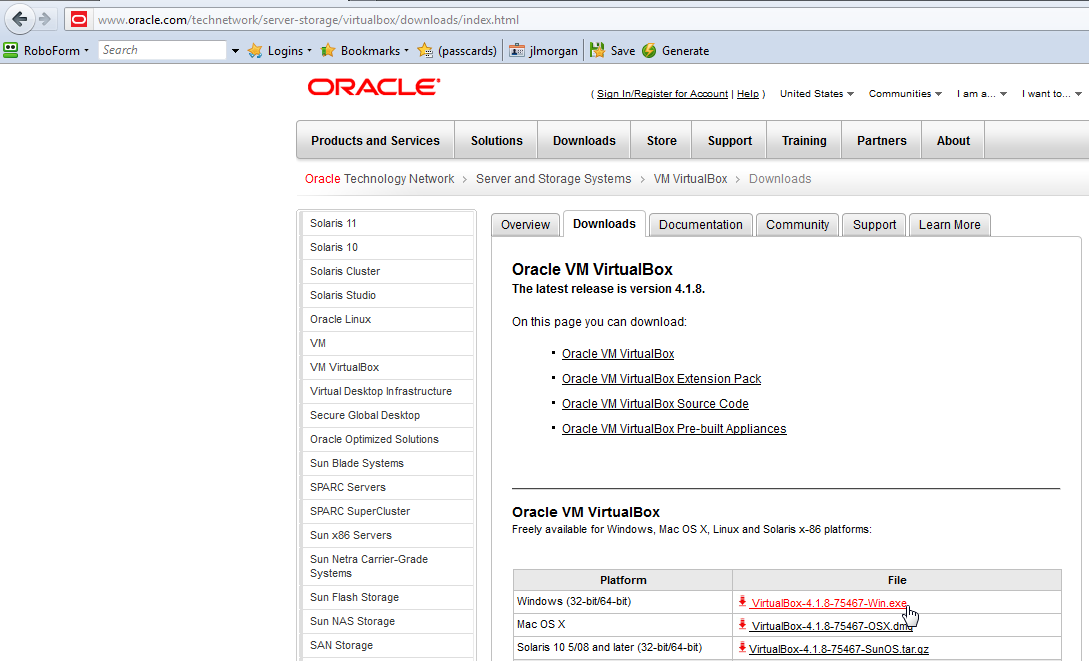
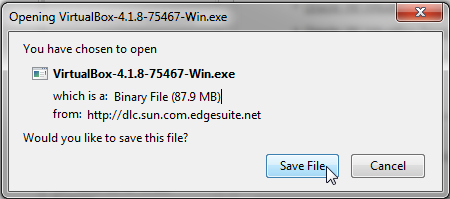
**Installing Fedora 14 Linux on your Laptop or Home PC**

**Task 1: Download and Install VirtualBox**

Direct your browser to [www.oracle.com/technetwork/server-storage/virtualbox/downloads](http://www.oracle.com/technetwork/server-storage/virtualbox/downloads), and click on the link for the Windows (32/64 bit) version of VirtualBox.

****

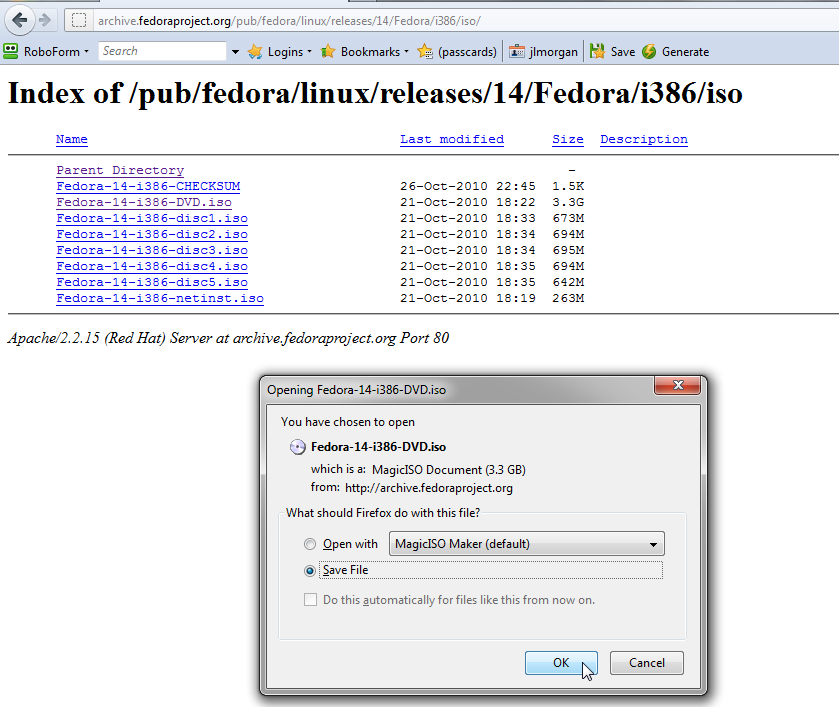
****

Download the VirtualBox installation program. Open Windows Explorer and double-click on the saved program to begin the installation. Install the programs with all the default settings.

**Task 2: Download Fedora Linux Release 14**

Open your browser to <http://archive.fedoraproject.org/pub/fedora/linux/releases/14/Fedora/i386/iso>

and click on *Fedora-14-i386-DVD.iso* to download the Fedora installation image.



