

Installing and configuring Ubuntu Linux 9.04

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Introduction

Many people want to try out a Linux operating system but they don't know where to begin. Furthermore, once it is installed, they don't know how to get things running. This document will go over 3 different ways to install Ubuntu and get it working correctly. It covers getting the proper (mostly) codecs for streaming audio and video that many websites use today. It shows how to install the Adobe Flash player plug-in for Firefox. For those wanting (or needing) to develop programs either for Linux or for Embedded Systems (such as JK Micro's OmniFlash or OmniEP -see <http://www.jkmicro.com>), there are steps on how to install additional software.

This document is in no way a fully comprehensive installation guide. It does not cover what to do if you have errors or how to use Linux. It is simply a guide by which I use to set up my PC's with a usable Linux. For more information, try searching the web for Ubuntu and you will find many resources to help you get started.

Getting Started

In order to begin, we need to decide how we want to install our Linux environment. We have a couple choices depending up on your taste.

There are a couple questions to ask yourself

- 1.) Will your IT department allow you to install a different operating system side by side with your current one for dual booting. Some companies don't allow this?
- 2.) Do you feel comfortable dual booting your computer?

If your company allows you to install another operating system and dual boot your system, then this is my preferred method. Not everyone likes this approach so we will cover a couple different options.

Downloading Ubuntu

We need to download the latest copy of Ubuntu Desktop edition.

Head over to <http://www.ubuntu.com>



Click the Download now button for the Desktop Version.

Choose a version

- Ubuntu 9.04 Desktop (the latest version):** Includes the latest enhancements and is maintained until 2010
- Ubuntu 8.04 LTS Desktop:** Released April 2008 and maintained until April 2011 – ideal for large deployments

Choose a download location near you

Please choose a location

United States University of California, Santa Ba...

Begin Download

After your download begins, we'll provide instructions on how to create a live CD.

Custom Options

Only change these if you know you need different values.

Computer Architecture

- 32bit version:** This works with most computers
- 64bit version:** May provide additional capabilities to computers that are able to use 64bit software

Choose a location closest to you and choose the 32-bit version as it seems to work better. Click the Begin Download button to get your ISO image. (Note: it's about 650 Meg so it takes some time).

Once your ISO has completed downloading, burn it to a CD using your choice of software. My personal favorite is ImgBurn from <http://www.imgburn.com/>. Its free and does a pretty good job.



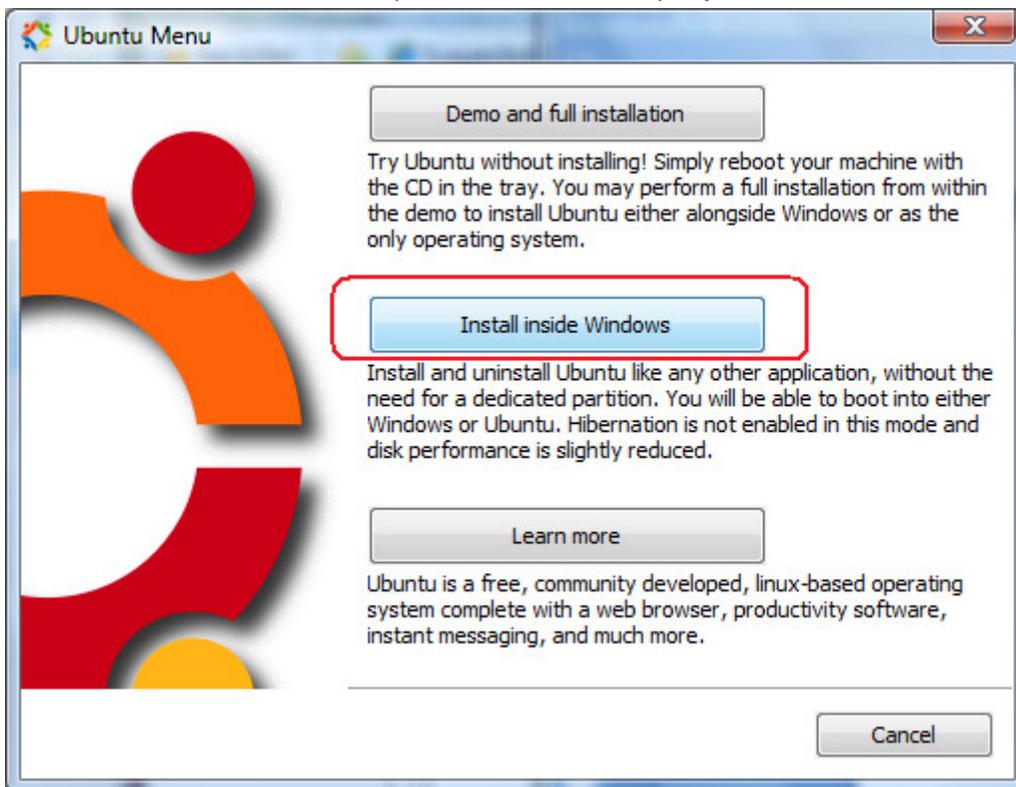
Installing Ubuntu

There are a few different ways we can install Ubuntu. They are presented below.

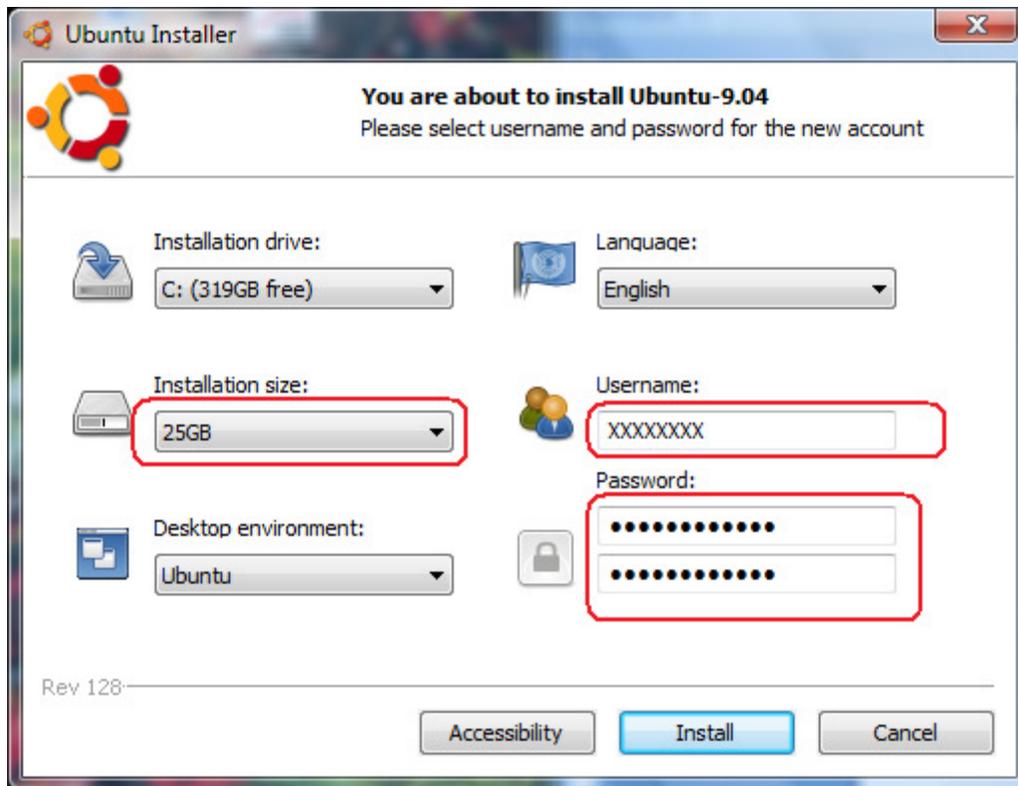
Dual Boot - Install inside Windows - The easiest solution

We can choose to install Ubuntu from within Windows. This will still give us the ability to dual boot into Ubuntu at startup, but allows us to un-install it from the Windows control panel when we are done. This way leaves our Windows partitions in tact but allows us to run Ubuntu full fledged on the hardware. This allows us to take advantage of the graphics drivers if they are available for fast graphics (NVIDIA graphics cards work the best).

To install inside of Windows, simple insert the new CD you just created.



Click the Install inside Windows button.



Change the installation size from 17G to 25G. I came close to running out of space with 17G. Choose a username and password for your installation.

Now boot into Linux and follow the setup listed under the Virtual Machine - leaving out the Virtual Machine specific instructions.

Dual Boot - Install to a new partition or drive - The most flexible for advanced users.

This option allows us to install Ubuntu to a new partition or drive that we create. This will change your windows Partition. This option gives us a complete independent install of Ubuntu onto another drive or partition. This requires an unused partition on the hard disk or a separate hard disk. The Ubuntu installer can resize the Windows partition for us to make room if we have enough disk space to do so. This also allows us to take advantage of the graphics drivers if they are available for fast graphics (NVIDIA graphics cards work the best).

This is more advanced for those who aren't afraid to get their hands dirty. This is the way I have my personal computer set up. (I run a virtual machine of Windows inside my Linux setup for when I have to use Windows.)

Ubuntu comes with its own installer that can create the Dual Boot for us. Simply boot the machine with the CD in the drive and choose Install Ubuntu when the screen appears. Ubuntu comes with its own

boot manager - GRUB. What I don't like about it is that it makes uninstallation of Ubuntu difficult because it changes the Windows boot loader to a Linux Boot loader. It's not easy to fix the MBR of a Windows installation.

There is a great tool for managing your dual boot options. Check out EasyBCD and the installation docs there for Ubuntu. I recommend NOT using Ubuntu's Dual boot installation. Follow what EasyBCD has to say about it.

Main Website:

<http://neosmart.net/dl.php?id=1>

Installation docs:

<http://neosmart.net/wiki/display/EBCD/Linux>

The rest of the installation is beyond the scope of this document. The docs on neosmart's website are pretty good. The only change I have to add to it is when you get to the option to choose which partition to install to, you are presented with 3 choices - the Full disk, any leftover space, or manual. You can choose the leftover space and actually drag the slider back and forth to pick how much space to allocate to Linux. I recommend 50 to 100 GB just give ample room to play.

Install inside a Virtual Machine - Works Anywhere

This option is for users whose IT department doesn't allow a different operating system to be installed on the machine in a dual boot fashion. This also gives us the flexibility to run our Linux environment inside our Windows environment without worry of messing up our Windows partitions or installation. Graphics aren't the best in this mode as we don't have a physical graphics card to do all the muscle for us. For software development, this isn't a big issue.

This is the option I will cover because it will work with most computers whether they are at home or in the office. The installation of Ubuntu is basically the same for all the options listed.

There are some quirky things with the way Ubuntu's graphics runs in a virtual machine. It is totally usable but remember that you are running in an emulation layer and the graphics may be a little slower depending on your computer's speed.

First we need to get a copy of a Virtual Machine program.

Head on over to Sun's Virtual Box website.

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

Click the Downloads option at the left. Choose the software that matches your machine.

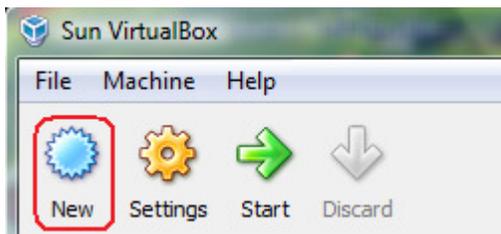


Download and install VirtualBox. Note: During installation, you will temporarily lose your network connection.

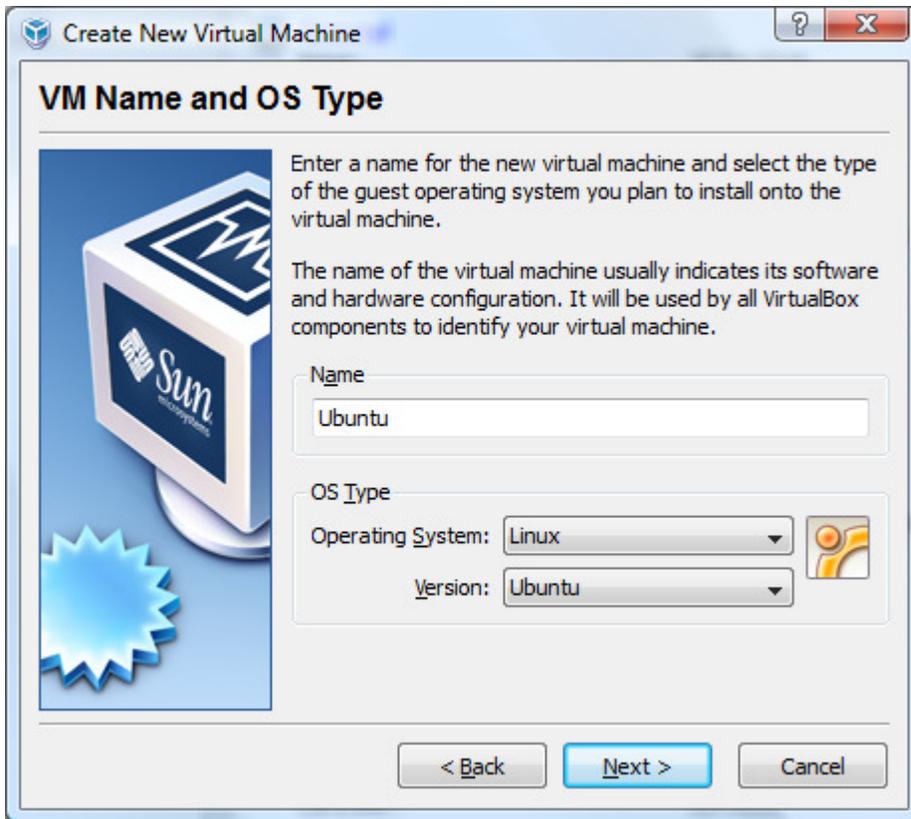
Note: Once we have our operating system up and running, we can download Virtual Box for Linux hosts and install windows inside a virtual machine. This is the way I personally work.

Now start Virtual Box to configure a Virtual machine for Ubuntu Linux.

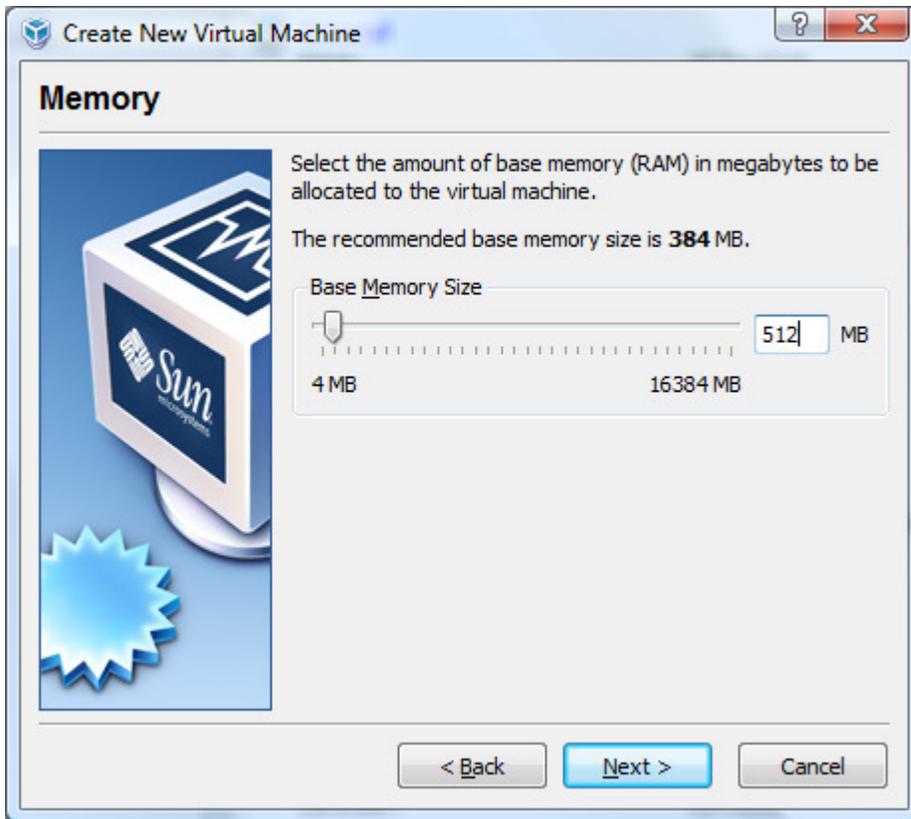
Virtual Box asks you to register. If you don't register, it will nag you each time you start the program. It still runs fine if you don't want to register though. I finally bit the bullet and registered it so it would stop nagging me.



Click the New button to create a new Virtual Machine.



Give the machine a name and choose the operation system type.



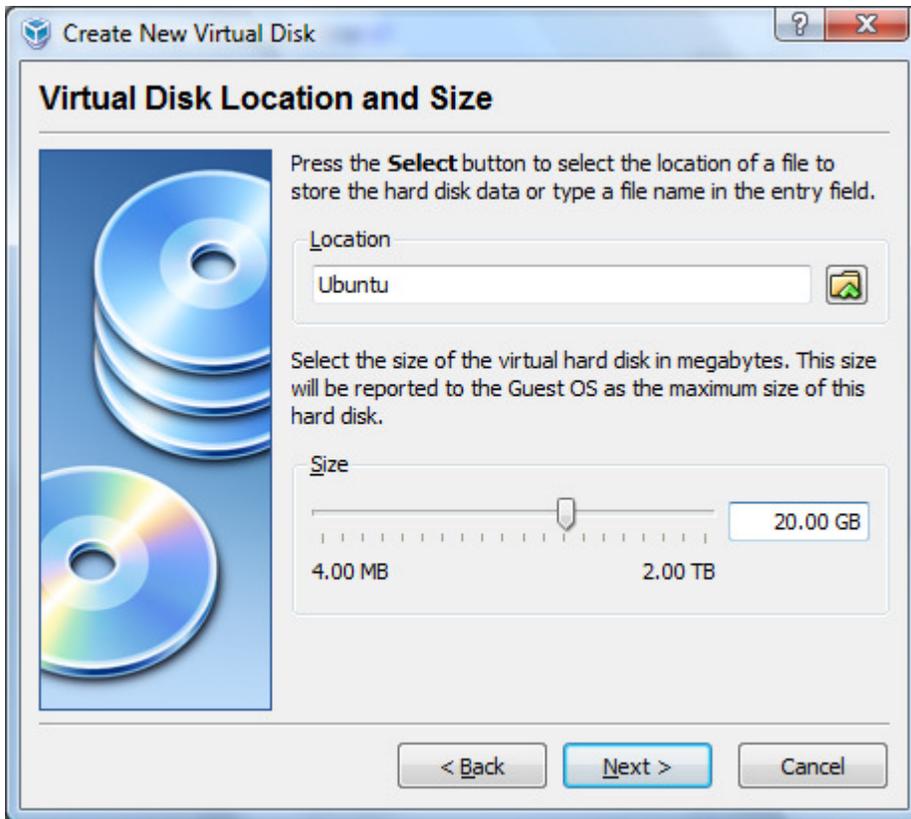
Give the machine however much memory you want to. It defaults to 384M. I bumped mine up a little.



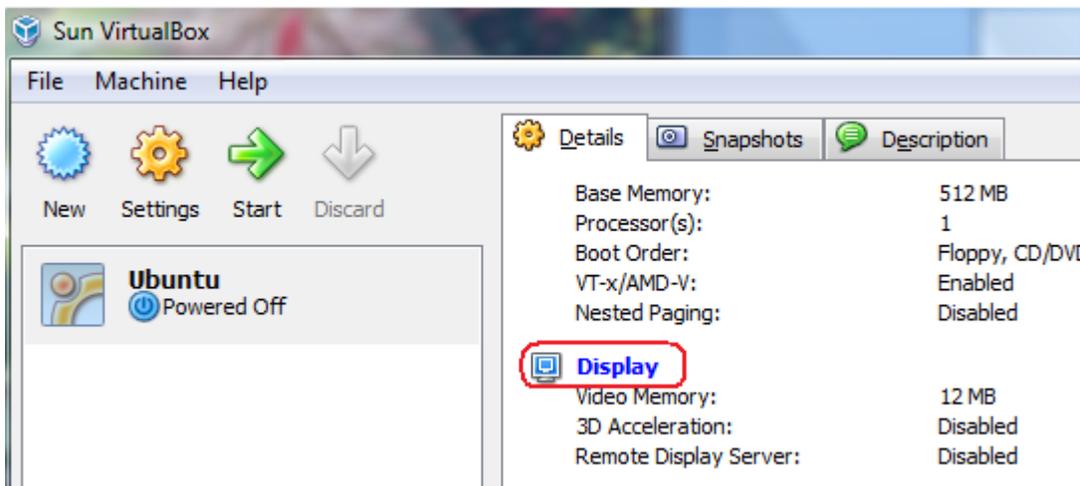
We need to create a new virtual hard disk to use.



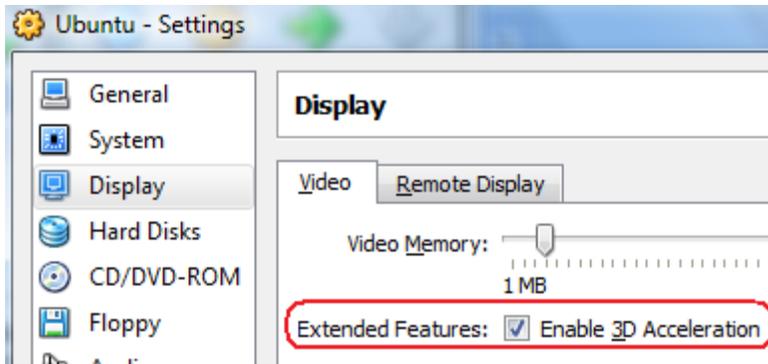
Choose a dynamic disk.



