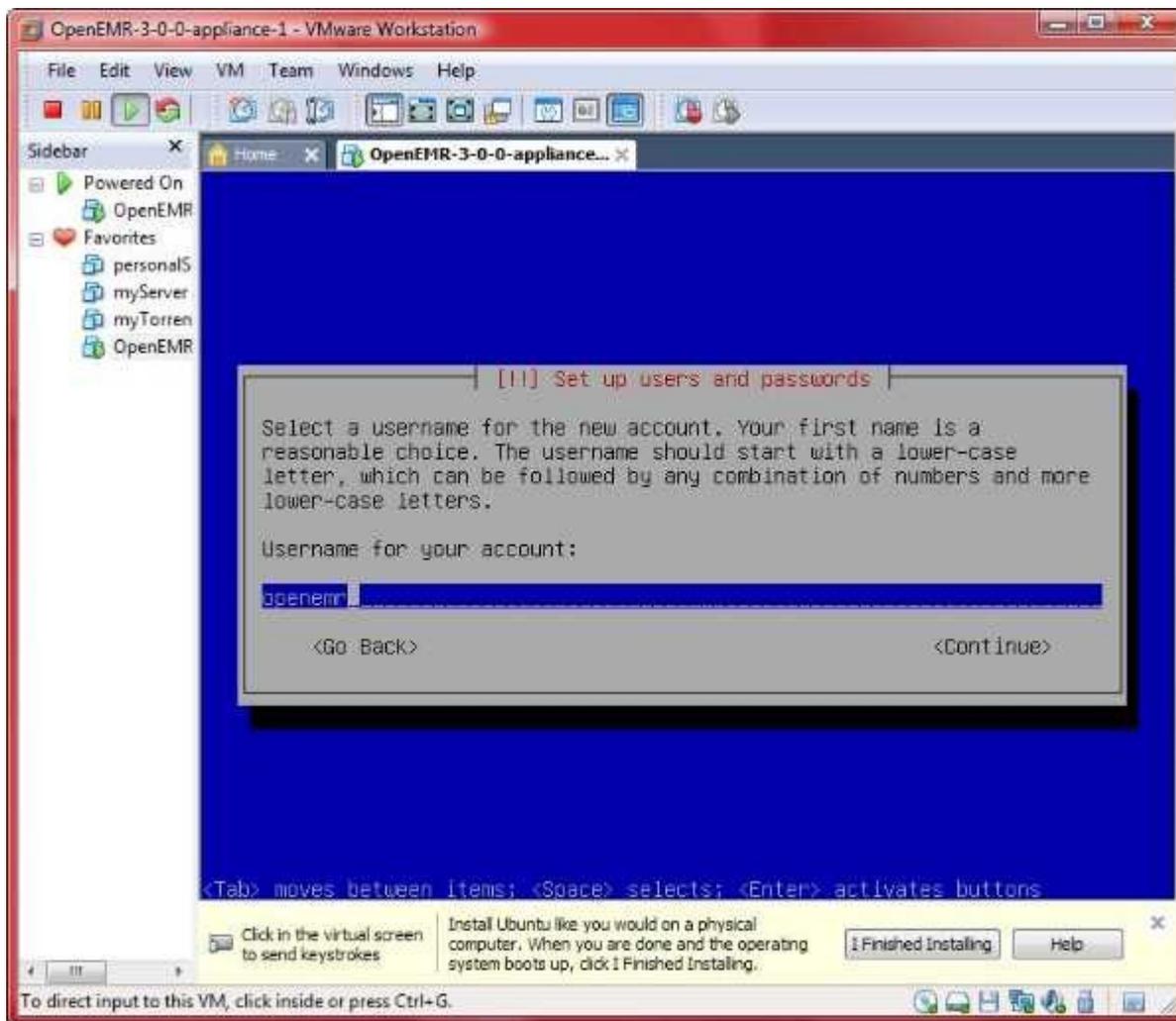
Type 'openemr', then 'Continue'.
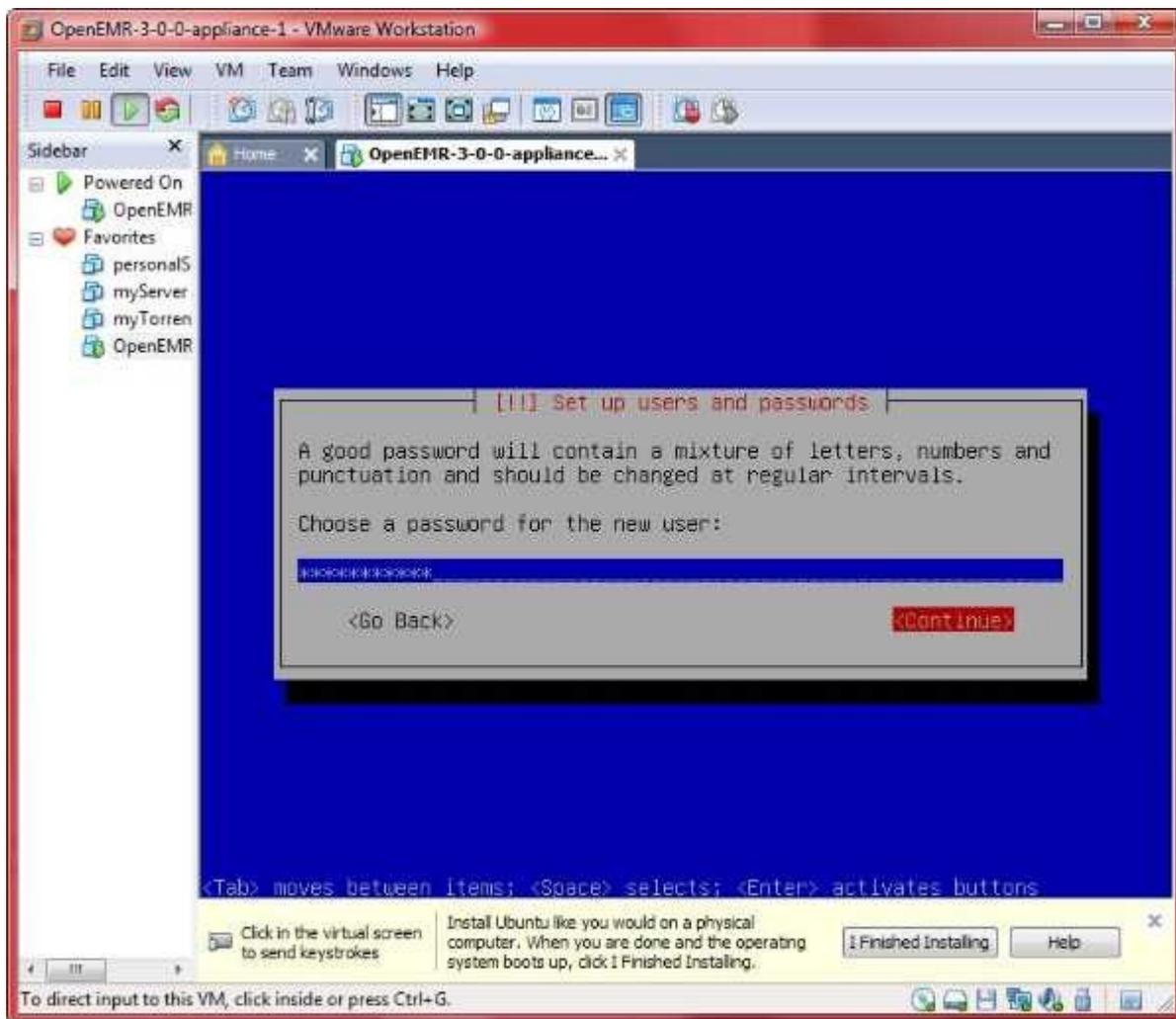
Choose a password. I typed 'openemrcool' for password, then 'Continue'.
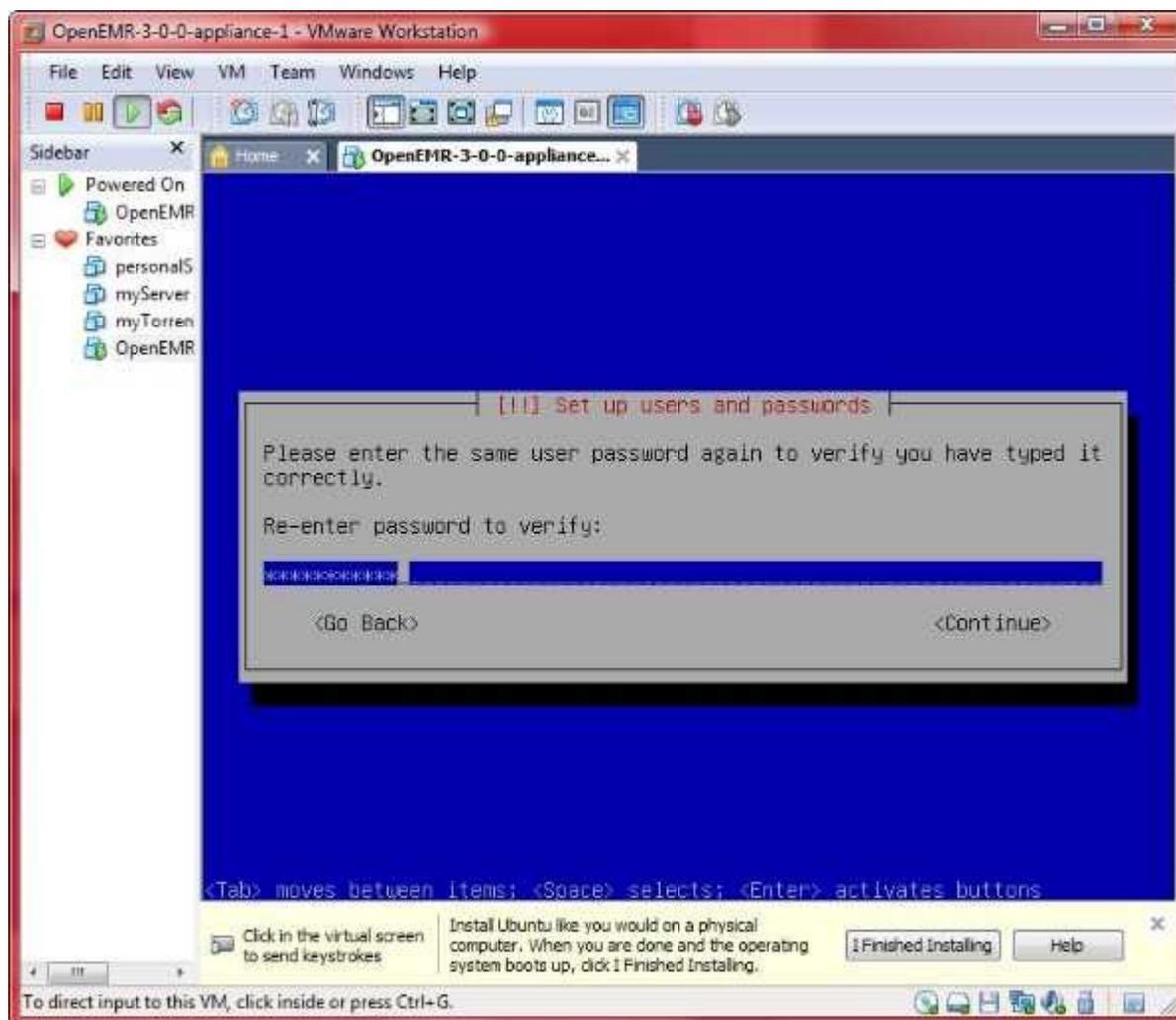
Confirm password 'openemrcool', then 'Continue'.
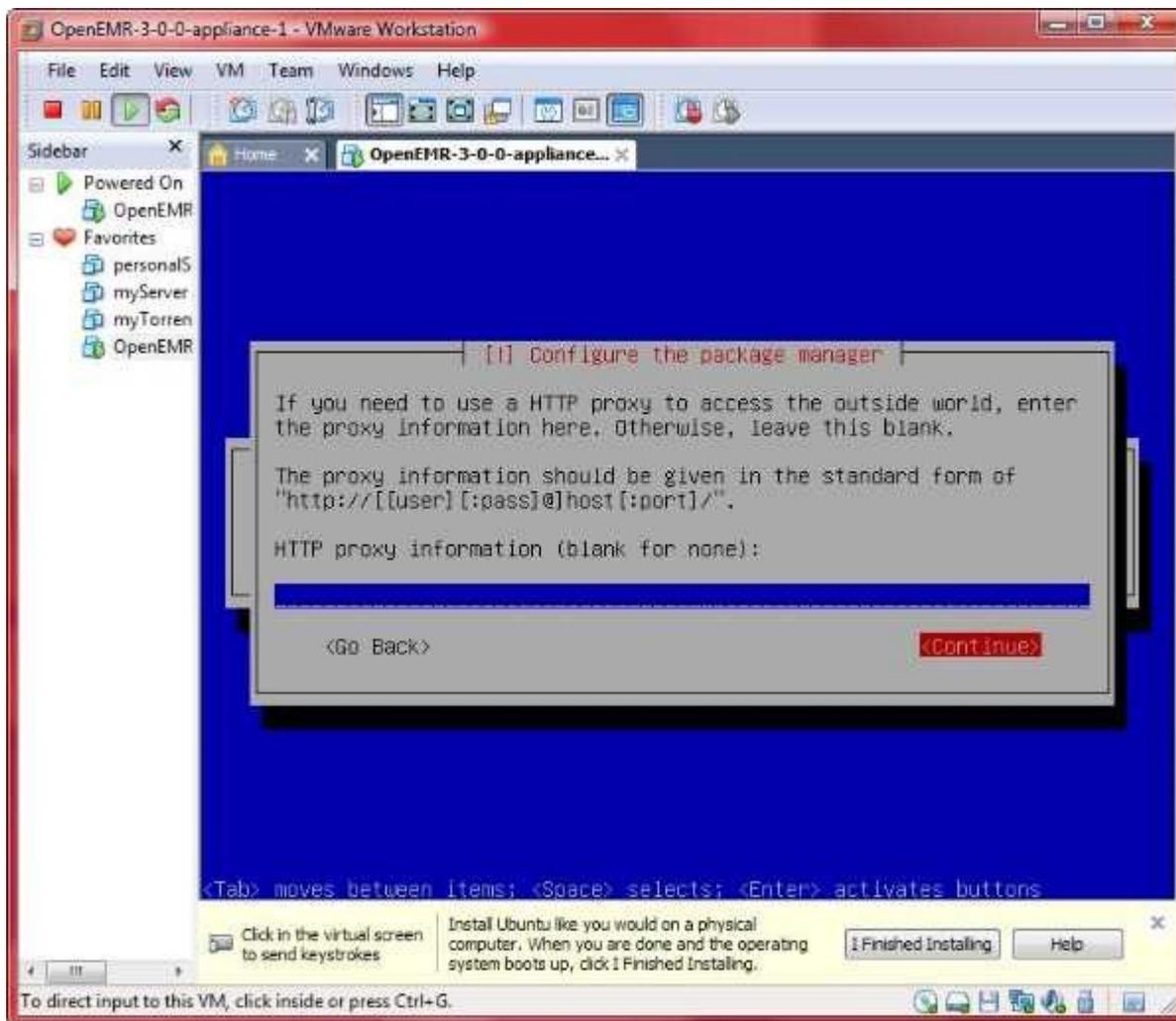
Leave blank and 'Continue'.
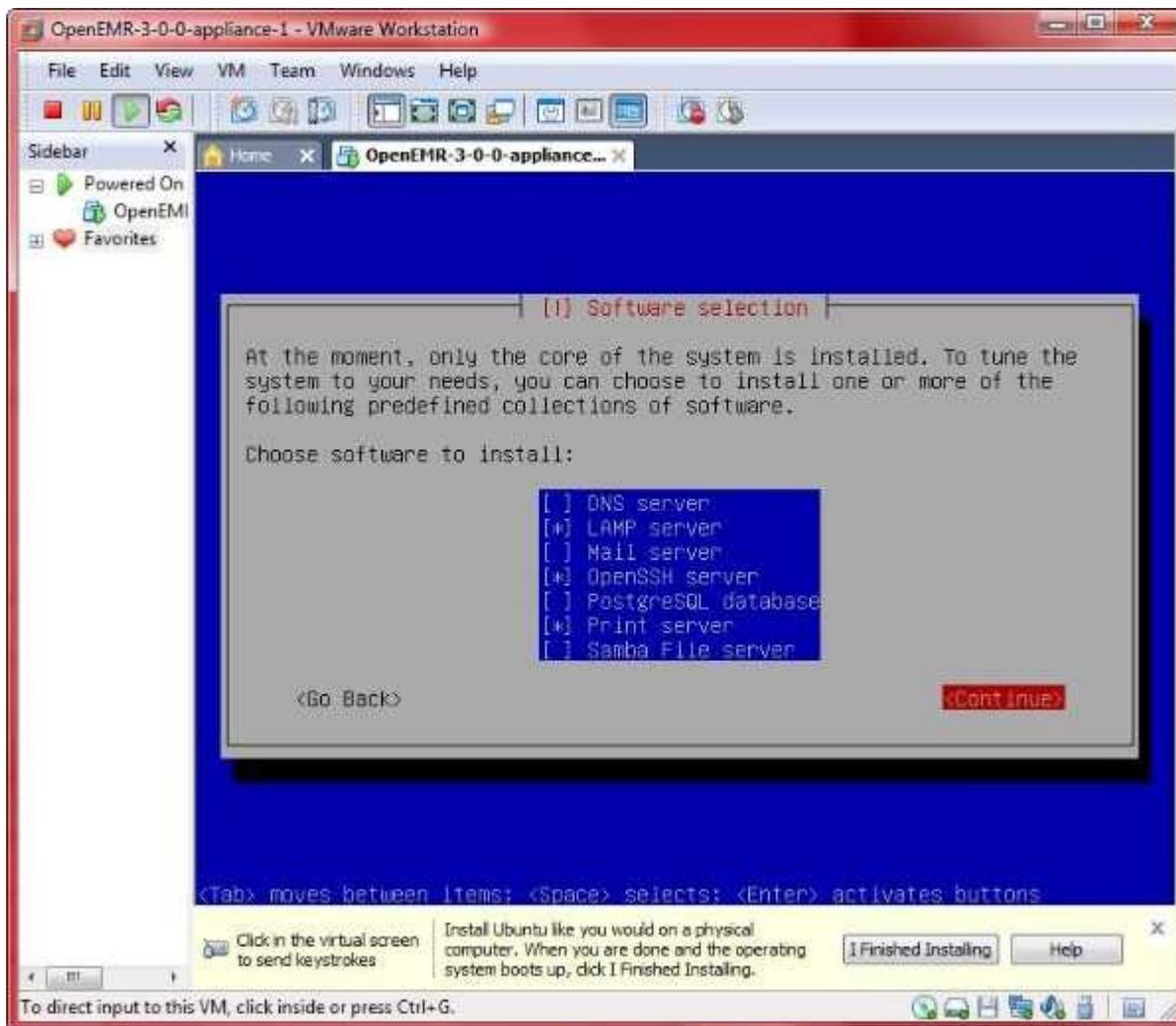
