Linux Tutorials

Programming Environment Setup
Installing VirtualBox and Ubuntu

For more tutorials:
http://cs.uwlax.edu/~jjhursey/teaching/tutorial/linux/

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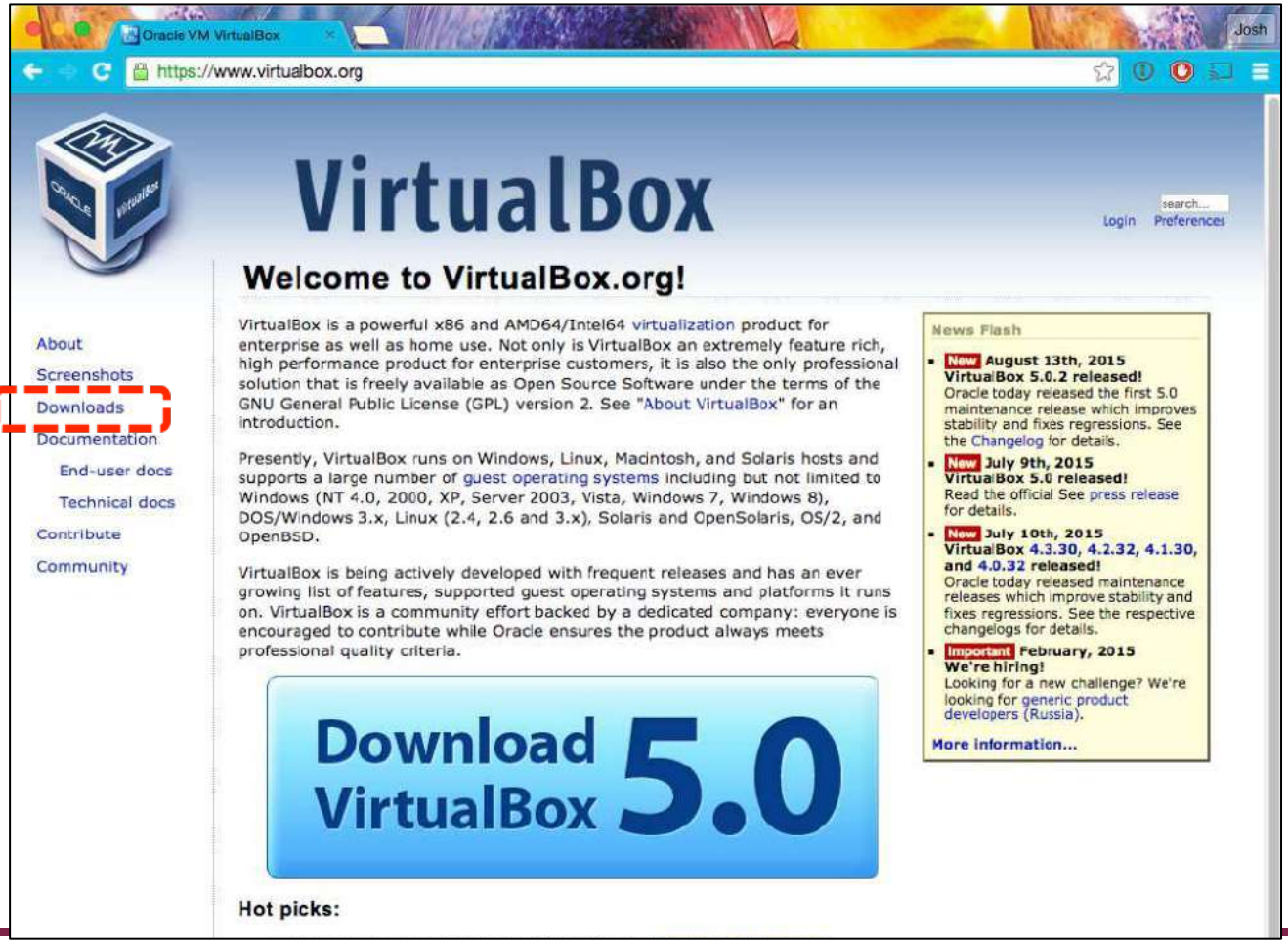
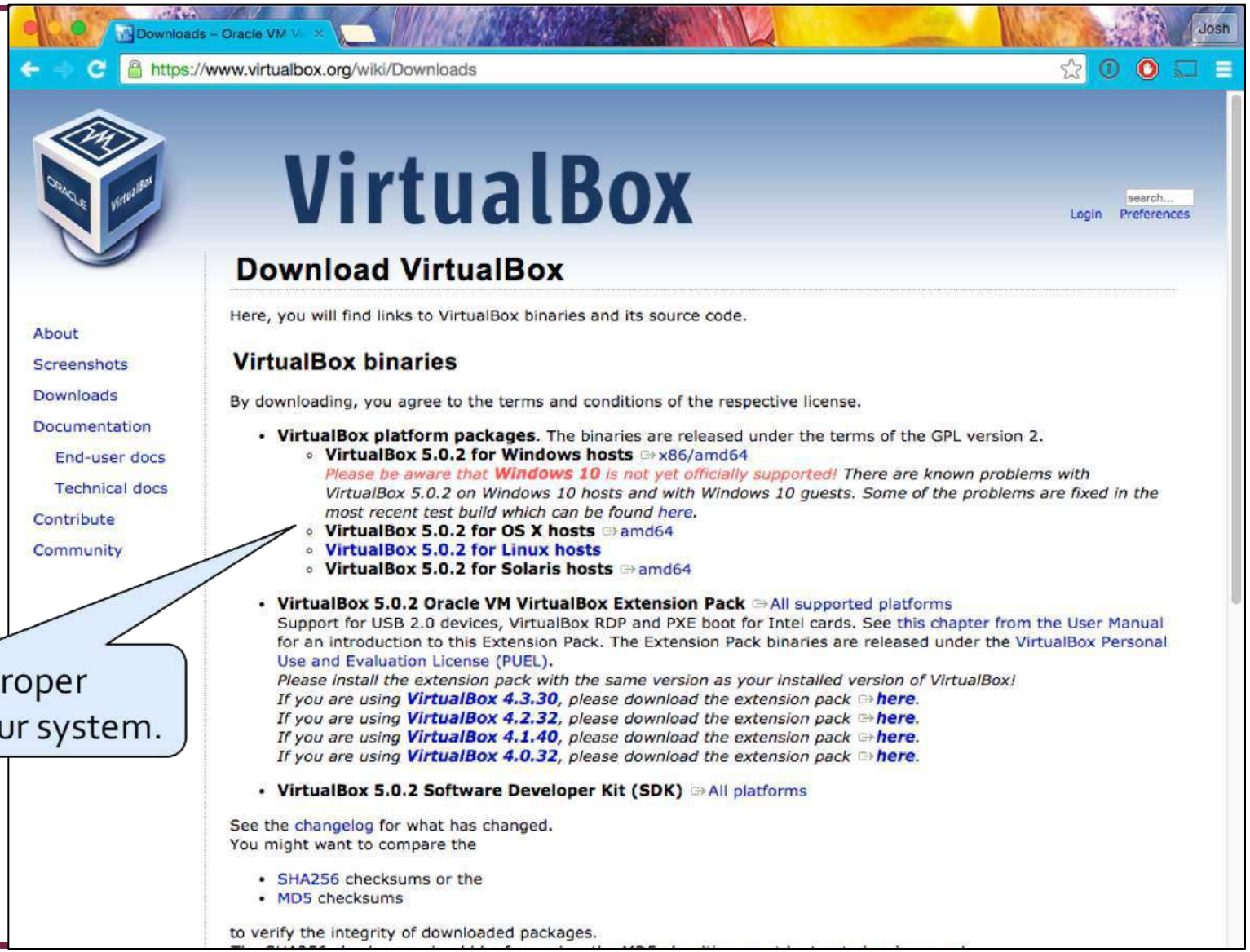
Download Oracle VirtualBox

- Download Website: (download may take a while ~100MB) https://www.virtualbox.org/



Download Oracle VirtualBox



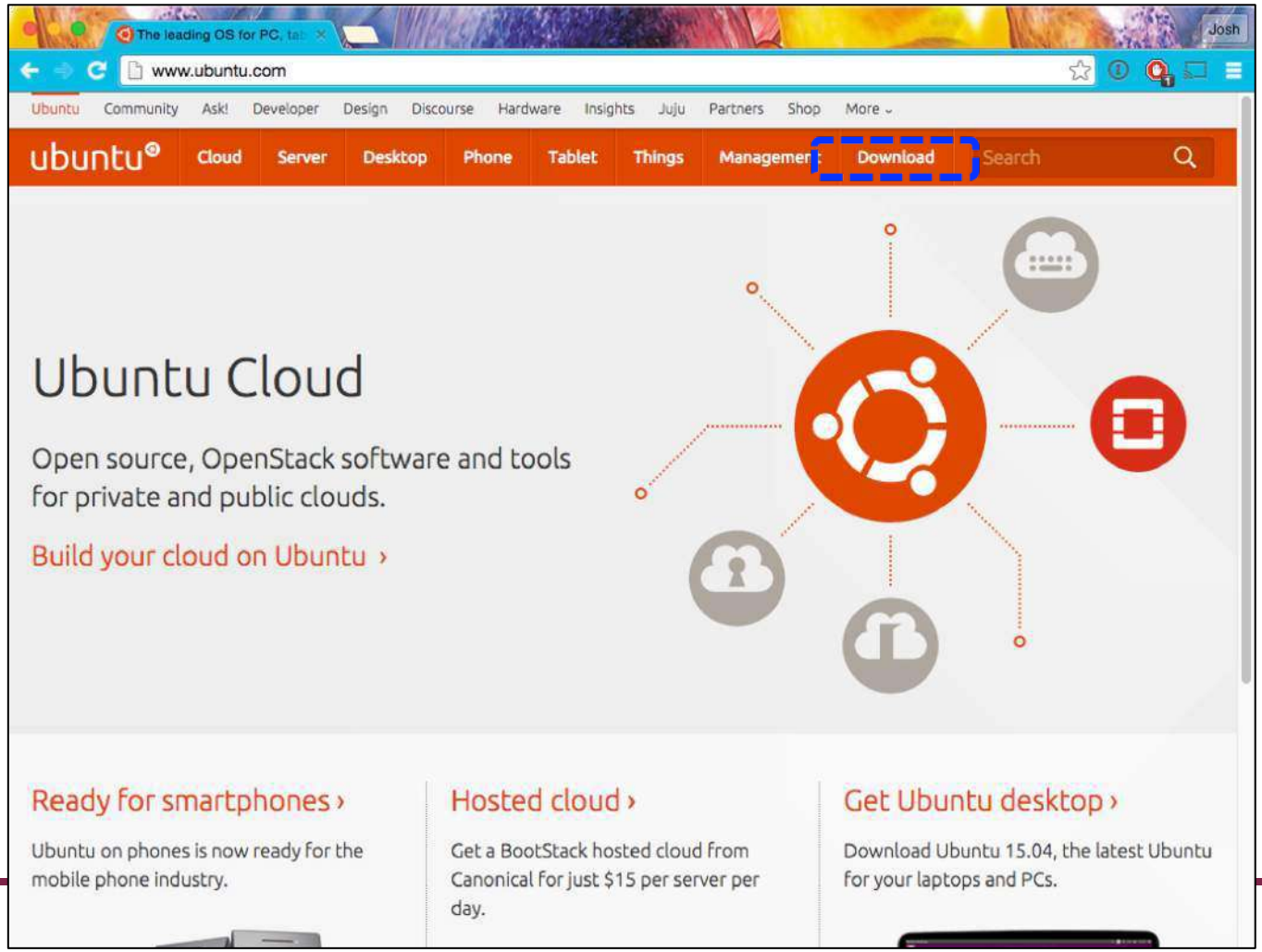
Select the proper download for your system.