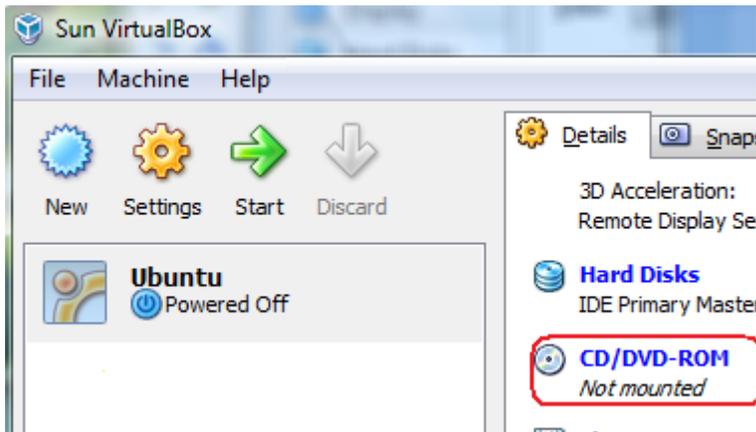
Give the disk some size. The default is 8G which is too small. Bump the size up to something usable.



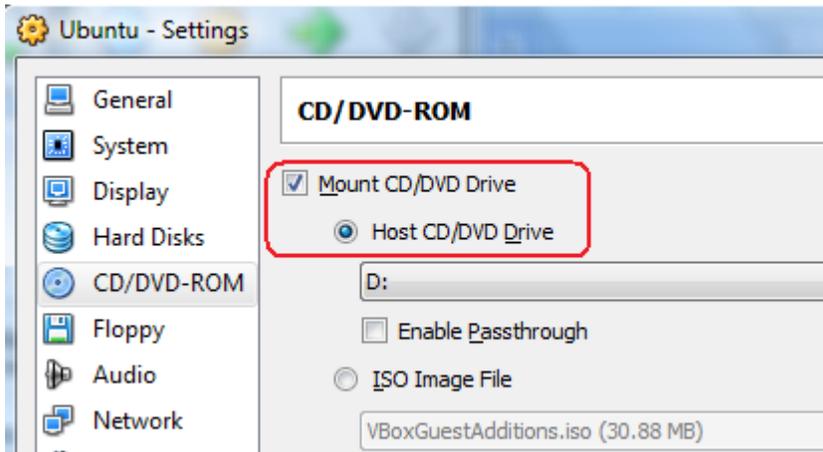
When back at the main screen, click the Display option.



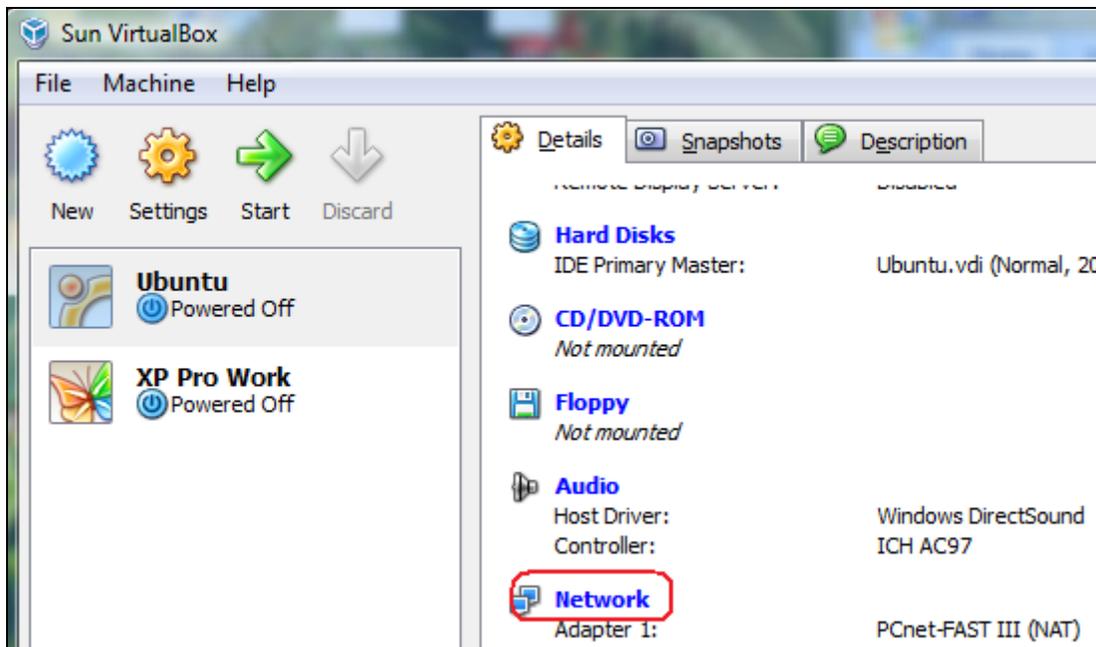
Check the box to enable 3D acceleration. The click OK.



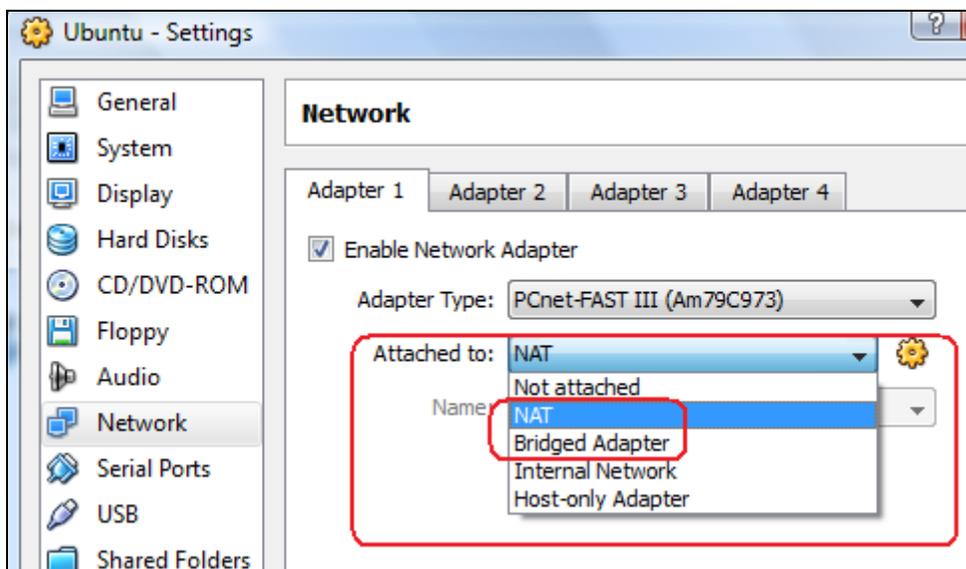
Click the CD/DVD-ROM option.



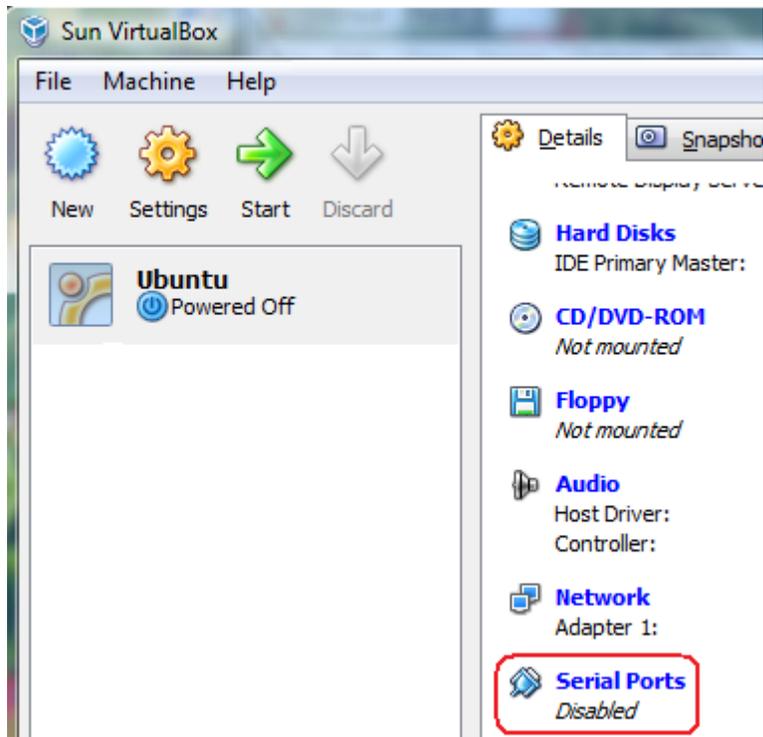
Mount the CD rom so we can install Ubuntu. Click OK.



Click the Network option.



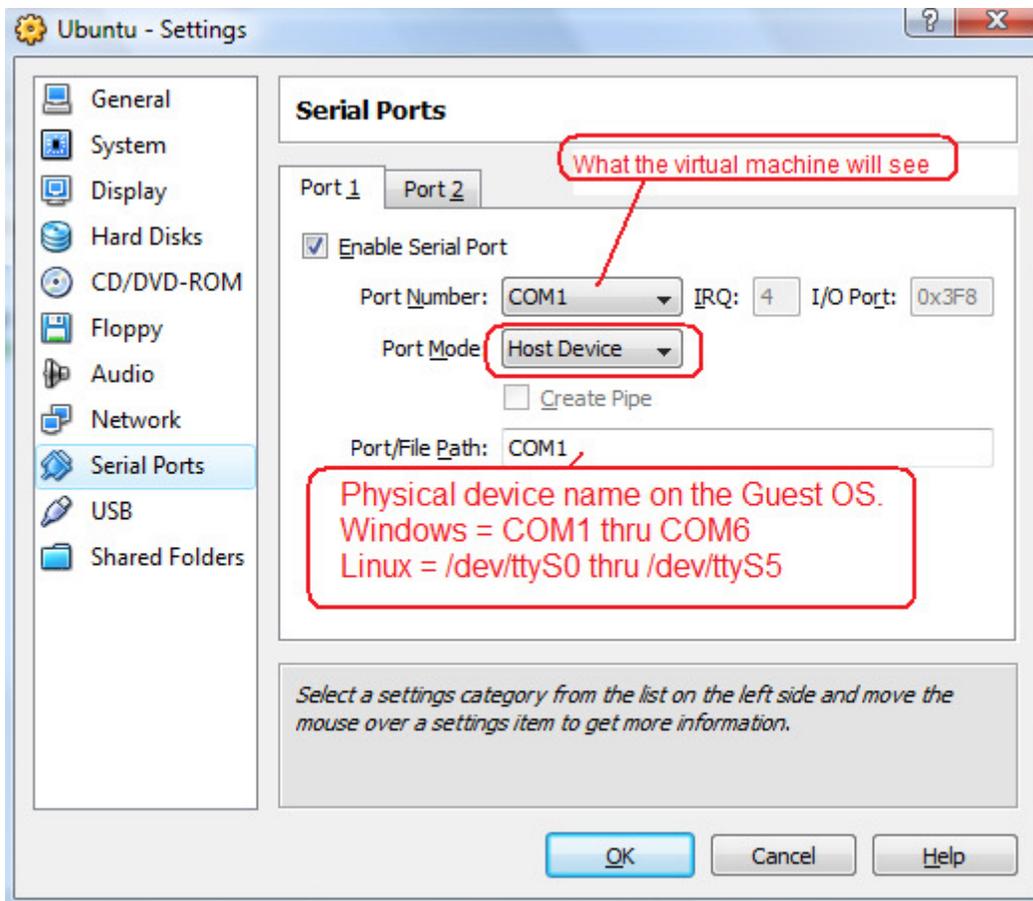
The Default option is NAT. This option uses your computer as a DHCP server to assign private IP addresses to the Virtual Machine. This option works well for companies that use device filtering at the MAC address level to get on their networks. If you want to be able to communicate with your Virtual Machine over the network, then select the Bridged Adapter option. This will use the DHCP server on your network to assign an IP address to your Virtual Machine. If you need to you can configure the IP address of the Linux Virtual Machine manually (static route).



Next click Serial Ports. We need to enable the serial port.

Note: The following instructions came from the following website:

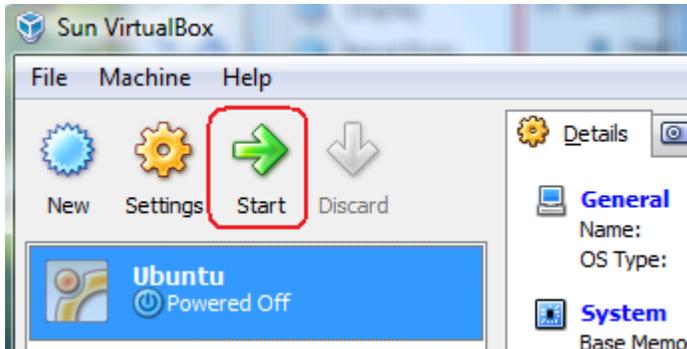
<http://techtooltip.wordpress.com/2008/09/12/using-host-serial-port-from-guest-in-virtual-box/>



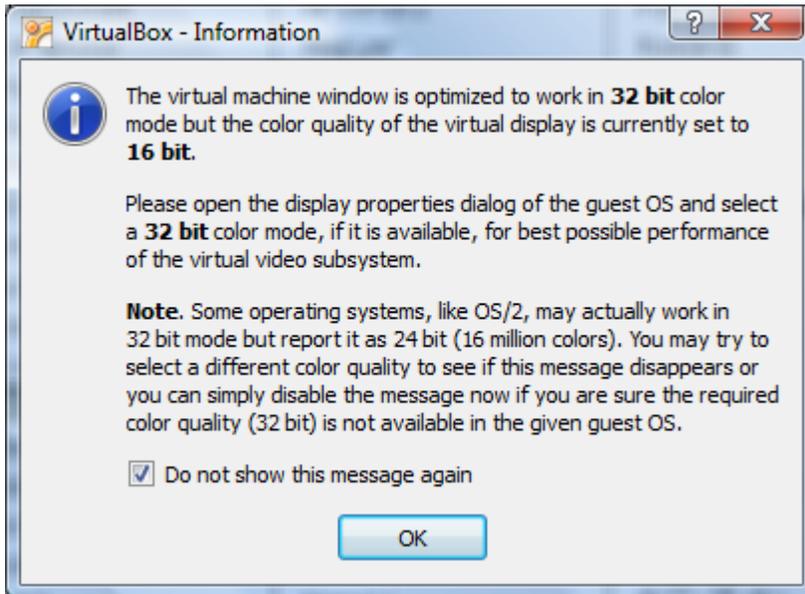
This option is only needed if you will be working with Serial devices such as embedded device programming. If you don't need access to the serial port, skip this step.

Check the Enable Serial Port option. Select the COM number to report to the Virtual computer. Select Host Device as the option. Then for the Port/File Path, enter the name of the real COM port on your Windows box to connect the virtual com port to. If you are using a USB Com port device, enter its com number in the box. If you aren't sure what the COM number is, go to the control panel in Windows and run the System option and find the Device Manager. It will tell you which COM number your USB adapter is at.

Now insert the Ubuntu CD into the computer. Cancel the auto-run window.

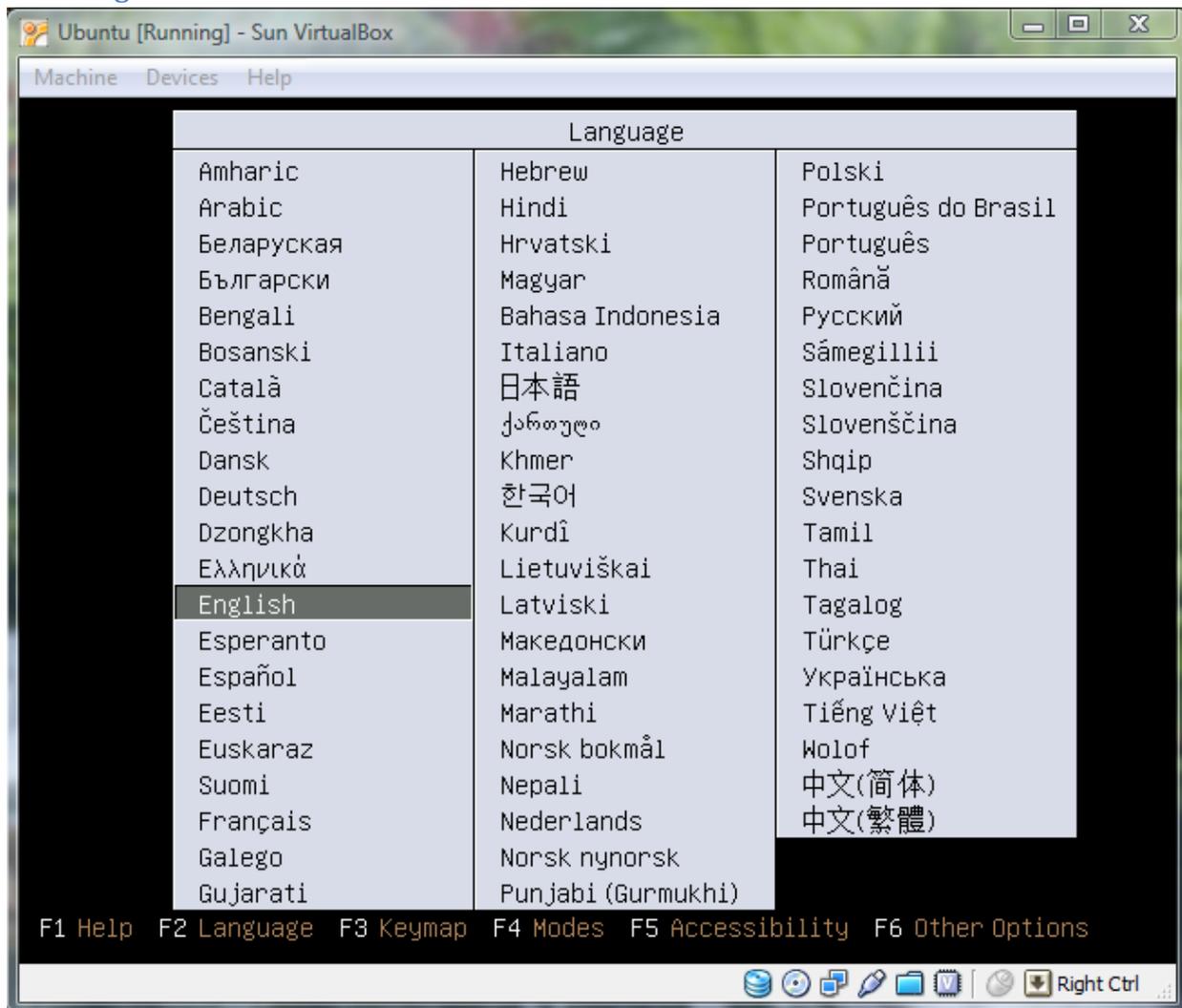


Now start the Virtual machine by clicking the Start button.