Select 'LAMP server', 'OpenSSH server', and 'Print Server'; then click 'Continue'.
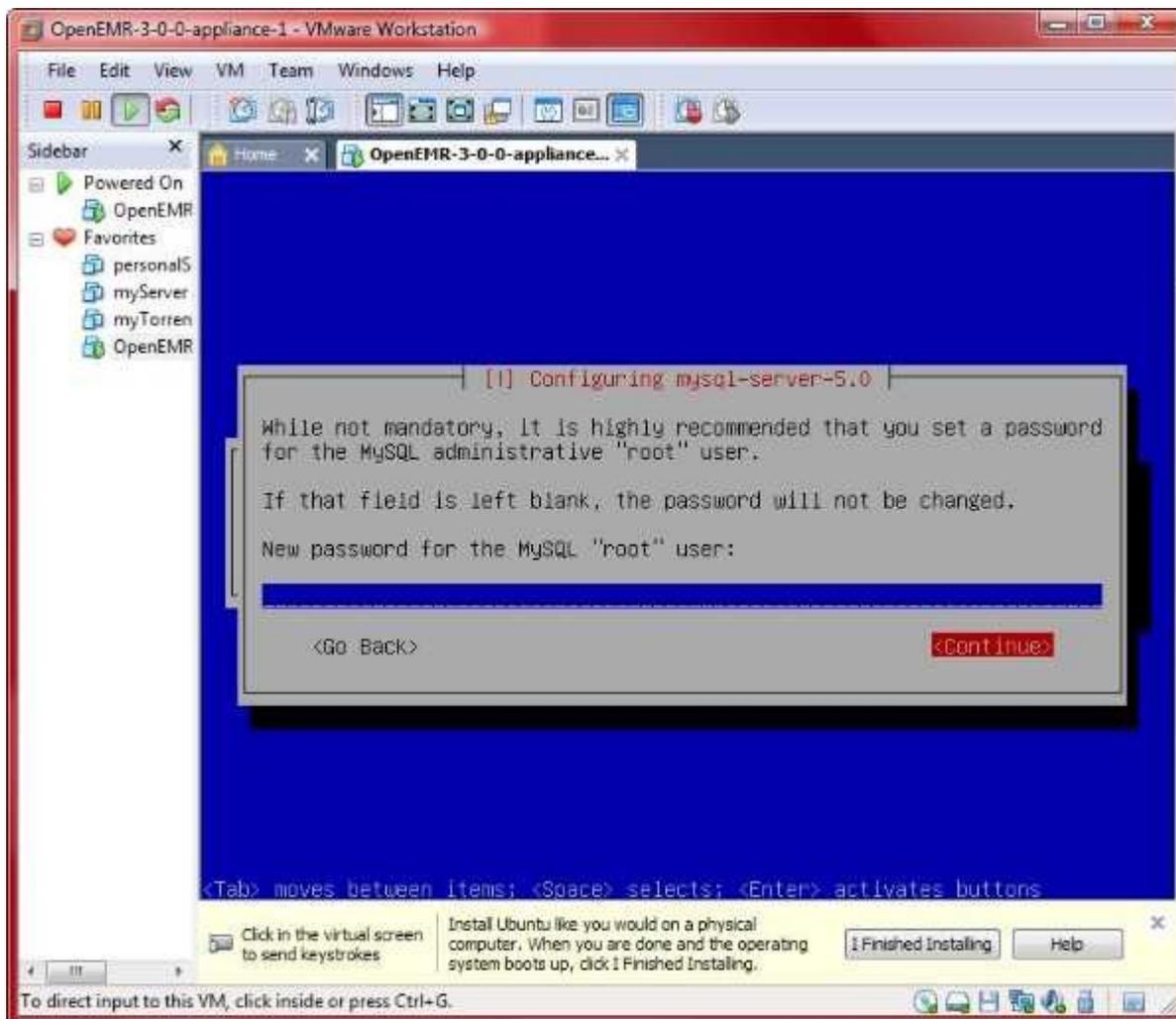
Leave blank and 'Continue'.
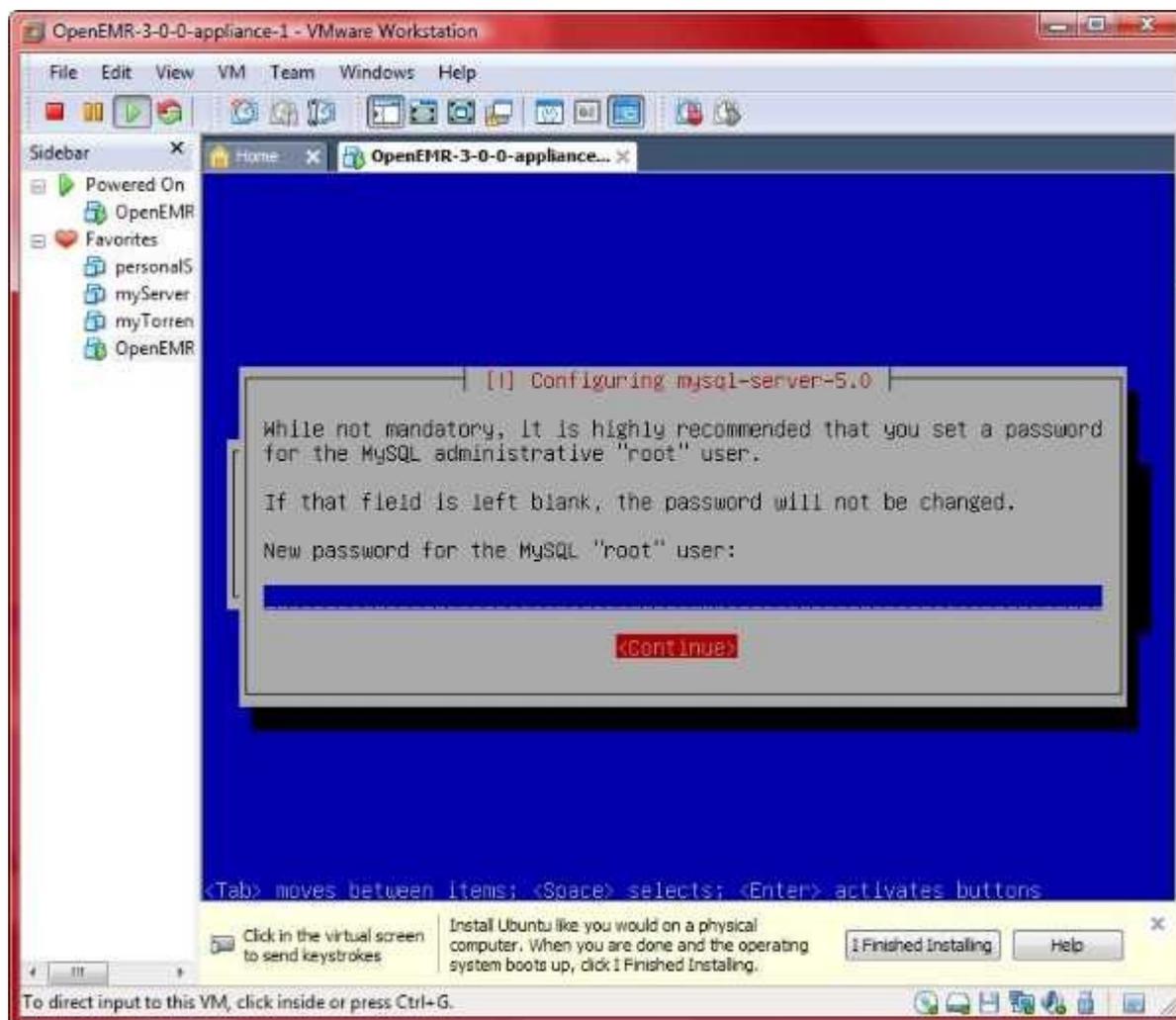
Leave blank and 'Continue'.
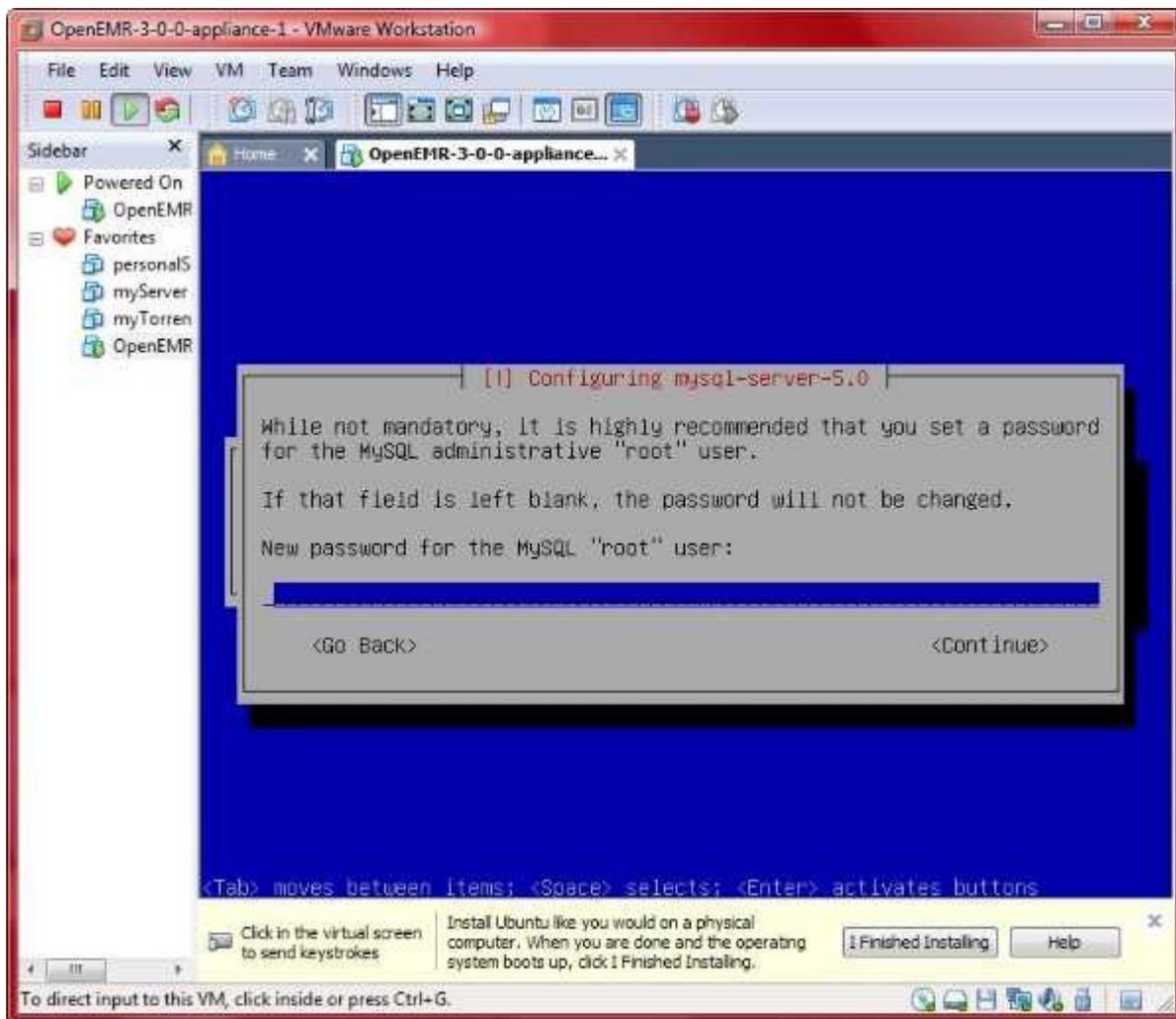
Leave blank and 'Continue'.
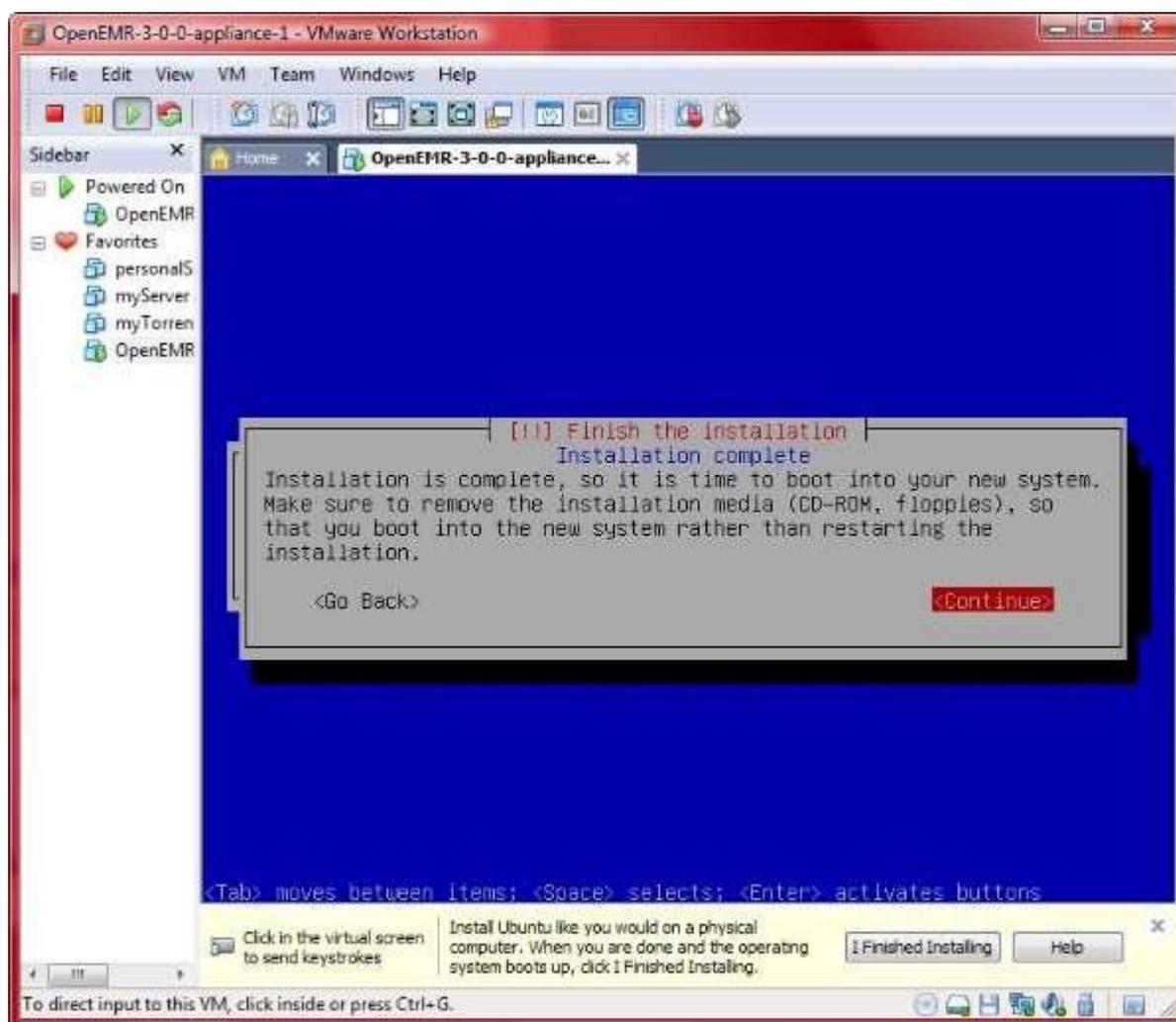
Click 'Continue'.
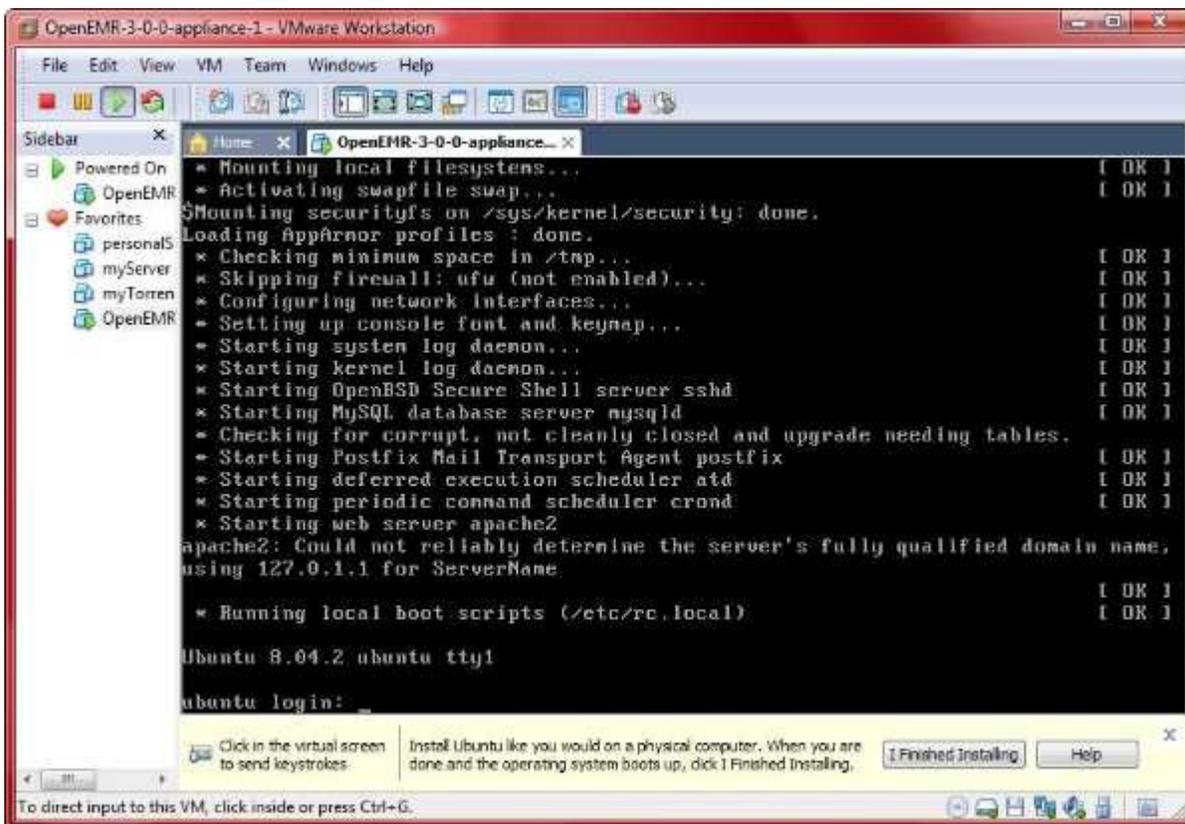
login with user:openemr pass:openemrcool