Install VirtualBox

- The download (~100MB) may take a while.
- Once it is finished, follow the instructions to install it on your system.

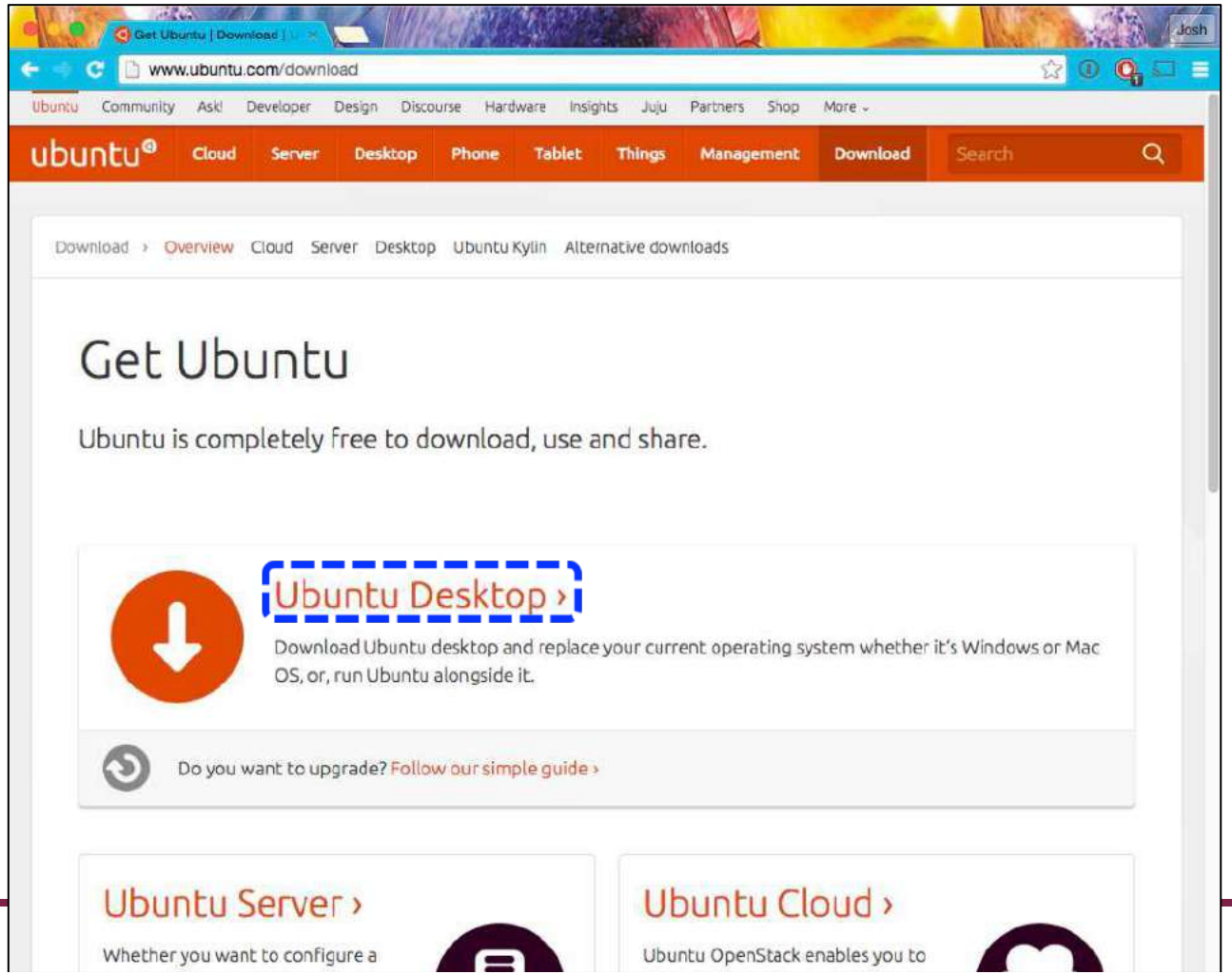
Download Ubuntu Linux

- Download website: (download may take a while >700MB) http://www.ubuntu.com/



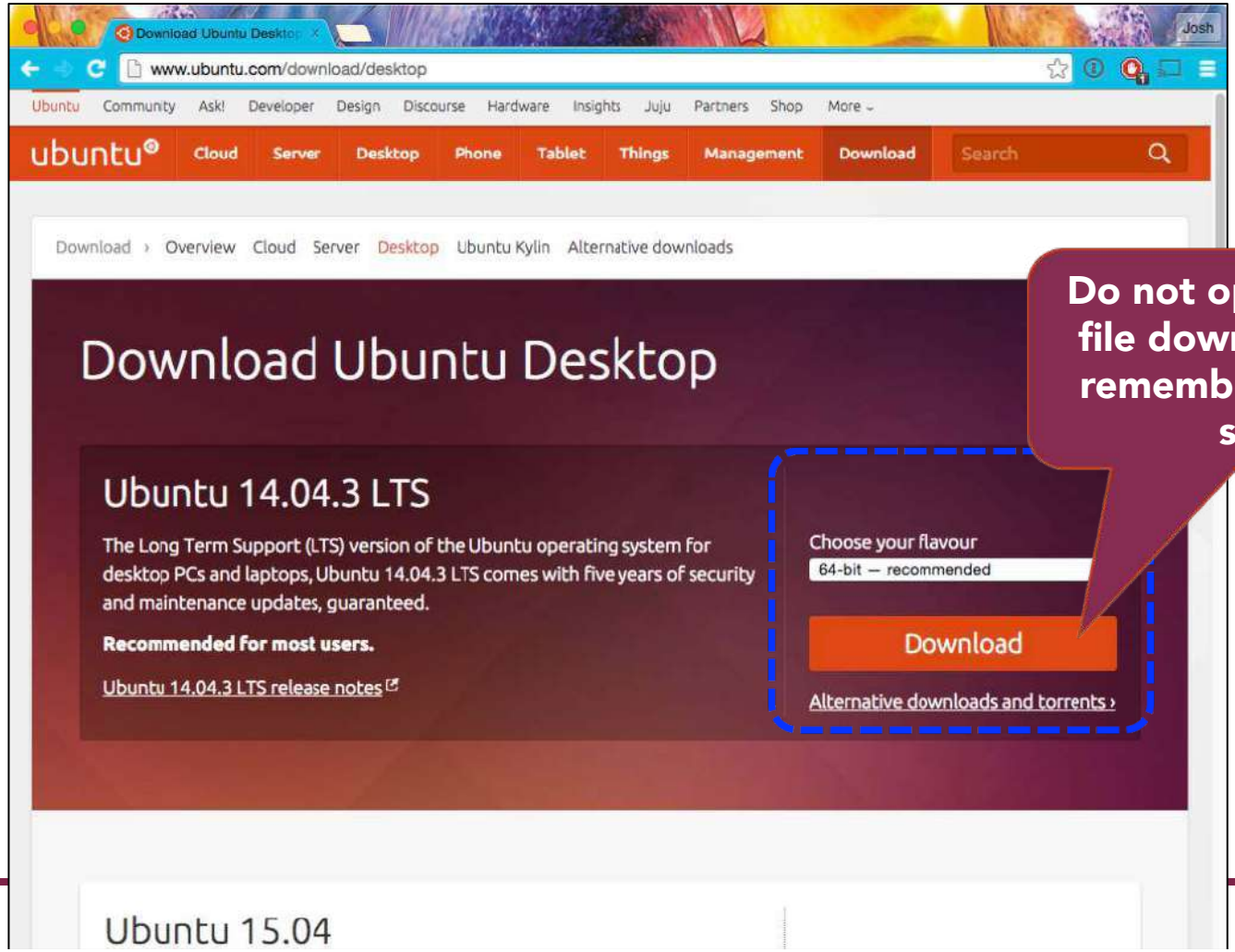
Download Ubuntu Linux

- Download website: (download may take a while ~1 GB)
  http://www.ubuntu.com/



Download Ubuntu Linux

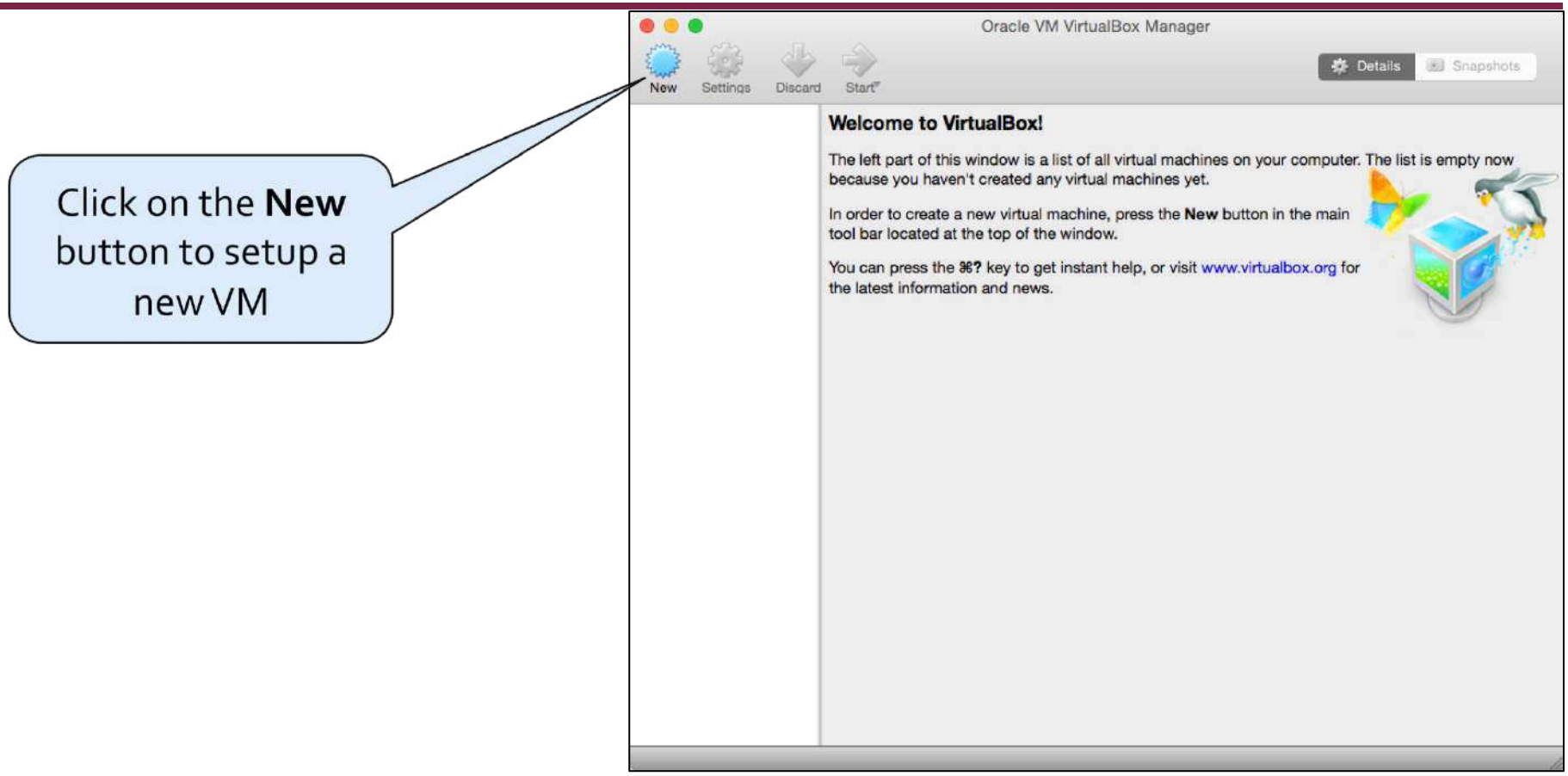
- Download website: (download may take a while ~1 GB) http://www.ubuntu.com/ (Make sure you get the LTS version)