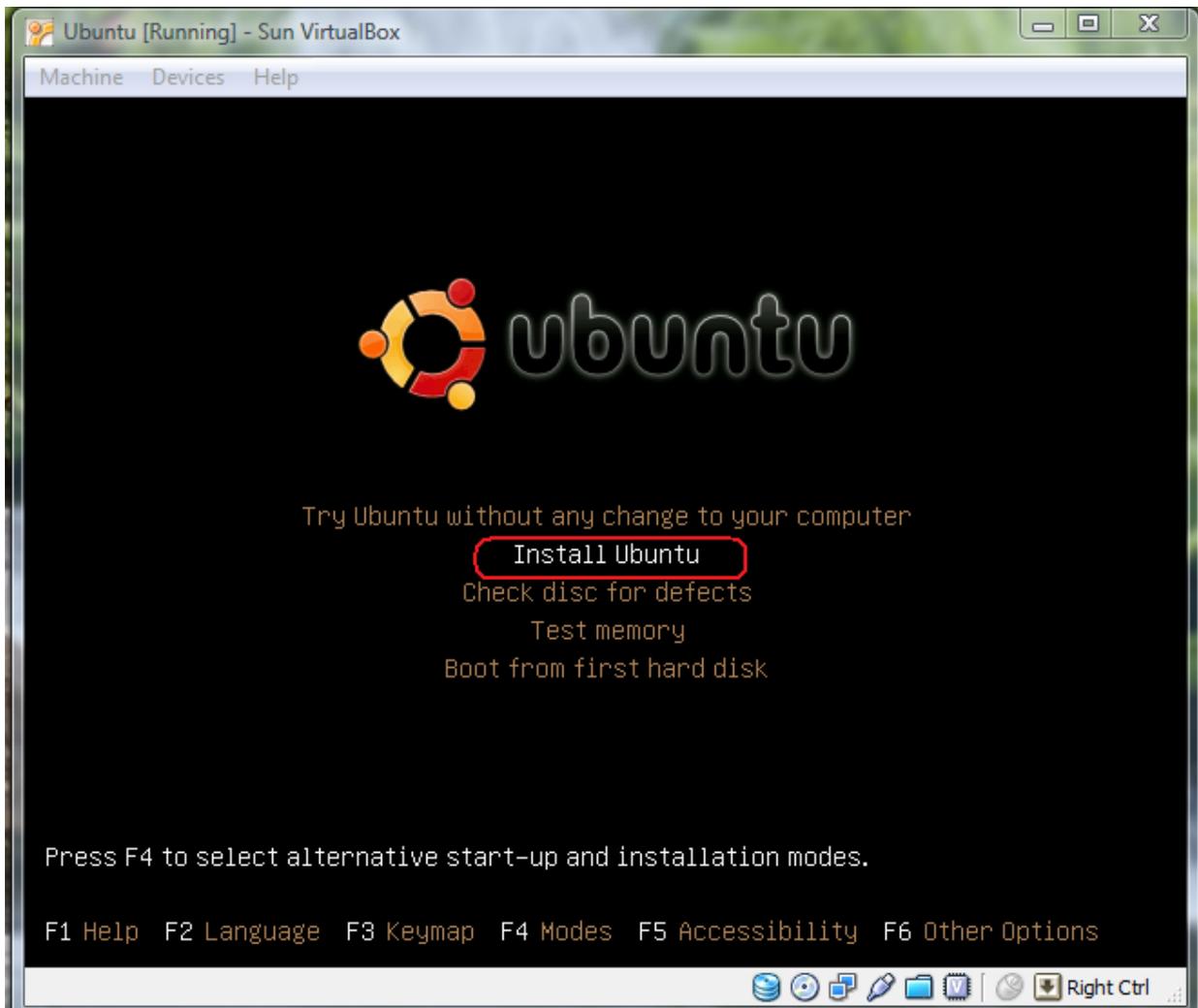


Check the box and click OK

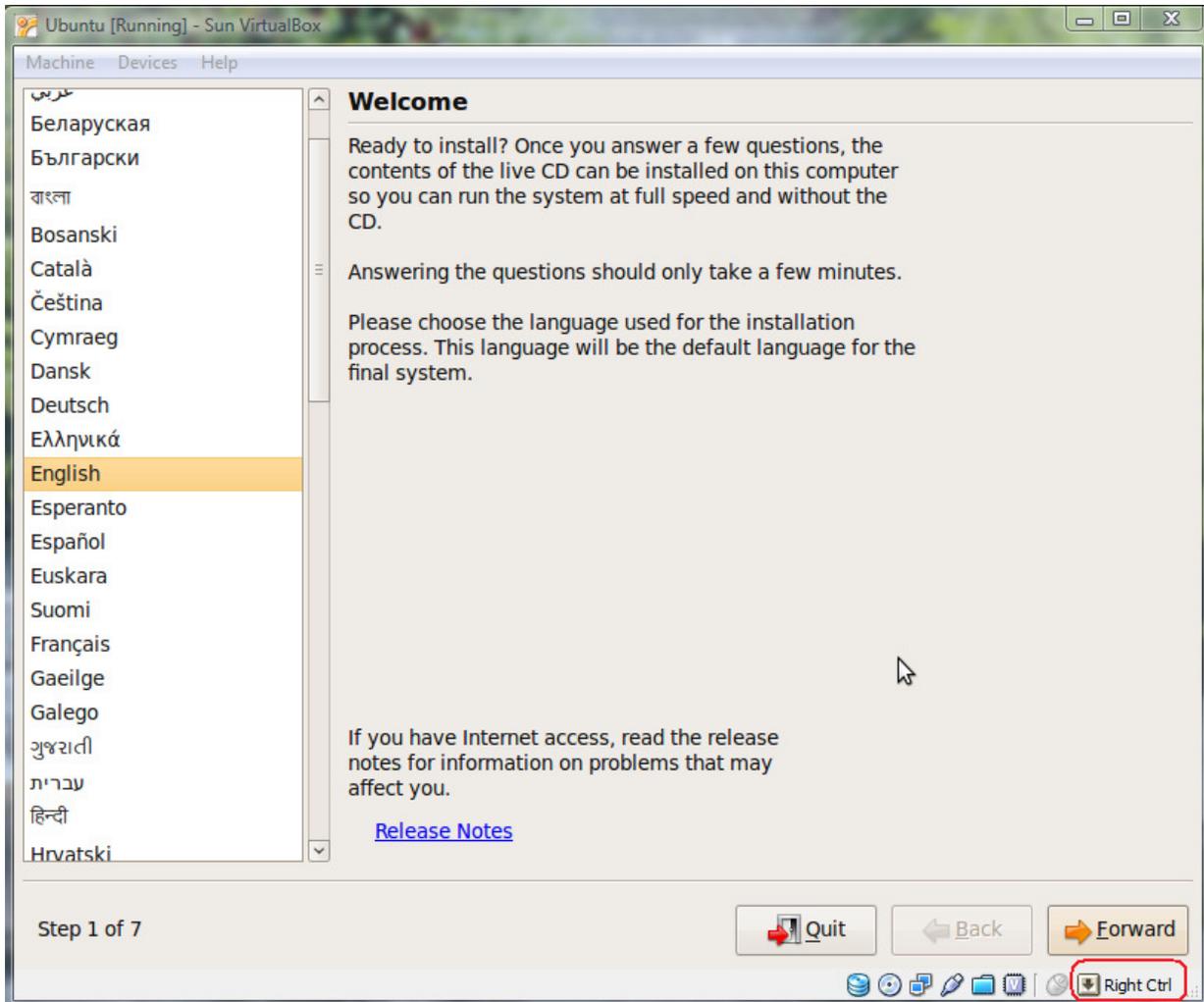
Installing Ubuntu in a Virtual Machine



Select your language and press Enter.



Using the arrow keys, select Install Ubuntu and press OK.



To use the Virtual Machine, click inside with your mouse and your mouse control will be passed to the Virtual Machine. To get your mouse cursor back, look in the lower right-hand corner of the Virtual Box window. It will tell you the key to press to get out of the Virtual Machine. The default is the RIGHT ctrl key. I highlighted it so you can see where to look.

Press the Forward button.

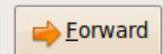
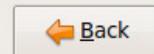
Where are you?

Select your time zone from the map, or by region and city.



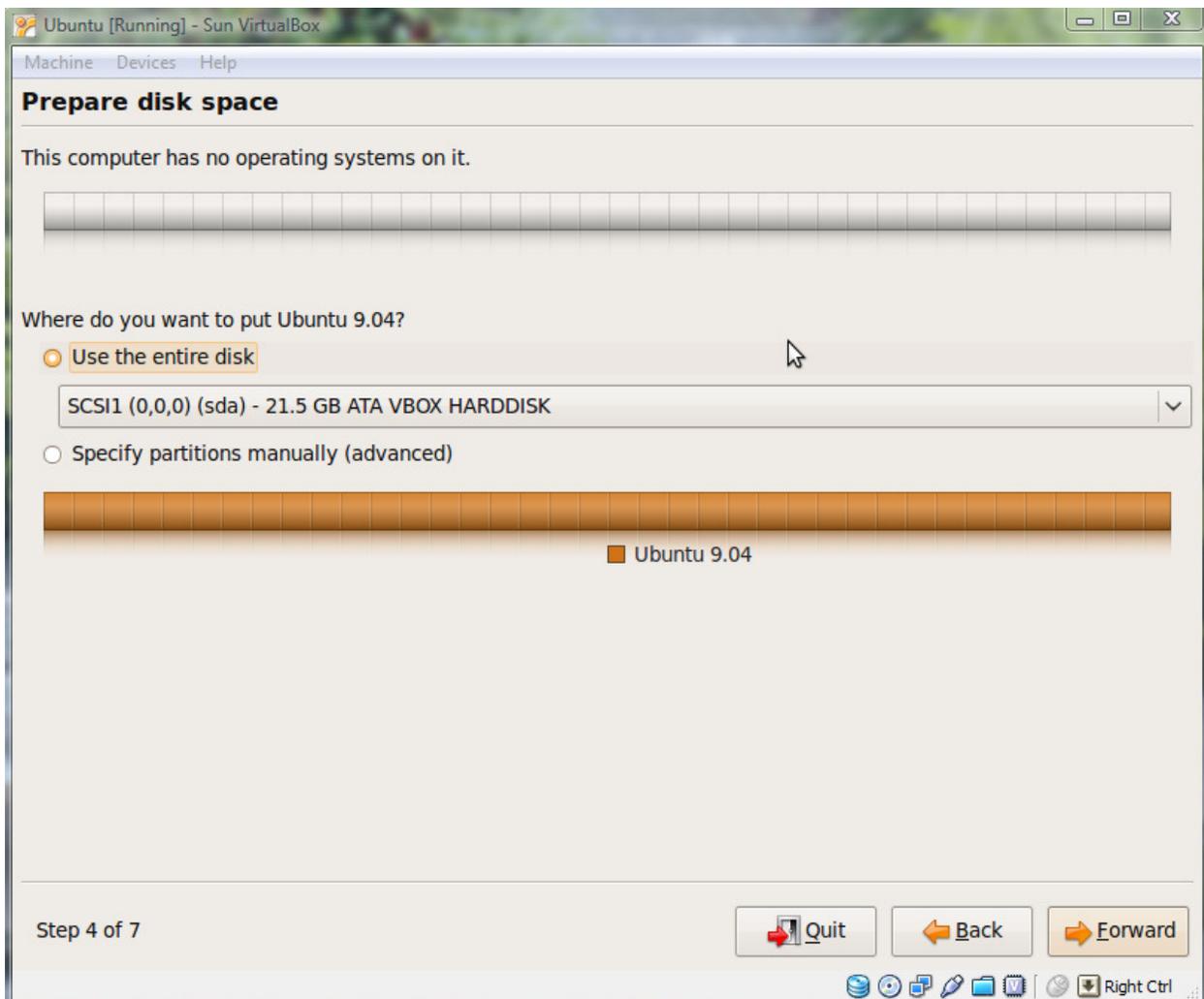
Region: City:

Step 2 of 7

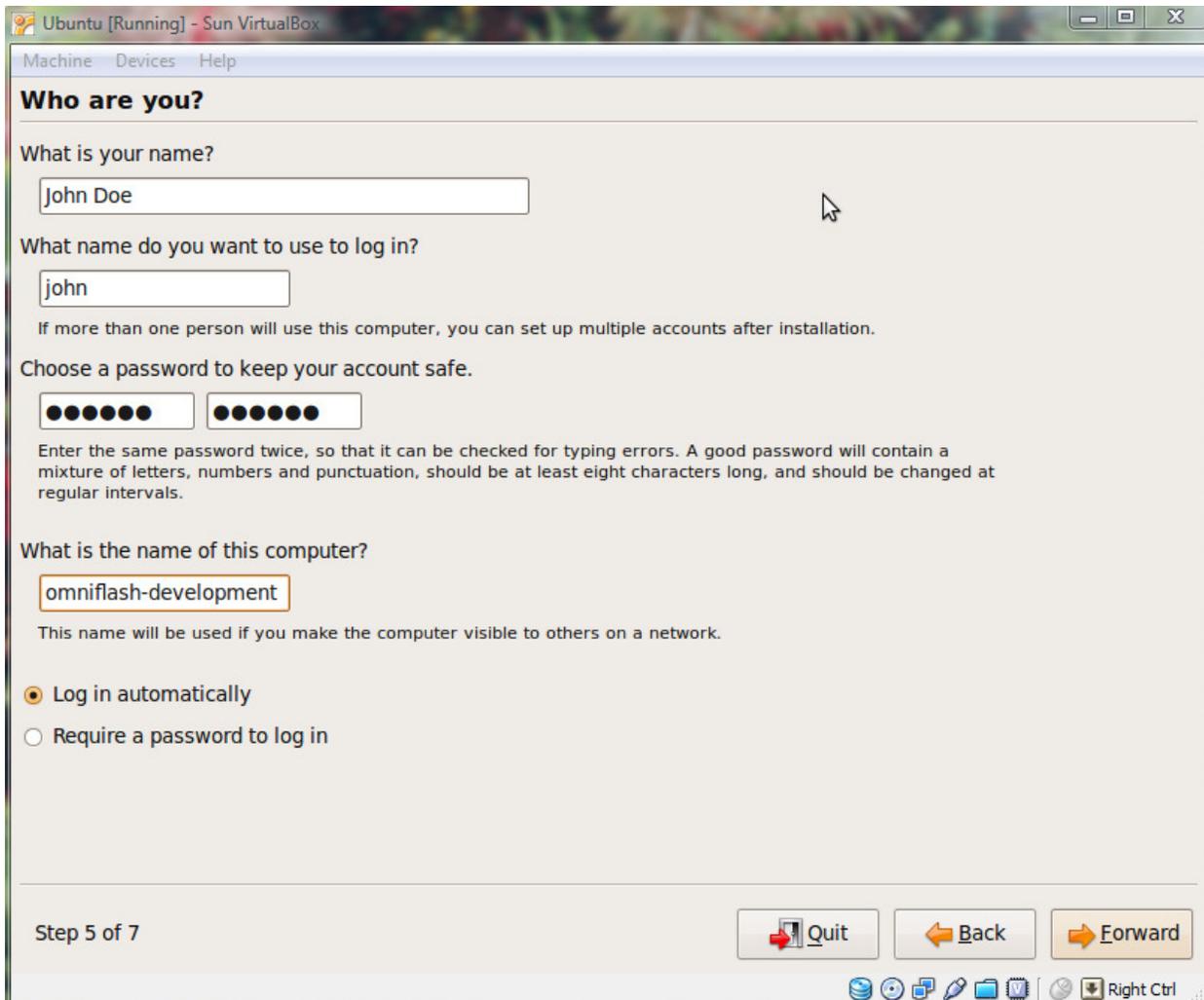


Click the area on the map where you live and press Forward.

When asked about your keyboard style, if using English, accept the defaults and click Forward.

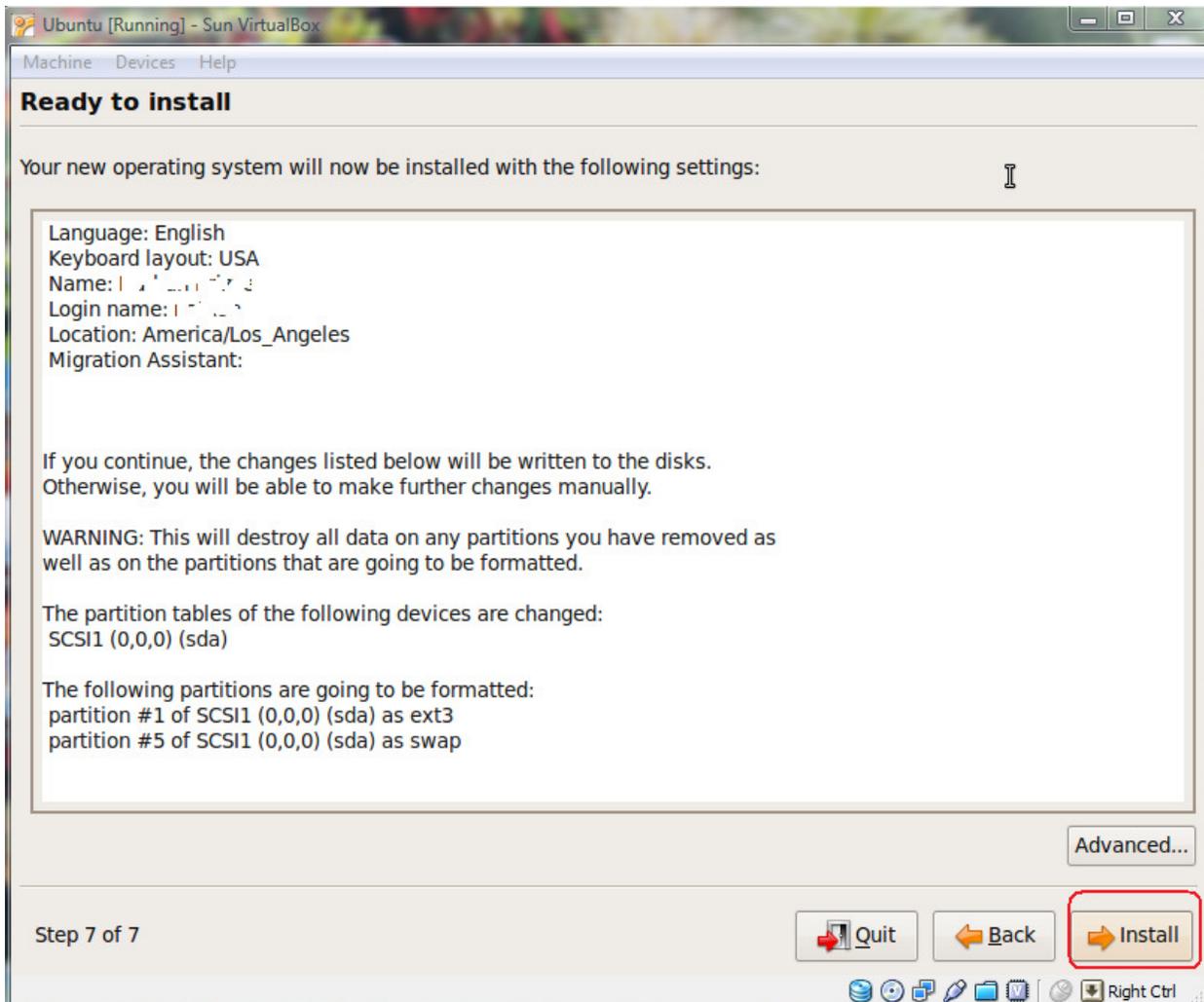


Use the default to use the entire disk and press Forward.



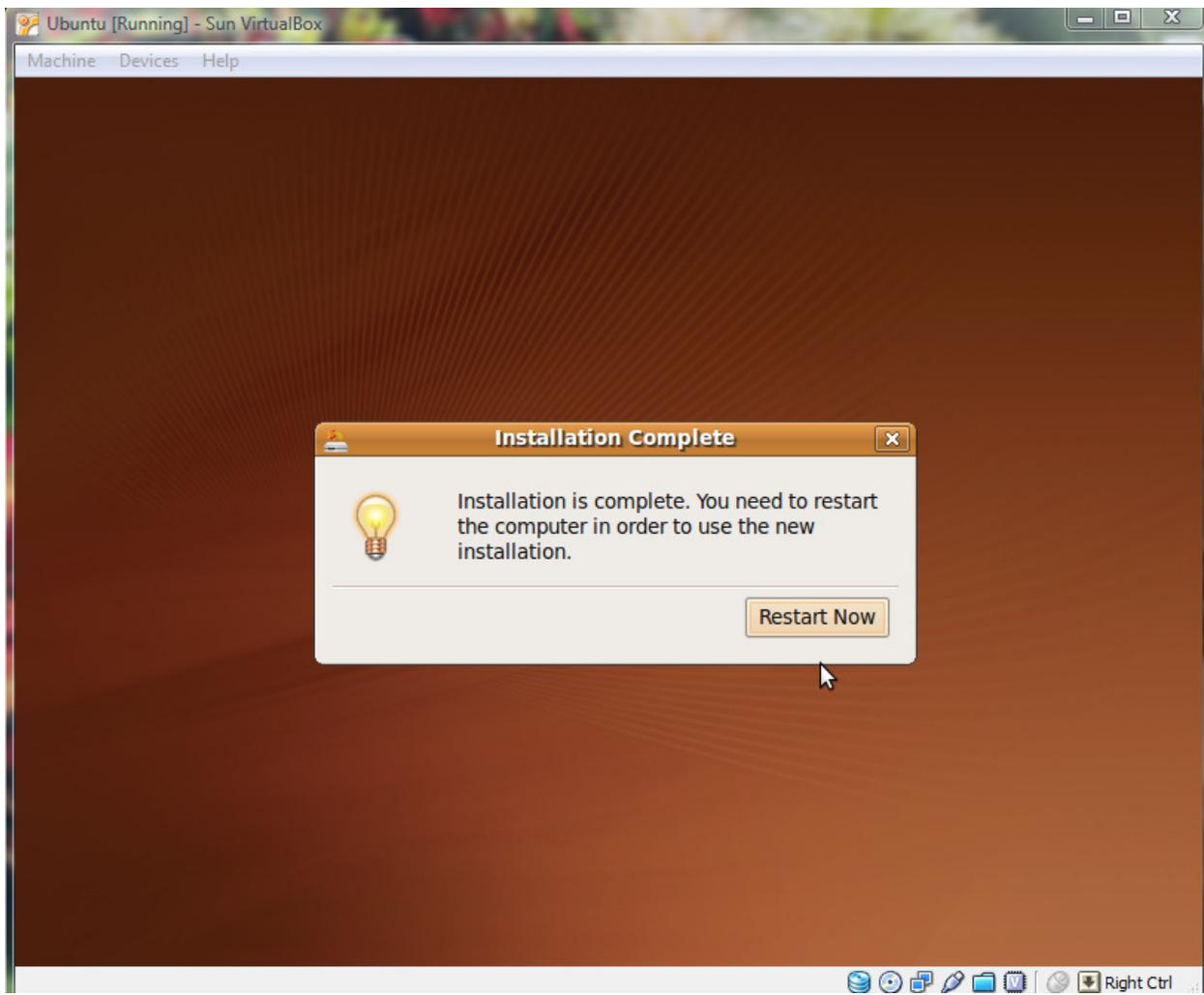
Fill in your name and password. Change the name of the computer to something useful. This is the name that will be seen on the network.

I checked the box to log in automatically. This is just my preference. If you choose to require a password, you will be asked to provide your username and password to log it. You can always change the option once you have installed Ubuntu.

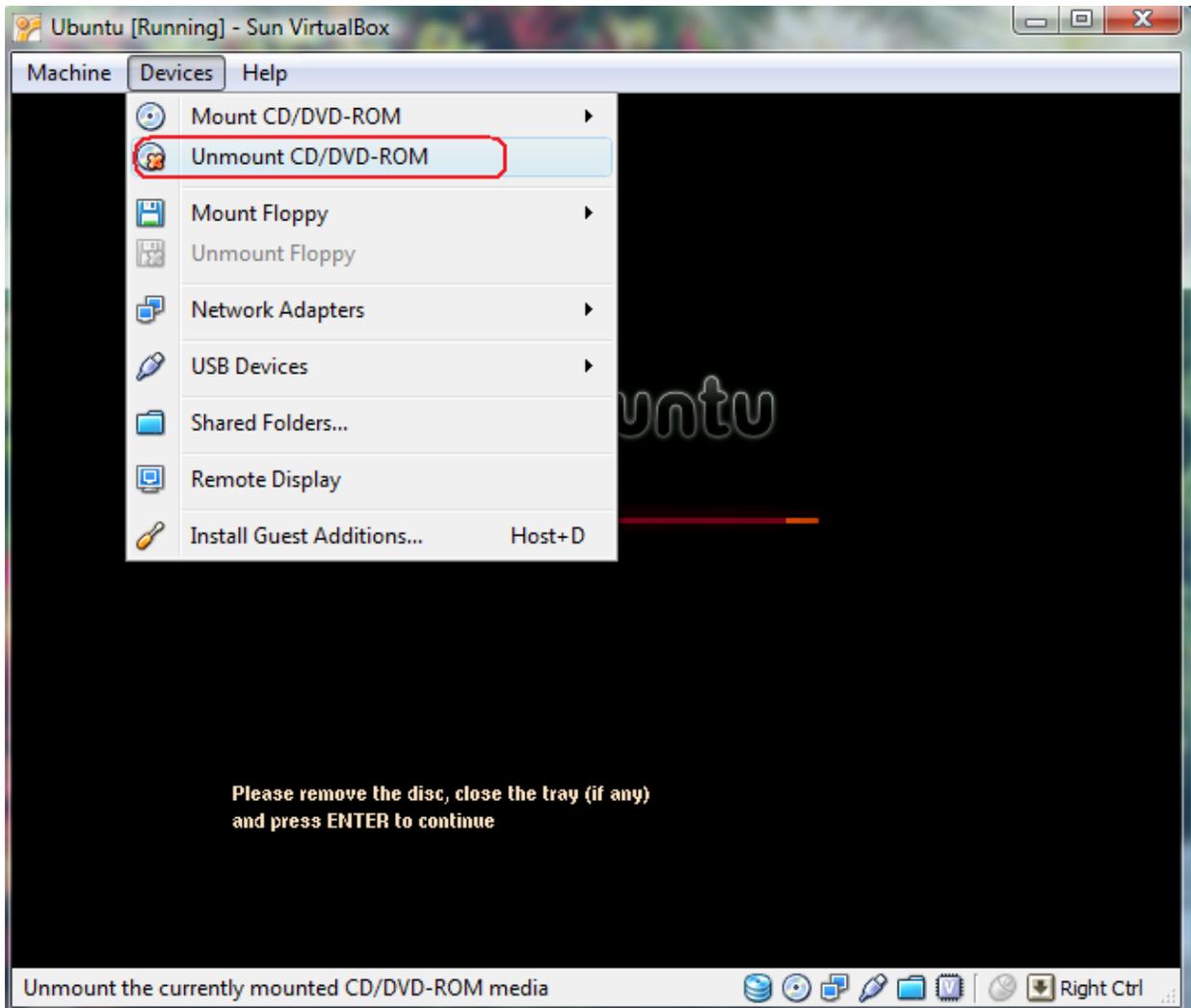


Click the Install button.