***Note****: If you would like to install the 64-bit version of Fedora, open your browser to* [*http://archive.fedoraproject.org/pub/fedora/linux/releases/14/Fedora/x86\_64/iso*](http://archive.fedoraproject.org/pub/fedora/linux/releases/14/Fedora/x86_64/iso) *and click on Fedora-14-x86\_64-DVD.iso to download the Fedora installation image.*

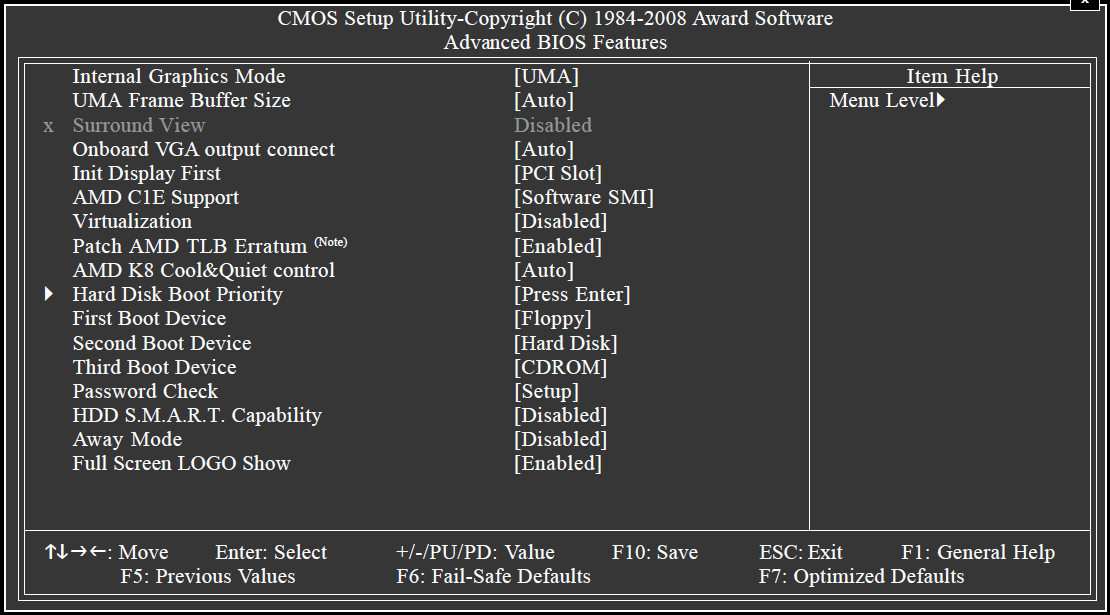
**Task 3: Activate Hardware Virtualization on Your Computer**

Your computer may or may not support hardware virtualization. It is primarily a feature of the CPU.

Click on the link below to download a free Microsoft utility that can check to see whether your processor (CPU) supports virtualization and whether it is activated.

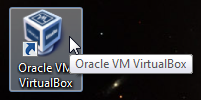
[**http://www.microsoft.com/download/en/details.aspx?displaylang=en&id=592**](http://www.microsoft.com/download/en/details.aspx?displaylang=en&id=592)

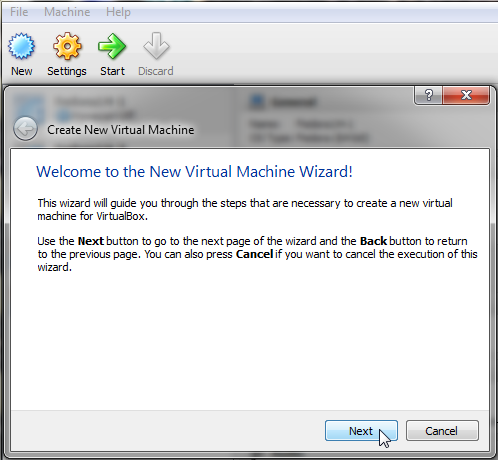
Even if your CPU supports virtualization, it must be activated in your CMOS boot settings. As your computer boots up, press the key that opens CMOS setup menus. The key press depends on the computer and the BIOS manufacturer. It may be <F2>, <F10>, or, on some computers, the <Delete> key. The key that opens CMOS is very briefly displayed as your computer boots up. When you see the message, press the key immediately. Browse the menus and look for a virtualizationoption. Below, you can see that it is disabled on this computer. For this CMOS setup, use the arrow keys to select virtualization and press the PgUp and PgDn keys to change the setting. Press <F10> to save your changes.

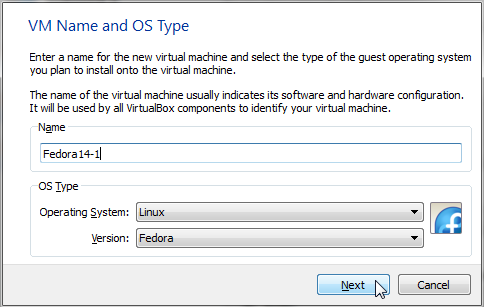
****

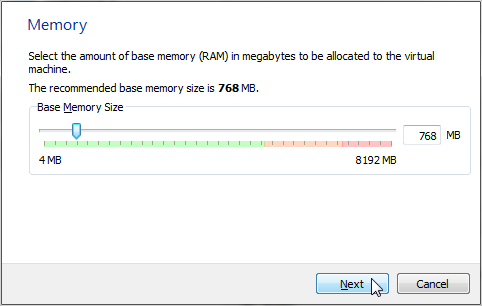
If the Microsoft utility shows virtualization capability, but there is no option to enable in CMOS, you may need to download and install a CMOS BIOS upgrade.