ubuntu

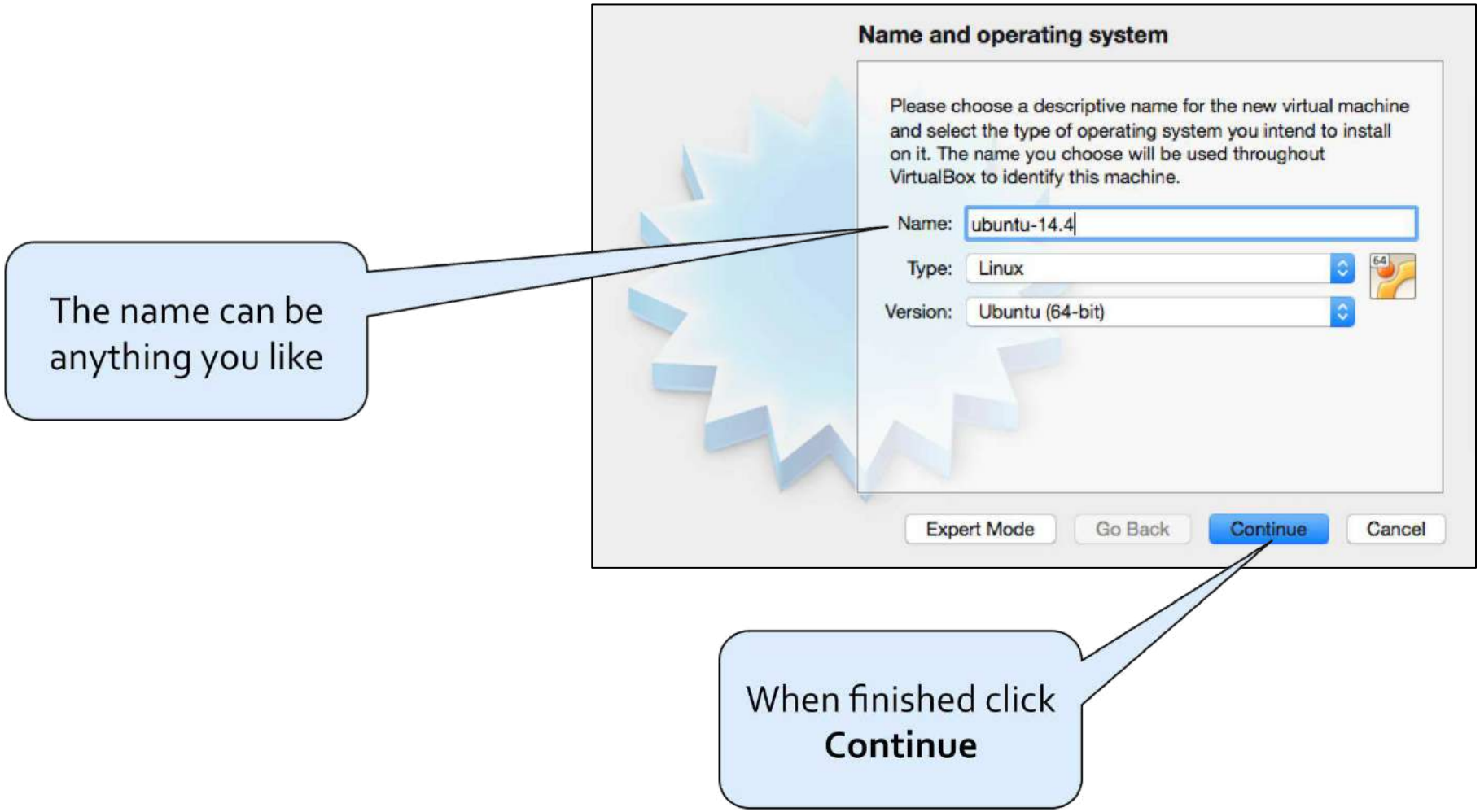
Installing Ubuntu in VirtualBox

1) Launch VirtualBox

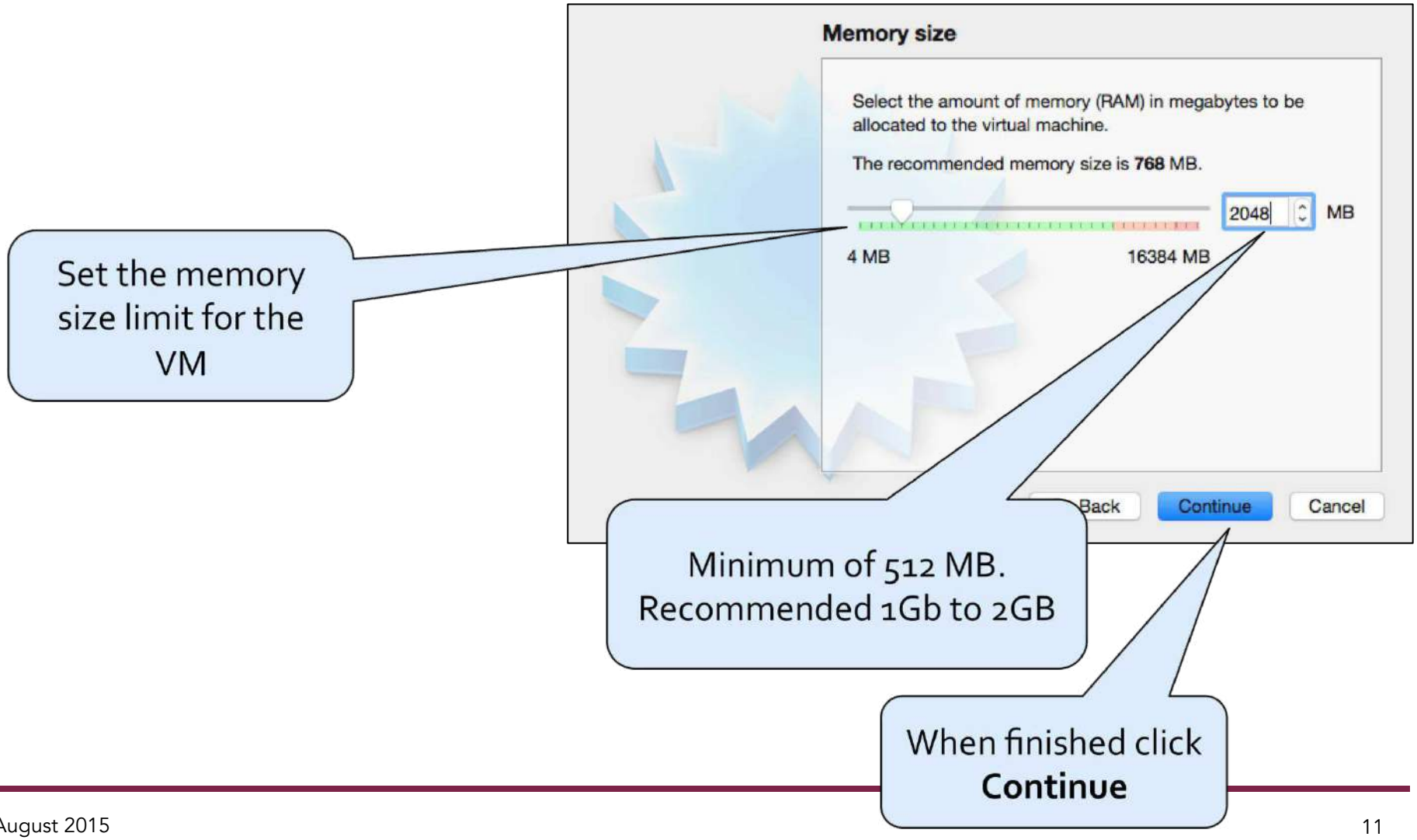


- Note: If you add more VMs you will see them all listed on the left-hand side.