If your screen goes totally black as you are waiting for it to finish, it is most likely the screen saver. Click inside the Virtual machine and move the mouse. You should get a window back.

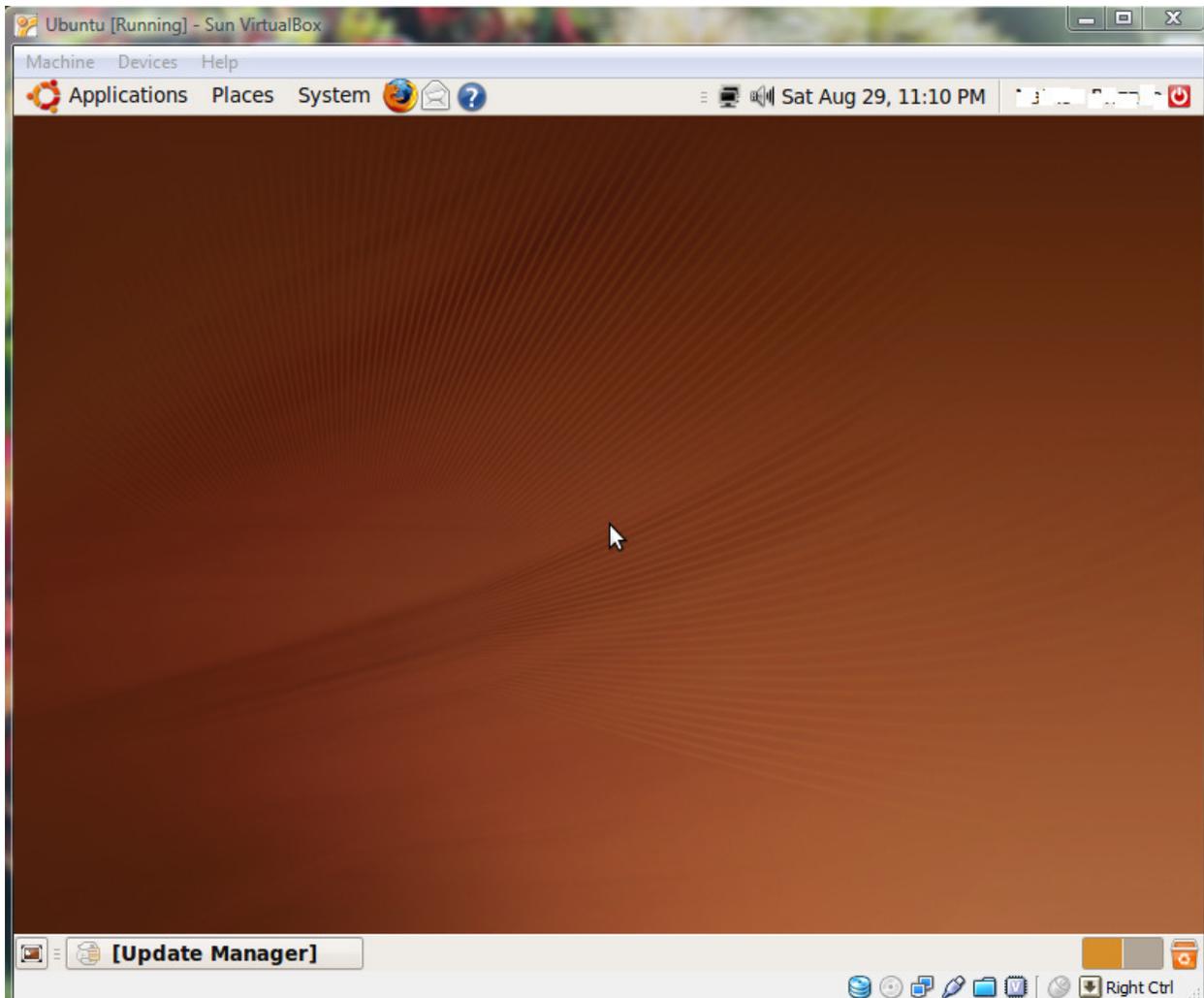


Click the Restart Now button.



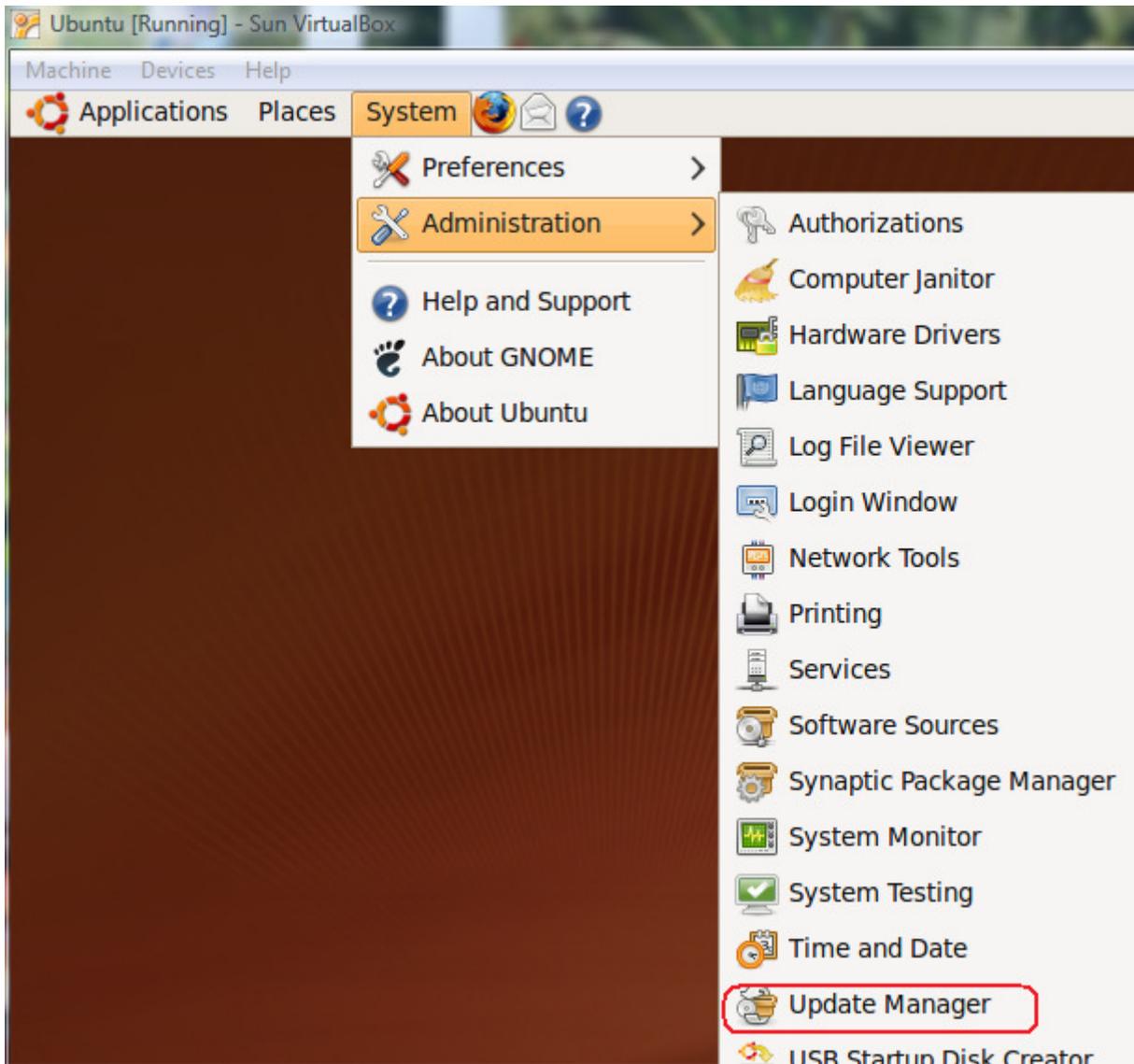
In order to remove the CD, we have to unmount it. Click the Devices -> Unmount CD/DVD-ROM option. Then you can remove the CD. Click inside the Virtual Machine and press Enter to reboot.

Configuring Ubuntu (All boot options)

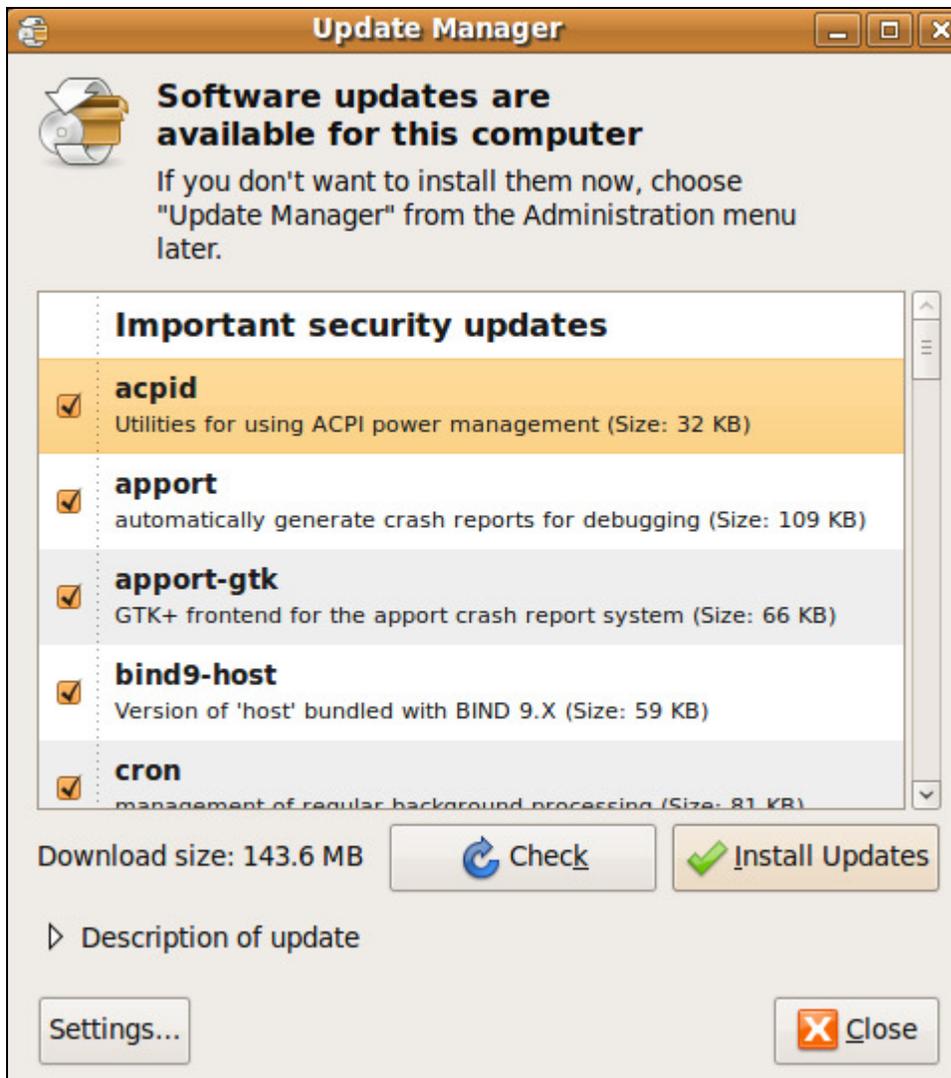


The first thing you will notice is that your screen size is 800 X 600. Since Ubuntu cannot determine your graphics card type, we need to configure the screen settings so we can get to 1024 X768 (or higher). We need to apply all the updates so we can override the screen settings. Open the Update Manager.

To launch the Update Manager if it doesn't load automatically (or any time you want to check for updates),



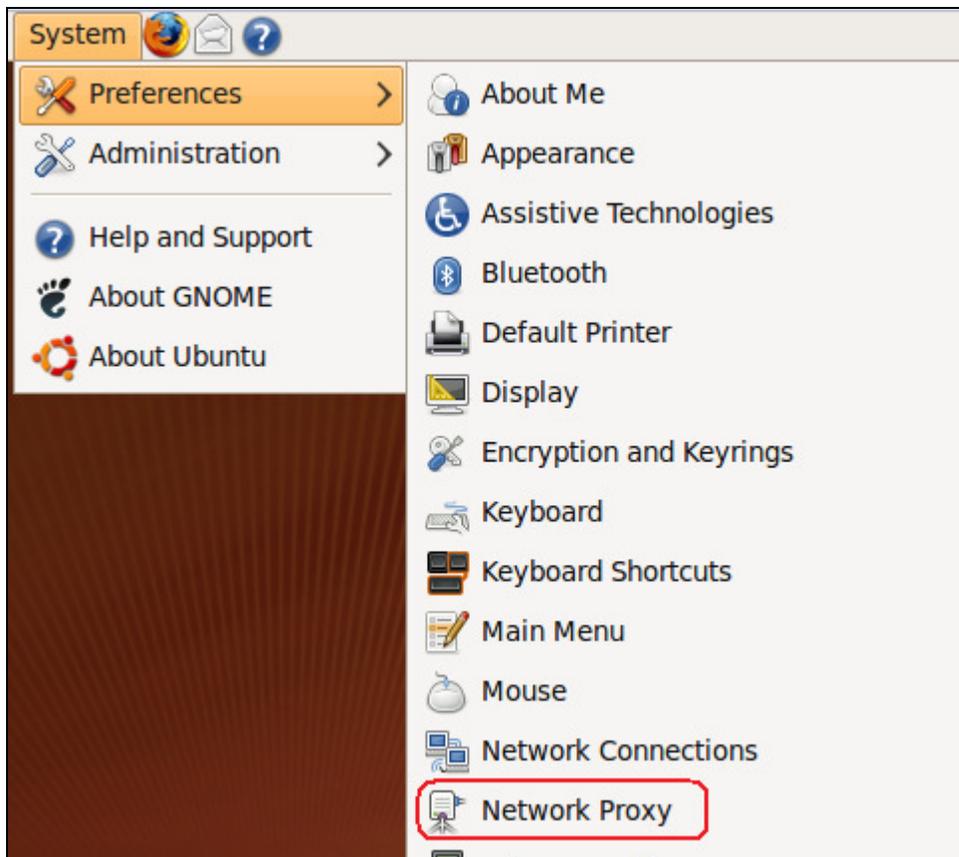
Click System->Administration -> Update Manager.



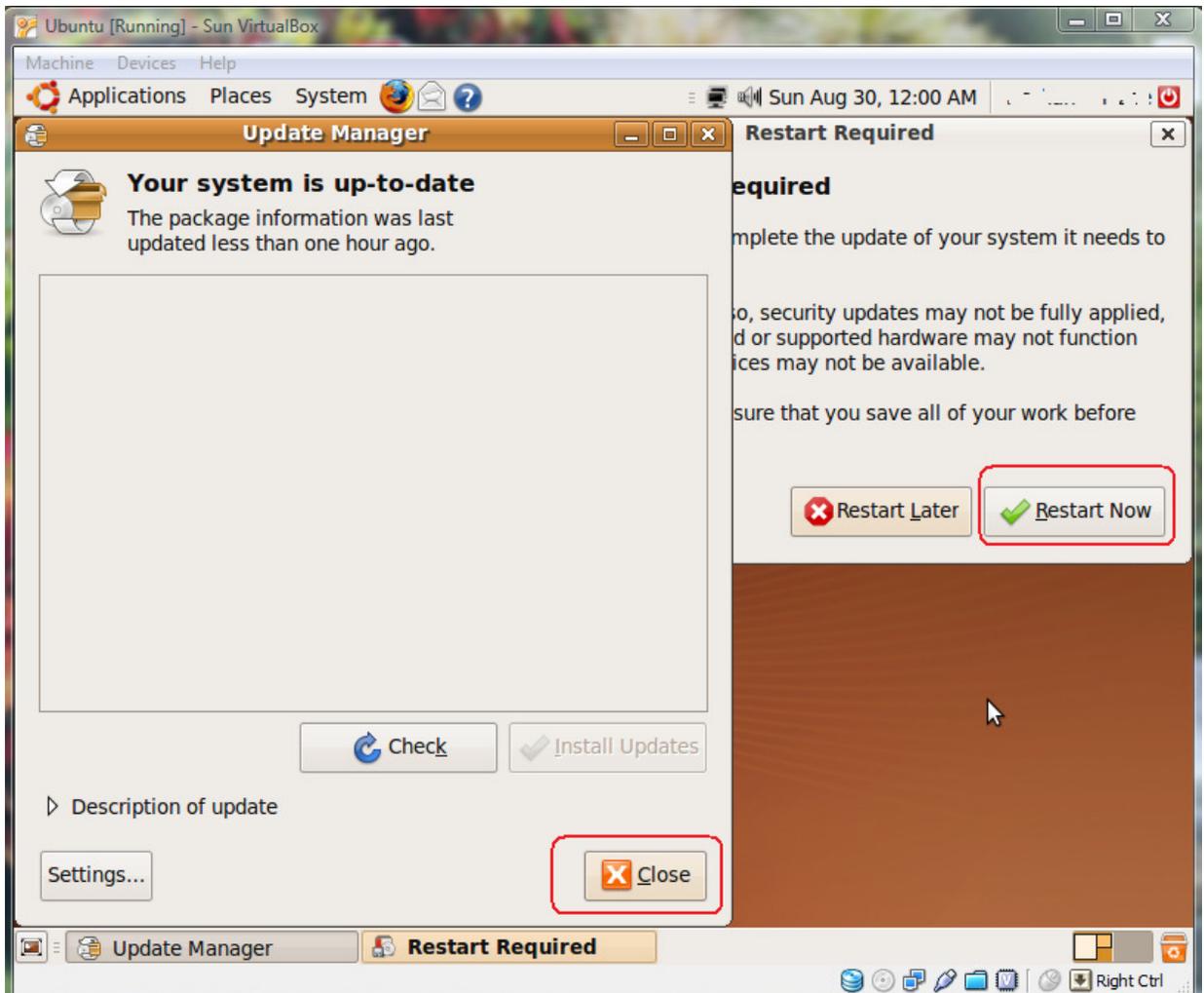
Click the Install Updates button. Supply your password when prompted. Note, if you click the Settings... button, you can configure the Auto Update feature to automatically download and install updates.

Note: If your company has a Proxy server set up for Internet access, you will have to configure Ubuntu for the proxy settings in order to get the Update Manager working.

To set up the proxy settings,

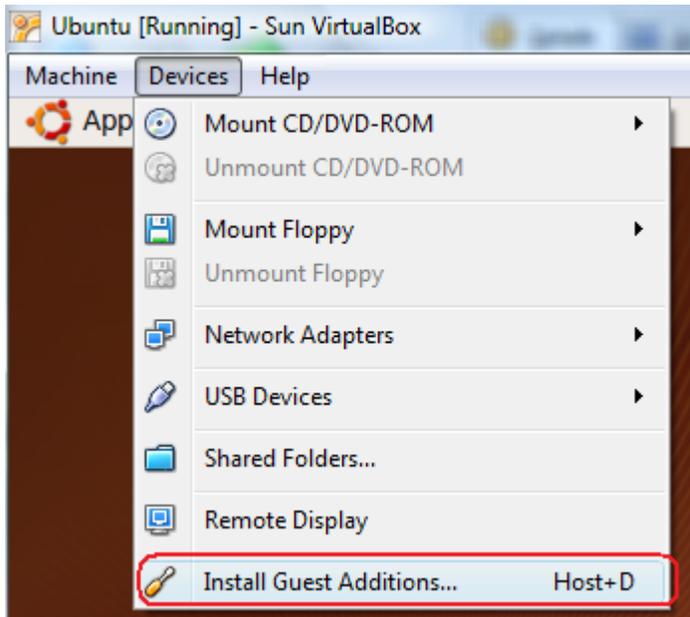


Click on System -> Preferences -> Network Proxy and fill out the settings for your proxy server.

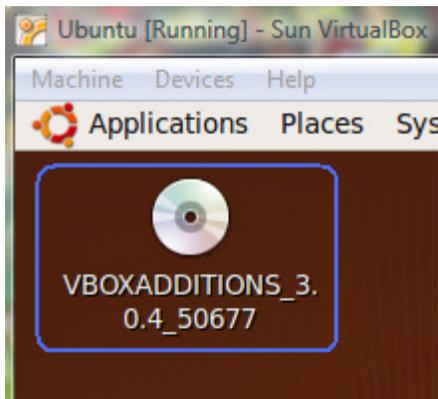


Click Close and then **Restart Now**.