**Task 4: Open VirtualBox and Create a Fedora 14 Virtual Machine**

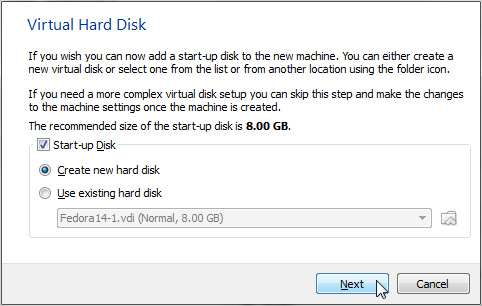
Double-click on the *Oracle VM VirtualBox*icon on your desktop to open VirtualBox.



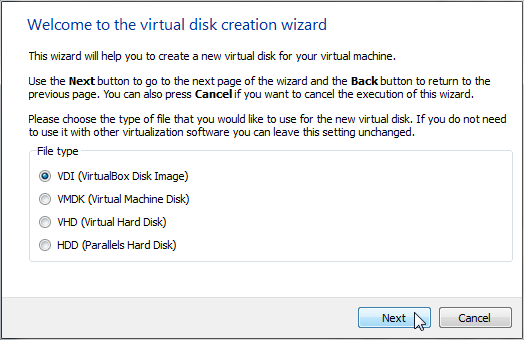
Click on the *New* toolbar icon to create a new virtual machine. Click the *Next*buttonon the first dialog that appears.

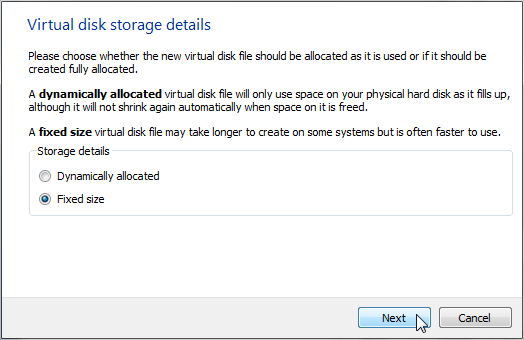


As shown above, select Linux as the operating system and Fedoraas the version. Select Fedora 64 as the version if you are installing the x86-64 version of Fedora. Type Fedora14-1as the name of the new virtual machine. Later, we will clone this VM to create a second VM named Fedora14-2.

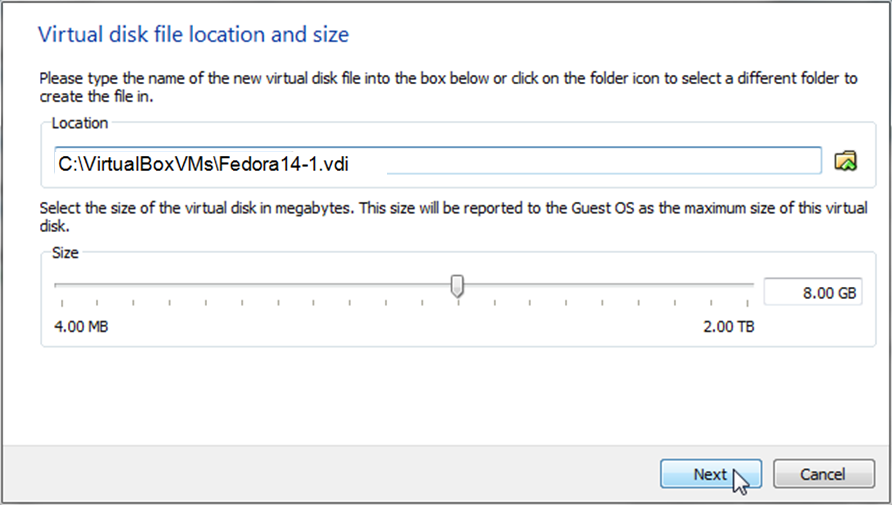
Click Nextand select 768 MBas the base memory size, as shown on the right.

Click Nextand select the *create new hard disk*option. Note that the recommended size is 8.00 GB.This will be a good size for our Fedora 14 virtual hard disk. Click Nextto continue the virtual hard disk creation process.

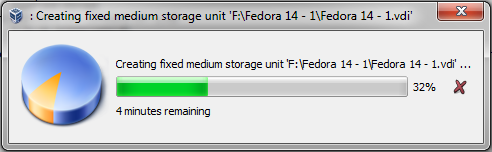
Use the default *VDI (virtualbox disk image)*as the file type and click Next.



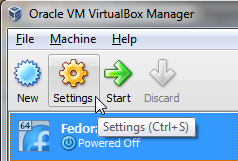
In the *virtual disk storage details* dialog, select fixed sizeand click Next.

For the location of your virtual disk file, I suggest that you create a new directory called *C:\VirtualBoxVMs\*to create the Fedora14-1 virtual disk. Keep the size set to 8GB. If you have more than one drive on your computer, select a drive that has plenty of room for the 8Gvirtual disk.