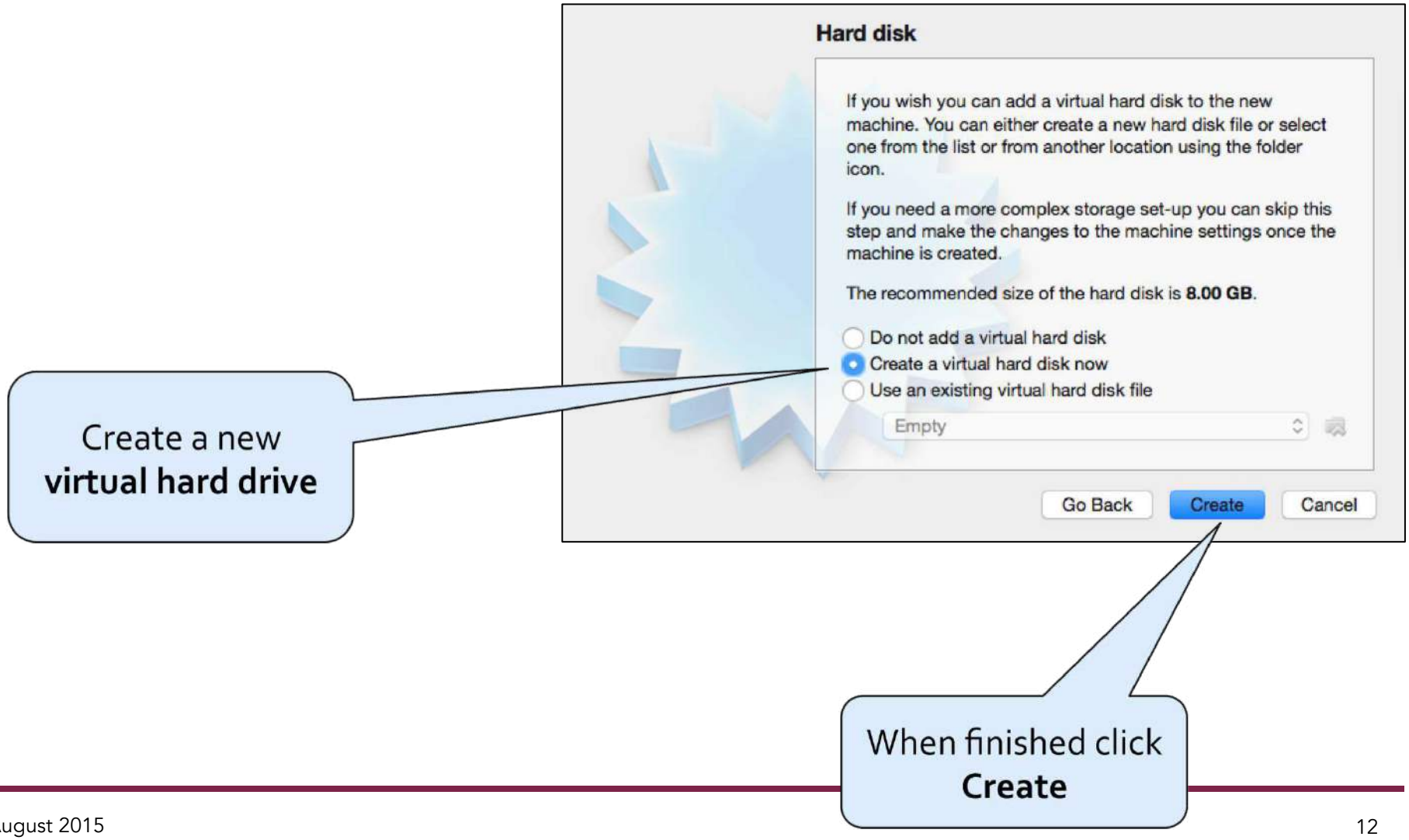
2) Enter a name for your new VM



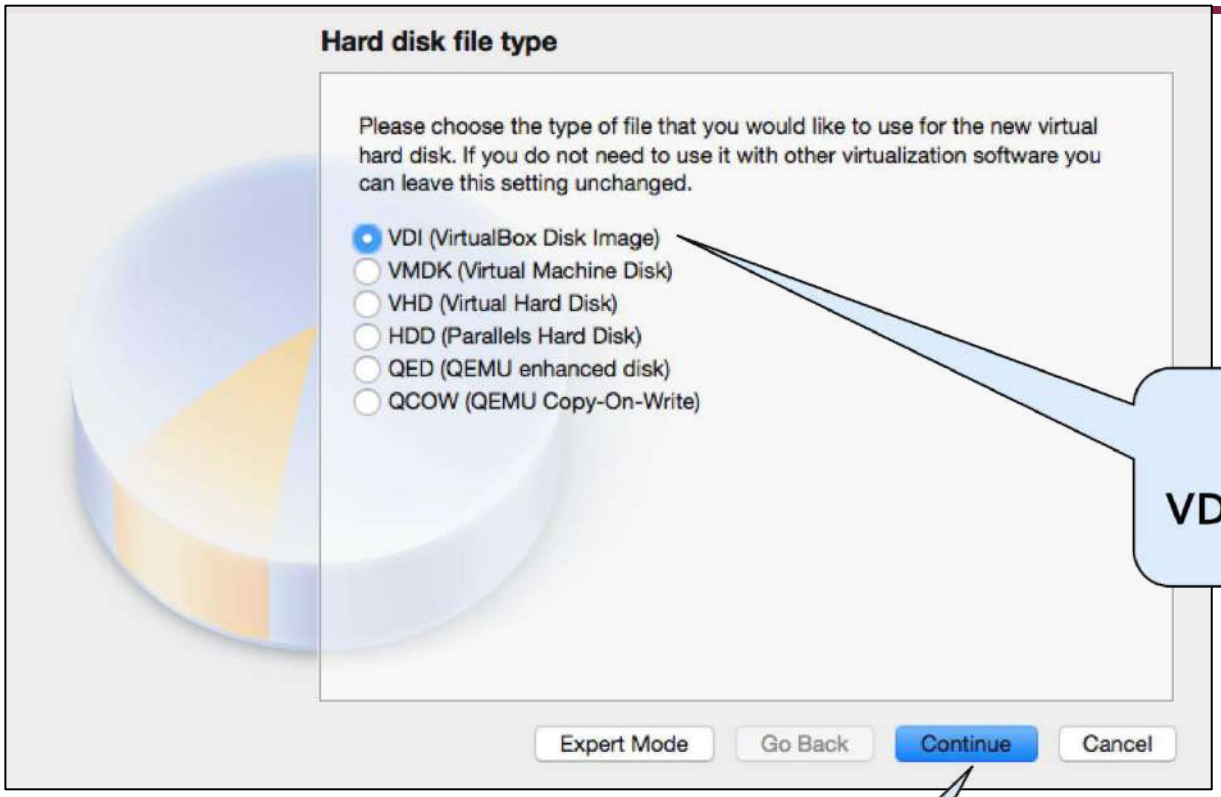
3) VM Memory Limit



4) Virtual Hard Drive Setup



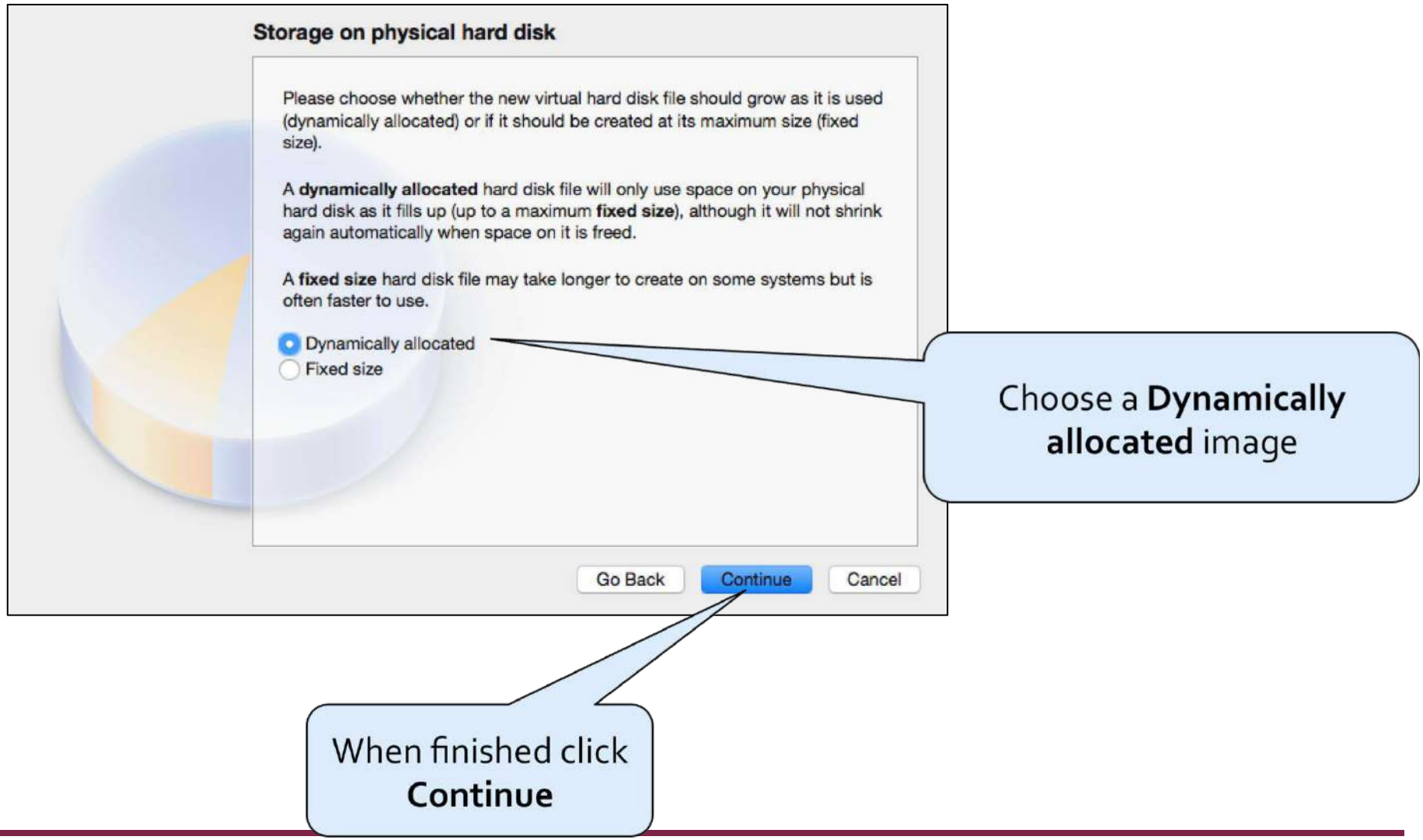
4) Virtual Hard Drive Setup



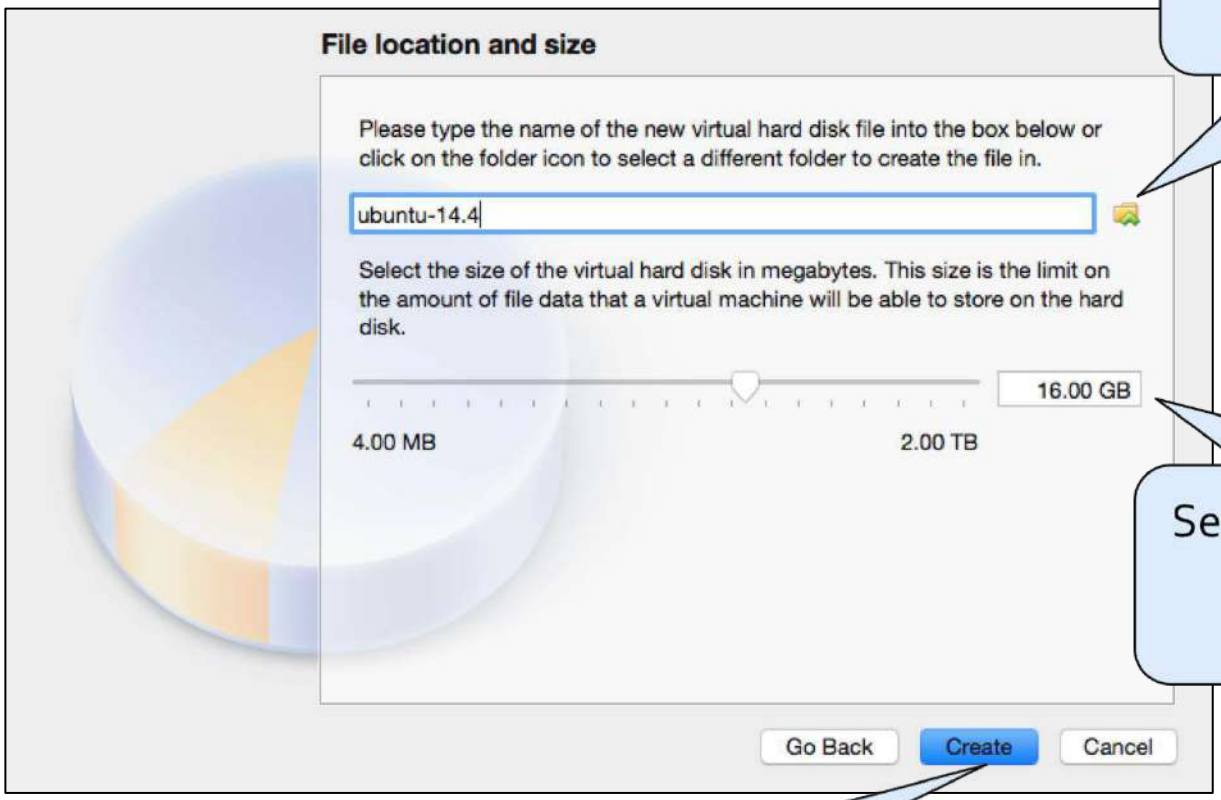
Choose the
VDI (VirtualBox Disk Image)