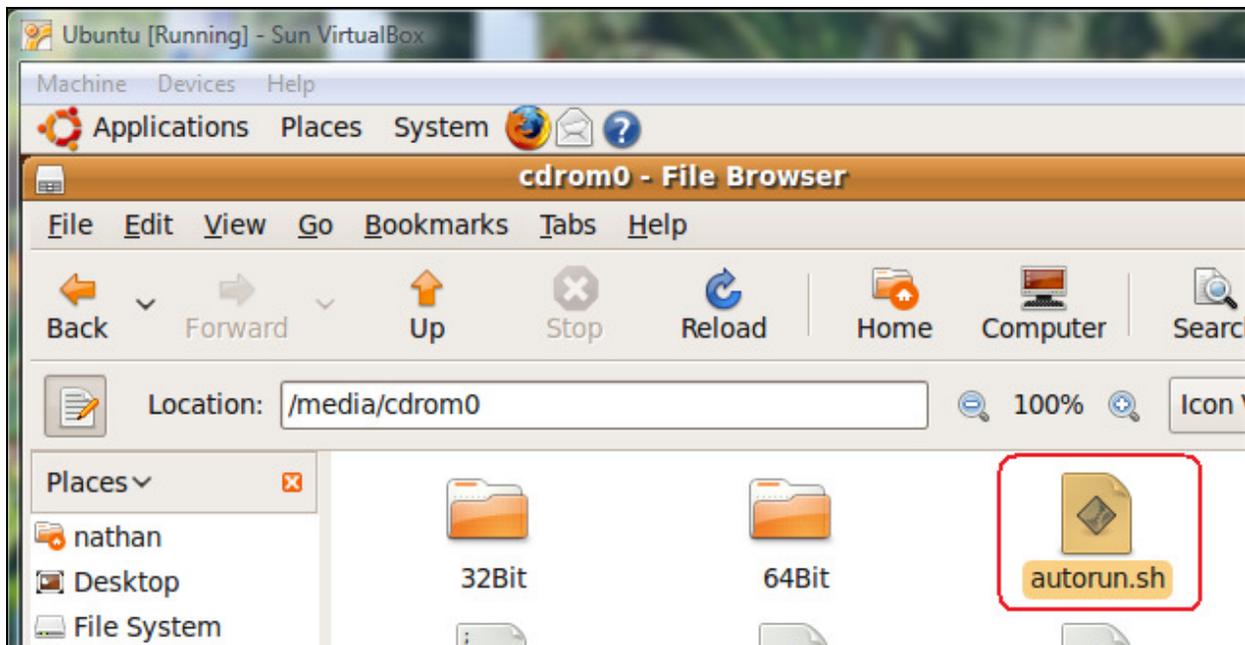
Installing the Guest Additions (Virtual Machine only)



Next we need to install the Guest Additions.
Click Devices -> Install Guest Additions...



The additions will show on your desktop. Double-click this icon to open up the installation directory.

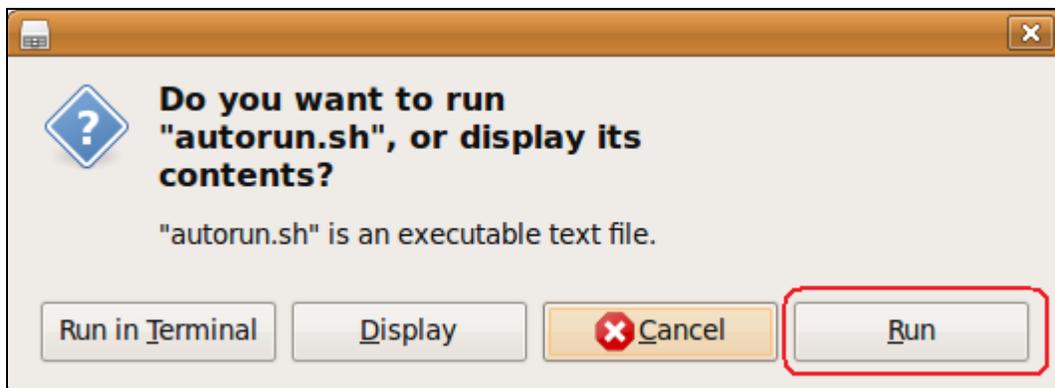


NOTE: Installing this way with Virtual Box 3.04 made the screen refresh quite slow. I recommend installing with the optional instructions below until Sun fixes this.

I show it merely for reference on the preferred way to install the guest additions.

Double-click on the autorun.sh file.

Enter your password.



Now click the Run button.

```
VirtualBox 3.0.4 Guest Additions for Linux installa
Verifying archive integrity... All good.
Uncompressing VirtualBox 3.0.4 Guest Additions for Linux installation.....
.....
.....
VirtualBox 3.0.4 Guest Additions installation
Building the VirtualBox Guest Additions kernel module...
Building the shared folder support kernel module...
Building the drm support kernel module...
Installing the VirtualBox Guest Additions...

Successfully installed the VirtualBox Guest Additions.
You must restart your guest system in order to complete the installation.
Press Return to close this window..
█
```

If successful, you should see a window similar to this.
Press Return to close the window and read on before you Restart the system.

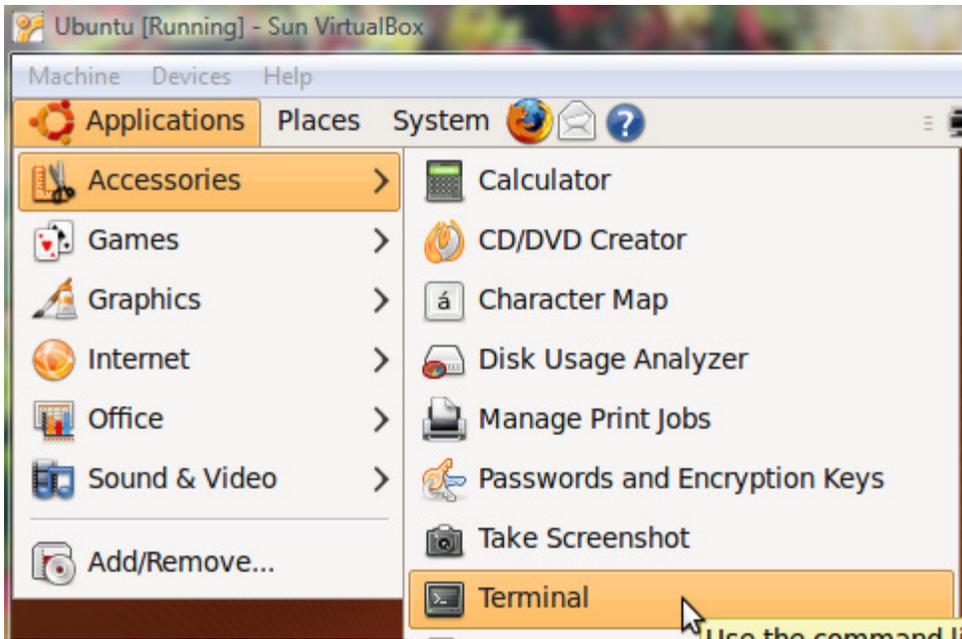
Optional setup for Guest Additions installation or Guest Additions that run a bit strange in a virtual machine - (Preferred method)

If we find the guest additions running a bit strange (like slow graphics or ghosting artifacts), follow these manual steps.

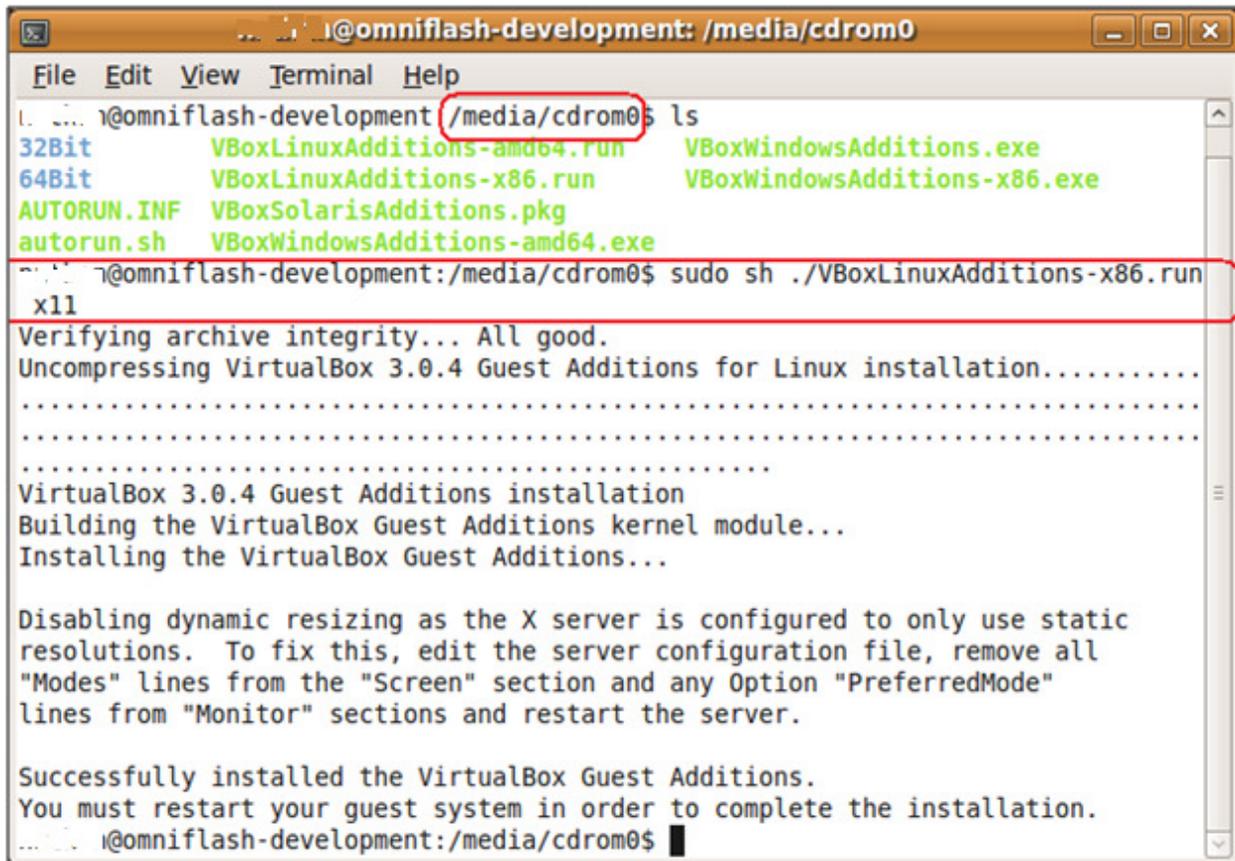
This way works much better.

The following procedure was taken from the following website.

<http://www.ubuntugeek.com/ubuntu-904jaunty-and-virtualbox-video-driver-for-xguest-additions.html>



Open a terminal from the Applications ->Terminal



Type **cd /media/cdrom0**

Type **ls** to see a listing of the files

Next, install the additions by typing

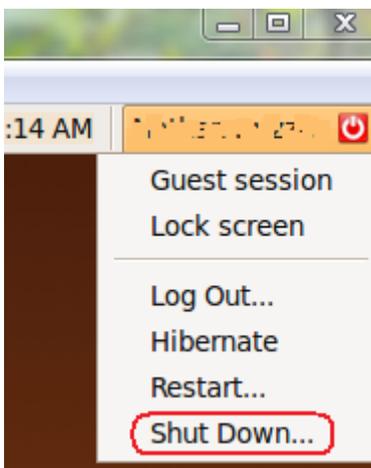
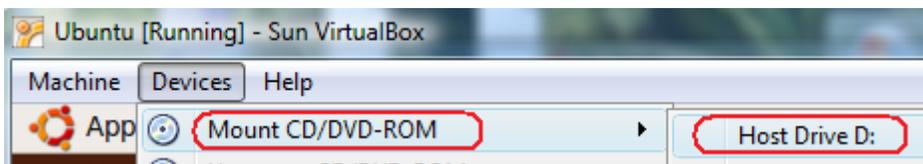
sudo sh ./VBoxLinuxAdditions-x86.run x11

This is the end of the optional installation steps.

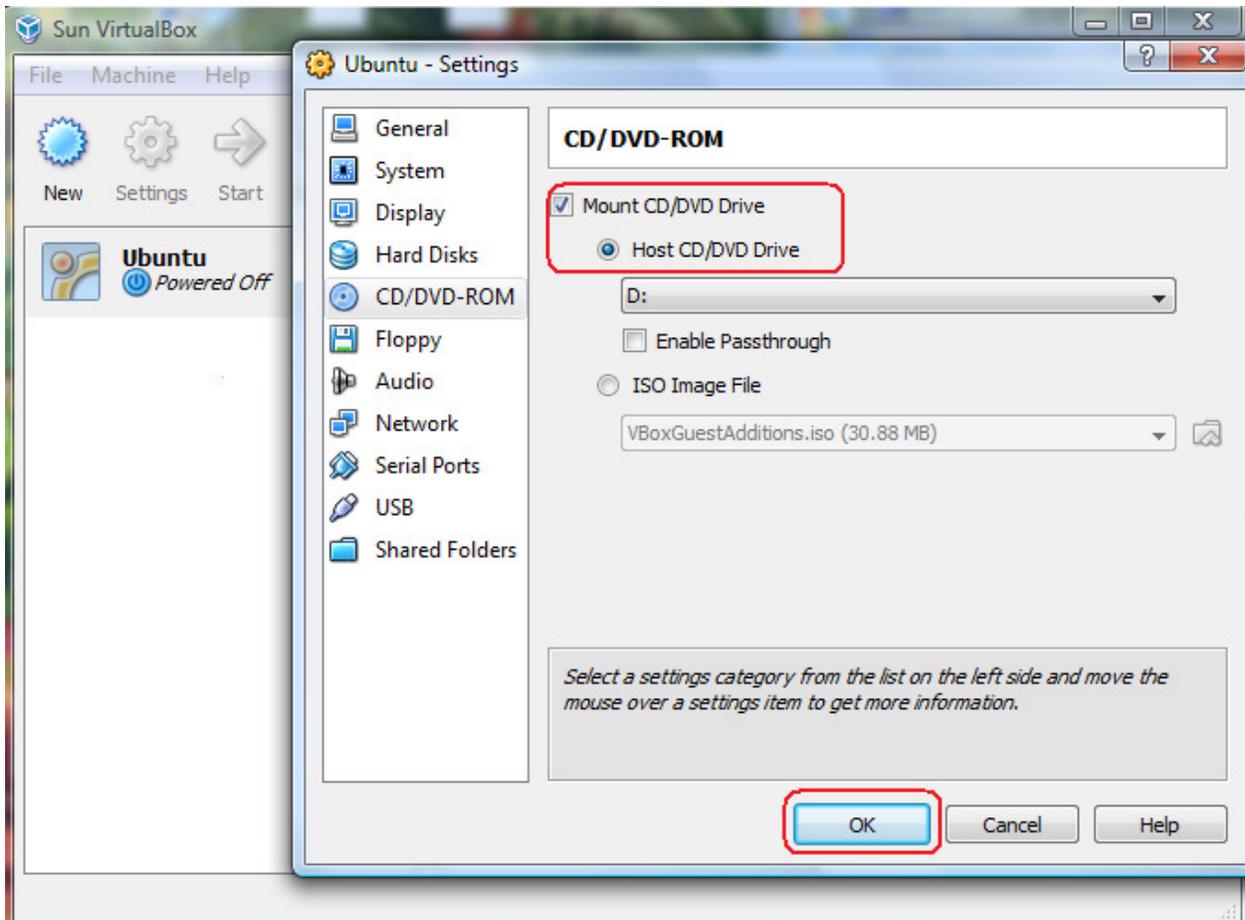
The display settings should be correct now. Continue on with the instructions from here.

Unmounting the Guest Additions and Restarting the system

To unmount the VBOX additions, remount the CD Rom by clicking Devices -> Mount CD/DVD-ROM -> Host Drive D: (or E: or whatever your CD drive is).

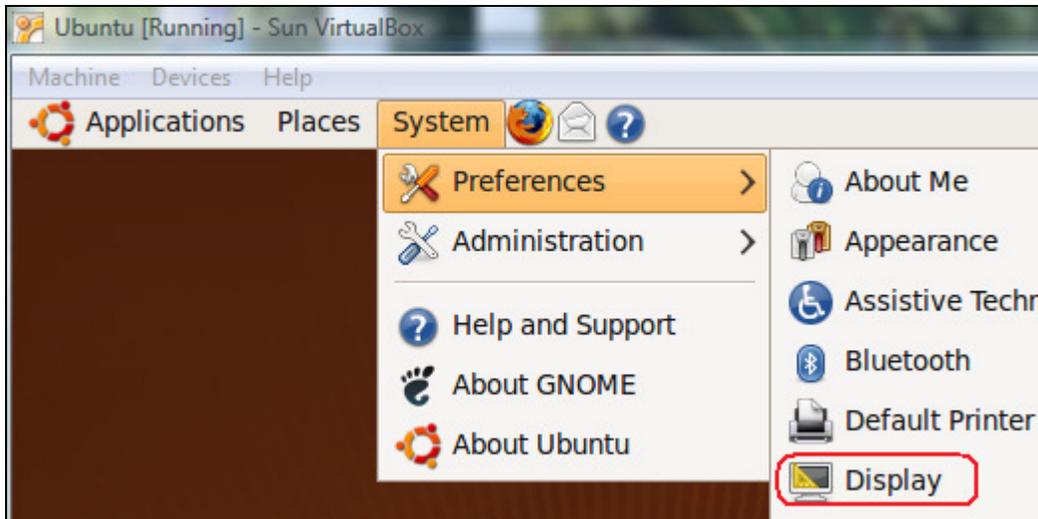


Now Shut Down...

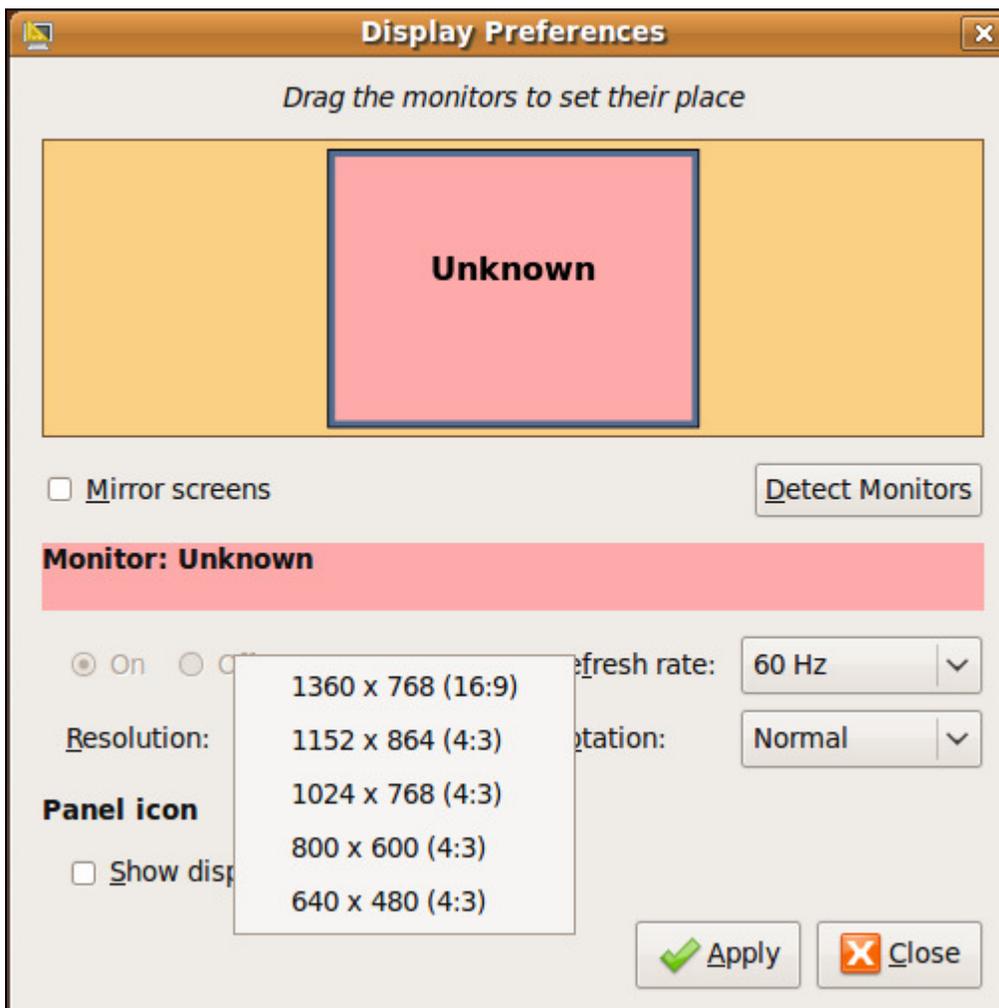


From the Sun Virtual Machine console, click on CD/DVD-ROM and verify the CD drive is mounted. Press **OK** and then restart the Virtual Machine.

Setting the Screen Resolution (All versions)



Click on System -> Display to set your desired screen resolution.



Choose a desired resolution to run at. (Your list may look a little different from this).