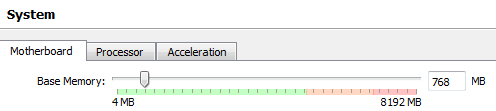
In the next dialog, click createto start the virtual drive creation.



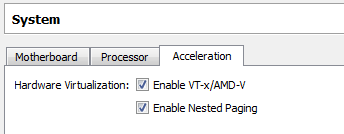
It may take a little while to create the virtual drive. A progress bar will tell the estimate time remaining to complete the drive creation.



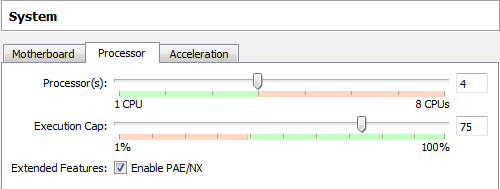
After the virtual hard disk has been created, it will appear in VirtualBox as one of the virtual machines. Select the Fedora14-1 VM and click Settings on the tool bar.



Open the Motherboard tab under system, and verify that the base memory is set to 768 MB.

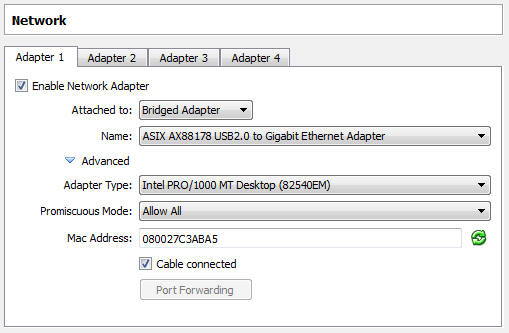


Open the Acceleration tab under system settings and (if you were able to activate virtualization) set Enable*VT-x/AMD-V and enable nested paging*. Leave these check boxes un-checked if you were not able to activate virtualization.

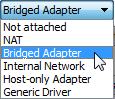


Open the Processortab under system settings and select the number of processors supported by your CPU. *Note: If virtualization is not enabled, select only 1 CPU.*

Under network settings, check enable network adapter.



Select *bridged*for the lab computer. For name, select your wired Ethernet card (not your wireless adapter).

Expand the *advanced*options and under *promiscuous mode:* select allow all. The allow all is required for Internet access. If you don’t need Internet access, you can select allows connections to other computers in the local network and access to the Internet.

*Note: NAT**doesn’t work well with multiple Fedora 14 VMs. Internal network**is used where VMs can interact with static IPs with no local network or Internet connectivity. Host-only is the same, except addresses are assigned to hosts.*

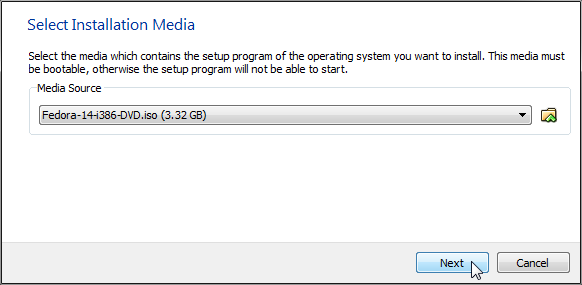
**Task 5: Install Fedora 14 on the Virtual Machine**

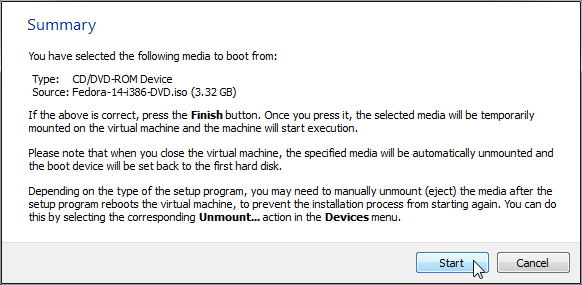
In VirtualBox, double-click on the Fedora14-1 icon to power up the

virtual disk to install Fedora 14 from a CDROM or iso image.

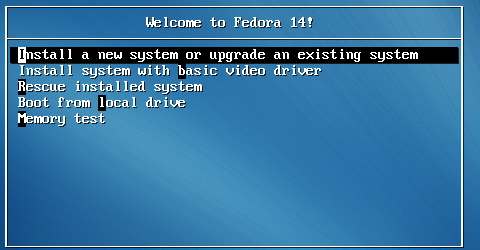
Click Next when you see the First Run Wizard welcome screen.

|  |
| --- |
|  |

In the Select Installation Mediadialog, select the *DVDROM drive* or the location of the Fedora-14 iso image file.



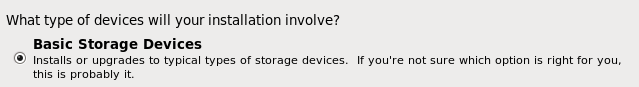
As the summary suggests, the Fedora iso image file acts as a virtual DVD-ROM device. Click Start to begin the Fedora 14 installation.

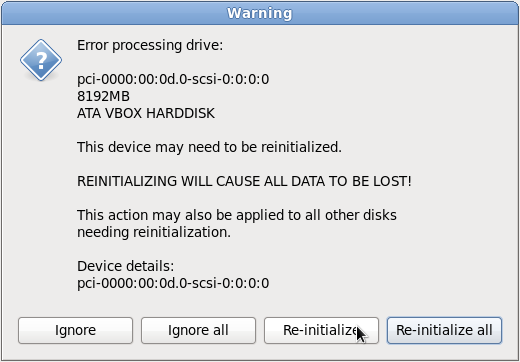


Use the arrow keys to select *install a new system or upgrade an existing system* and press <Enter>.