4. Enter below **bolded** instructions on command line (if prompted to give password during the sudo command, then use 'openemrcool'):

   #update and upgrade ubuntu
   sudo apt-get update
   sudo apt-get upgrade
   -enter Y to continue

   #Install the php command line, imagemagick, lynx client browser, and jed text editor.
   sudo aptitude install jed lynx php5-cli imagemagick
   -enter Y to continue

   #get packages required by Vmware Tools
   sudo aptitude install build-essential linux-headers-$(uname -r)
   -enter Y to continue

5. Prepare to install Vmware Tools:
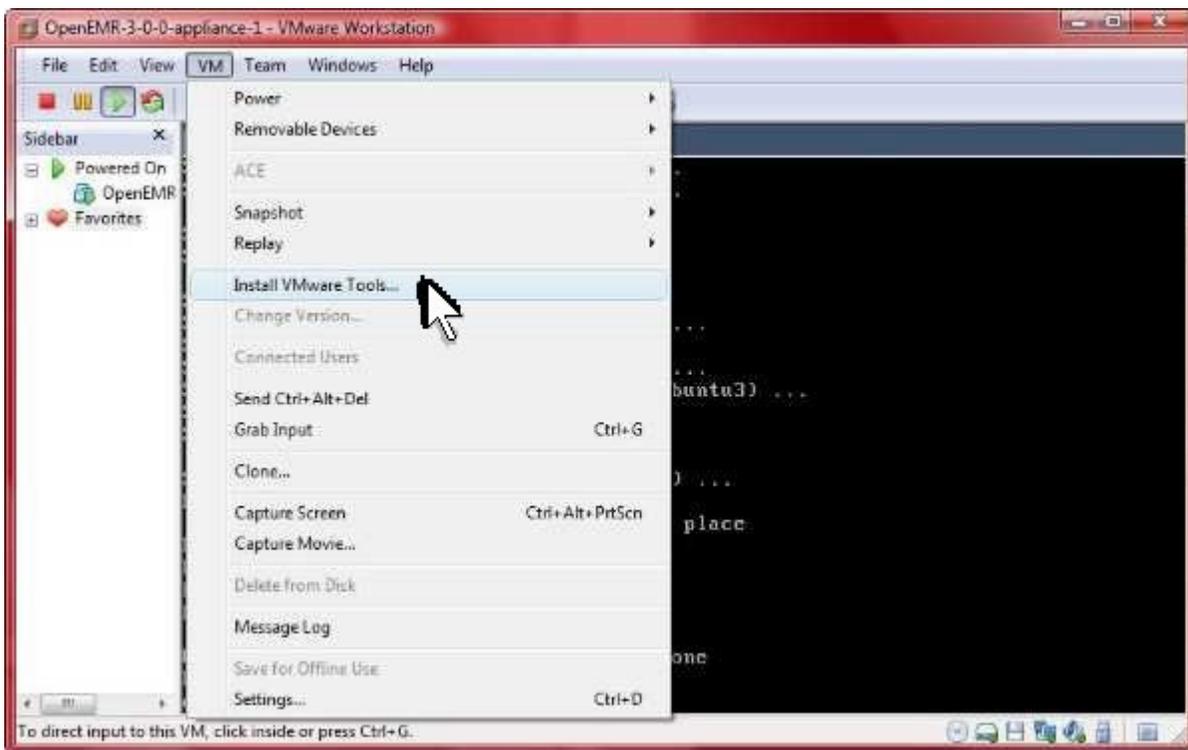
Click 'VM' in top menu, and select 'Install VMware Tools...'.

6. Enter below **bolded** instructions on command line (if prompted to give password during the sudo command, then use 'openemrcool'):

> #mount the vmware drive
> **sudo mkdir /mnt/temp**
> **sudo mount /dev/cdrom /mnt/temp**
>
> #get and unpackage vmware tools
> **cp /mnt/temp/VMwareTools-*.tar.gz .**
> **tar -zxpf VMwareTools-*.tar.gz**
>
> #install Vmware Tools
> **cd vmware-tools-distrib**
> **sudo ./vmware-install.pl**
> *-hit 'enter' to select default for all questions*
>
> #clean up files
> **cd ..**
> **rm -f VMwareTools-*.tar.gz**
> **rm -fr vmware-tools-distrib**
>
> #unmount the vmware drive
> **sudo umount /dev/cdrom**
> **sudo rm -fr /mnt/temp**

Configure PHP and Apache (with SSL)

1. Enter below **bolded** instructions on command line (if prompted to give password during the sudo command, then use 'openemrcool'):

   #edit the php config file /etc/php5/apache2/php.ini
   sudo jed /etc/php5/apache2/php.ini
   > **#edit** following variables:
   > short_open_tag = **On**
   > max_execution_time = **60**
   > max_input_time = **90**
   > memory_limit = **128M**
   > display_errors = **Off**
   > log_errors = **On**
   > register_globals = **Off**
   > post_max_size = **30M**
   > magic_quotes_gpc = **On**
   > file_uploads = **On**
   > upload_max_filesize = **30M**
   > **TEXT EDITOR SAVE AND EXIT**

   #edit apache2 config file /etc/apache2/apache2.conf
   sudo jed /etc/apache2/apache2.conf
   > **#Paste** below to end of file:
   > <Directory "/var/www/openemr/documents">
   > order deny,allow
   > Deny from all
   > </Directory>
   > <Directory "/var/www/openemr/edi">
   > order deny,allow
   > Deny from all
   > </Directory>
   > <Directory "/var/www/openemr/era">
   > order deny,allow
   > Deny from all
   > </Directory>
   > **TEXT EDITOR SAVE AND EXIT**

   #create an SSL certificate
   sudo openssl req $@ -new -x509 -days 1825 -nodes -out /etc/apache2/apache.pem -keyout /etc/apache2/apache.pem
   -ok to just select all defaults

#configure SSL in apache2
sudo a2enmod ssl
sudo cp /etc/apache2/sites-available/default /etc/apache2/sites-available/ssl
sudo ln -s /etc/apache2/sites-available/ssl /etc/apache2/sites-enabled/

#edit file /etc/apache2/sites-available/default
sudo jed /etc/apache2/sites-available/default
  #Edit first two lines of file:
  NameVirtualHost *:**80**
  <VirtualHost *:**80**>
  TEXT EDITOR SAVE AND EXIT

#edit file /etc/apache2/sites-available/default
sudo jed /etc/apache2/sites-available/ssl
  #Edit first two lines of file:
  NameVirtualHost *:**443**
  <VirtualHost *:**443**>

  #Insert the below code right above the 'Loglevel warn' line:
  SSLEngine on
  SSLCertificateFile /etc/apache2/apache.pem
  TEXT EDITOR SAVE AND EXIT

#edit file /etc/apache2/mods-available/ssl.conf
sudo jed /etc/apache2/mods-available/ssl.conf
  #Uncomment the following lines (near end of file):
  SSLCipherSuite HIGH:MEDIUM:!ADH
  SSLProtocol all -SSLv2
  TEXT EDITOR SAVE AND EXIT

#restart apache
sudo /etc/init.d/apache2 restart
-do not worry about the domain name messages

Install OpenEMR 3.0.1

1. Enter below **bolded** instructions on command line (if prompted to give password during the sudo command, then use 'openemrcool'):

   #Download OpenEMR
   wget http://downloads.sourceforge.net/openemr/openemr-3.0.1.tar.gz

\#Put the OpenEMR program in its place
sudo tar -pxzvf openemr-3.0.1.tar.gz
sudo rm -f openemr-3.0.1.tar.gz
sudo mv openemr-3.0.1 /var/www/openemr
sudo chown -R root:root /var/www/openemr

\#Deal with file permissions
sudo chmod 666 /var/www/openemr/library/sqlconf.php
sudo chmod 666 /var/www/openemr/interface/globals.php
sudo chmod 666 /var/www/openemr/gacl/gacl.ini.php
sudo chmod 666 /var/www/openemr/gacl/gacl.class.php
**sudo chown -R www-data:www-data
  /var/www/openemr/documents**
sudo chown -R www-data:www-data /var/www/openemr/edi
sudo chown -R www-data:www-data /var/www/openemr/era
**sudo chown -R www-data:www-data
  /var/www/openemr/custom/letter_templates**
**sudo chown -R www-data:www-data
  /var/www/openemr/gacl/admin/templates_c**
**sudo chown -R www-data:www-data
  /var/www/openemr/library/freeb**
**sudo chown -R www-data:www-data
  /var/www/openemr/interface/main/calendar/modules/PostCa
  lendar/pntemplates/cache**
**sudo chown -R www-data:www-data
  /var/www/openemr/interface/main/calendar/modules/PostCa
  lendar/pntemplates/compiled**

\#Get IP address of appliance
sudo ifconfig
-Look at screenshot below to get IP address

The location where you will find the IP address of your appliance is circled in red above.

3. Now, open a webbrowser outside the appliance and point to (the APPLIANCE_IP_ADDRESS was found by above ifconfig command): https://APPLIANCE_IP_ADDRESS/openemr/setup.php

(If you are getting a certificate security error, then first follow the instructions in below appendix section 'Configuring client web browser for https' to configure your web browser.)

Click 'Continue'.

OpenEMR Setup Tool - Mozilla Firefox

File   Edit   View   History   Delicious   Tools   Help

OpenEMR Setup Tool   ✕

OpenEMR Setup

Step 1

Now I need to know whether you want me to create the database on my own or if you have already created the database for me to use. For me to create the database, you will need to supply the MySQL root password.
NOTE: clicking on "Continue" may delete or cause damage to data on your system. Before you continue please backup your data.

● Have setup create the database
○ I have already created the database

Continue

Done   192.168.1.167
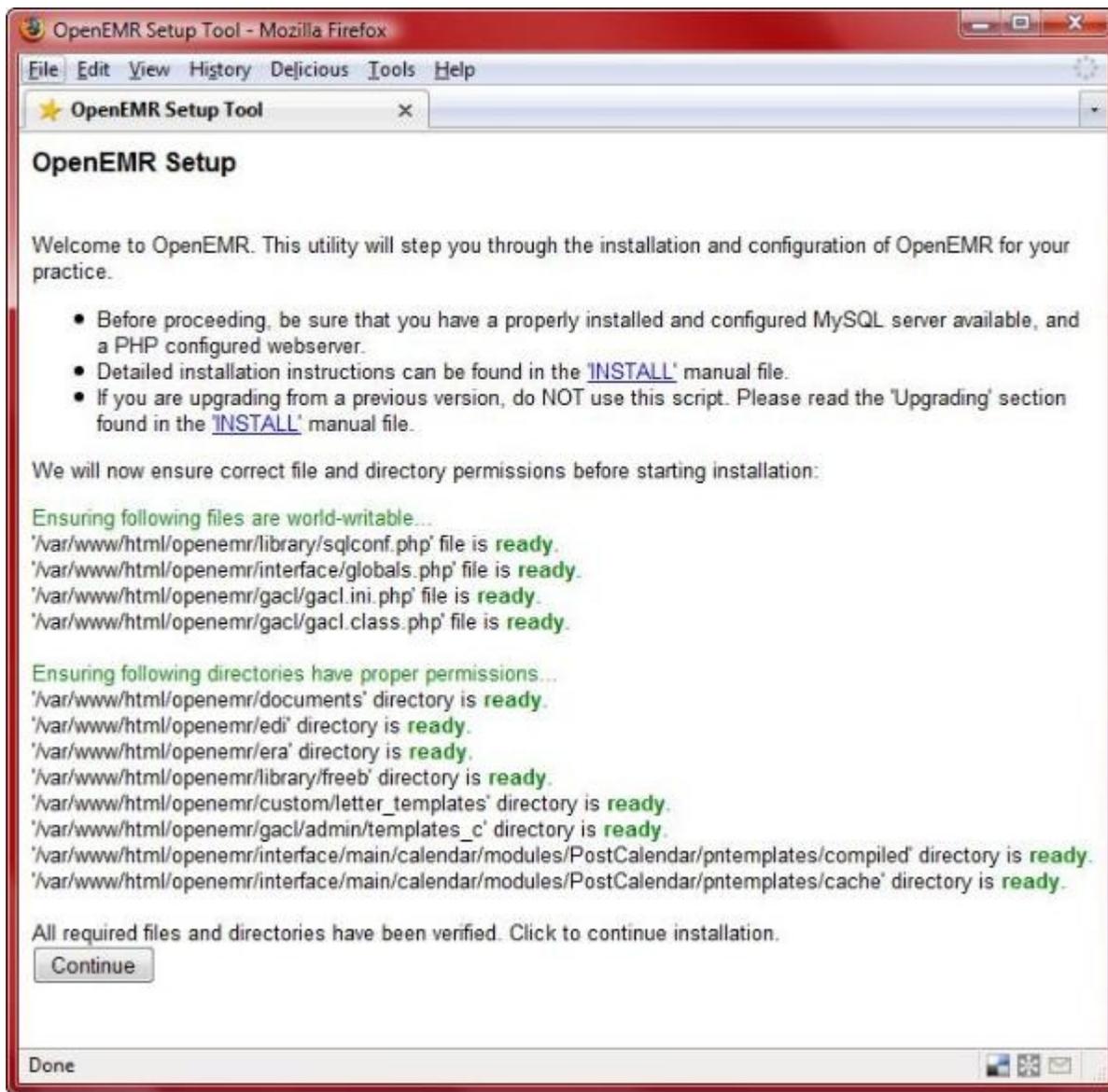
Select 'Have setup create the database', then click 'Continue'.