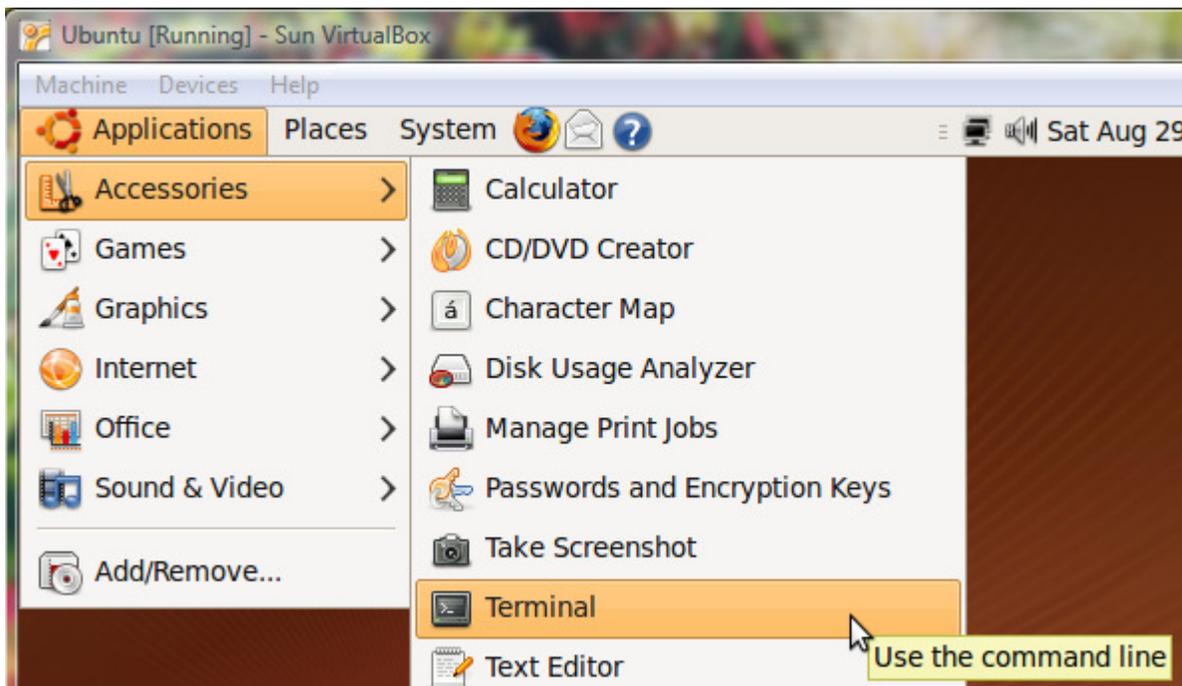
When the Resolution doesn't change

If doing this within Virtual Box and you don't get these options, double-check that in installed your Guest Additions correctly.

If you physically installed Ubuntu on your computer (like a laptop or a PC) and not in a Virtual machine and your screen resolution is only 800x600, then follow these steps to (try to) override it.

The details about how to do this were taken from this website:

<http://ubuntuforums.org/showthread.php?t=1153437>



We need a Terminal to set the display.



First backup the original file

sudo cp /etc/X11/xorg.conf /etc/X11/xorg.conf.bak

It will prompt you for your password. Since we are trying to change system files, we have to use pseudo root access. This is what sudo does for us. It runs this command as pseudo root.

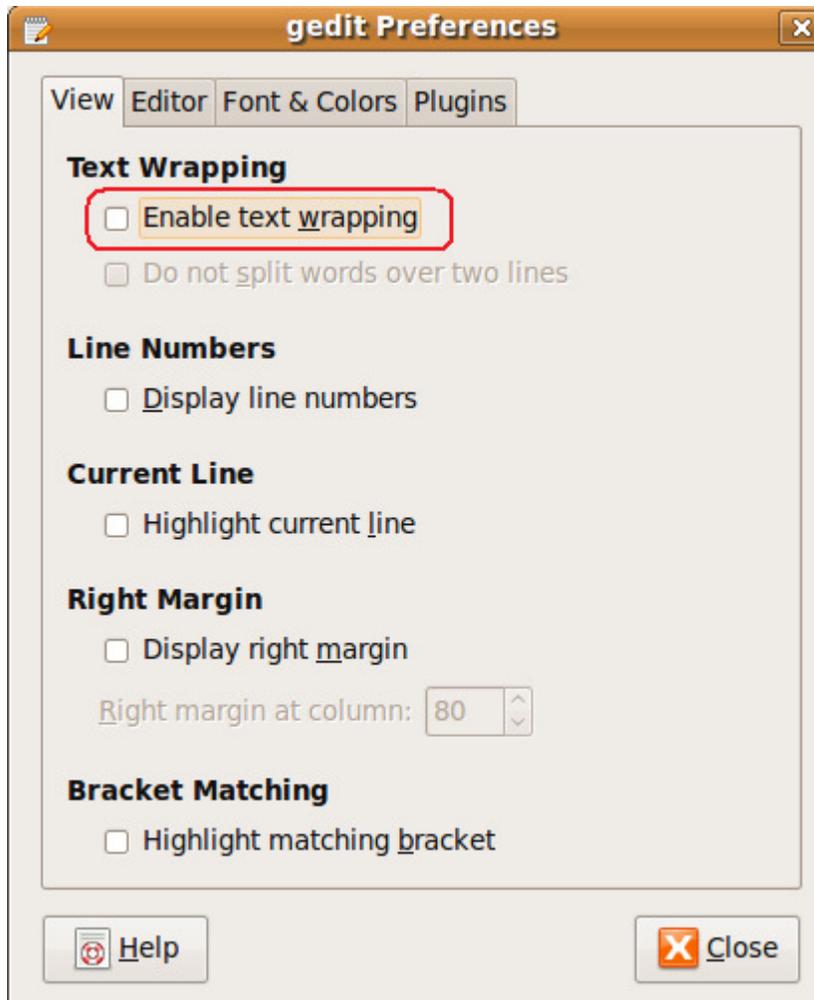
```
@omniflash-development: ~  
File Edit View Terminal Help  
@omniflash-development:~$ sudo cp /etc/X11/xorg.conf /etc/X11/xorg.conf.backup  
[sudo] password for root:  
@omniflash-development:~$ gksudo gedit /etc/X11/xorg.conf
```

Next we have to edit the configuration file
gksudo gedit /etc/X11/xorg.conf

```
xorg.conf (/etc/X11) - gedit  
File Edit View Search Tools Documents Help  
New Open Save Print... Undo Redo Cut Copy Paste Find Replace  
xorg.conf  
# Note that some configuration settings that could be done previously  
# in this file, now are automatically configured by the server and settings  
# here are ignored.  
#  
# If you have edited this file but would like it to be automatically updated  
# again, run the following command:  
# sudo dpkg-reconfigure -phigh xserver-xorg  
  
Section "Device"  
    Identifier      "Configured Video Device"  
EndSection  
  
Section "Monitor"  
    Identifier      "Configured Monitor"  
EndSection  
  
Section "Screen"  
    Identifier      "Default Screen"  
    Monitor         "Configured Monitor"  
    Device          "Configured Video Device"  
EndSection  
Plain Text Tab Width: 8 Ln 1, Col 1 INS
```

This is what the default file looks like. We are going to add a section to it.

We need to turn off line wrapping. Click Edit ->Preferences



Uncheck Enable text wrapping.

```

# If you have edited this file but would like it to be automatically updated
# again, run the following command:
#  sudo dpkg-reconfigure -phigh xserver-xorg

Section "Device"
    Identifier      "Configured Video Device"
EndSection

Section "Monitor"
    Identifier      "Configured Monitor"
EndSection

Section "Screen"
    Identifier      "Default Screen"
    Monitor         "Configured Monitor"
    Device          "Configured Video Device"
    SubSection      "Display"
        Depth       24
        Modes        "640x480" "800x600" "1024x768" "1280x1024"
    EndSubSection
EndSection

```

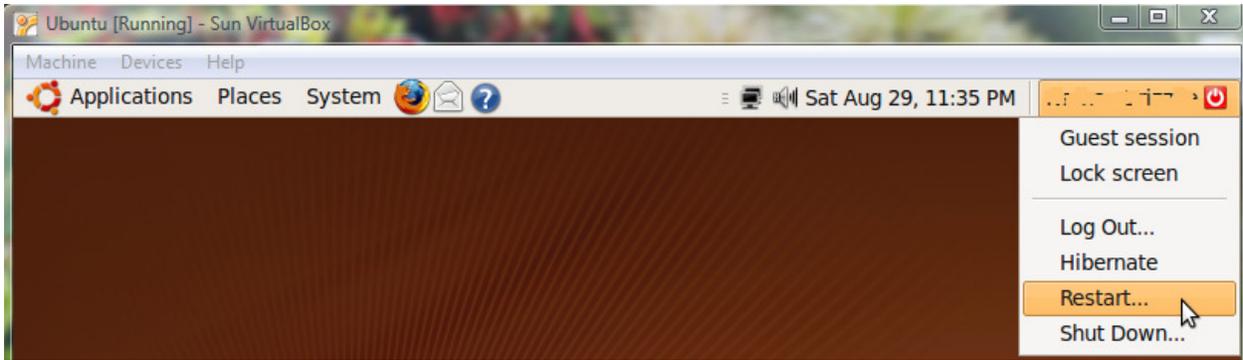
Add the following lines to the file. Case is important on the letters. Make sure you press the **TAB** key **ONCE** to move the cursor to the start locations then use spaces to get it to align somewhat like shown above. There needs to be only **ONE tab** character on the beginning.

```

    SubSection "Display"
        Depth    24
        Modes    "640x480" "800x600" "1024x768" "1280x1024"
    EndSubSection

```

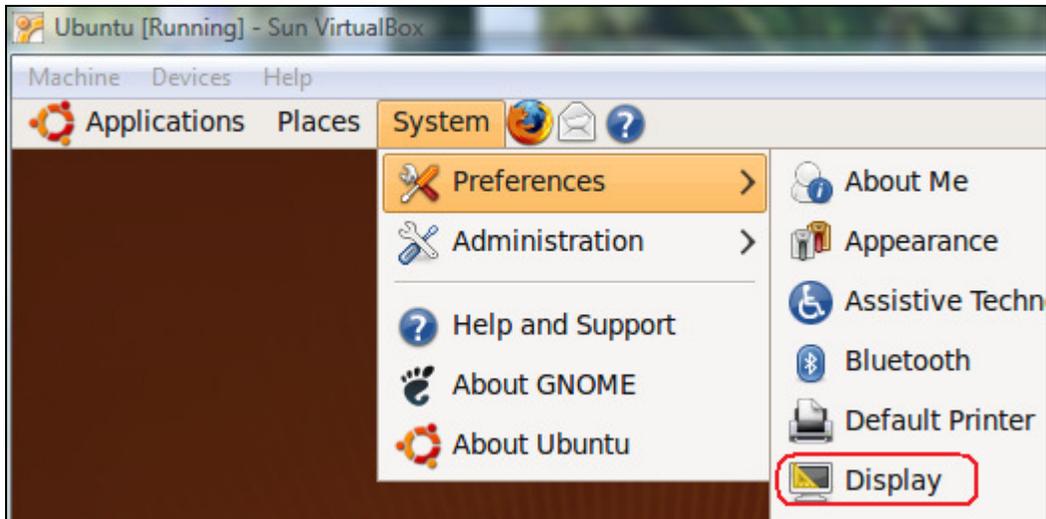
Now click **Save** and then close the editor. You can close the terminal as well. We need to **reboot** in order to make the settings available.



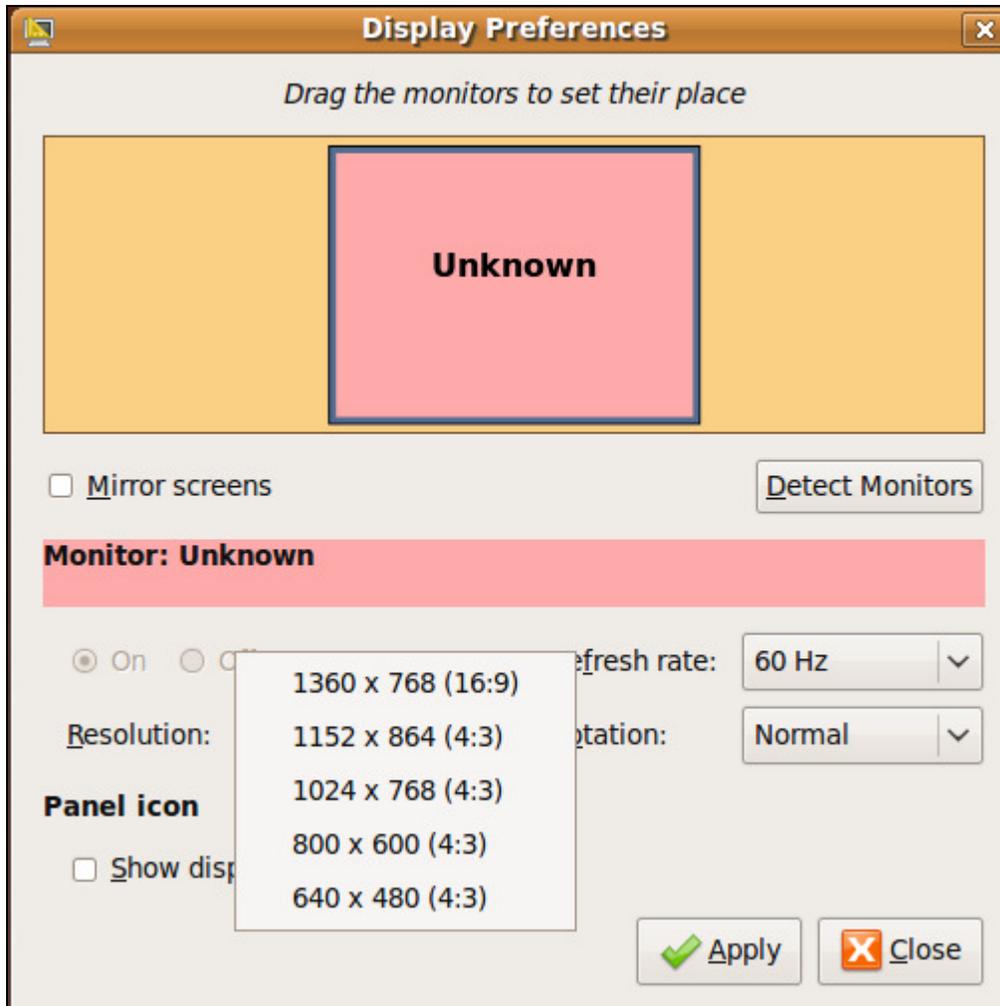
Click your name.

Now Restart.

Now you should be able to change your display settings.



Click on System -> Display to set your desired screen resolution.



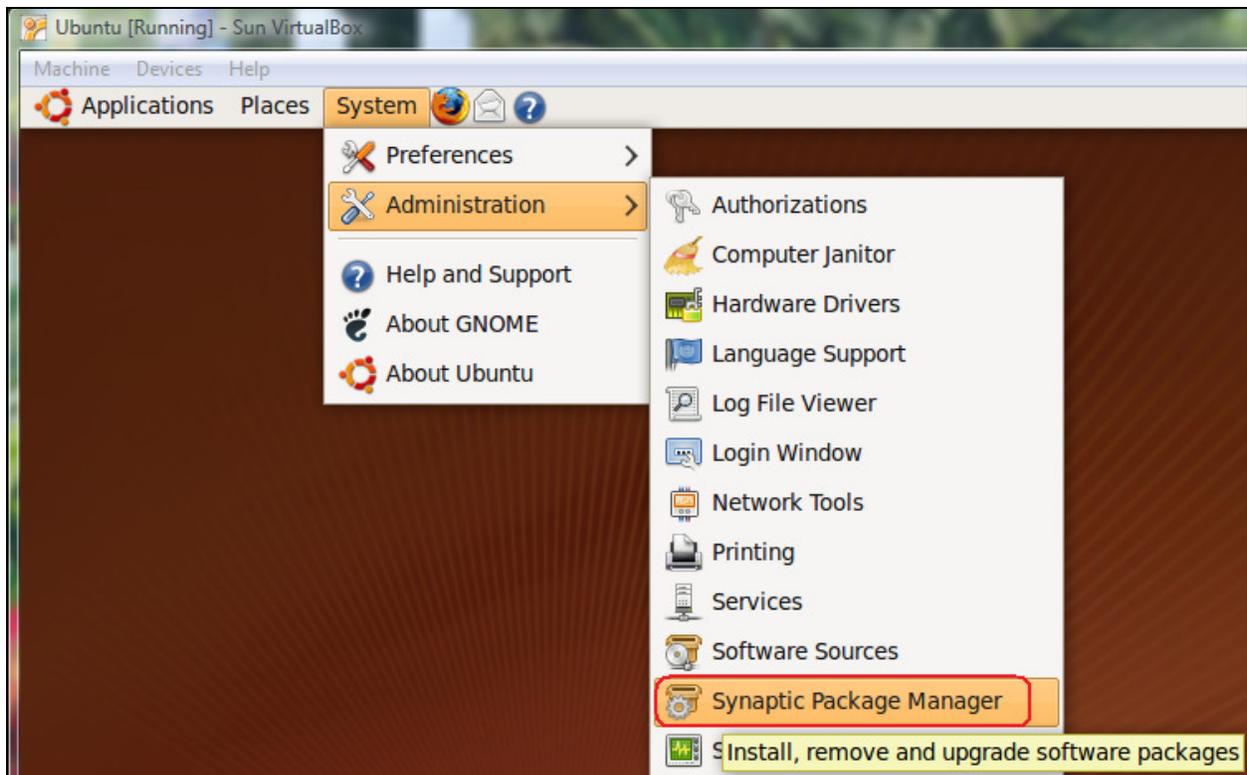
Choose a desired resolution to run at. (Your list may look a little different from this).

Additional software to make Ubuntu usable

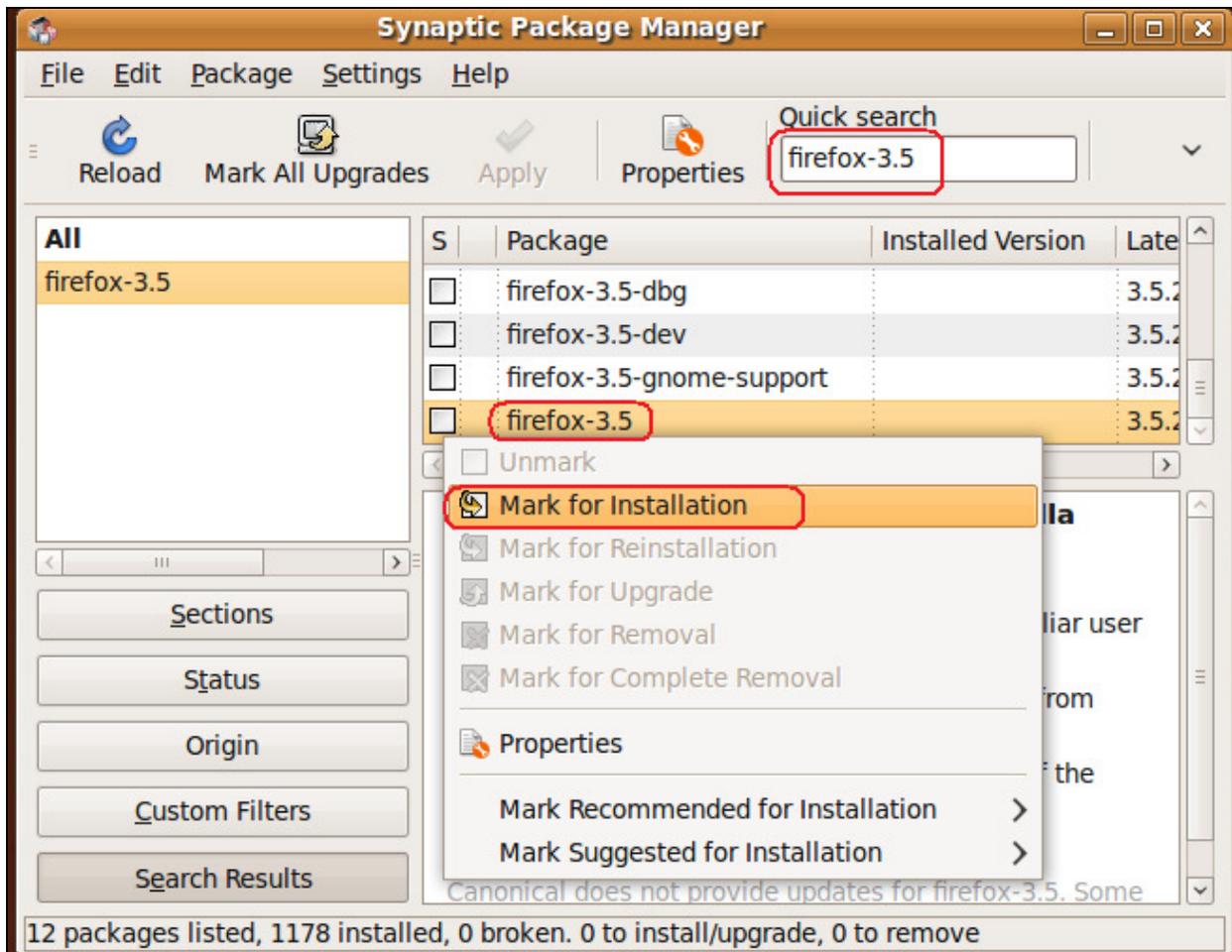
The system is now usable, but there are some programs and drivers that make Ubuntu work a lot better and make it more compatible with websites and all around life.

Synaptic Package Manager

Most software is easily installable via the Synaptic Package Manager. This manager lets us Install, Reinstall or Uninstall software packages and drivers.

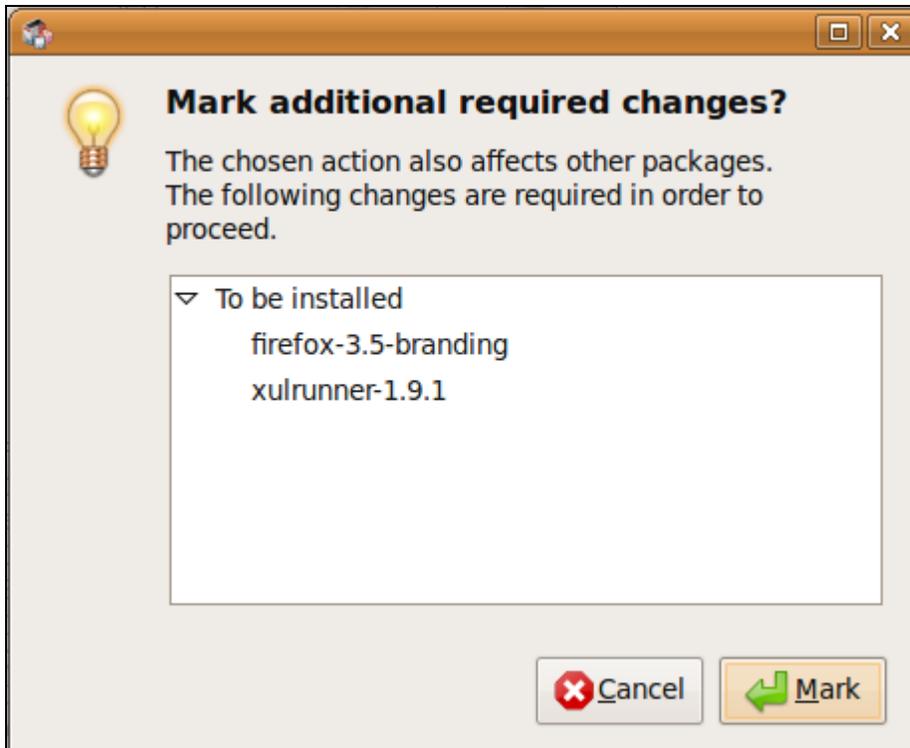


Click System -> Administration -> Synaptic Package Manager.