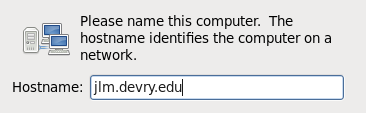
The next dialog will ask if you want to perform a media test of your virtual DVD. Press <Tab> to highlight Skip and press <Enter>.

After skipping the media test, a graphic user interface (GUI) will open to continue the installation.

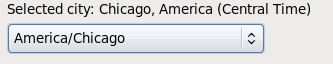
On the next screen, select basic storage devicesand click Next.

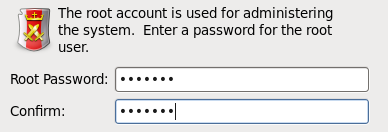


If you get the warning dialog shown on the right, click the re-initializebutton.

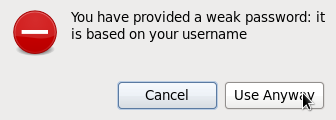


When prompted for a host name for this computer, enter your three initials followed by *.devry.edu* (John Paul Jones, for example would enter jpj.devry.edu).

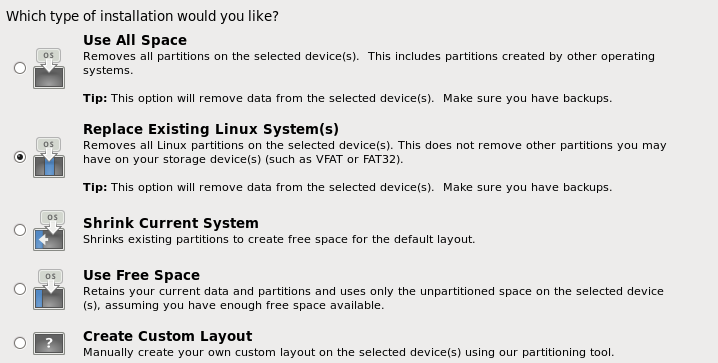
Next, select the correct time zone for your locale; America/Chicago is a good choice for the Central Time.

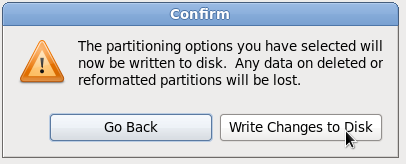


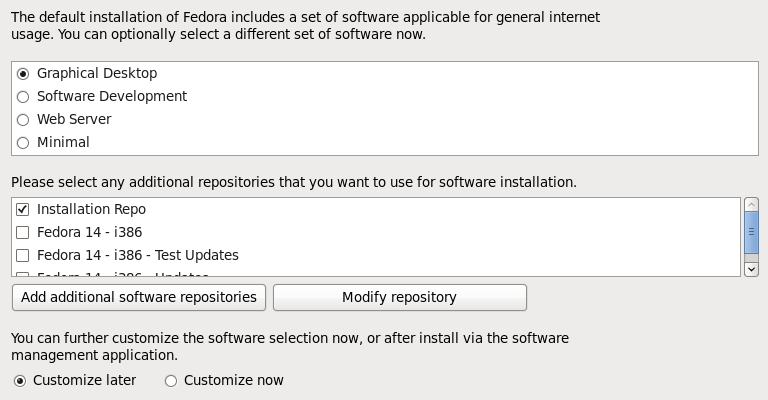
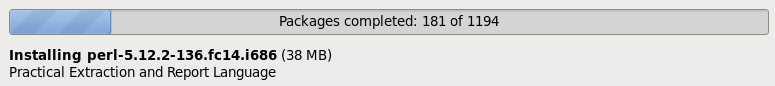
You will next be prompted for a root password. If you are using a DeVry school computer, make the *root password: student.* If you are installing this on your computer, choose something you can easily remember later.



You may get a message about a weak password, but you can override this warning by clicking *Use Anyway.*

On the next screen, select *Replace Existing Linux System(s).*

  
  
Click Nextand confirm your choice by clicking *Write Changes to Disk.*

Use the default settings for *graphical desktop,* *installation repo,* and *customize later.* Click Next to begin installing the Fedora packages.  
  
A progress bar will indicate the number of packages installed and the total number of packages to be installed.  
  
  
  
When the installation is completed, click the Re-Bootbutton.

**Task 6: Initial Setup and root user login configuration**

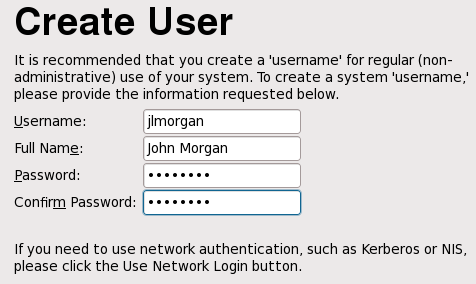
The first time the Fedora Linux image is booted, you will see a welcome screen. Click the Forwardbutton.