For my appliance I typed 'openemr' into 'Password' field, and otherwise kept defaults. Click 'Continue'.

OpenEMR Setup Tool - Mozilla Firefox

File   Edit   View   History   Delicious   Tools   Help

OpenEMR Setup Tool

OpenEMR Setup

Step 3

Configuring OpenEMR...

Connecting to MySQL Server... OK.
Creating database... OK.
Creating user with permissions for database... OK.
Reconnecting as new user... OK.
Opening database...OK.
Creating initial tables... OK
Adding Initial User... OK

Writing SQL Configuration...
Successfully wrote SQL configuration.

Writing OpenEMR webserver paths to config file...
Successfully wrote OpenEMR webserver paths to config file

Next step will install and configure access controls (php-GACL).

Continue

Done

Click 'Continue'.

OpenEMR Setup Tool – Mozilla Firefox

File   Edit   View   History   Delicious   Tools   Help

OpenEMR Setup Tool   ×

OpenEMR Setup

Step 4

Installing and Configuring Access Controls (php-GACL)...

Writing php-GACL configuration settings to config files...
Finished writing php-GACL configuration settings to config files.

Configuration:
driver = **mysql**,
host = **localhost**,
user = **openemr**,
database = **openemr**,
table prefix = **gacl**_Testing database connection...
Success! Connected to "**mysql**" database on "**localhost**".
Testing database type...
Success! Compatible database type "**mysql**" detected!
Making sure database "**openemr**" exists...
Success! Good, database "**openemr**" already exists!
Success! First Step of Access Control Installation Successful!!!

OpenEMR ACL Setup
All done configuring and installing access controls (php-GACL)!
Gave the 'admin' user (password is 'pass') administrator access.

Done installing and configuring access controls (php-GACL).
Next step will configure PHP.

[Continue]

Done

Click 'Continue'.

OpenEMR Setup

Step 5

Configuration of PHP....

We recommend making the following changes to your PHP installation, which can normally be done by editing the php.ini configuration file:

- Your php.ini file can be found at /etc/php.ini
- To ensure proper functioning of OpenEMR you must make sure that settings in php.ini file include "short_open_tag = On", "display_errors = Off", "register_globals = Off", "magic_quotes_gpc = On", "max_execution_time" set to at least 60, "max_input_time" set to at least 90, and "memory_limit" set to at least "128M".
- In order to take full advantage of the patient documents capability you must make sure that settings in php.ini file include "file_uploads = On", that "upload_max_filesize" is appropriate for your use and that "upload_tmp_dir" is set to a correct value that will work on your system.

We recommend you print these instructions for future reference.

Next step will configure Apache web server.

Continue

We have already configured this in the above 'Configure PHP and Apache (with SSL)' section. Click 'Continue'.

OpenEMR Setup

Step 6

Configuration of Apache web server...