When finished click
Continue

4) Virtual Hard Drive Setup



4) Virtual Hard Drive Setup



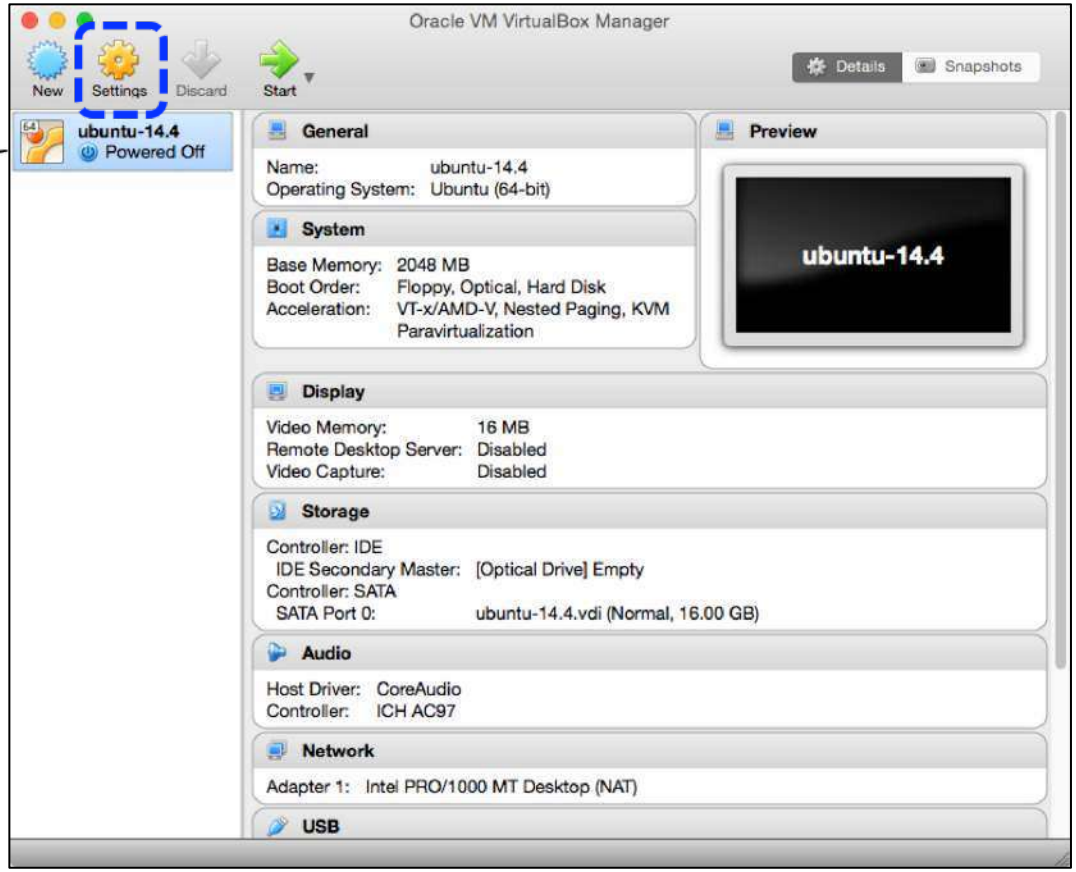
Choose a name for the disk image and specify where it should be located on disk.

Setup the maximum disk size.
Minimum 8 GB,
Recommended 16 GB

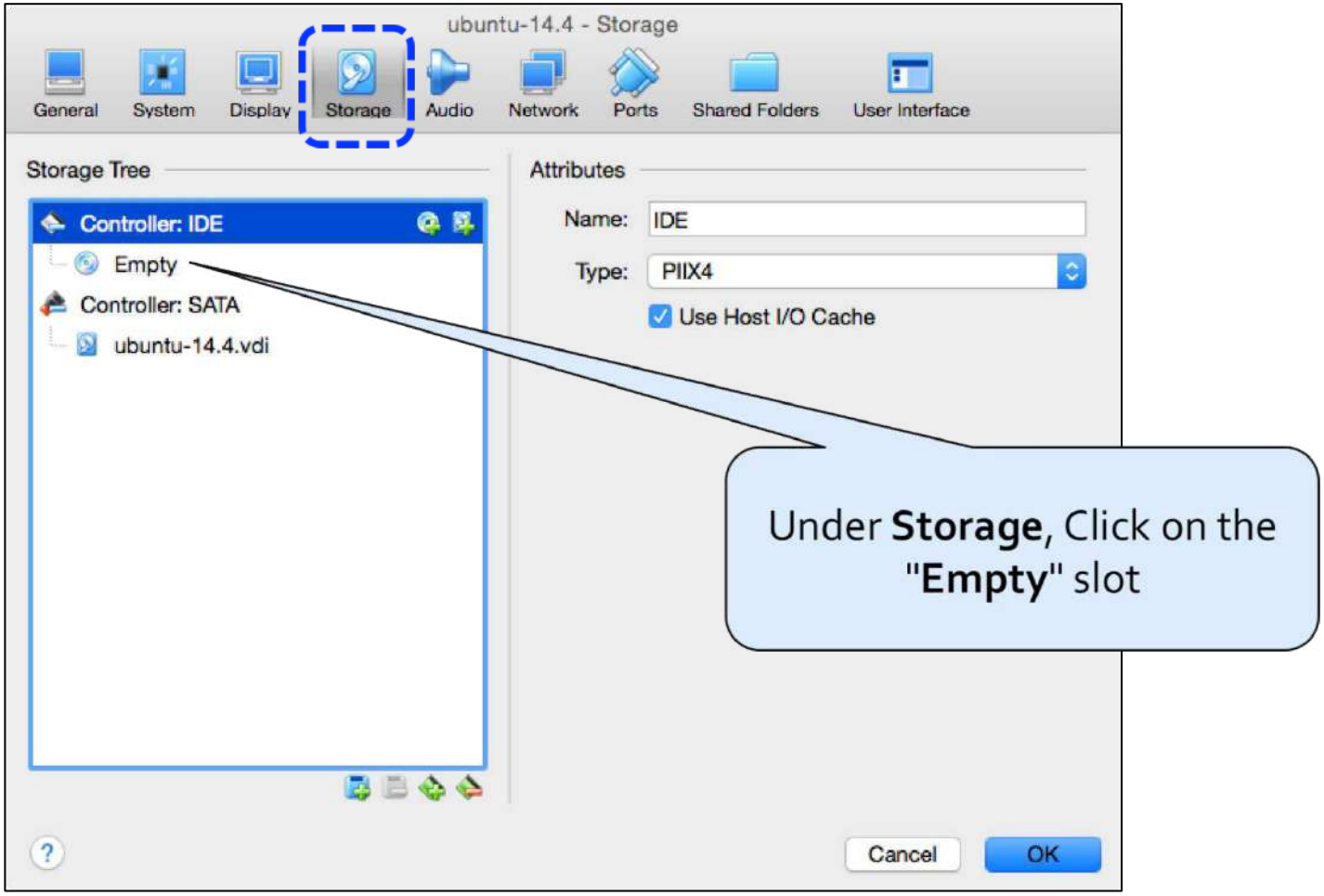
When finished click **Create**

5) Setup the new VM to boot from the Ubuntu iso image you downloaded

Choose your new VM, then click on **Settings**



5) Setup the new VM to boot from the Ubuntu iso image you downloaded



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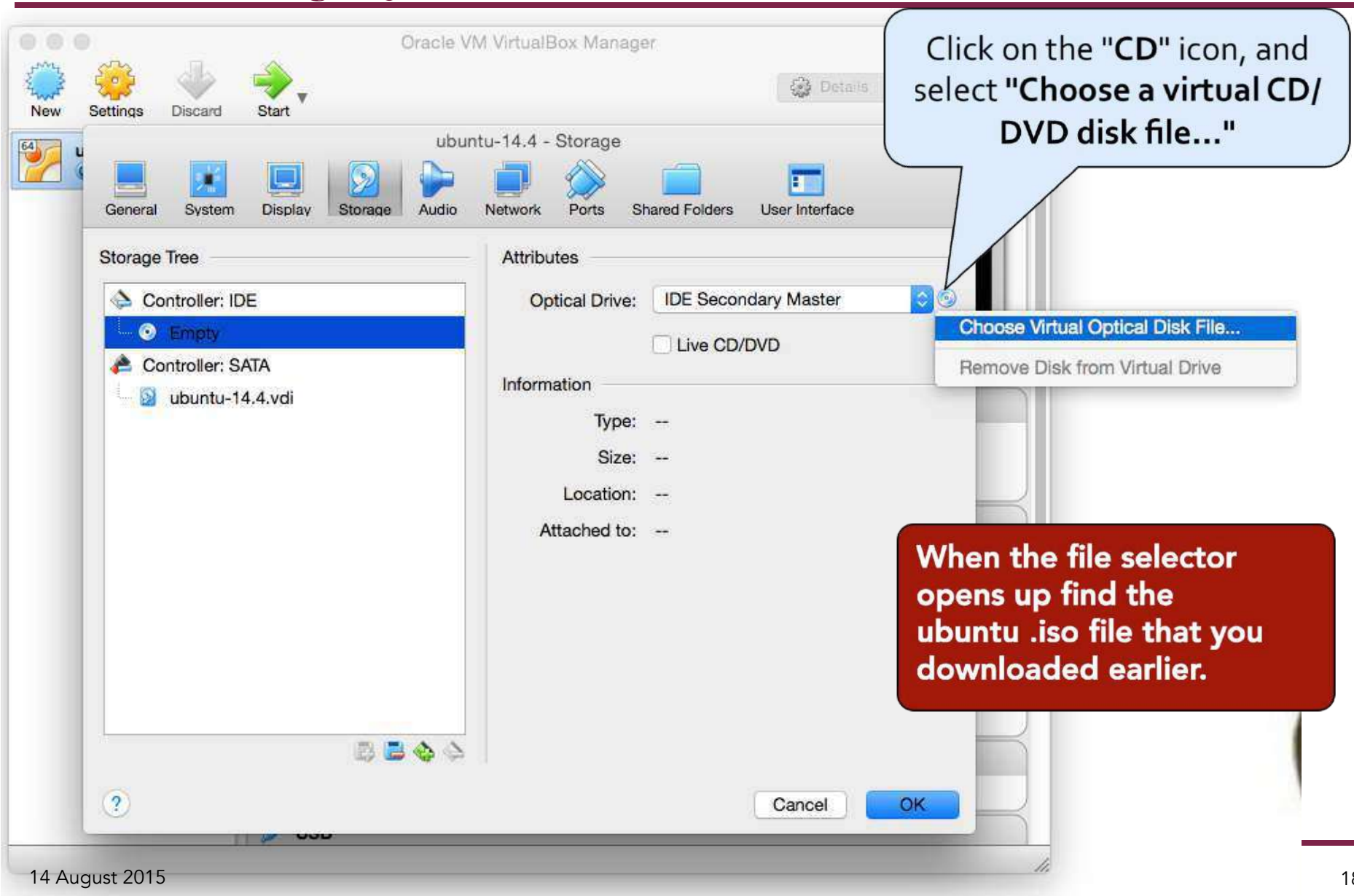
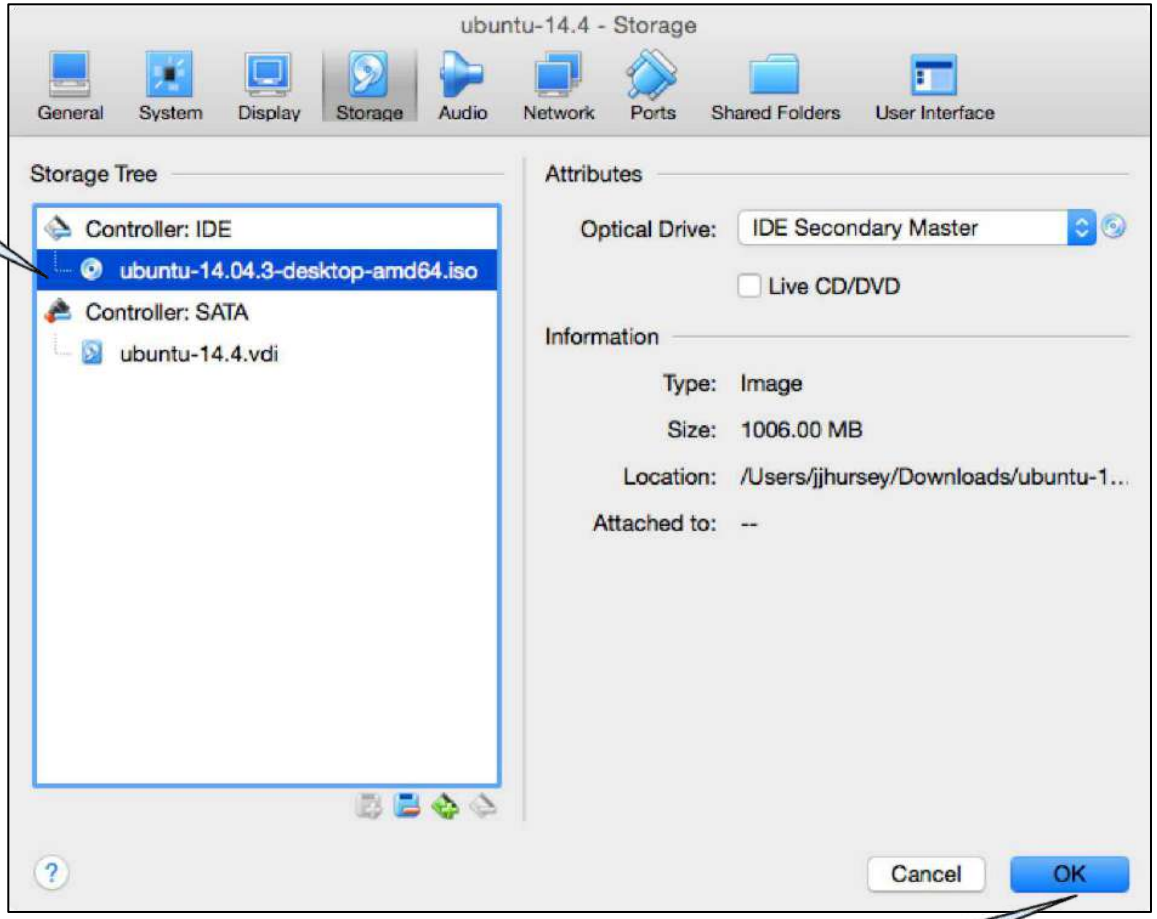