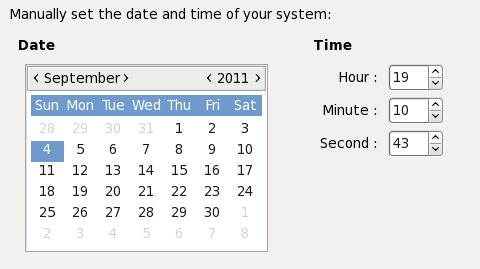
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On the license screen that appears next, also click the Forward button.





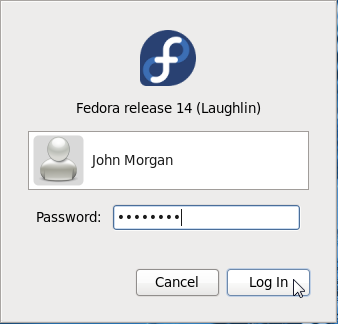
On the next screen, create a regular user. Make absolutely sure that you *remember this* username and password because you will initially login using this user information.

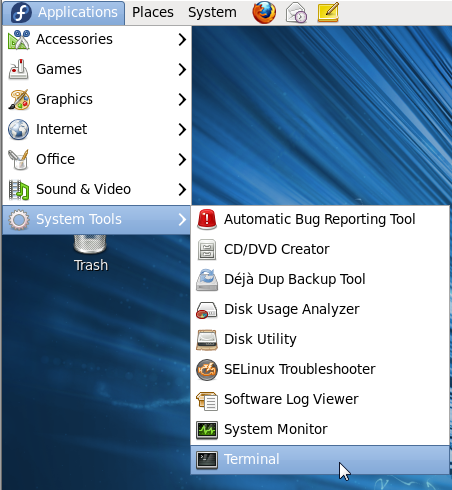
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On the next screen, set the current date and time and click the Forward button.

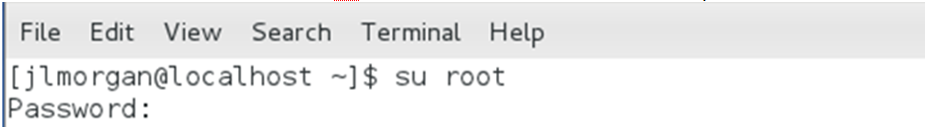


On the hardware profile screen that follows, click the Finishbutton. You will now boot into Fedora. Log in using the standard user that you created.



Open the Fedora menu and click on Terminalfrom the System Toolsmenu. This will open the Fedora command line (CLI).

In the terminal window, enter the *su root*command and enter the root password.



Now we need to install the nano text editor so we can edit the configuration files to allow root logins. *Note:**If nano is already installed, the message will be “Nothing to Do.”*







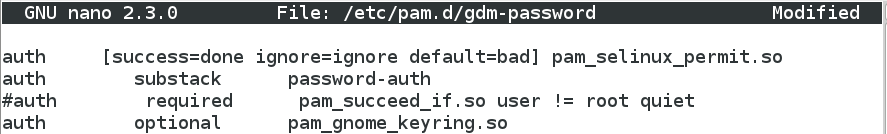
Open the file */etc/pam.d/gdm*in nano as shown below. Insert a **#** at the beginning of the line that ends with *root**quiet*. This will comment out this script line so it will not execute. Press <Ctrl>O then <Enter> to save the file changes. Press <Ctrl>X to exit.



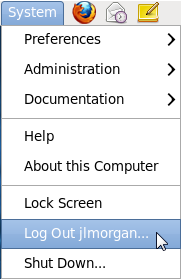


Open the file */etc/pam.d/gdm-password*in nano as shown below. Insert a **#** at the beginning of the line that ends with root quiet. This will comment out this script line so it will not execute. Press <Ctrl>O then <Enter> to save the file changes. Press <Ctrl>X to exit.

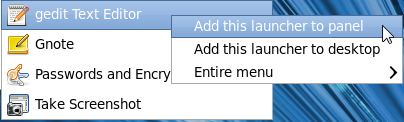




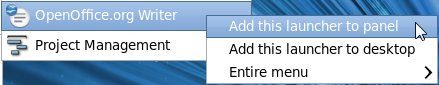
Select *log out* from the *system*menu. Log back in as the root user using your new root password.



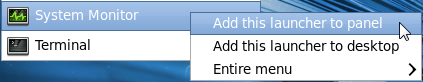
Now, we need to populate our *launch panel*with applications that we will frequently use.



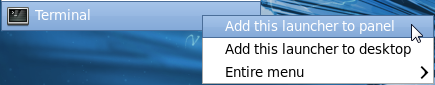
Under Accessories, right-click on *gedit*Text Editorand select *add this laucher to panel.*



Under *office,* right-click on Open Office.org Writerand select add this laucher to panel.



Under *system tools,* right-click on System Monitorand select add this laucher to panel.



Under *system tools,* right-click on Terminaland select add this laucher to panel.

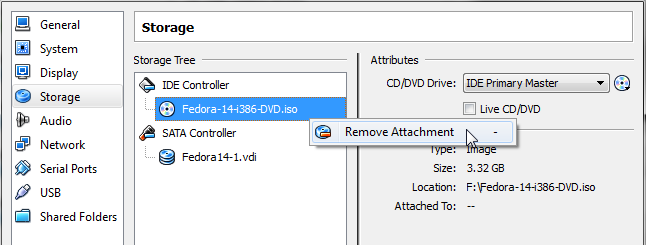
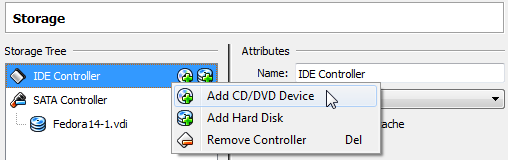
When you are finished, your panel should look similar to this.