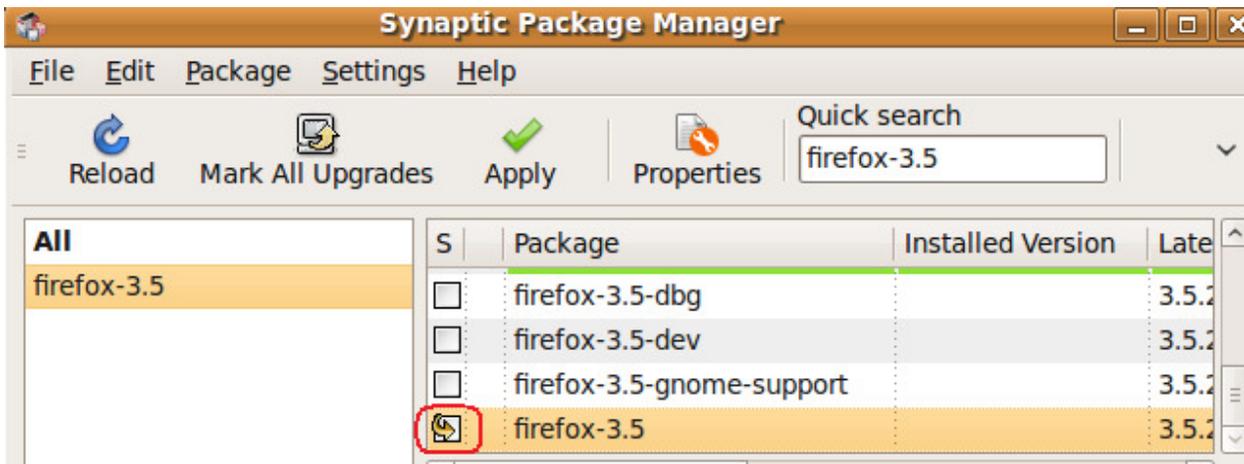


Using the Quick search, we will look for certain packages to install.

- 1.) Type the name into the Quick search.
- 2.) Click the box next to the package to install. A list of options will pop up.
- 3.) Mark for Installation the package.

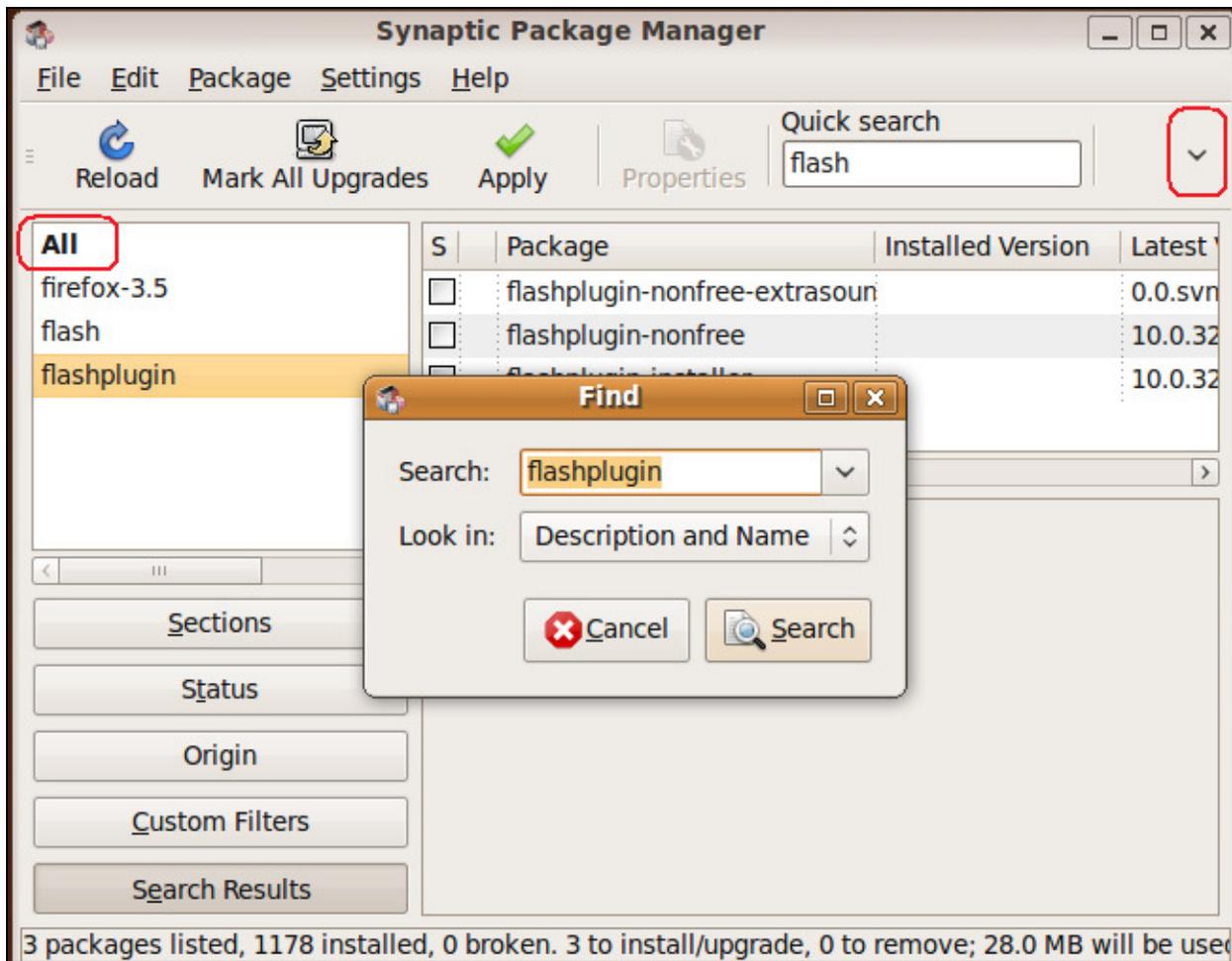


When asked about additional packages, click the Mark button.



Notice our option now contains an arrow indicating that we want to install this package.

If the Quick search doesn't list what we are looking for, then we can use the search button.



Click the down arrow to the right of the Quick search. Type in a piece of what you are looking for and press the search button. Also, if your list doesn't return anything, make sure you click the **ALL** button on the left side of the screen. This is a filter.

Here are the packages that I think are a minimum for a good operating system experience:

Note: Some of this was taken from the website:

<http://theindexer.wordpress.com/2009/04/24/to-do-list-after-installing-ubuntu-904-aka-jaunty-jackalope/>

The software list

- 1.) **firefox-3.5** (or whatever the latest version is). Ubuntu 9.04 comes with version 3.0
- 2.) **flashplugin-installer** (Adobe Flash player)
- 3.) **sun-java6-bin** (Java Run time and compiler)
- 4.) **sun-java6-plugin** (java web browser plugin)
- 5.) **gststreamer0.10-plugins-bad** (streaming audio codecs)
- 6.) **gststreamer0.10-plugins-ugly** (more streaming audio codecs)

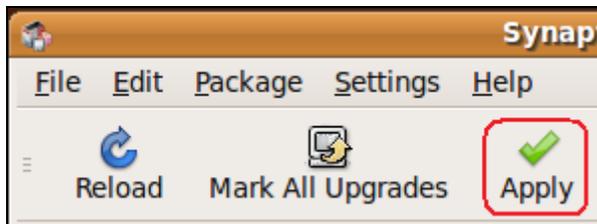
- 7.) **gststreamer0.10-ffmpeg** (even more streaming audio codecs)
- 8.) **gparted** (if you want to be able to resize your partitions)
- 9.) **compizconfig-settings-manager** (Cool desktop effects - like desktop cube, etc. Works best when not in a virtual machine.)
- 10.) **screenlets** (Similar to Windows Vista's gadgets. Has a clock, calendar, temperature, etc.)
- 11.) **wine** (This is optional. This allows many Windows programs to be installed and run under Linux.)

Software list for developers

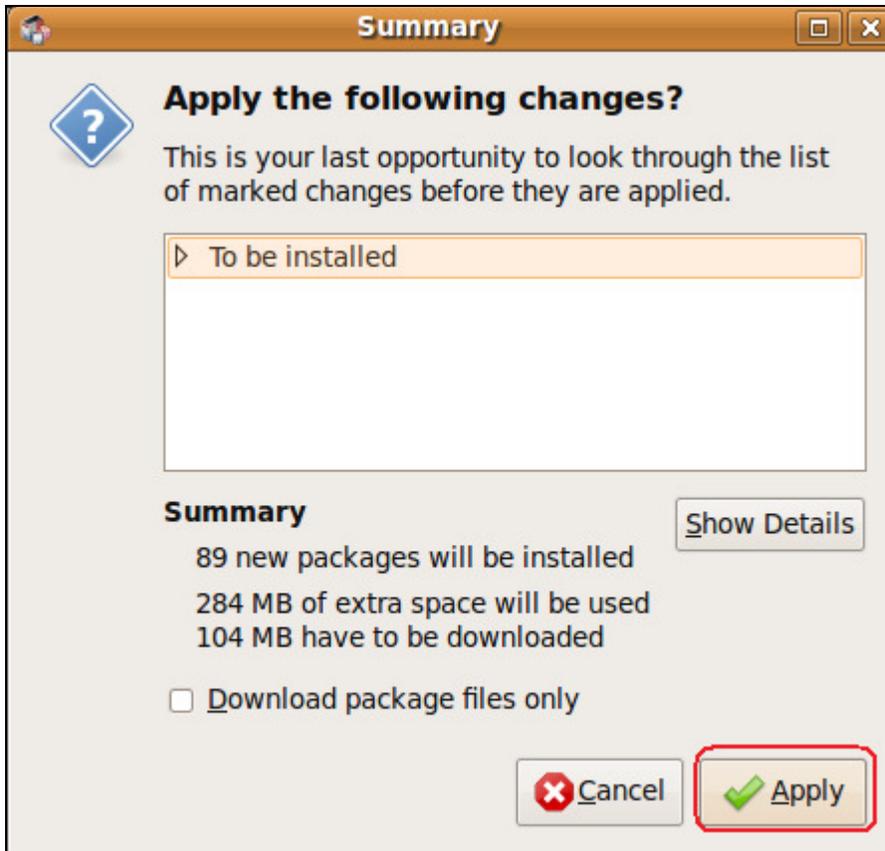
If you want to develop C programs and / or want to interface to embedded systems (via the serial port), here are some more programs that are needed.

- 1.) **g++** (The C++ compiler)
- 2.) **codeblocks** (A really nice editor)
- 3.) **codeblocks-contrib** (Add-ins for codeblocks)
- 4.) **cutecom** (Serial client for X, Y, and Z modem file transfers)
- 5.) **lrzsz** (Underlying program used by cutecom)
- 6.) **putty** (Nice terminal program)
- 7.) **gtkterm** (This can be installed instead of putty or install both)
- 8.) **xutils-dev** (tools like makedepend, etc.)

Installing the selected packages



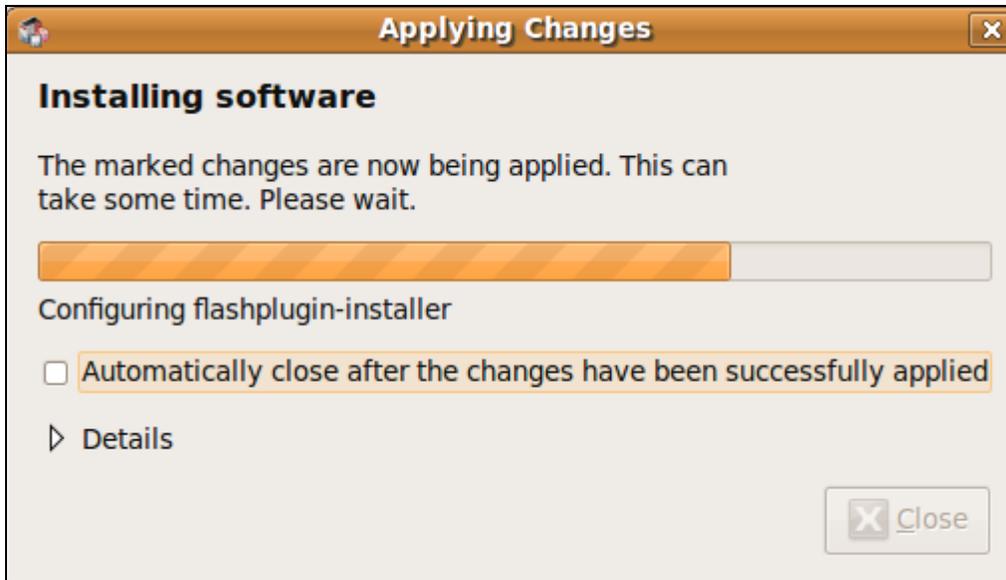
Once we have selected all the packages we want, click the Apply button.



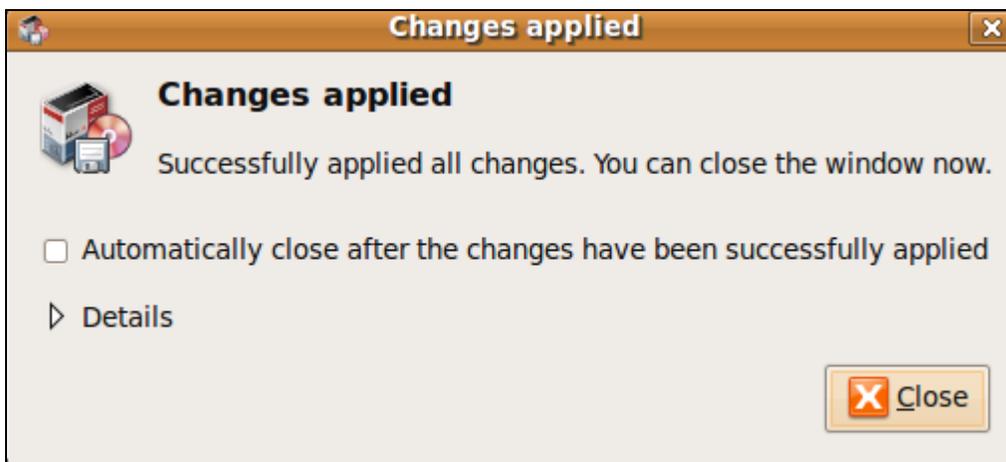
Click the Apply button here also.



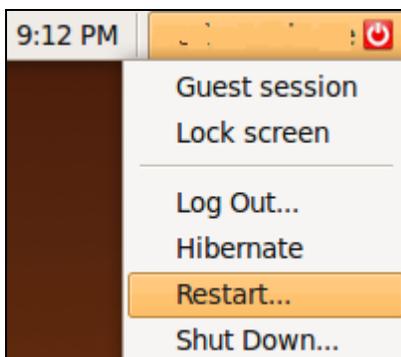
Sit back and wait while everything is downloaded.



Watch everything be installed.

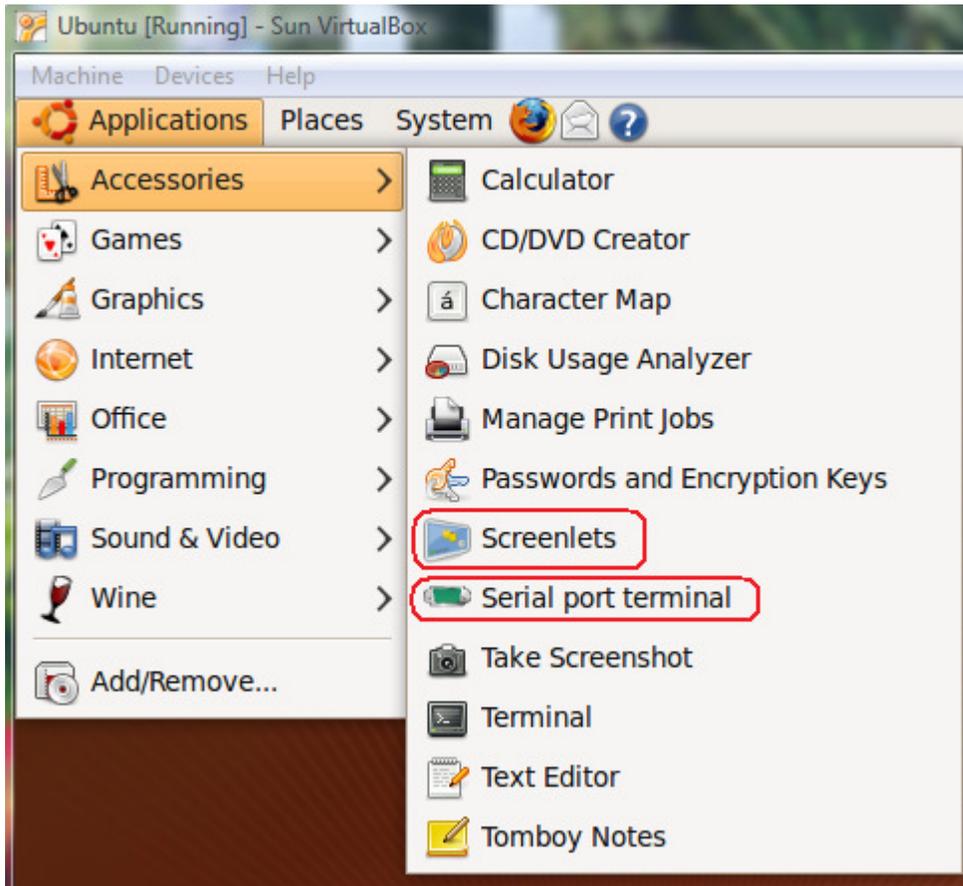


Click close when it's done. Then close the package manager.

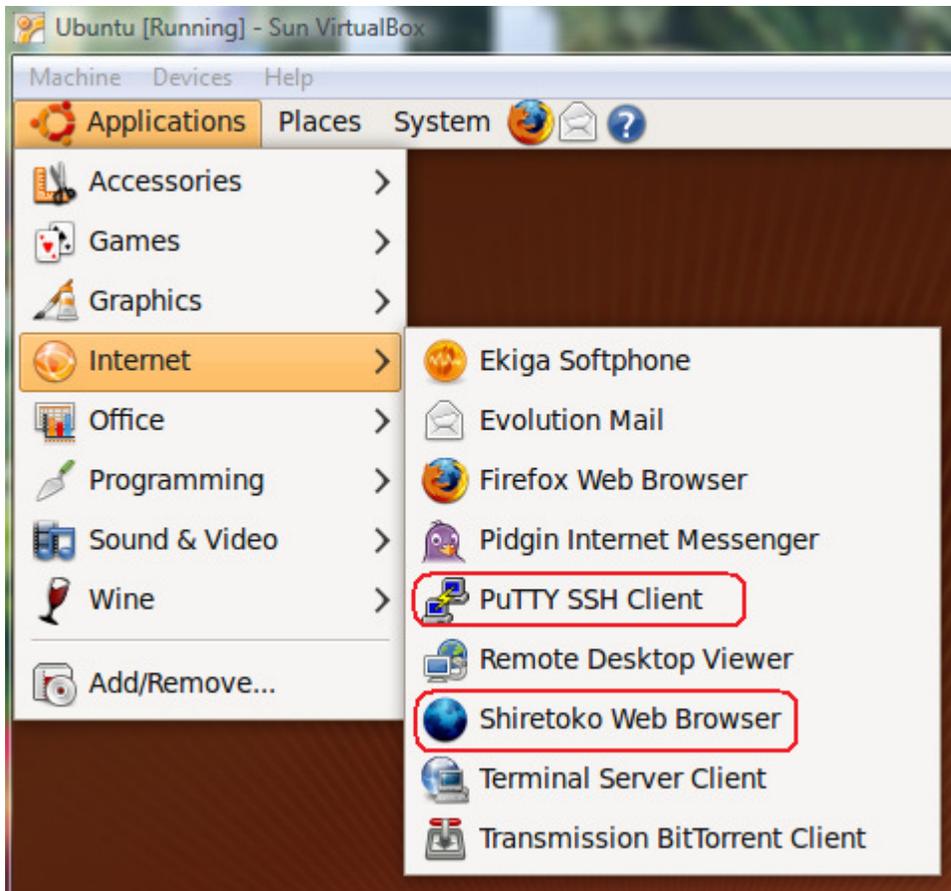


Even though it doesn't say so, we need to **Restart** so all the icons show up correctly.