The "/var/www/html/openemr/documents", "/var/www/html/openemr/edi" and "/var/www/html/openemr/era" directories contain patient information, and it is important to secure these directories. This can be done by placing pertinent .htaccess files in these directories or by pasting the below to end of your apache configuration 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>
<Directory /var/www/html/openemr/era>
    order deny,allow
    Deny from all
</Directory>
```

If you are having difficulty finding your apache configuration file, then refer to the 'INSTALL' manual for suggestions.

We recommend you print these instructions for future reference.

Click 'continue' for further instructions.

Continue

We have already configured this in the above 'Configure PHP and Apache (with SSL)' section. Click 'Continue'.

Click 'Click here to start using OpenEMR' to go to OpenEMR.

Continue to below instructions.

4. Enter below **bolded** instructions on command line (if prompted to give password during the sudo command, then use 'openemrcool'):

#Re-secure files
sudo chmod 644 /var/www/openemr/library/sqlconf.php
sudo chmod 644 /var/www/openemr/interface/globals.php
sudo chmod 644 /var/www/openemr/gacl/gacl.ini.php
sudo chmod 644 /var/www/openemr/gacl/gacl.class.php

Install and Configure Webmin

1. Webmin is an awesome way to administer a ubuntu server with a graphical interface remotely.

2. Enter below **bolded** instructions on command line (if prompted to give password during the sudo command, then use 'openemrcool'):

   #download Webmin
   wget http://prdownloads.sourceforge.net/webadmin/webmin_1.470_all.deb

   #install Webmin
   sudo dpkg -i webmin_1.470_all.deb
   -IGNORE the dependency errors (below command will install)
   **sudo apt-get install -f**
   -enter 'Y' to continue
   rm -f webmin_1.460_all.deb

1. Now, open a webbrowser outside the appliance and point to (the APPLIANCE_IP_ADDRESS was found by above ifconfig command): https://APPLIANCE_IP_ADDRESS:10000/