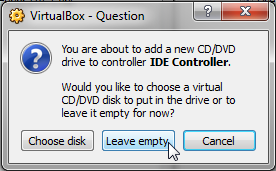
Shutdown Fedora by executing the init 0command from a terminal window.

**Task 7: Installing VirtualBox Guest Additions for Fedora 14**

VirtualBox *guest additions*allow you to copy and paste to and from your Windows host PC and your Fedora guest PC. This makes it easier to create the lab report documents required for the NETW240 lab assignments.

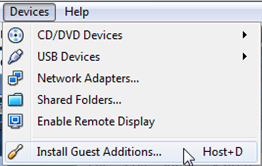
The VirtualBox guest additions are installed from the virtual CD/DVR ROM drive. That drive currently contains the Fedora IOS image file, so we need to remove the image file first. With Fedora powered down, click on Settings/Storage. Under IDE controller, right-click on the Fedora IOS image and select *remove attachment* and confirm this choice.

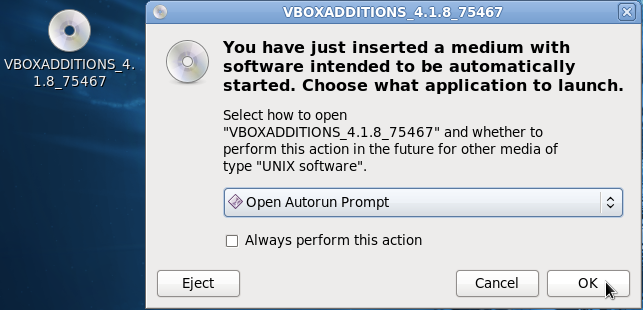


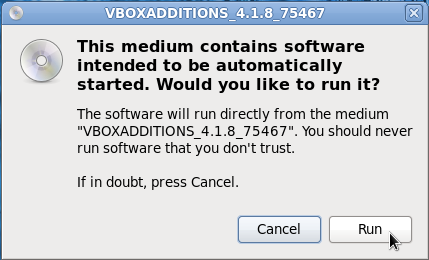
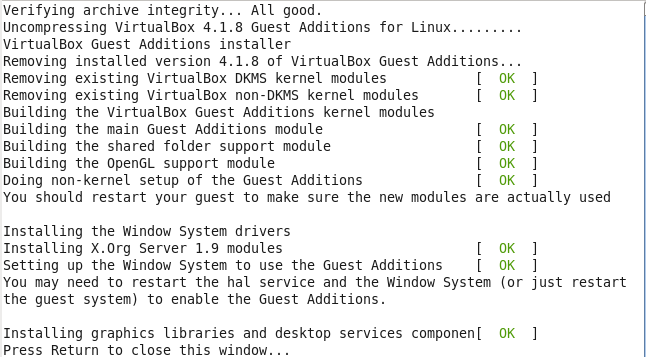
Right-click on the IDE controller again and select *add CD/DVD device.*  
  
  
  
  
In the dialog that appears, click on the *leave empty*button.

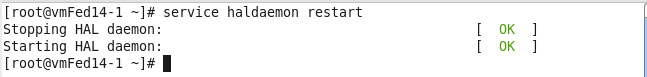
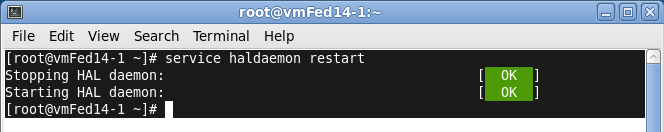
Click OK to save your changes and exit the settings dialogs. Restart the Fedora 14 VM.

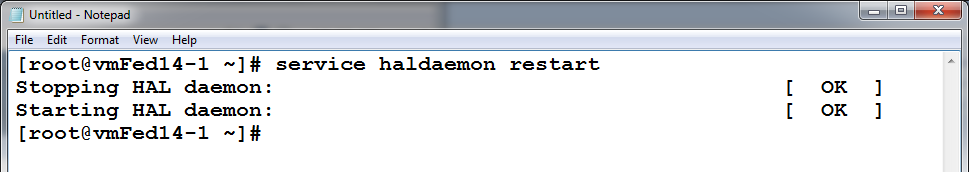
Open a terminal window in Fedora and execute the command shown below. These packages will allow the VirtualBox guest additions program to make changes to the Fedora kernel, and then recompile the kernel to support the guest additions.

  
After the packages have been installed, open the devices menu and select *install guest additions.*



The virtual CD/DVD ROM drive will open with the VBOXADDITIONS installation programs. Click OKin the dialog that pops up.  
  
  
  
  
  
  
  
  
In the next dialog that appears, click the *run*button to begin the installation of the VirtualBox guest extensions.  
If you are successful in your installation of the guest additions, you should see the following terminal session. Click <Enter> in the terminal window to close the session.  
  