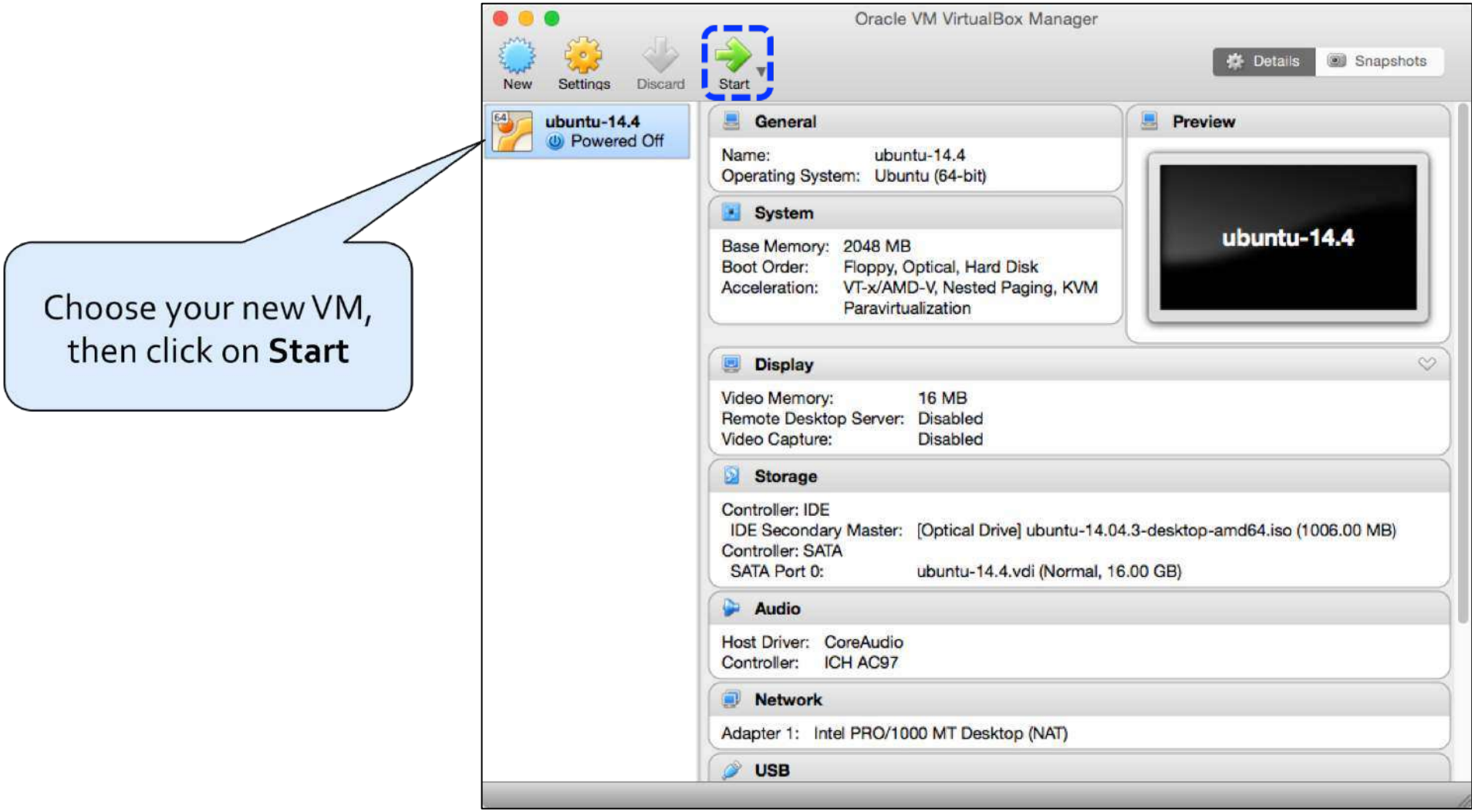
5) Setup the new VM to boot from the Ubuntu iso image you downloaded

You should see the .iso loaded in the drive.



Click **OK** to close the window

6) Startup your new VM



Troubleshooting

- **Problem:**

  After pressing Start I get a message like:

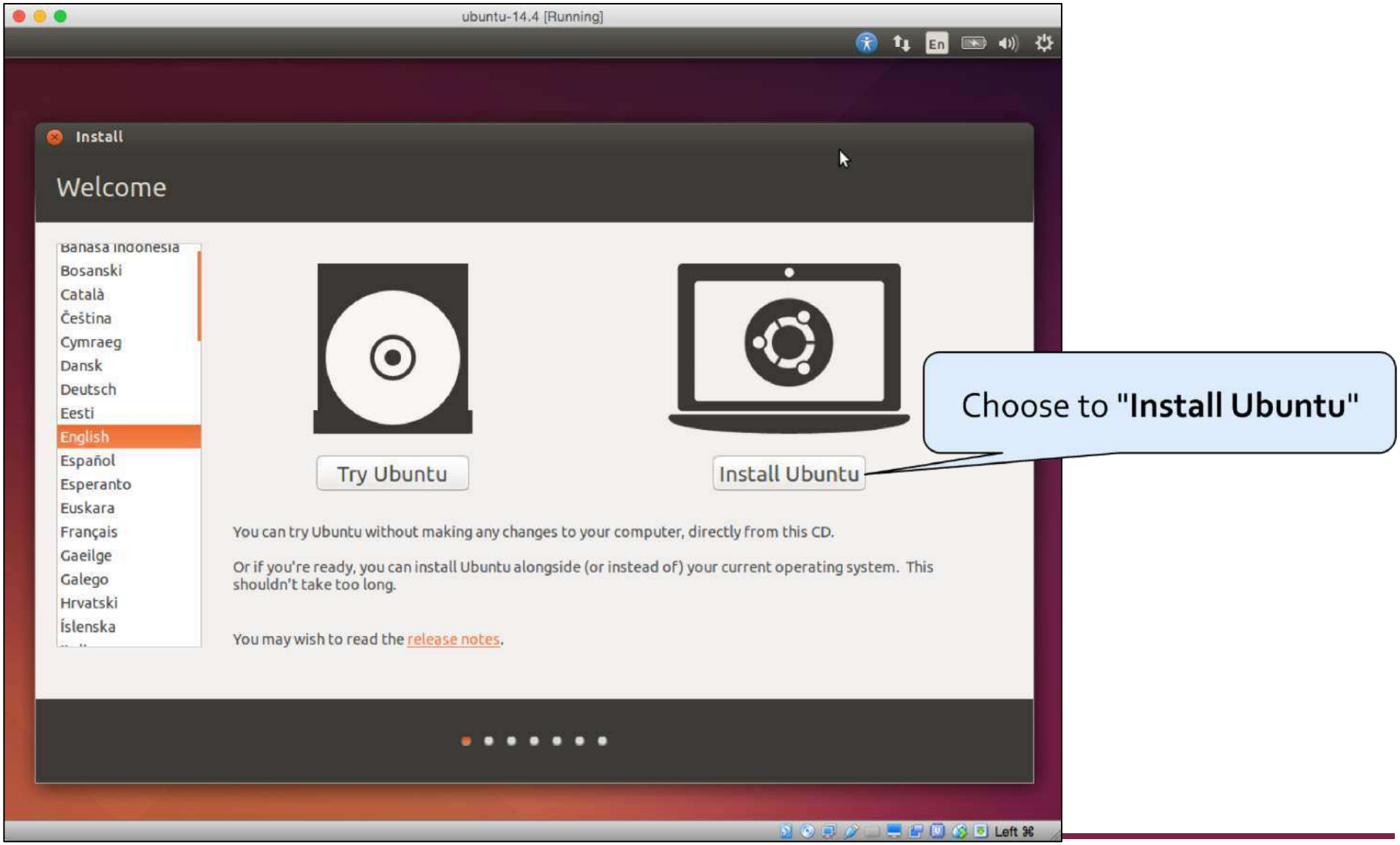
  ```
  This kernel requires an x86-64 CPU, but only detected
  an i686 CPU. Unable to boot - please use a kernel
  appropriate for your CPU.
  ```