(If you are getting a certificate security error, then first follow the instructions in below appendix section 'Configuring client web browser for https' to configure your web browser.)


Login with user:'openemr' and pass:'openemrcool'.

Click 'Install Updates Now' button.
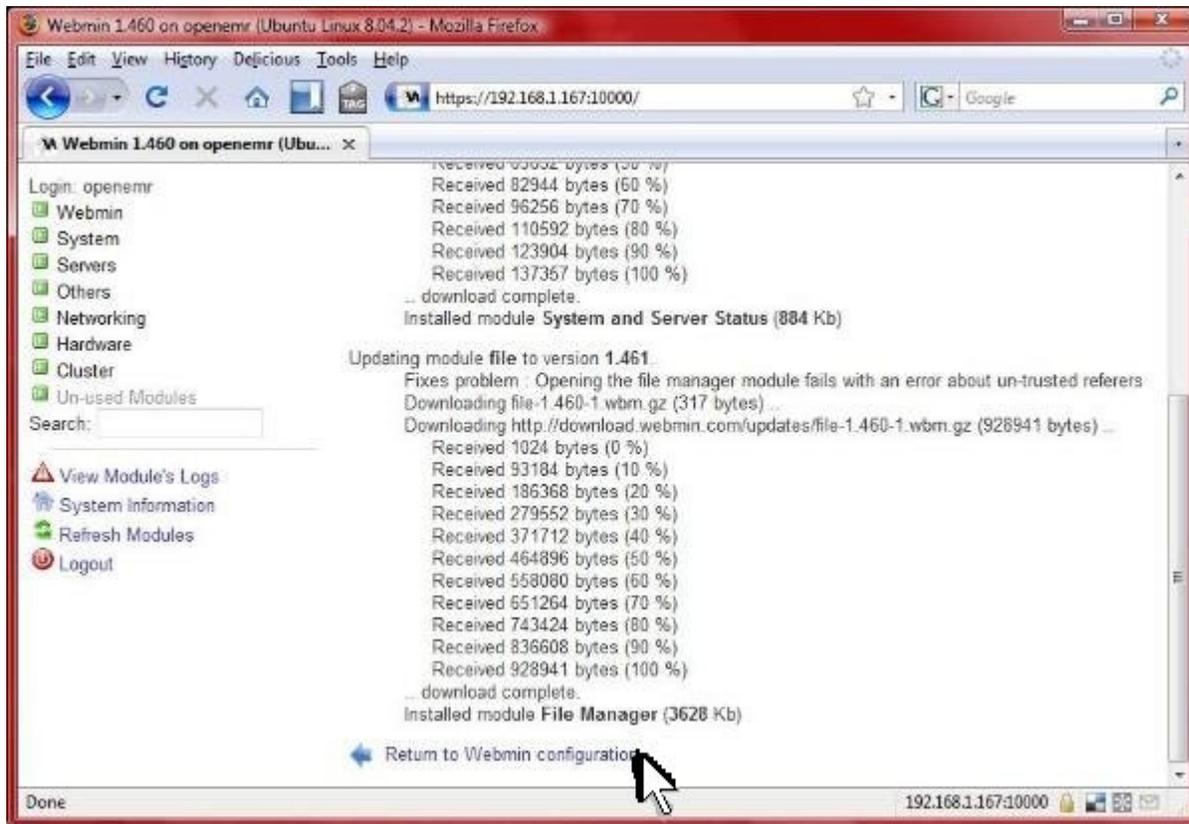
Scroll to bottom of window and click 'Return to Webmin configuration'.
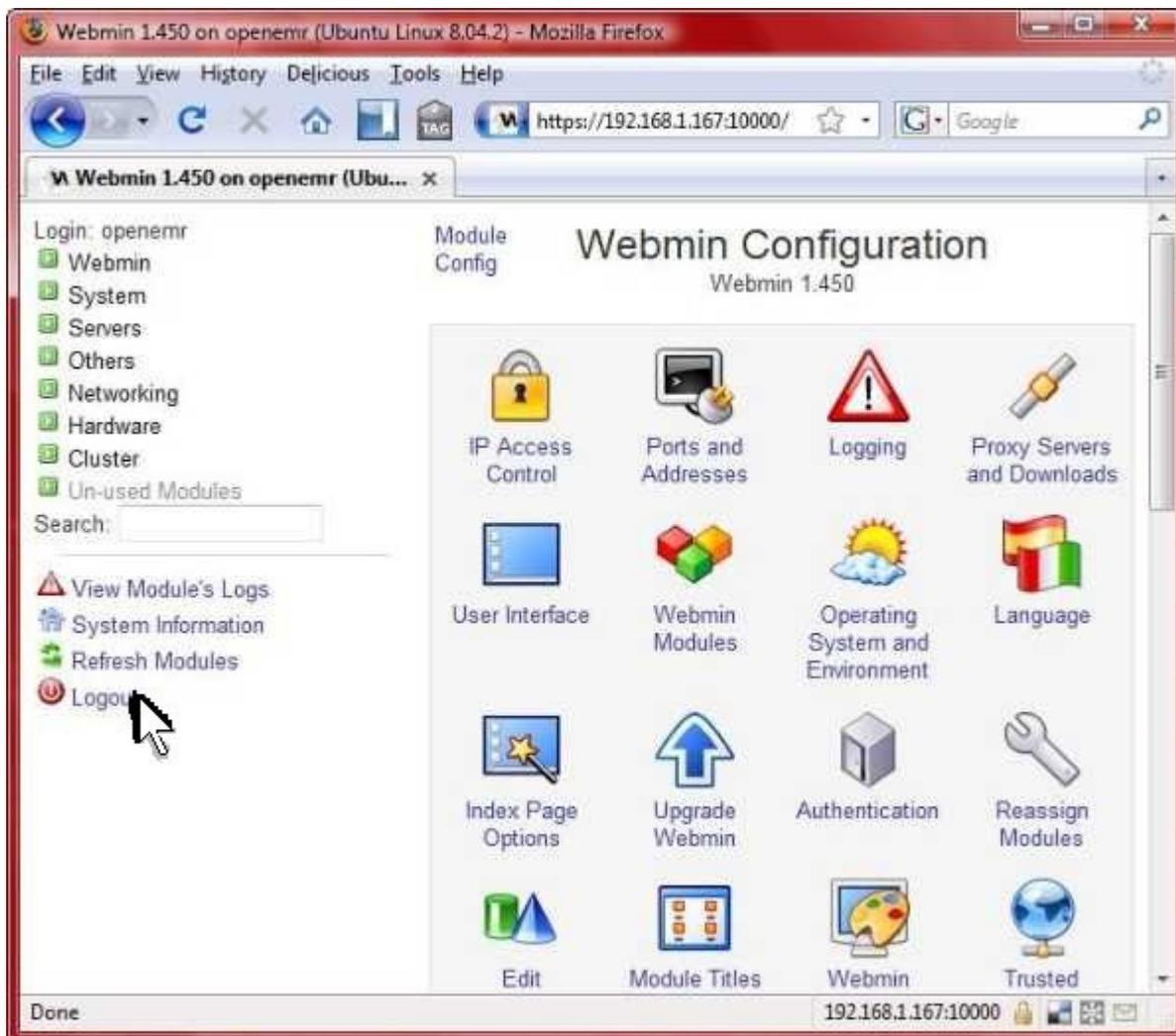
Click 'Logout'.

Configure Firewall

1. We will only allow access to the appliance through ports 22 (SSH), 443 (OpenEMR via https), and 10000 (Webmin via https). Note that we are blocking the http port (80) to force users to use https (encrypted) when connecting to OpenEMR.

2. Open a webbrowser outside the appliance and point to (the APPLIANCE_IP_ADDRESS was found by above ifconfig command): https://APPLIANCE_IP_ADDRESS:10000/

(If you are getting a certificate security error, then first follow the instructions in below appendix section 'Configuring client web browser for https' to configure your web browser.)

Login with user:'openemr' and pass:'openemrcool'.

Click 'Networking'.

Click 'Linux Firewall'.

Select 'Block all except SSH and IDENT on external interface'. Select the 'eth0' interface from the menu next to this. Toggle on the 'Enable firewall at boot time?'. Then click the 'Setup Firewall' button.

Select the line circled in red above. Then click the 'Delete Selected button.
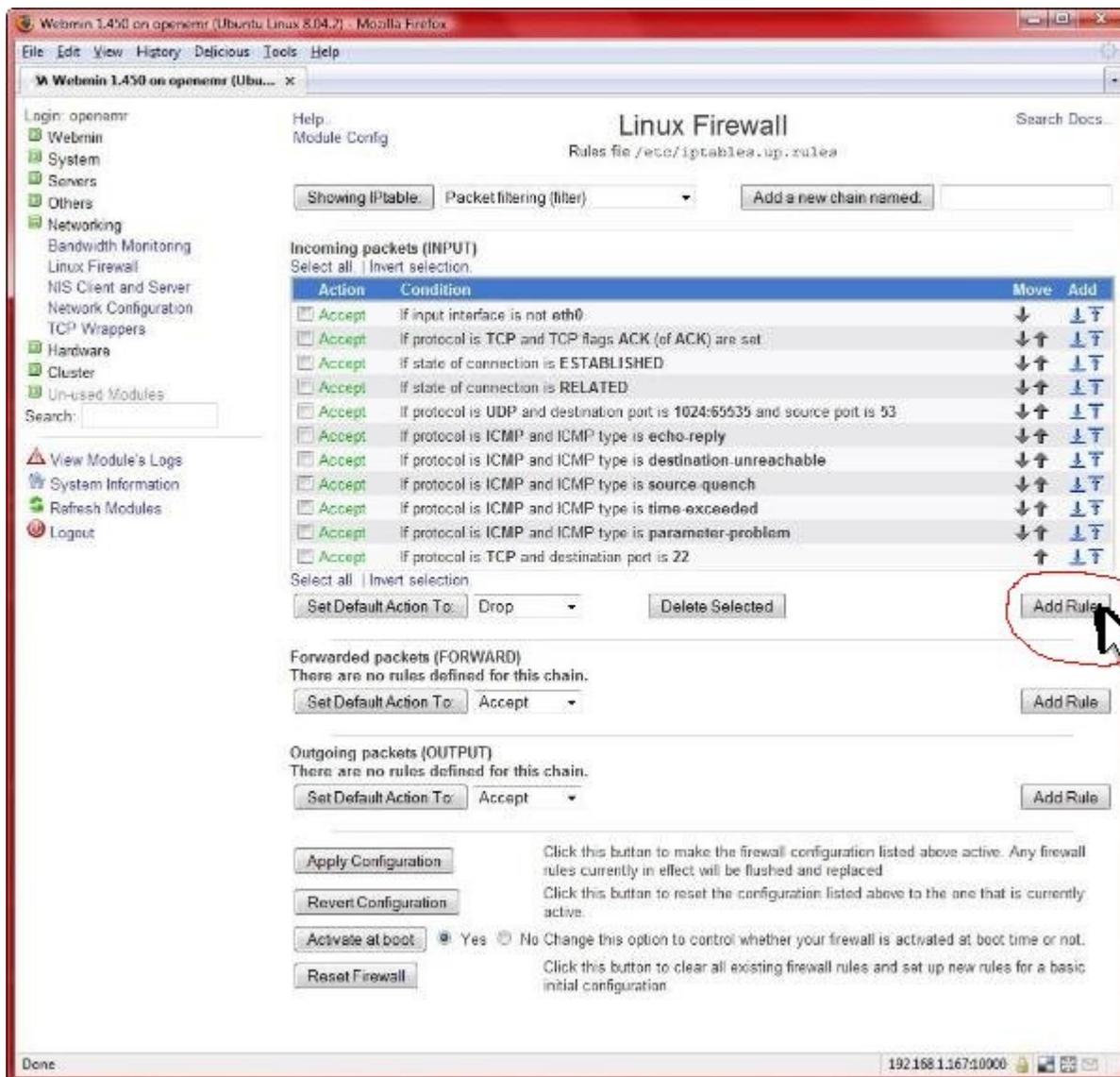
Click the 'Add Rule' button circled in red above.
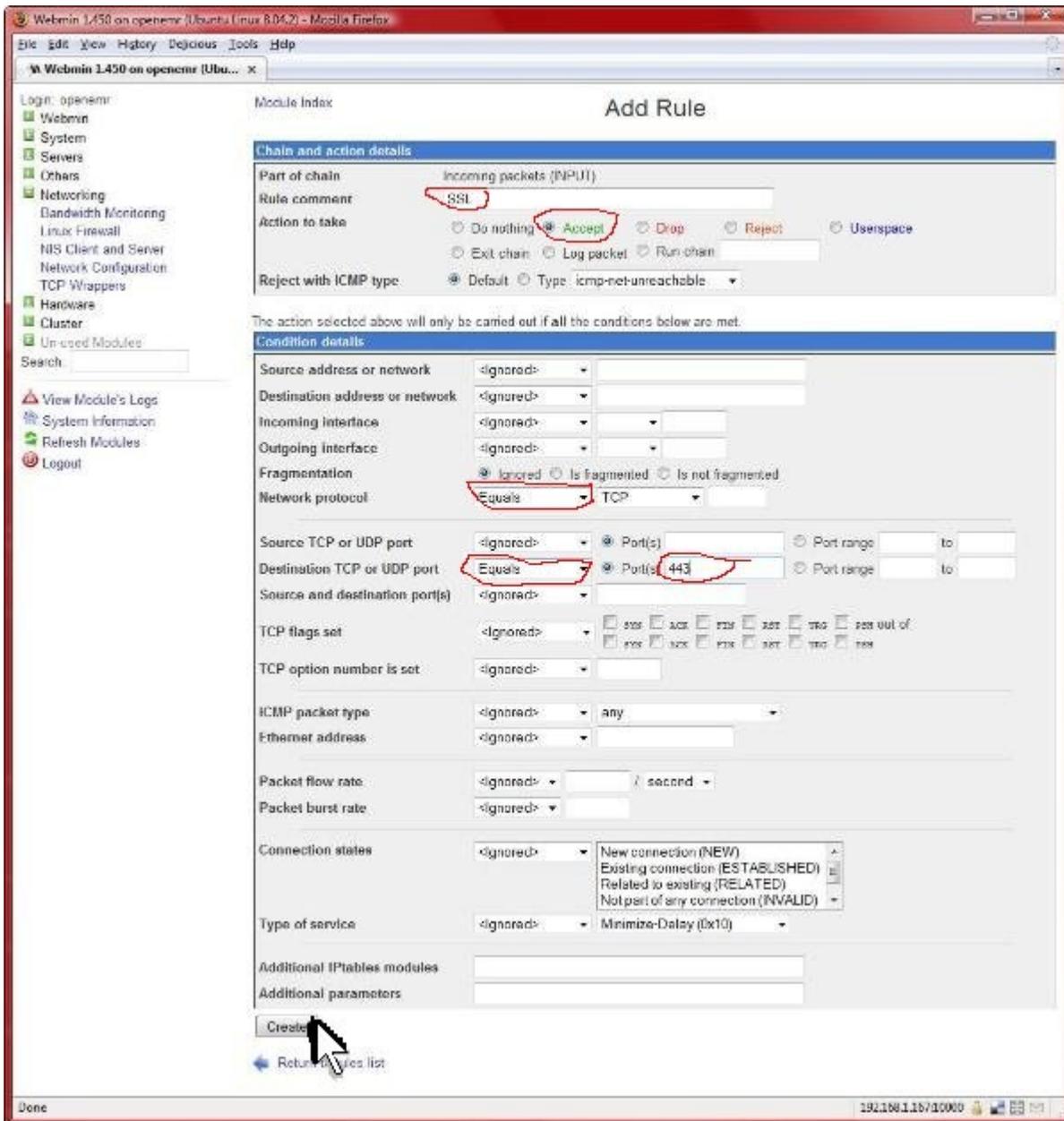
All places that require input are circled in red. Type 'SSL' in 'Rule comment'. Toggle on the 'Accept' in 'Action to take'. In 'Network protocol', select 'Equals'. In 'Destination TCP or UDP port', select 'Equals' and type '443' for 'Port(s). Then click the 'Create' button.
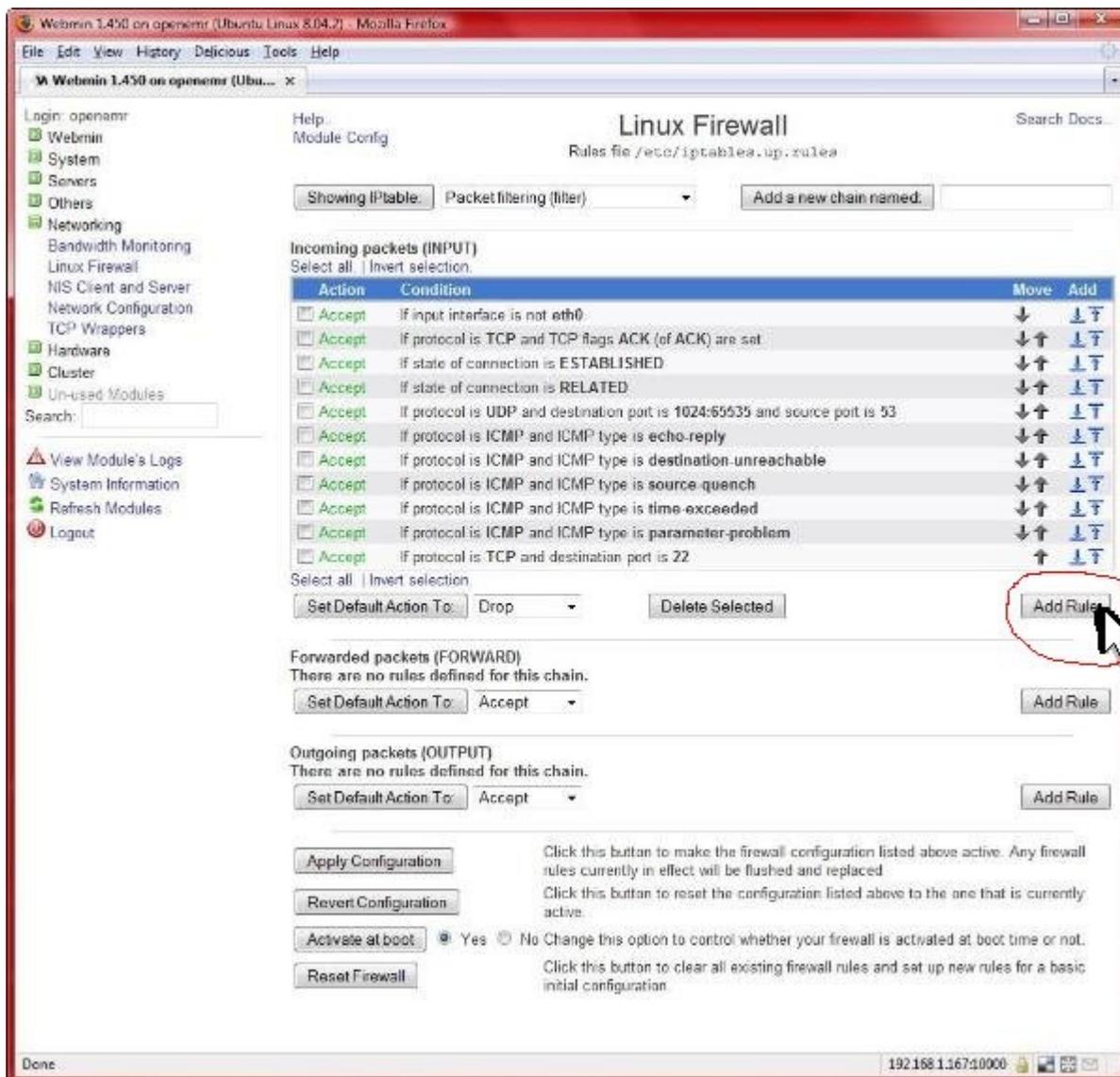
Click the 'Add Rule' button circled in red above.
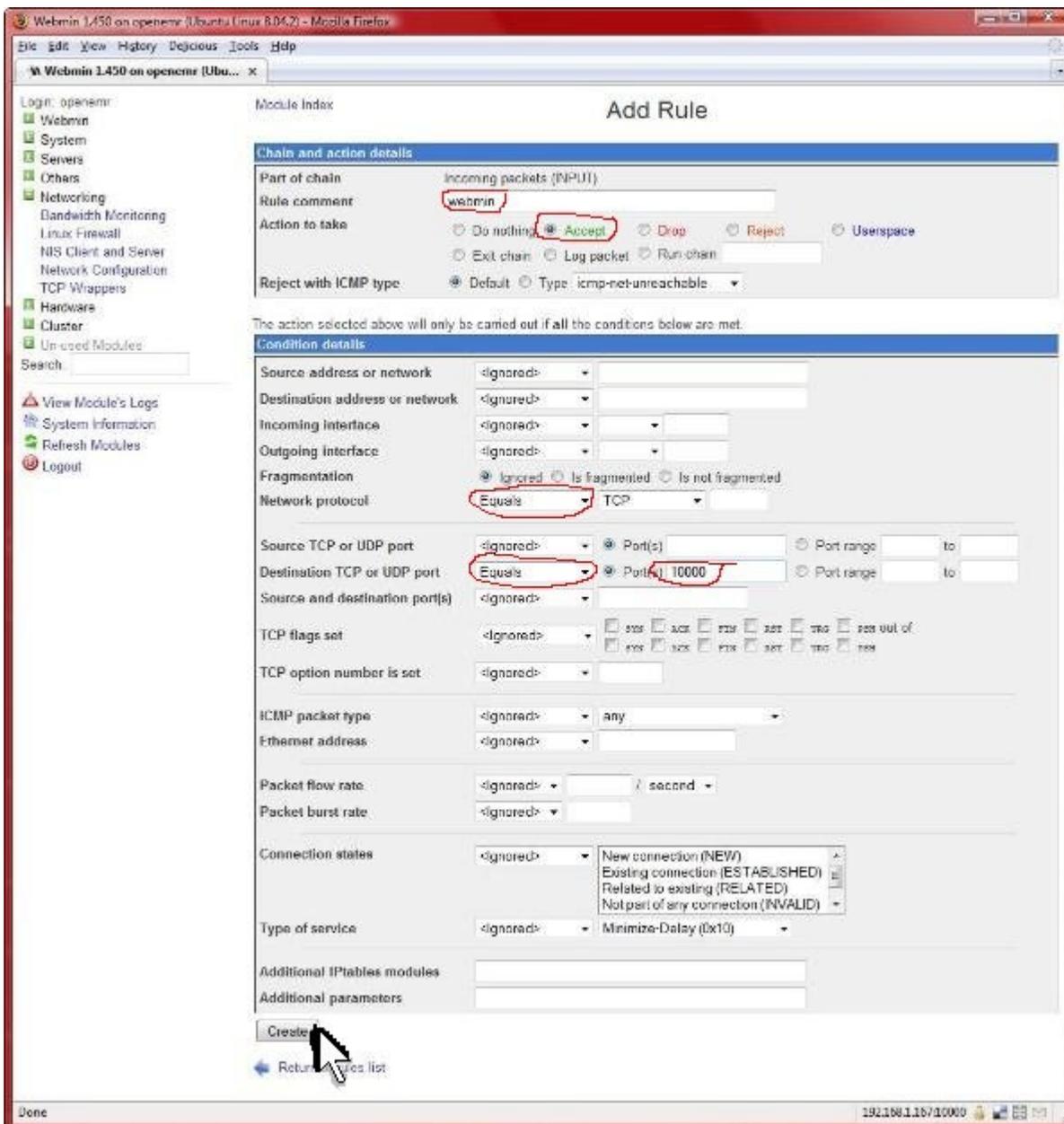