  
  
  
  
  
  
  
  
  
  
  
  
  
  
  
  
  
  
Before we can test the guest additions, we need to *restart the hal (hardware allocation) service,* as shown below.

  
  
  
Now for the test: Highlight the text in the terminal window using mouse click and drag. Press <Ctrl><Shift>C to put this terminal text into the clipboard.

Press <Ctrl><Alt> to release control back to the Windows host. Open NotePad and paste the clipboard text from Fedora into NotePad using <Ctrl>Vor past from the edit menu. You should see the copied text from the Fedora terminal in NotePad, as shown below.

|  |
| --- |
| ***STOP: The following steps must be done using a broadband***  ***Internet connection. It may take several hours to complete these tasks.*** |

**Task 8: Updating Linux, Installing Additional Packages, and Cloning the Fedora 14 VM**

**Update All Current Fedora 14 Packages**

Now we need to make sure that all of the operating system packages are up to date. From the terminal window, enter the command: *yum –y update*. You don’t have to interact with the Fedora terminal, so you could do this overnight. Make sure that your computer is not set to turn off after a period of inactivity or this will interrupt the upload process.  
  
  
  
**Add New Fedora 14 Packages**

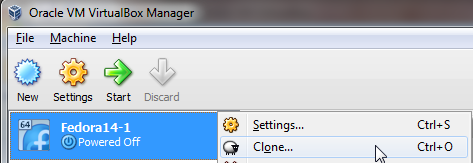
When the package updates are completed, we will still need to install some additional packages needed for other NETW240 lab assignments. Open terminal windows and execute the command shown below. Note that samba\* and wireshark\* have a \* suffix that must be included.

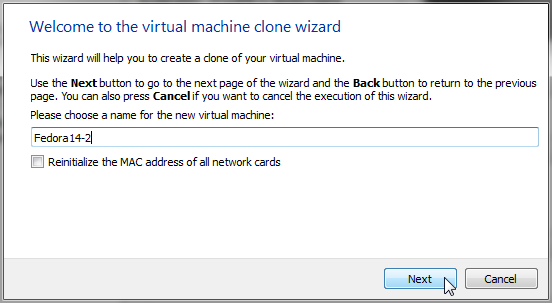


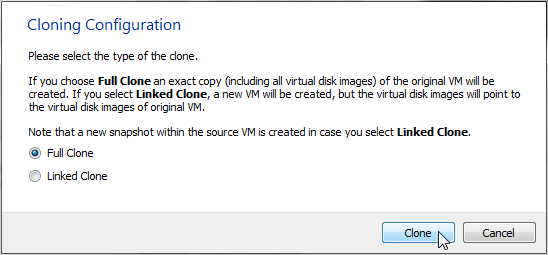
Once these new packages are installed, shutdown the Fedora virtual machine with the command: *init 0.*

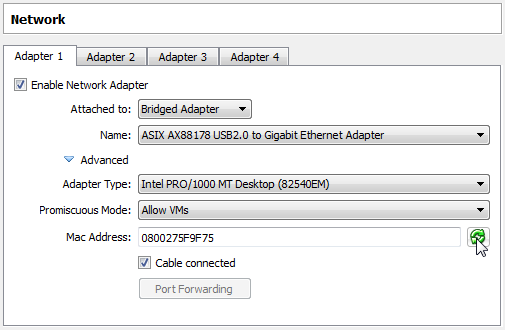
**Clone the Fedora14-1 Virtual Machine**

Now we are ready to create a clone of the updated Fedora14-1 virtual machine. Right-click on the Fedora14-1 VM icon in VirtualBox and select *clone.*



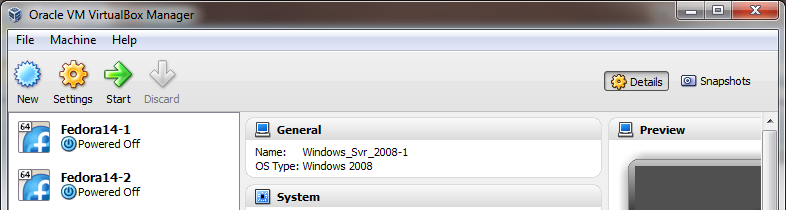
In the next dialog, name the new virtual machine Fedora14-2. Uncheck *reinitialize the MAC address of all network cards.* Click Next.

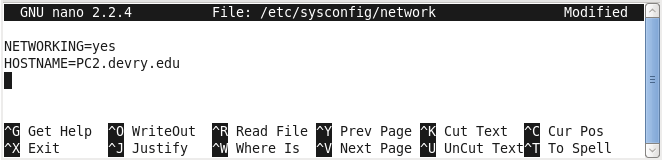
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In the *cloning configuration* dialog, select the *full clone* option and click the *clone*button to begin the cloning operation.  
  
  
  
  
  
  
  
When the cloning operation is complete, you will have two Fedora 14 VMs that can be running at the same time and interacting with each other via NAT, bridged, and internal network connections.

Before starting the new cloned Fedora14-2 VM, we need to give it a new MAC address. Open the network settings for Fedora14-2, and click on the icon to select a new random MAC address. Click OKto save the changes.

Open the new Fedora 14-2 VM by double-clicking on the new icon in VirtualBox manager.

  
  
Open a terminal window, and set a new host name by editing the */etc/sysconfig/network*file.



Open both VMs, check their IP addresses, and execute mutual pings.