- **Solution:**

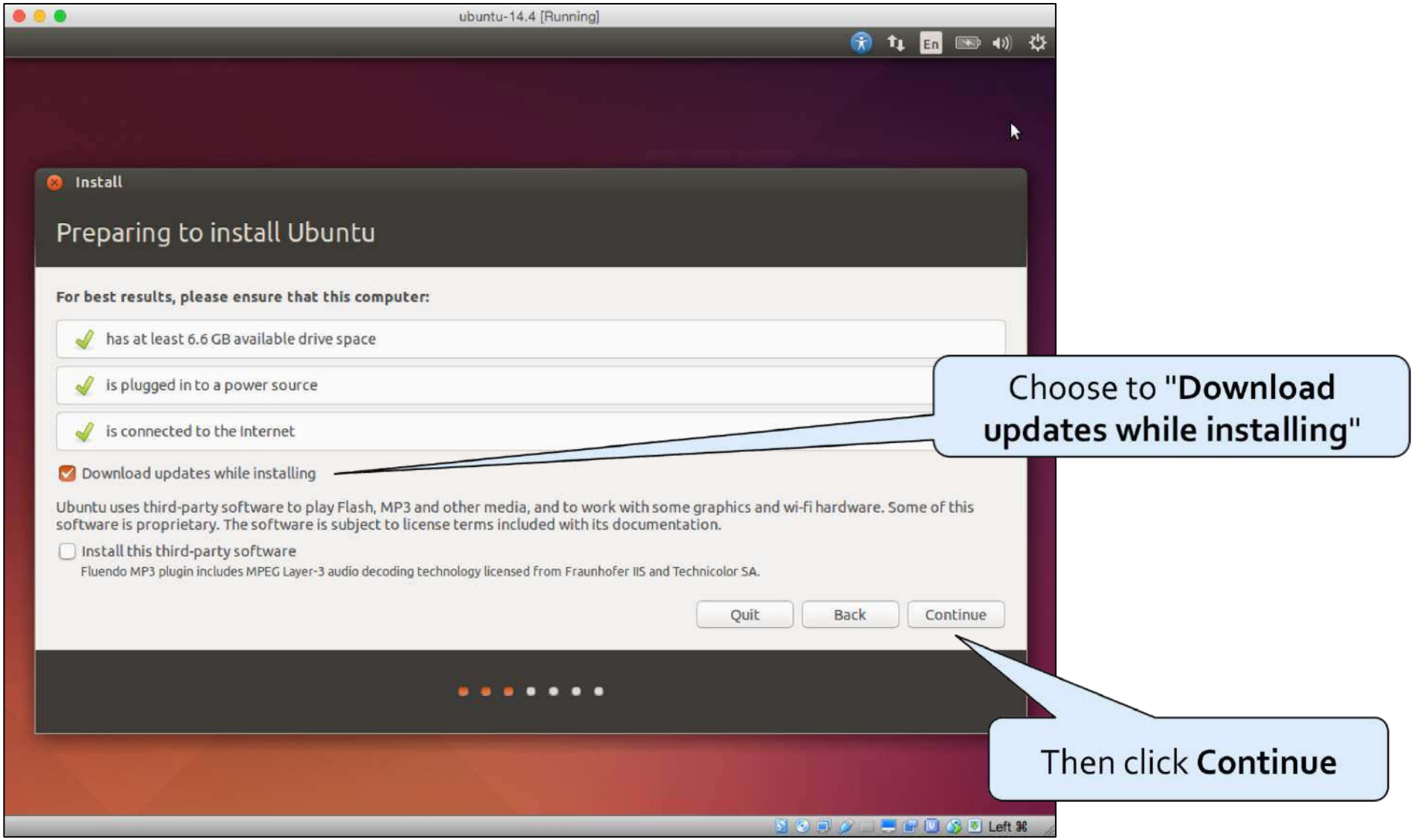
  You can either:

  - Download and install the 32bit version of Ubuntu, or
  - Make sure you have setup the virtual machine in 64bit mode
    - http://askubuntu.com/a/309007

7) Installing Ubuntu on the virtual hard drive



7) Installing Ubuntu on the virtual hard drive



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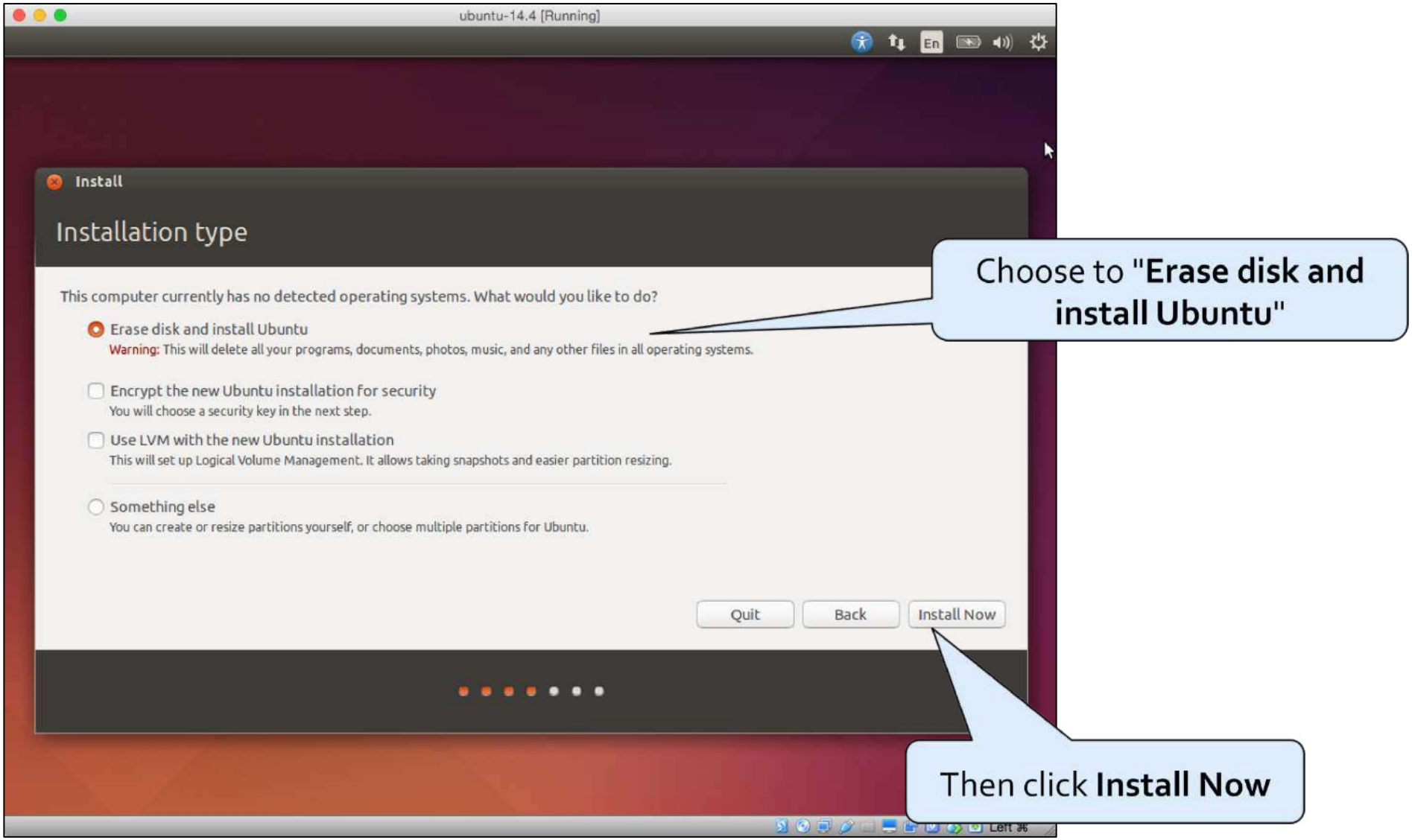

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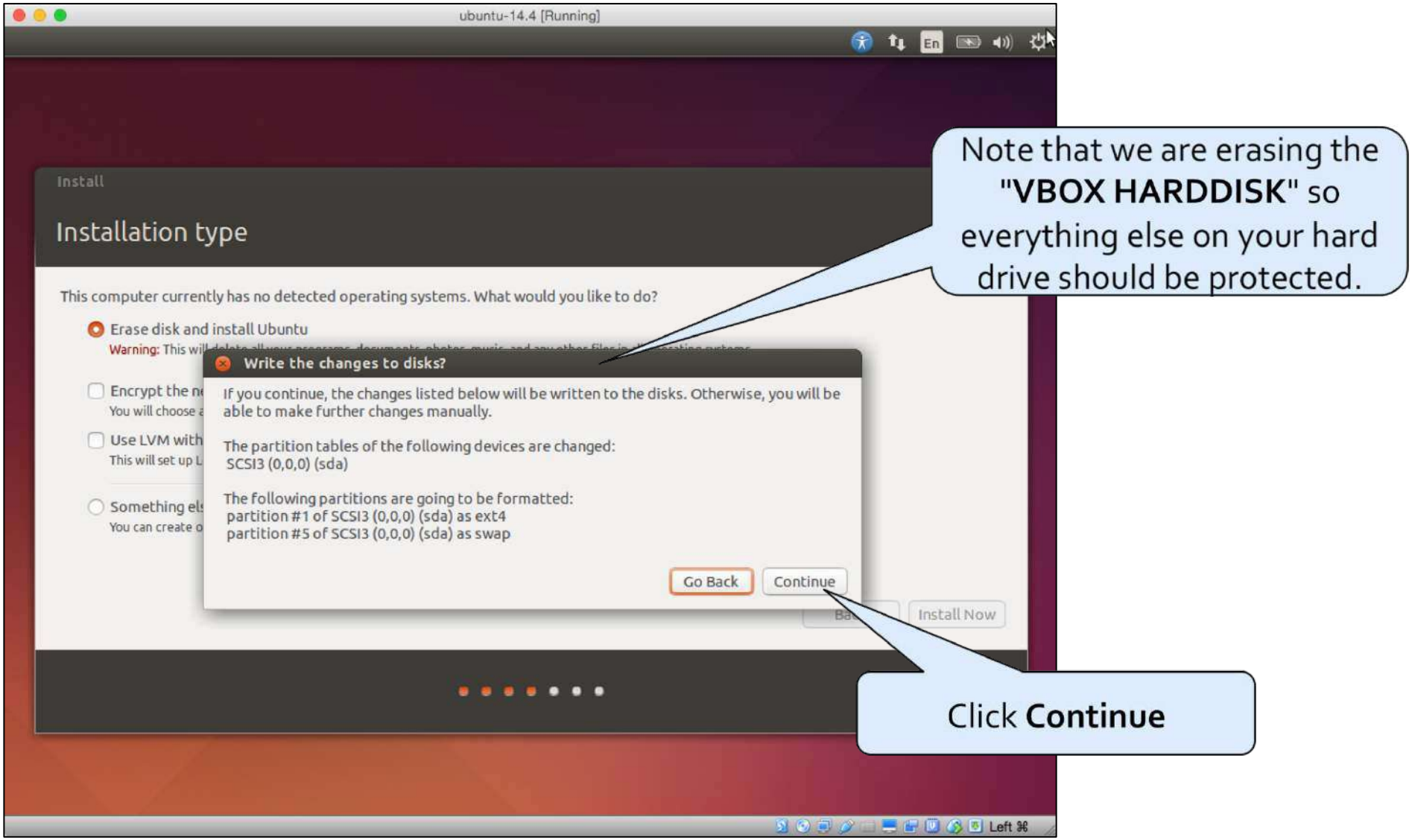