All places that require input are circled in red. Type 'webmin' in 'Rule comment'. Toggle on the 'Accept' in 'Action to take'. In 'Network protocol', select 'Equals'. In 'Destination TCP or UDP port', select 'Equals' and type '10000' for 'Port(s). Then click the 'Create' button.
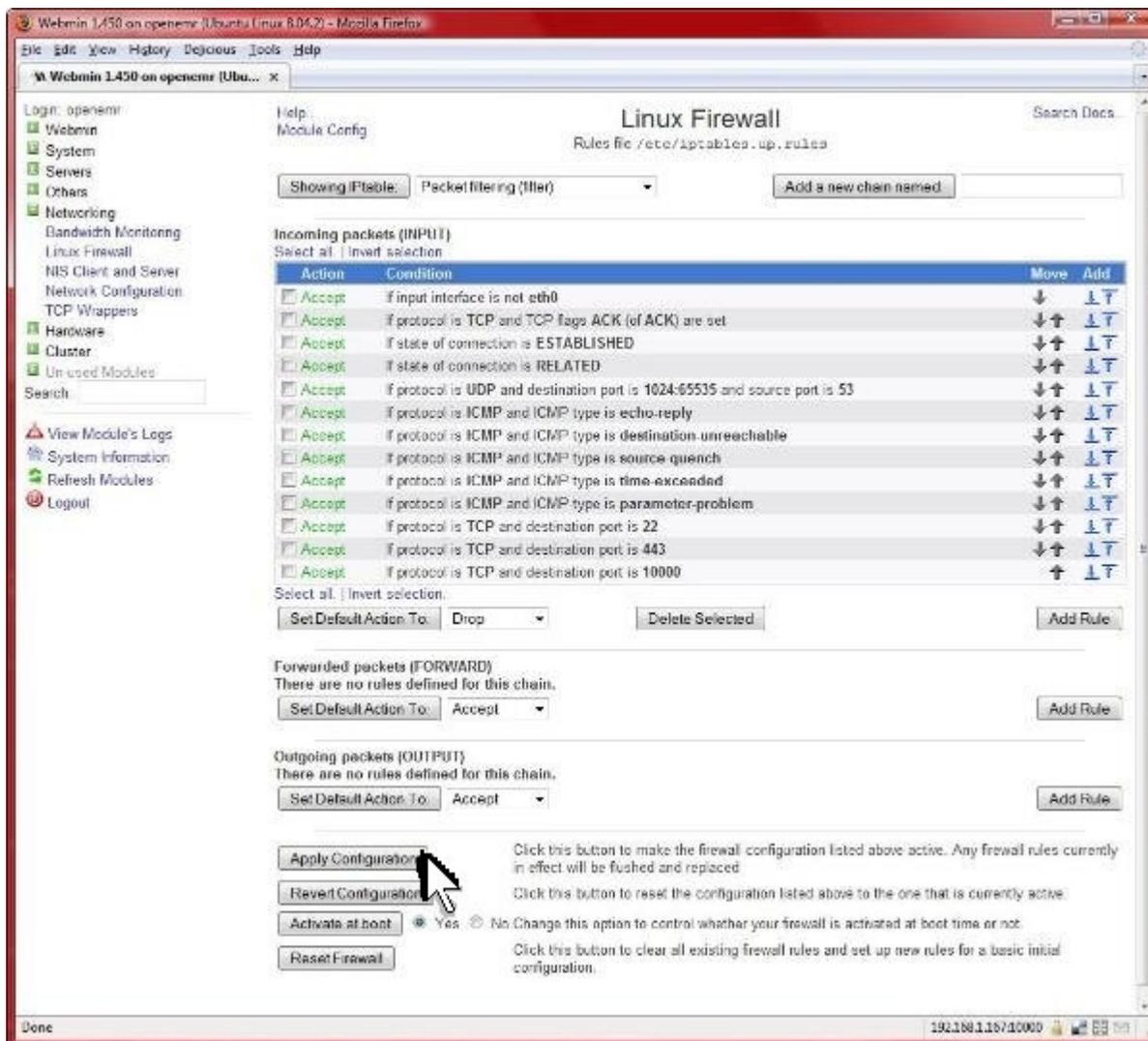
Click the 'Apply Configuration' button.
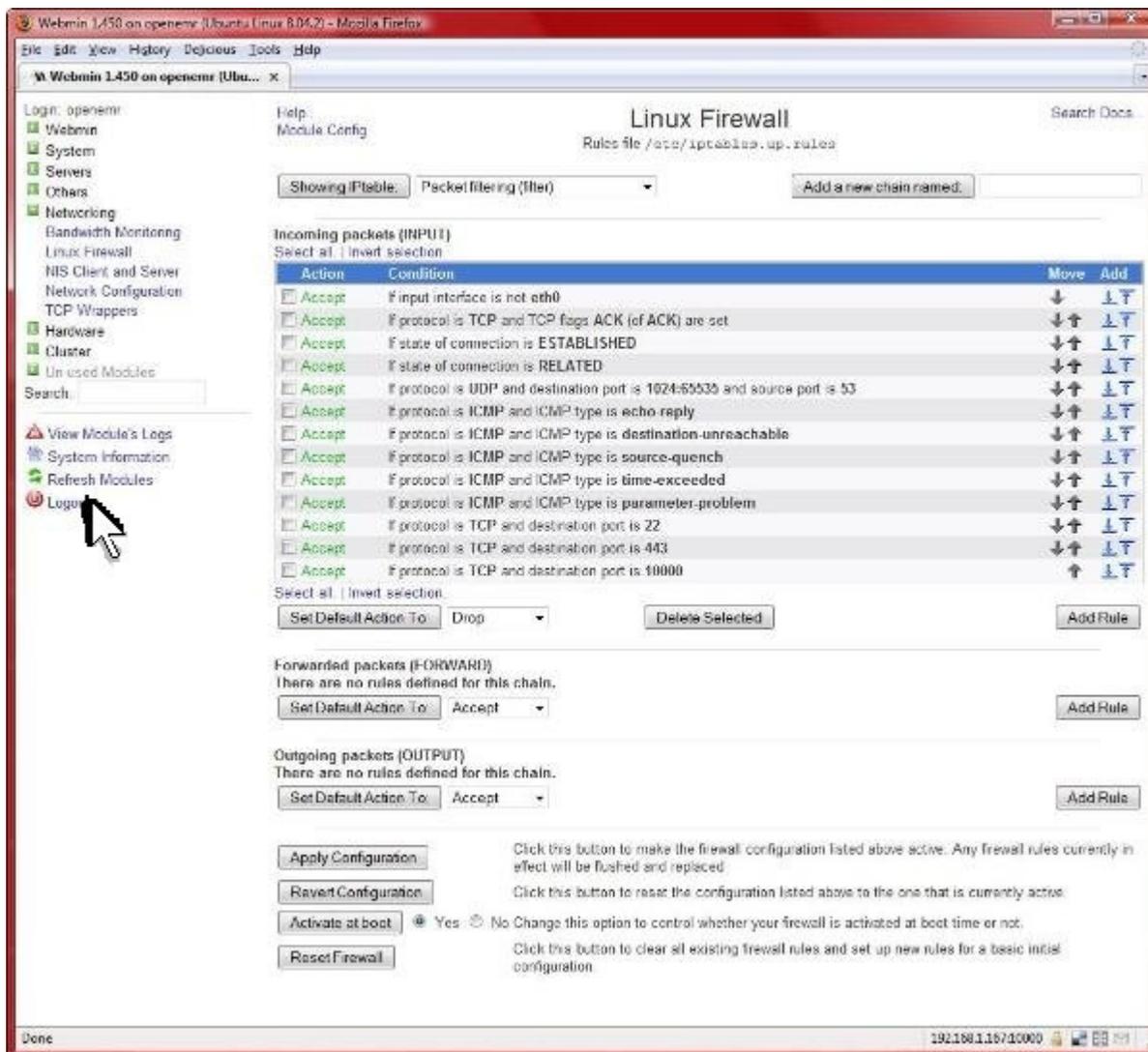
Click 'Logout'.

Finishing Touches On Appliance

1. We will install a startup/shutdown script. On startup it will configure the introductory screen to give the user required information (IP address, login names/passwords, etc.). On shutdown it will reset the network card to ensure mobility of the virtual appliance.

2. Enter below **bolded** instructions on command line (if prompted to give password during the sudo command, then use 'openemrcool'):

   #download the script
   sudo wget http://www.bradymd.com/openemrApplianceScript

#install the script
sudo mv openemrApplianceScript /etc/init.d/
sudo chown root:root /etc/init.d/openemrApplianceScript
sudo chmod +x /etc/init.d/openemrApplianceScript
sudo update-rc.d openemrApplianceScript defaults 99

#shutdown the appliance
sudo shutdown -h now

1. In Vmware, need to set the CD/DVD drive to autoset.
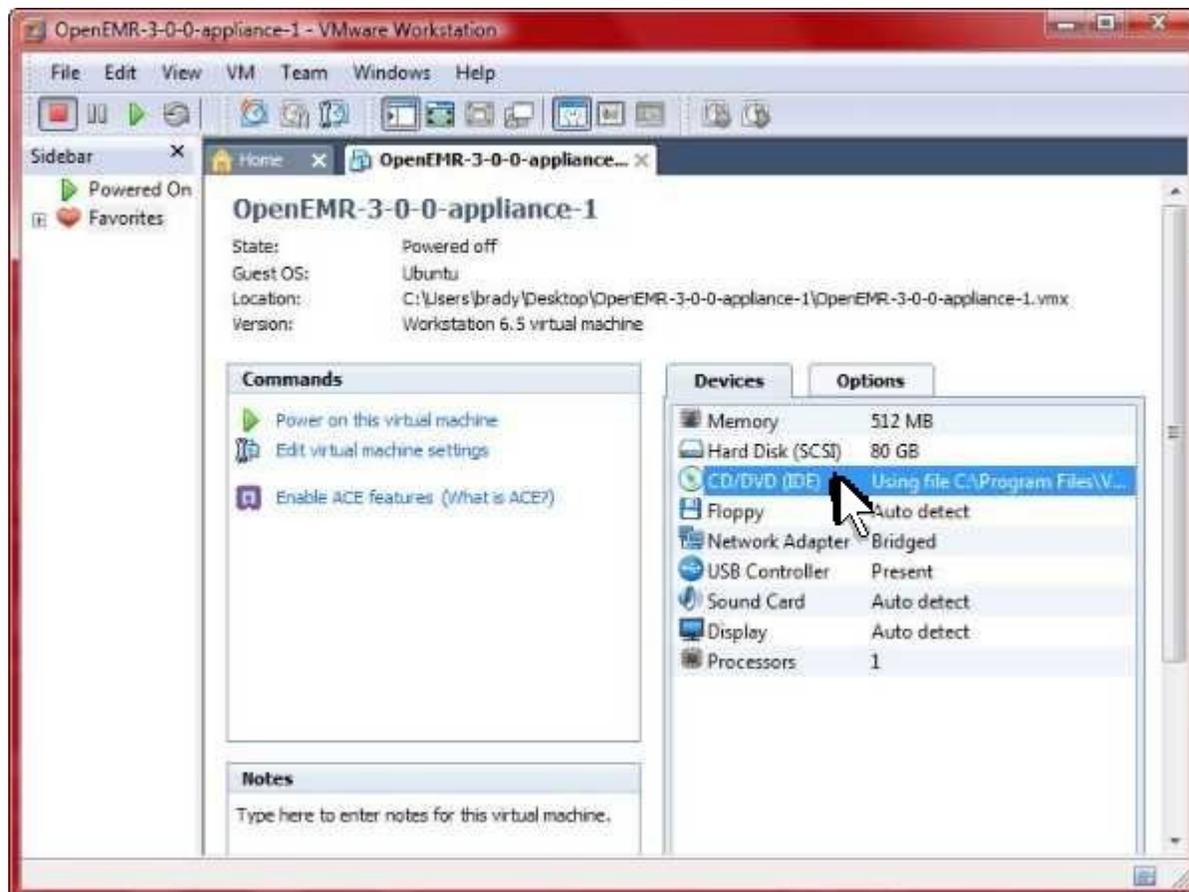
Double-click 'CD/DVD (IDE)'.

Select 'Use physical drive' and select 'Auto Detect' from menu. Then click 'OK'.

1. Because this appliance was built with Vmware Workstation 6.5, we now need to convert the appliance to an earlier version to ensure compatibility with all Vmware Player and Vmware Server versions. This is done with free software by Vmware, called 'VMware vCenter Converter Standalone Client'.

    1. Ensure Vmware Workstation is closed.

    2. Download, install, and start the 'Vmware vCenter Converter Standalone Client' from vmware.com (it is free).
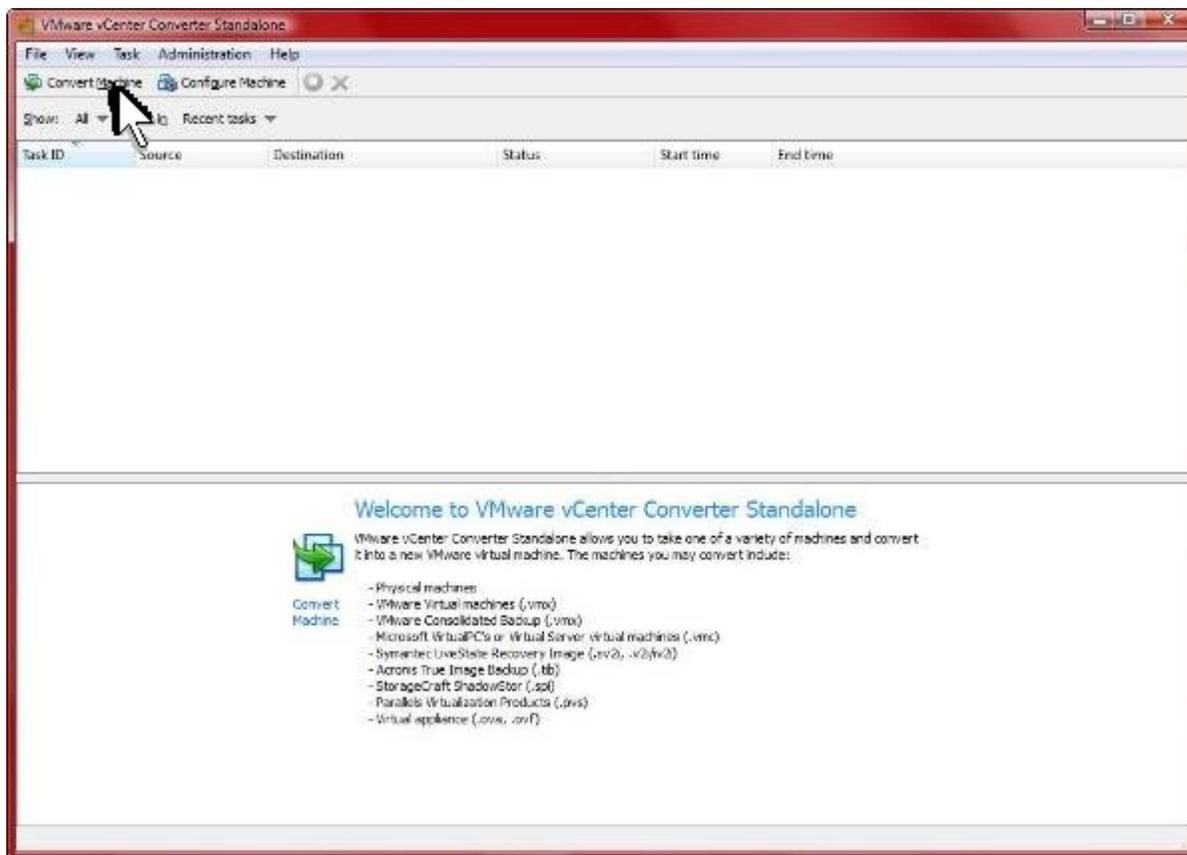
Click 'Convert Machine'.
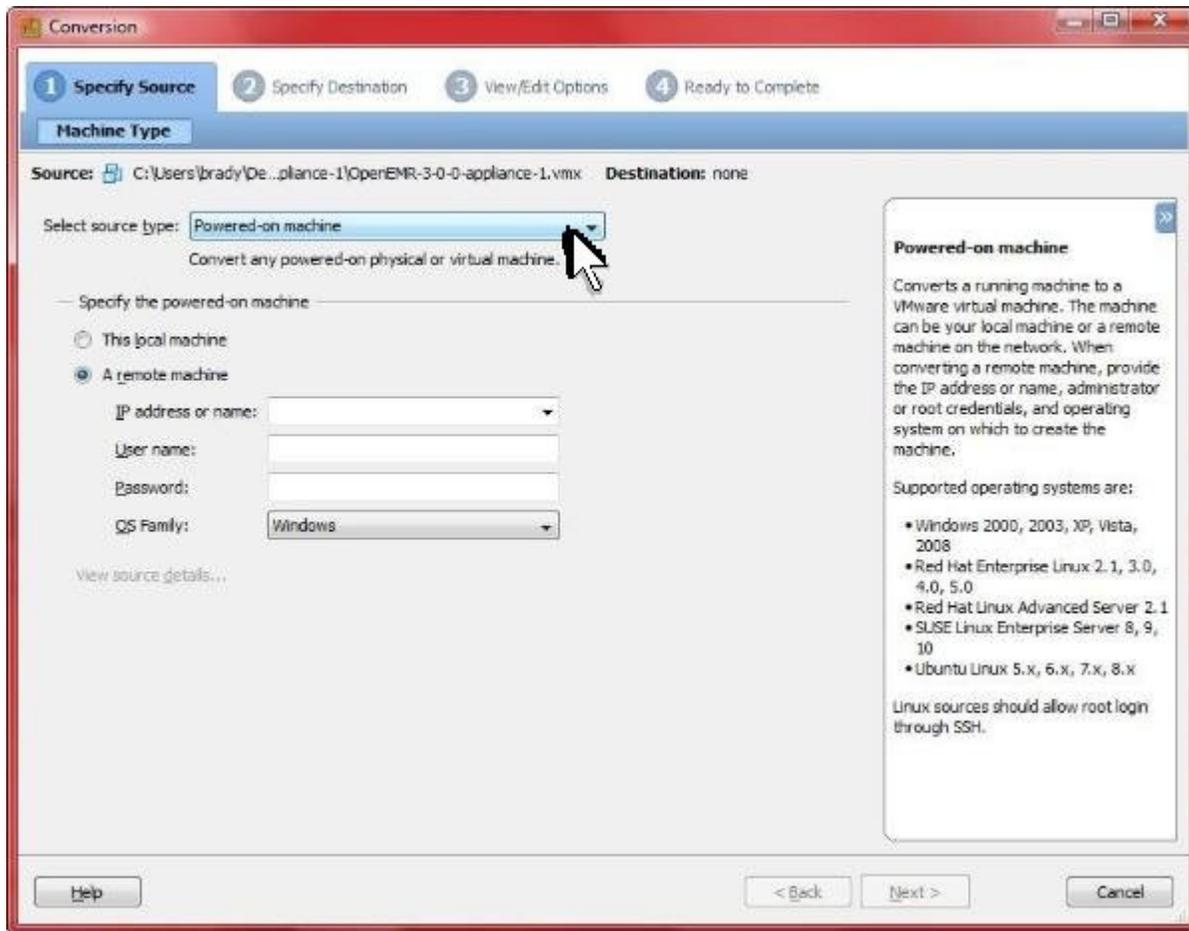
Click 'Select source type:' field.
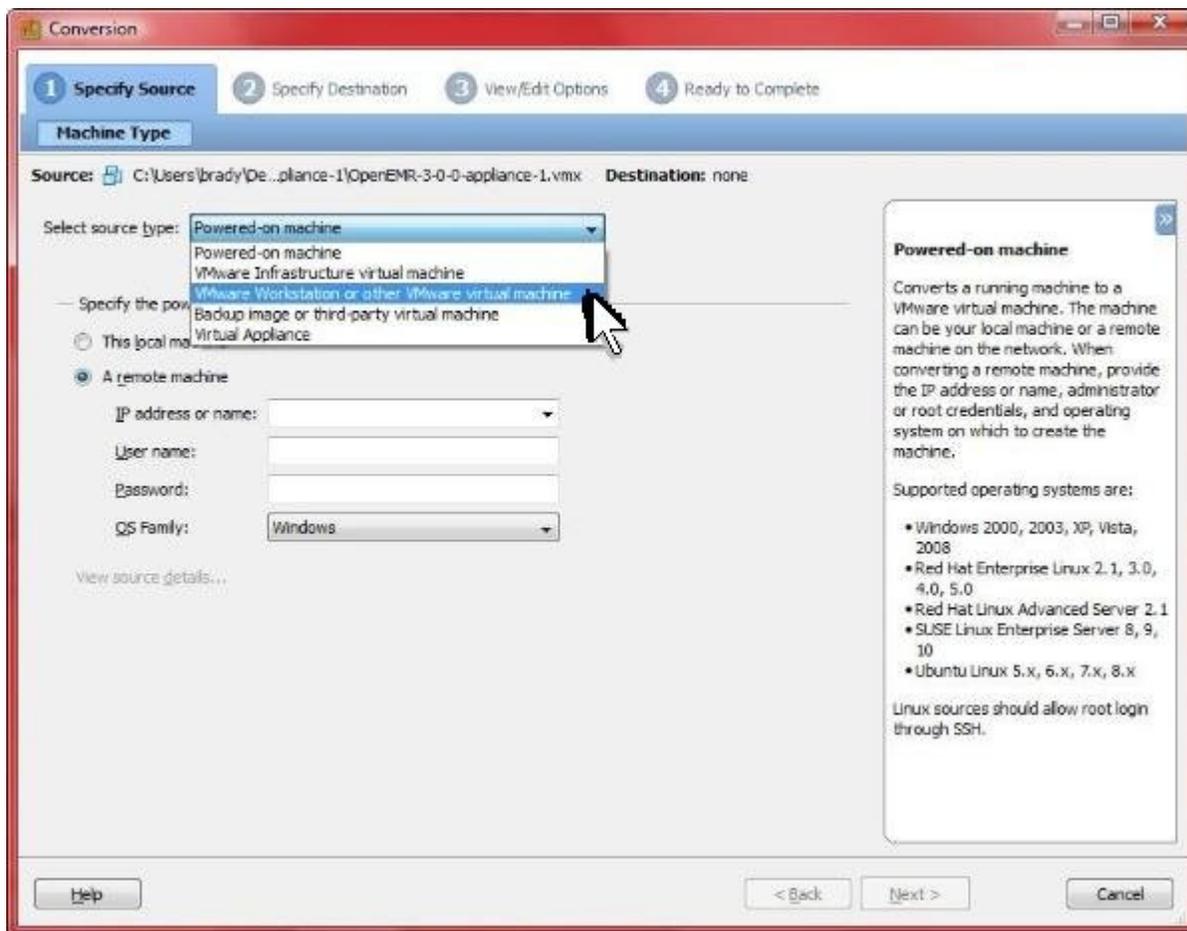
Select 'VMware workstation or other VMware virtual machine'.
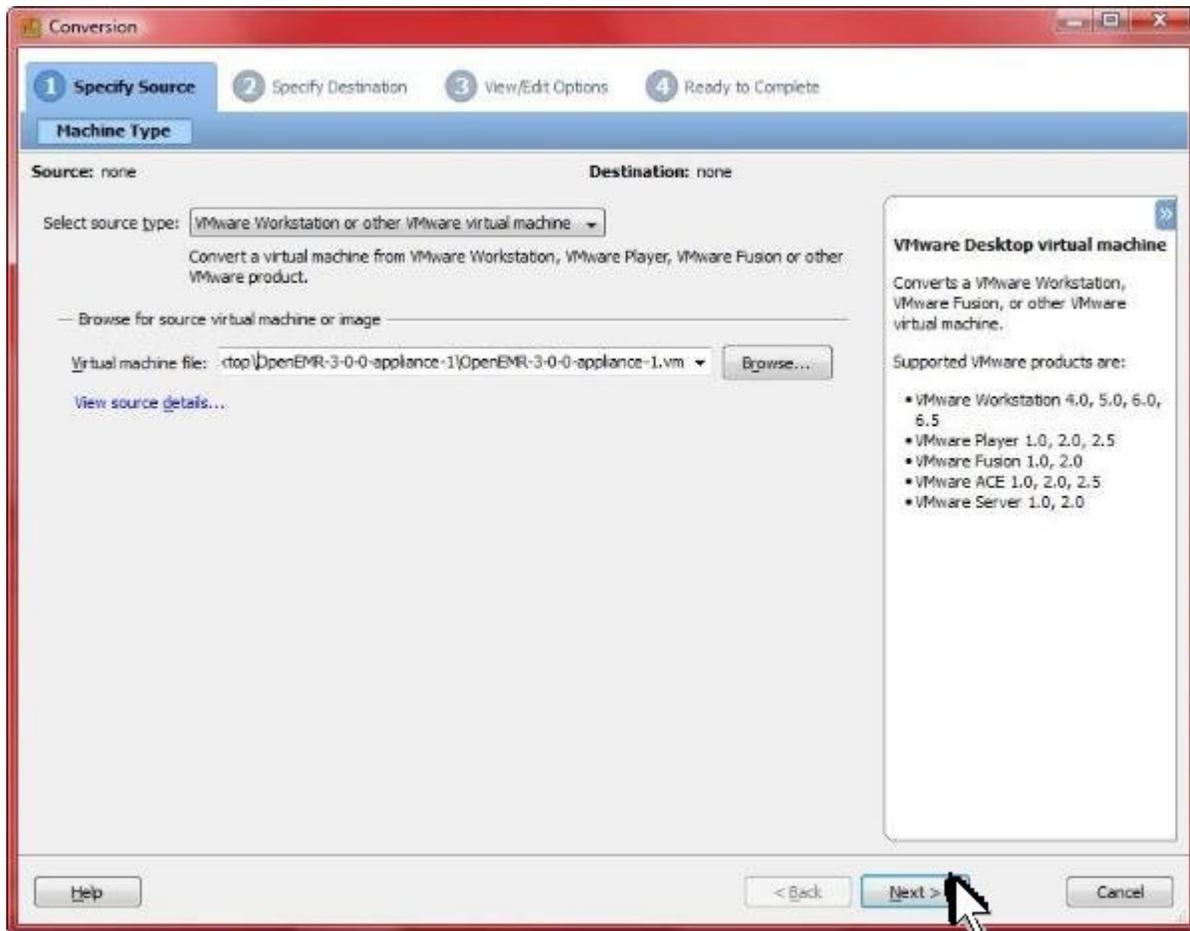