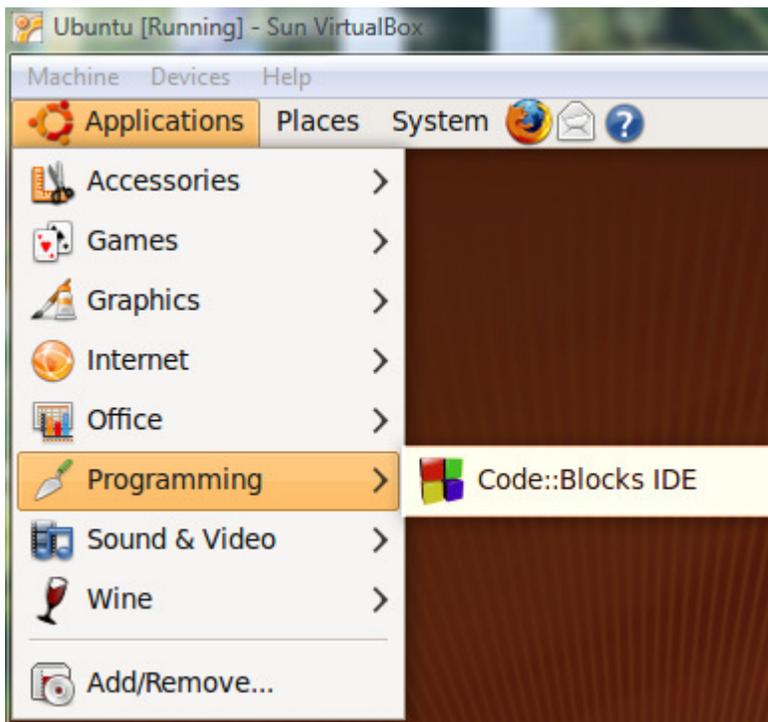
Finding the applications we installed



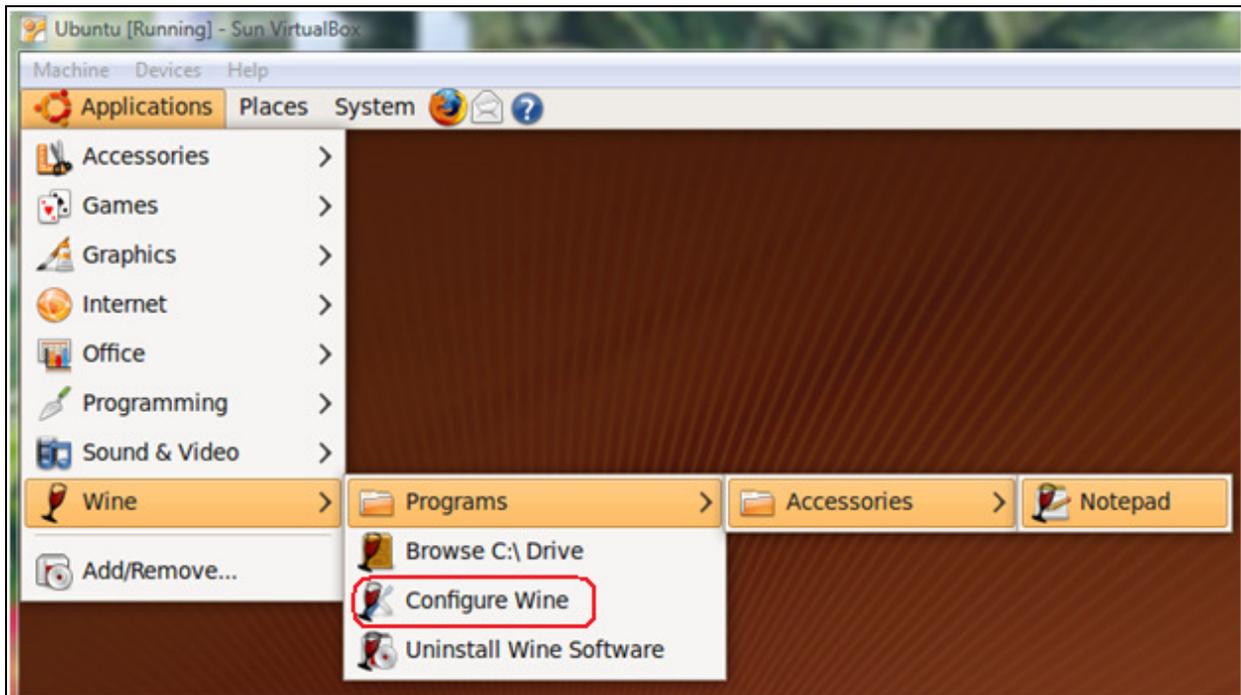
You may be asking yourself where everything ended up. Under Accessories, you will find **Screenlets** and **gtkterm**.



Under Internet you will find **PuTTY** and **Firefox 3.5**.



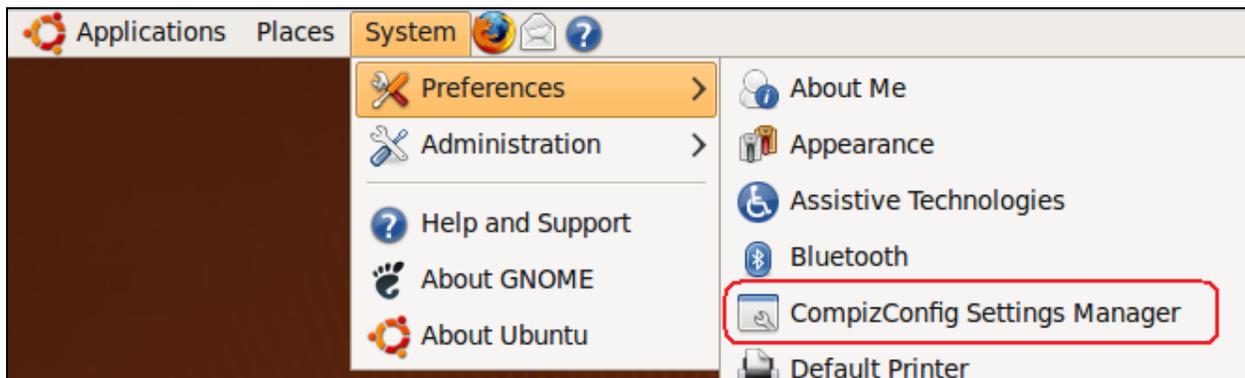
Under Programming you will find **Code::Blocks** Code editor.



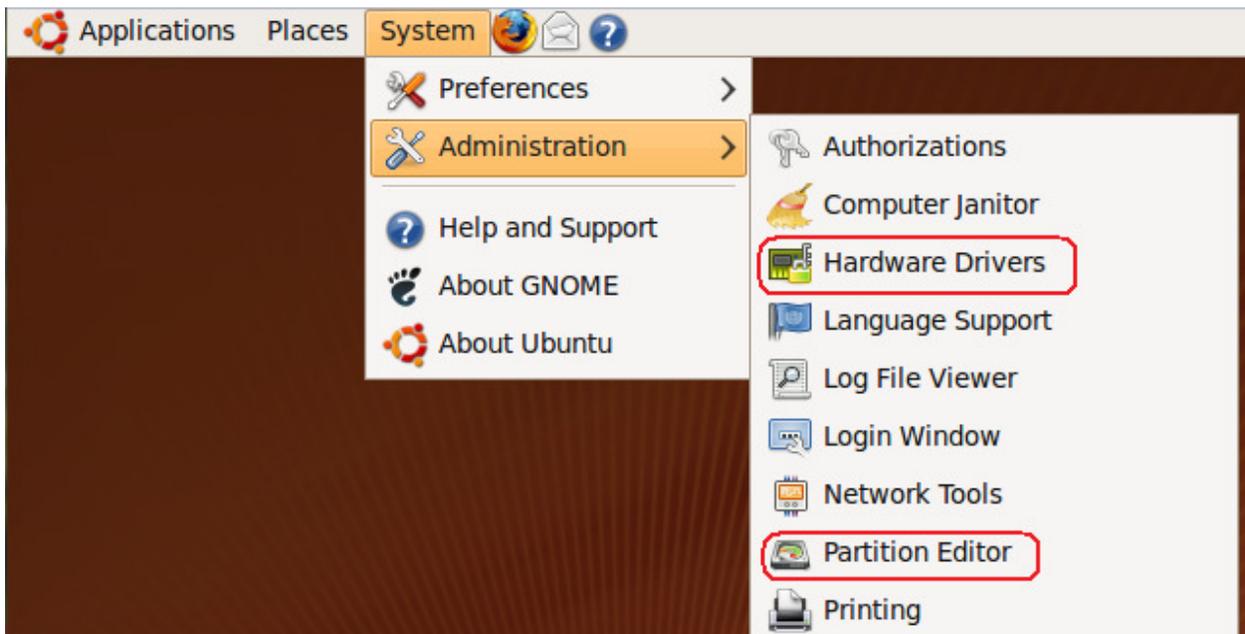
Under Wine, you will find the Windows emulation software. You need to configure Wine the first time and enable the audio device. Click **Configure Wine** to do this.



Click the Audio tab and the following dialog box will appear. Click OK. Then click OK to close the Wine control panel.



The CompizConfig Setting Manager is on the preferences bar. This controls a lot of different graphics options which are beyond the scope of this document (but really neat).



Partition Editor is on the Administration tab called Partition Editor. You can edit Windows partitions as well as Linux ones.

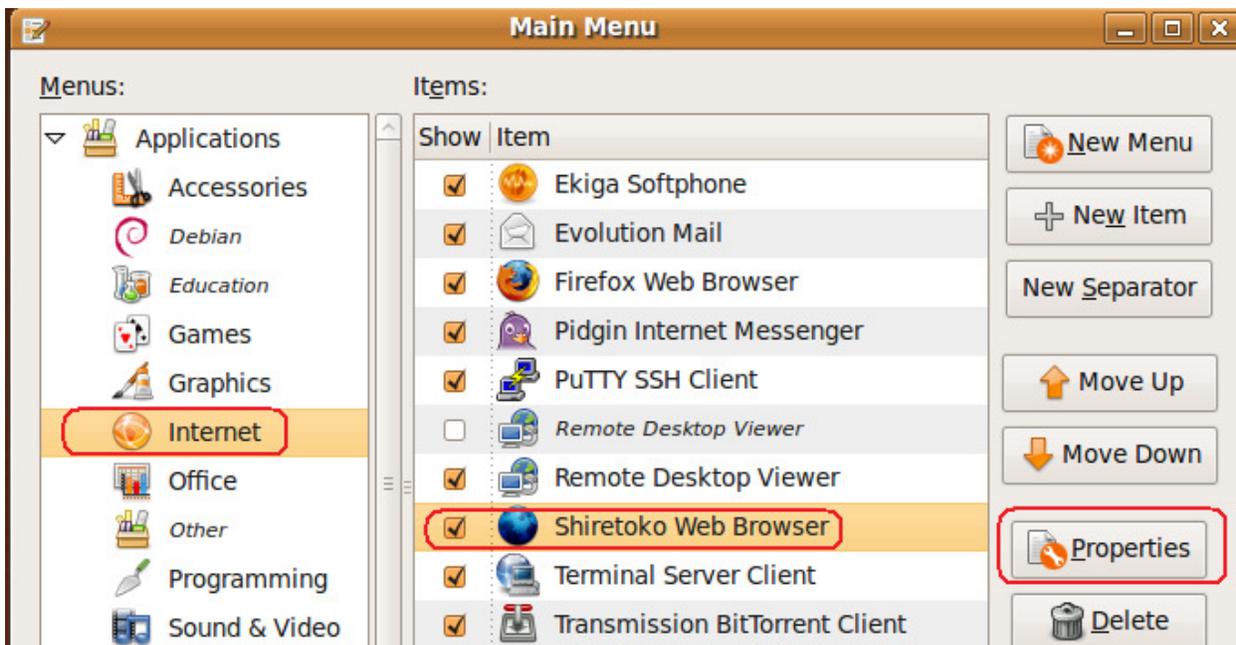
The Hardware Drivers option is for installing special drivers - like Graphics card drivers. If you installed Linux outside of a Virtual Machine onto a real machine and you have an NVidia graphics card, press this button to download the graphics drivers from NVidia for Linux. This really makes the Compiz options work well.

Updating the link for the web browser

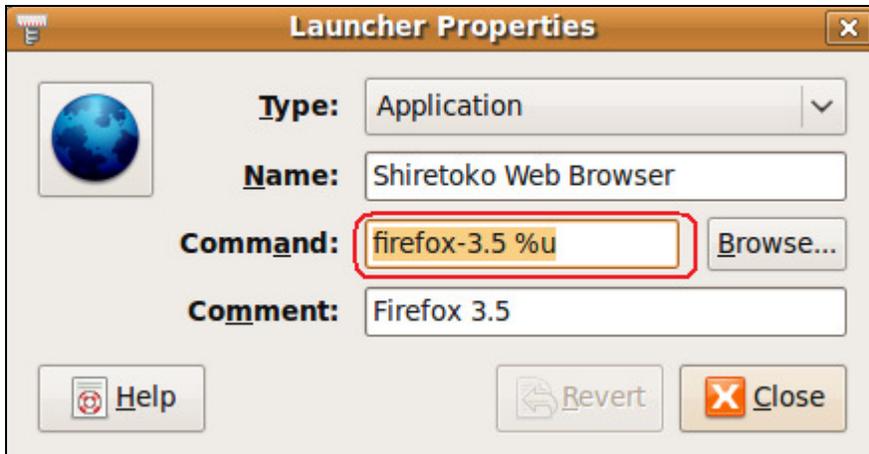
The last recommendation I have is the change the launch icon for Firefox to the latest version we just downloaded.



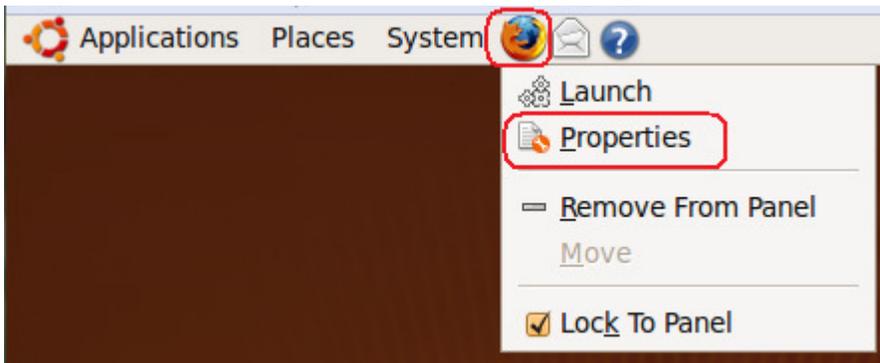
Right-click on the Applications button and choose Edit Menus.



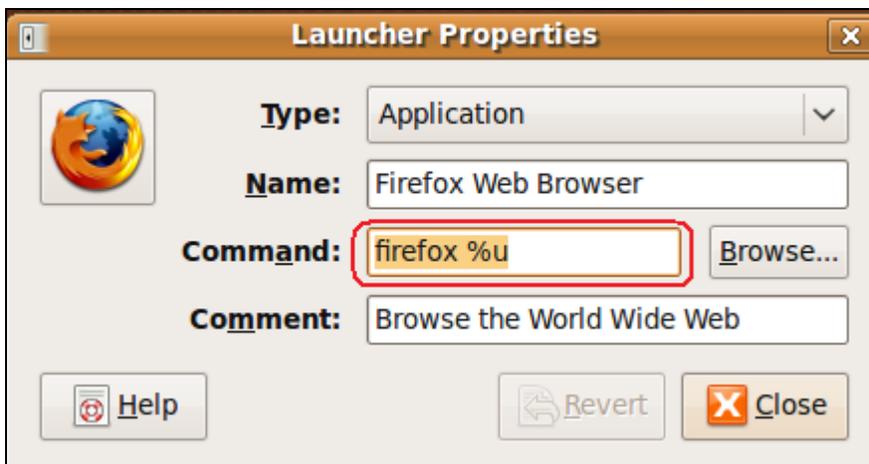
Select Internet -> Shiretoko Web Browser (or whatever the new browser is that you downloaded). Click the Properties button.



Take note of the Command line. For Firefox 3.5, the command line is **firefox-3.5 %u**
We can close out of the Launcher Properties and the Main Menu editor.



Right-click on the icon for Firefox 3.0 and click properties.



Change the command line from **firefox %u**

TO

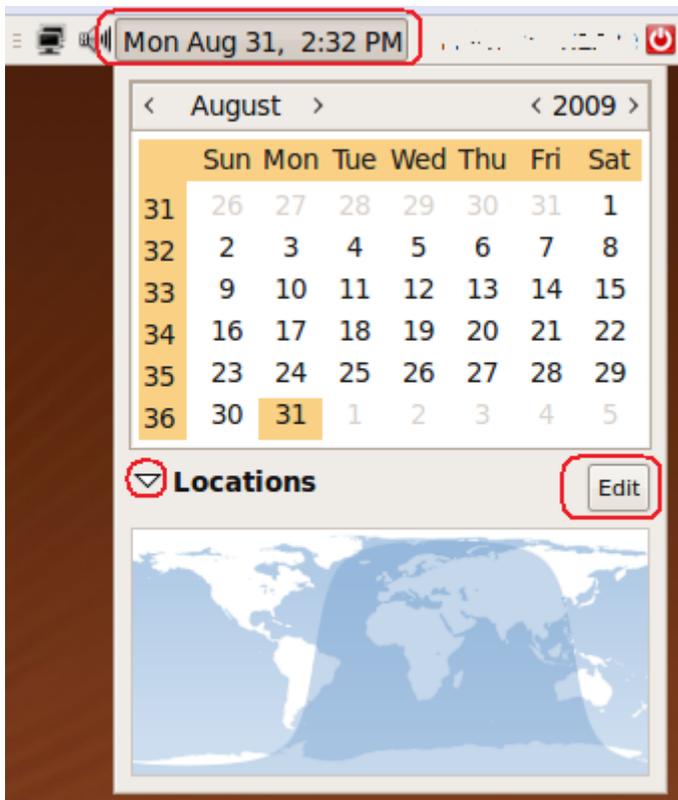


The command we saw for the latest version of Firefox which in this case is **firefox-3.5**. Click **Close**.

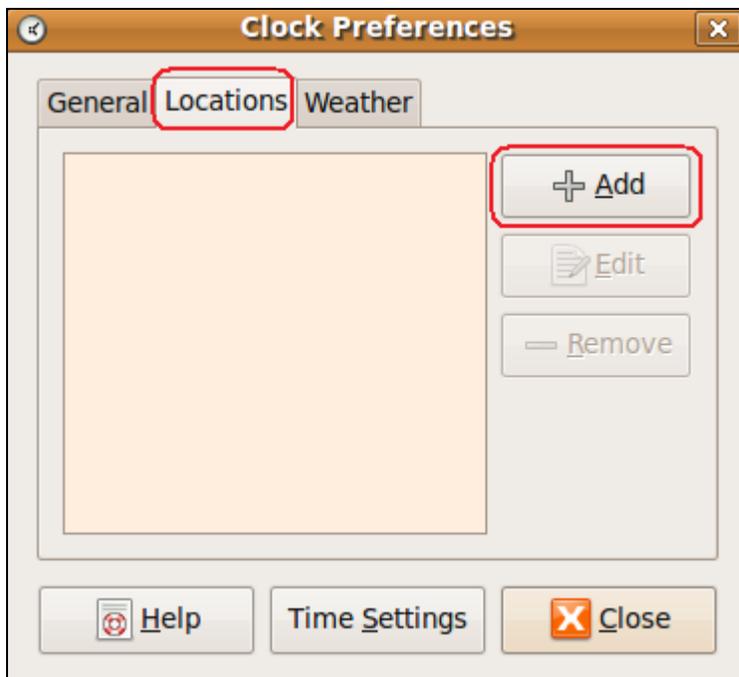
Now when you click this button, Firefox 3.5 will launch instead of firefox 3.0. (Note, web links will still open with Firefox 3.0 as we didn't change the file association for those.)

Note: If your company has a Proxy server for internet access, you will have to configure Firefox to use the proxy server.

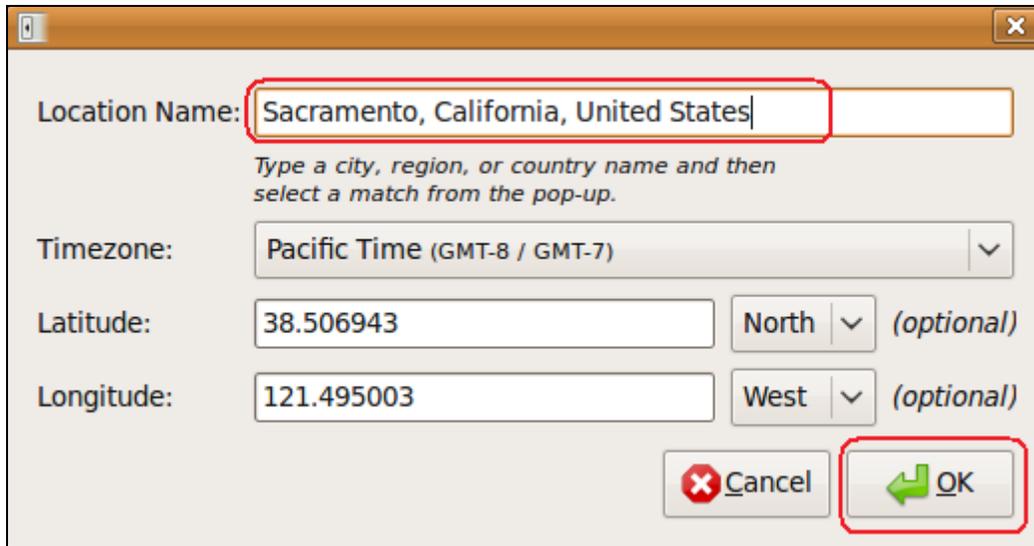
If you like to have the temperature shown on your desktop or if you travel to different timezones, you can enable multiple timezones in Ubuntu.



Click your Date/Time button. Then click the drop down arrow by Locations and click the Edit button.

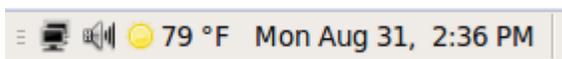


Click the Locations tab if it isn't already selected. Click the +Add button to add a location.



Type a major city in the Location Name: box that is near you. Then press OK.

Then click the OK button and then the Date/Time button at the top of the screen.



Voila! Weather information for your area. You can add multiple Location areas and then switch back and forth as you travel.

Final Notes

There you have it. How to install Ubuntu and get it working. I hope you enjoy your Linux environment.

If you installed Ubuntu inside a Virtual Machine, you can export this machine to another computer and it will be all set up ready to go. The only thing you have to install Sun's Virtual Box on your Windows system and then import the machine and configure the Virtual Machine's settings.