Select the 'virtual machine file:', then click 'Next'.
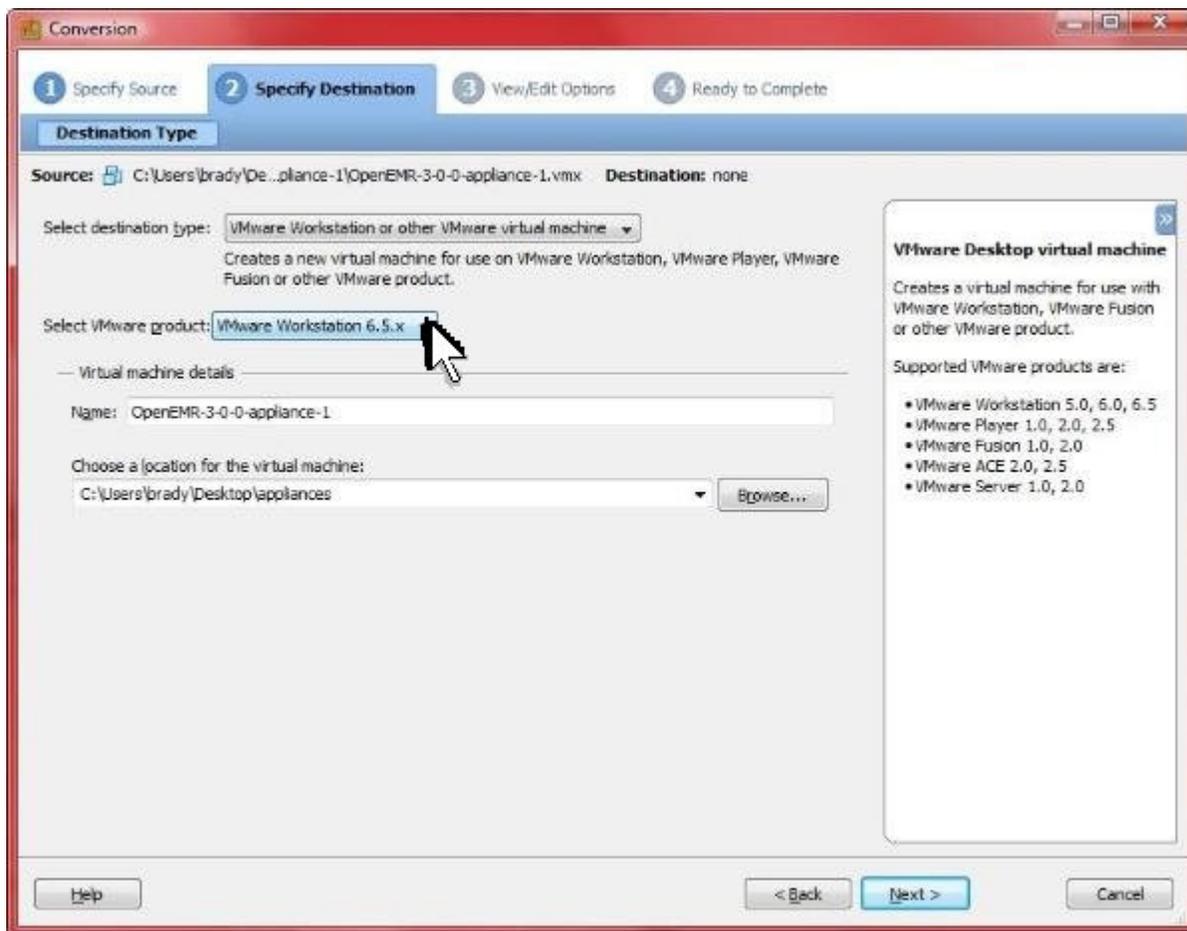
Click 'Select VMware product:' field.
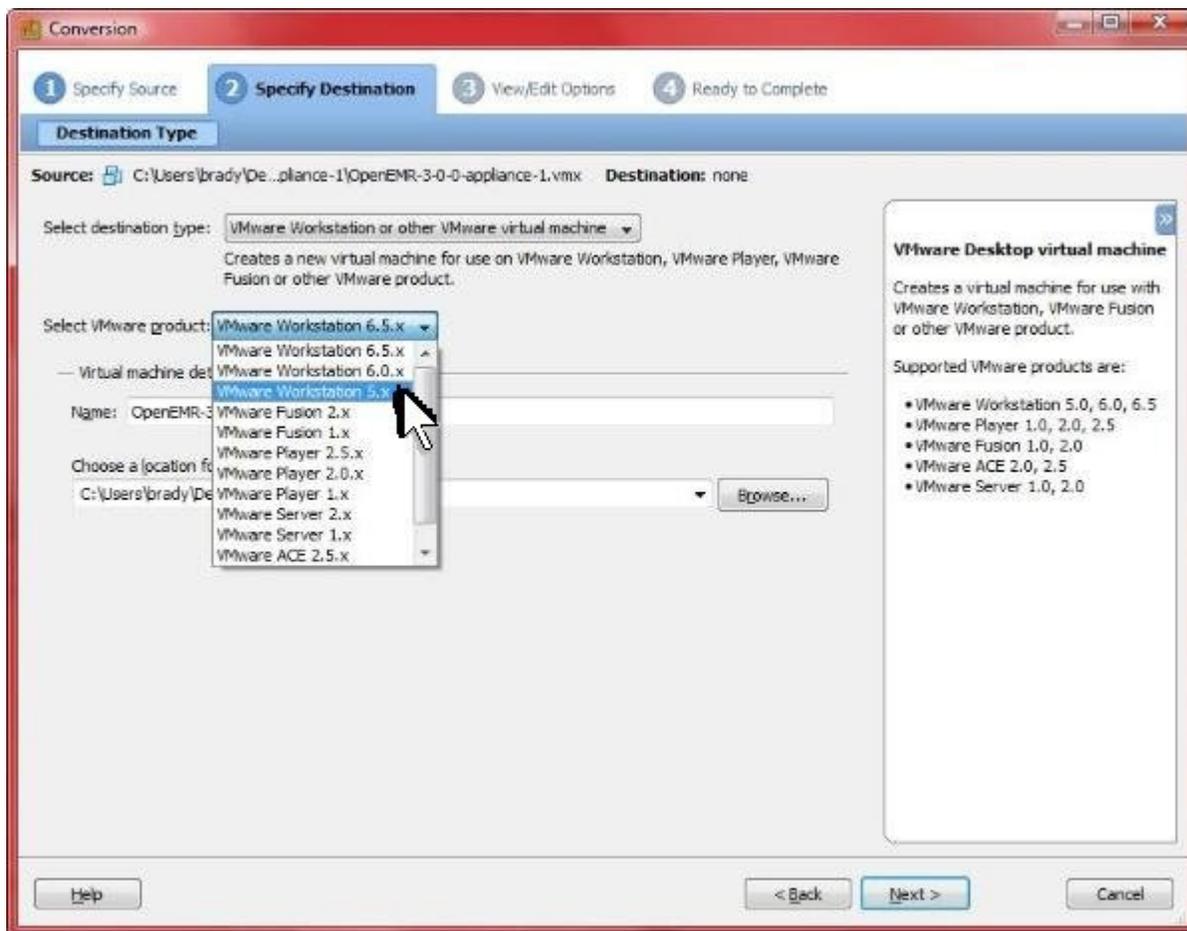
Select 'VMware Workstation 5.x'.
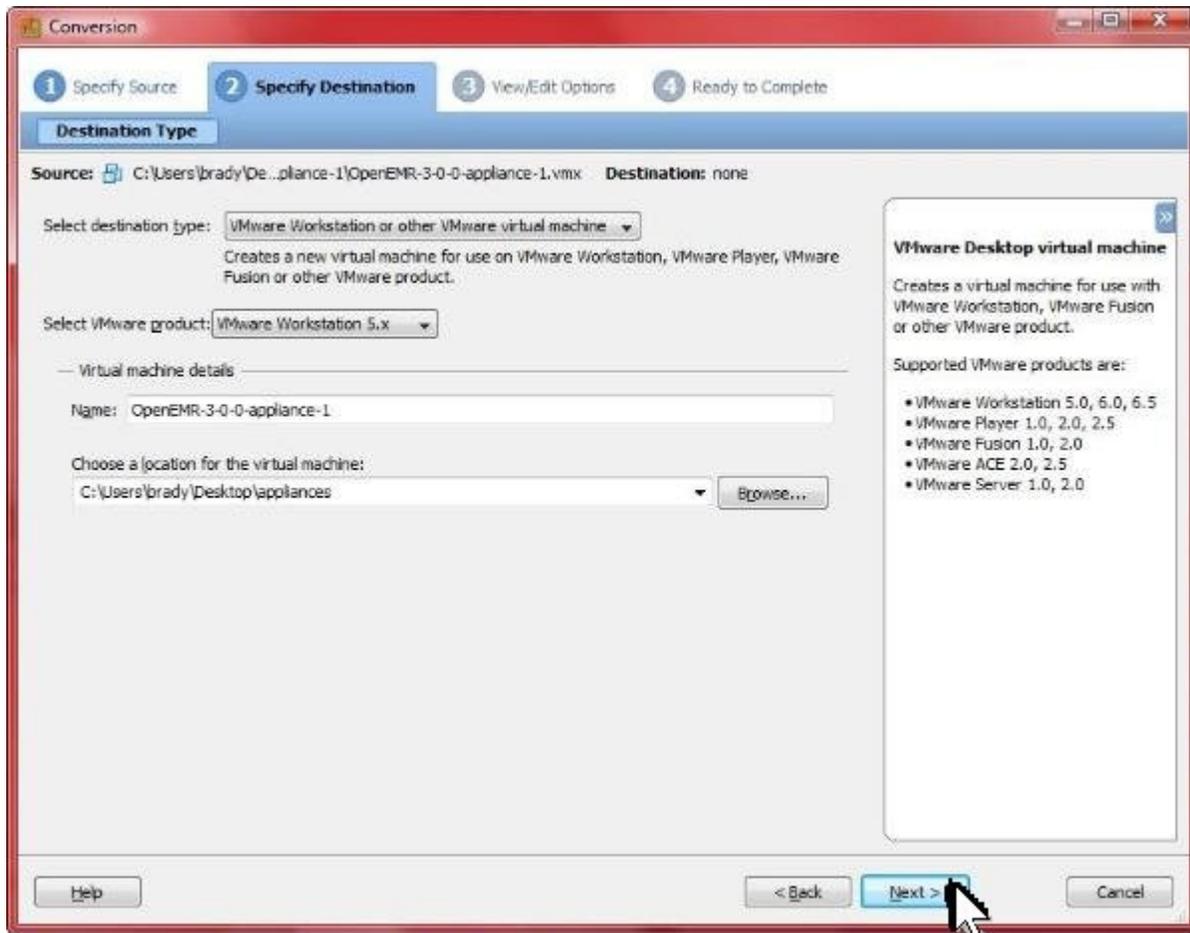
Click 'Next'.
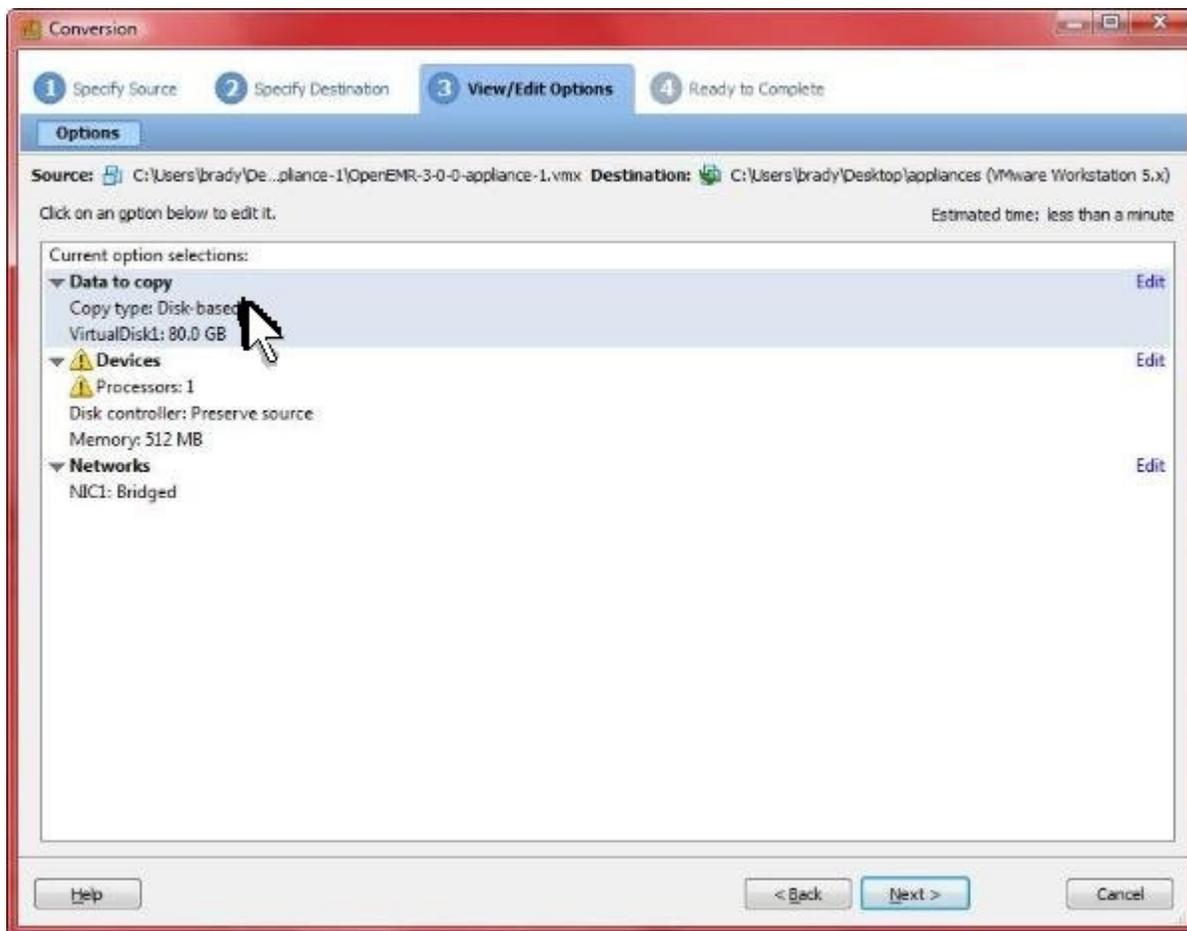
Click the 'Data to copy' field.
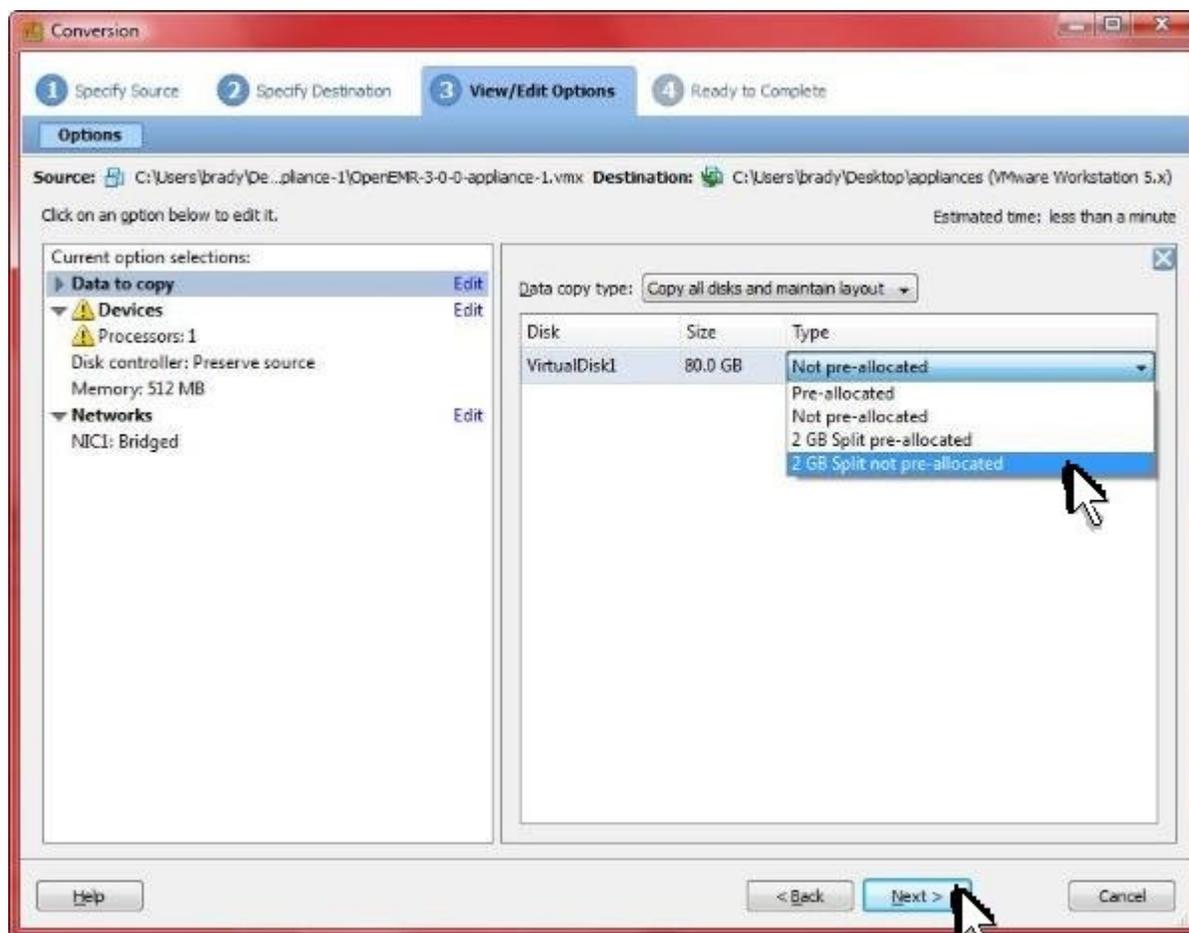
Select '2 GB split not pre-allocated', then click 'Next'.
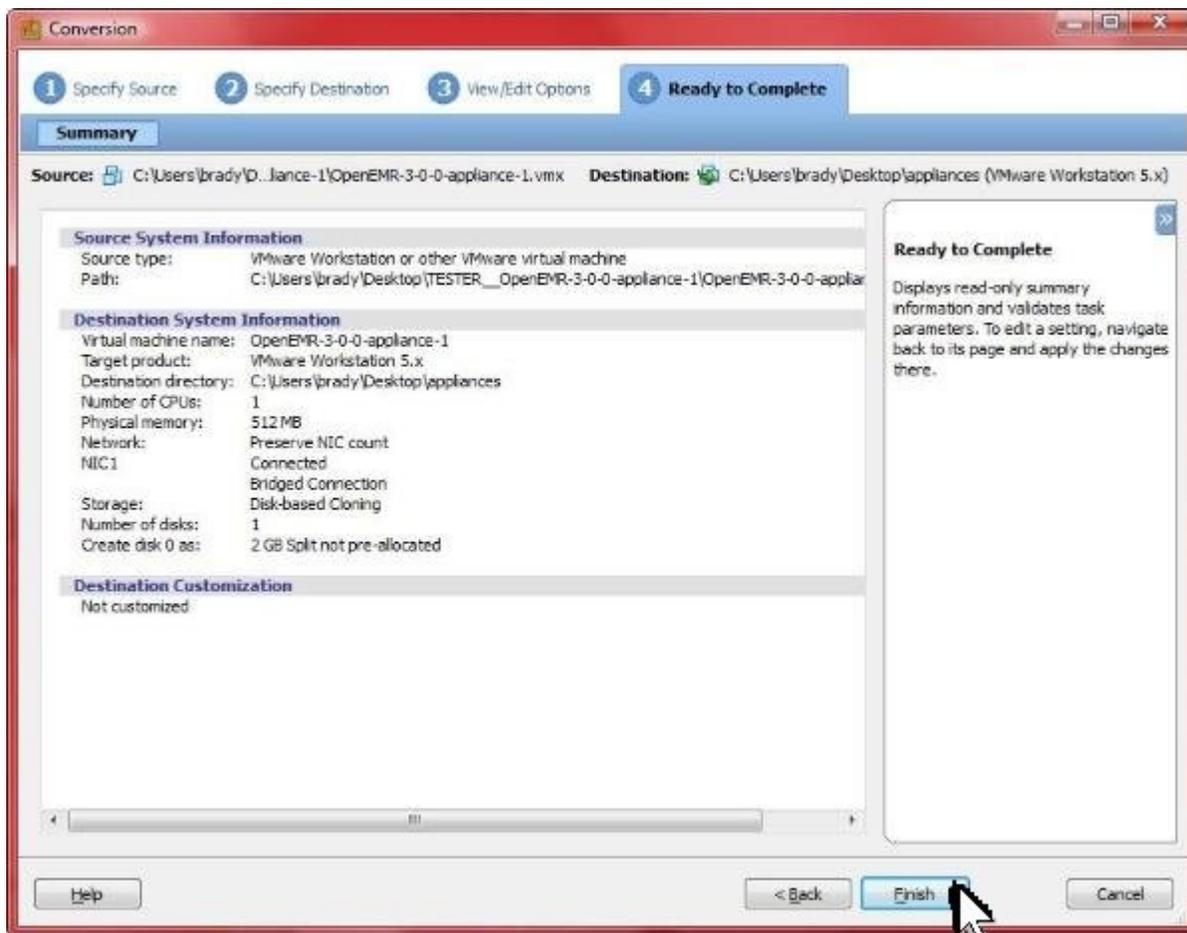
Click 'Finish'.

ALL DONE

Appendix

A. Configuring client web browser for https

1. For security, this appliance forces users to use https (encrypted) over a web browser. Because we are using a homemade security certificate (real certificates cost money), most new web browsers will give a security error. This can easily be dealt with by following the browser instructions to create an exception. I have posted steps for

both Firefox and Internet Explorer.

2. Firefox:

Click 'Or you can add an exception...'.

Click the 'Add Exception...' button.
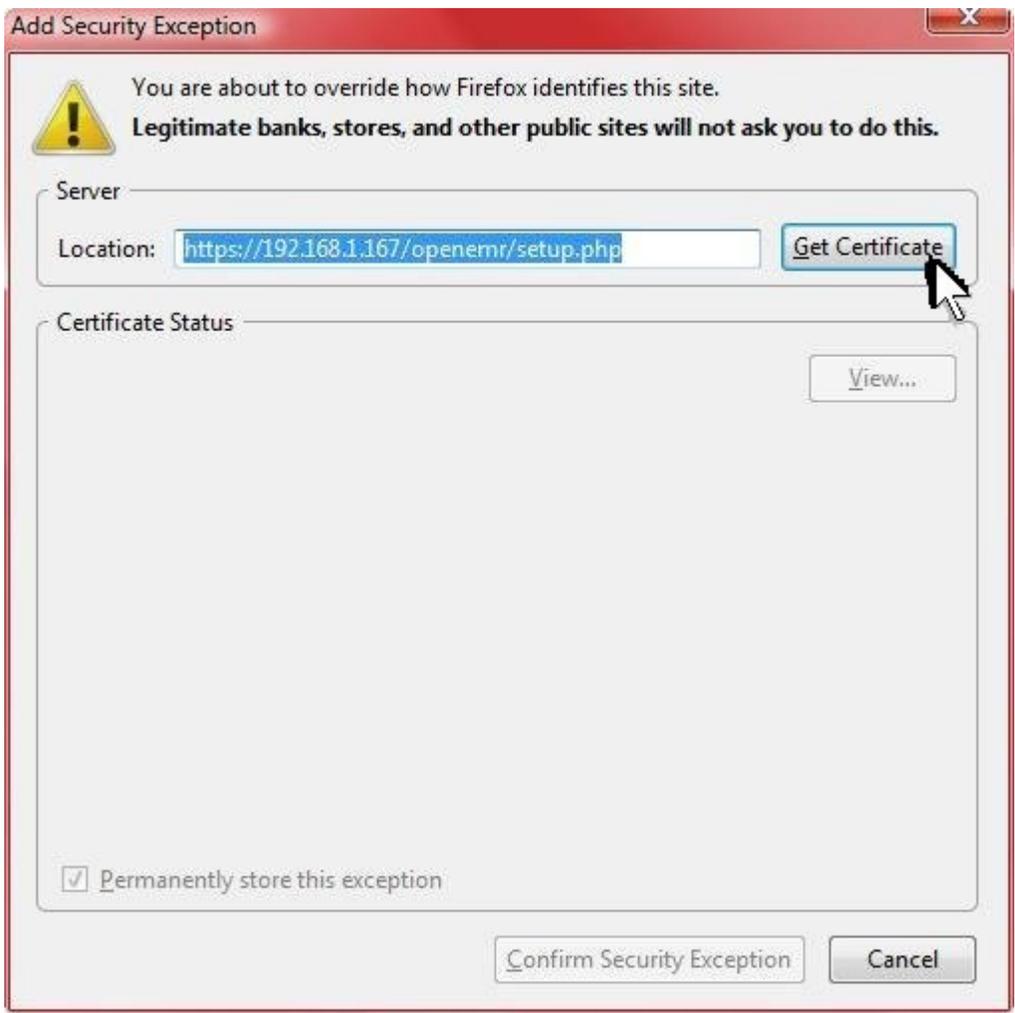
Click the 'Get Certificate' button. (DO NOT edit the 'Location:')

Click 'Confirm Security Exception'. Ensure 'Permanently store this exception' is checked, so you don't have to go through this every time. Also, DO NOT change 'Location:'.

ALL DONE, go back and continue your previous instructions.

3. Internet Explorer:

Click 'Continue to this website'.

ALL DONE, go back and continue your previous instructions.

B. 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 Virtual Appliance Homepage)

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.)

C. Author Email and License/Disclaimer

Main TOC Link

Author: Brady Miller

Email:brady@sparmy.com

www.bradymd.com

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Gnomovision version 69, Copyright (C) year name of author
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The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
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