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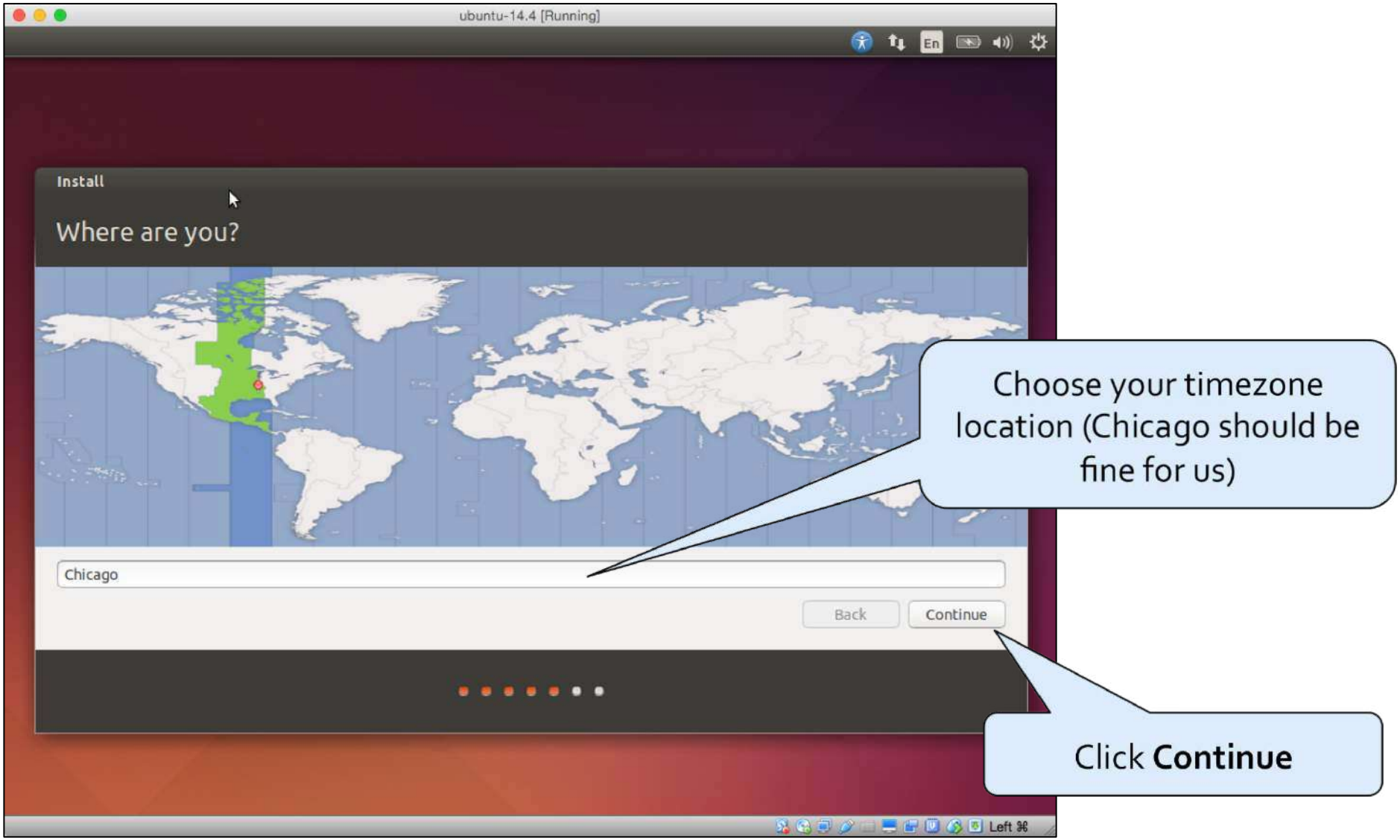

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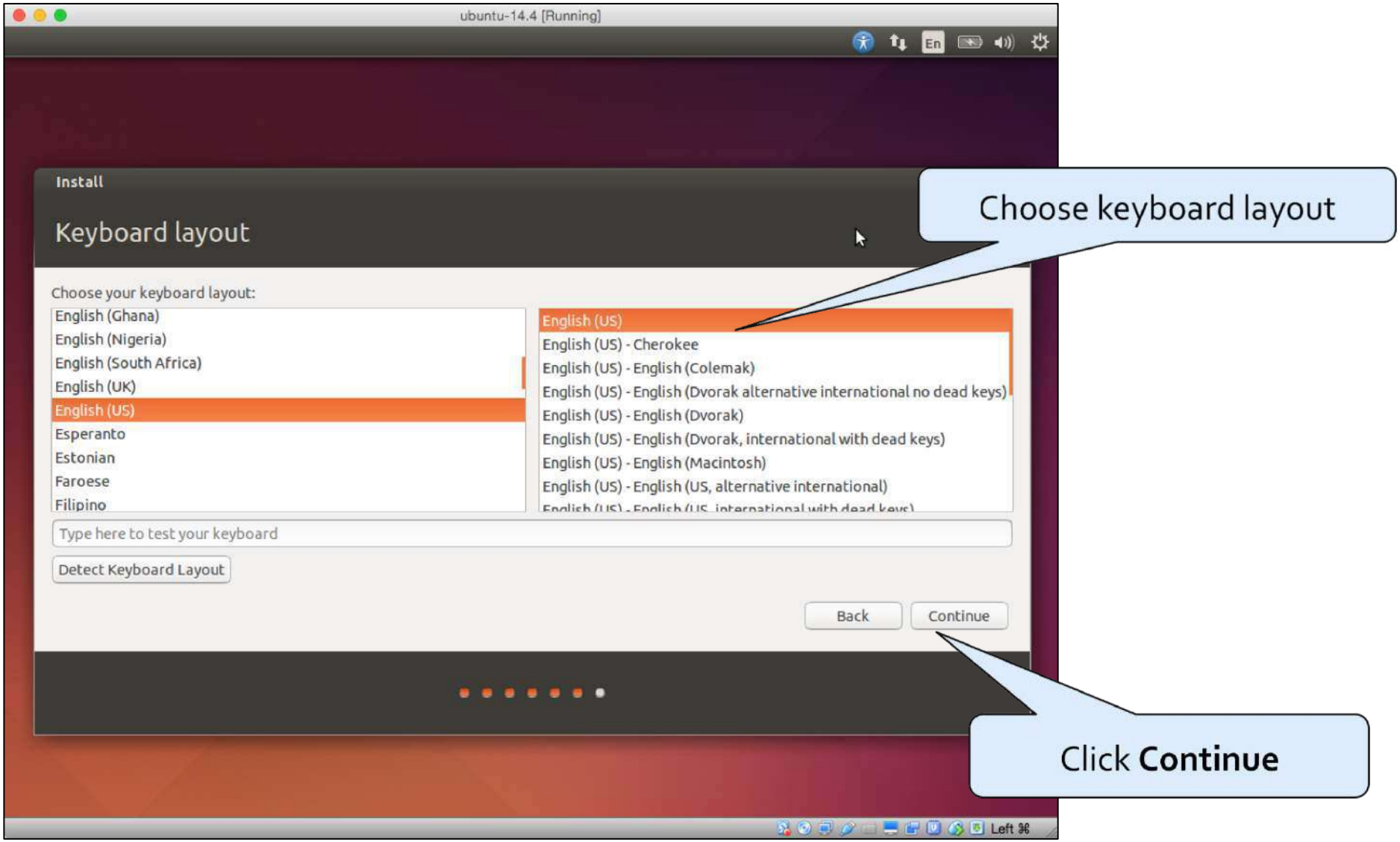

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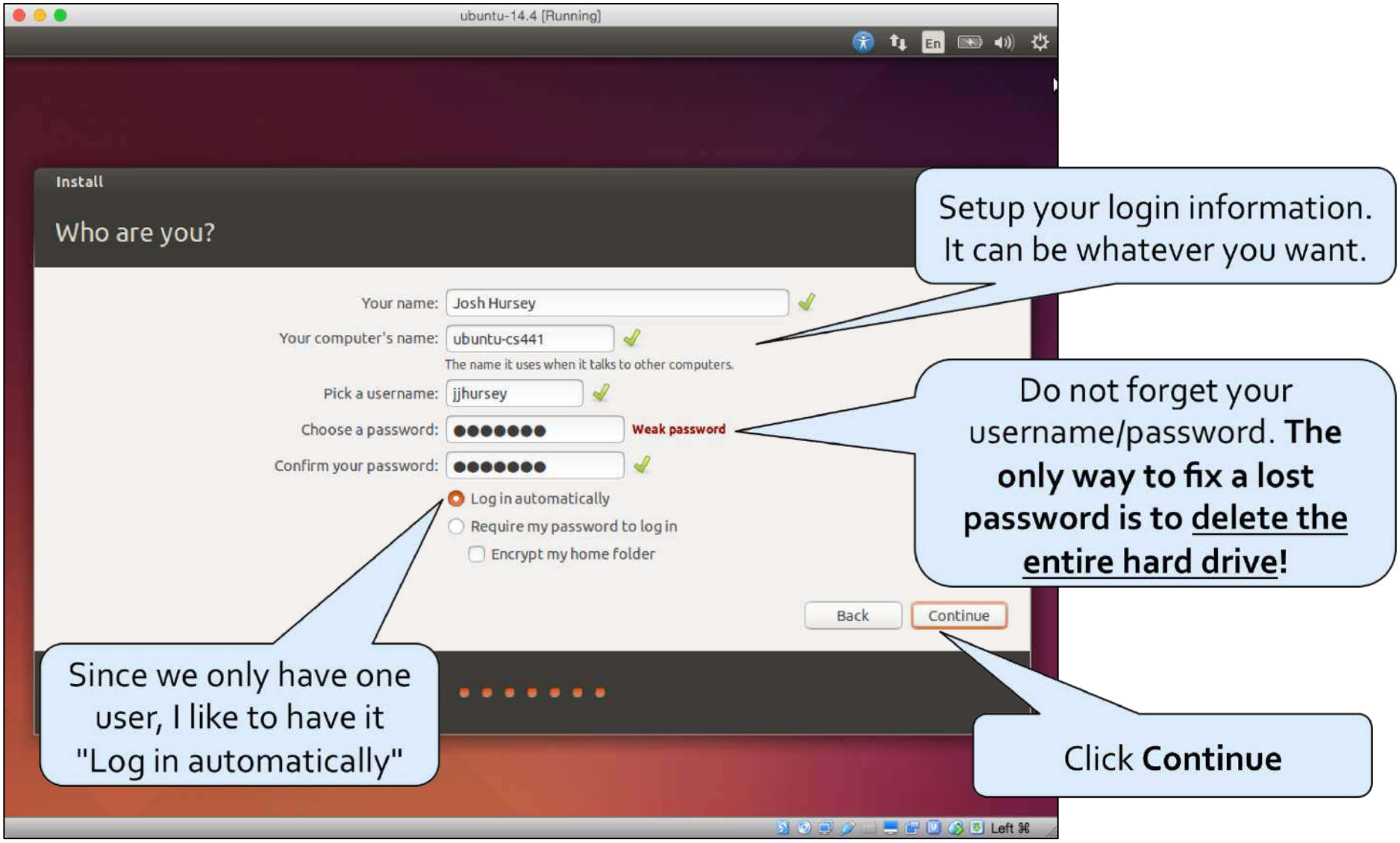
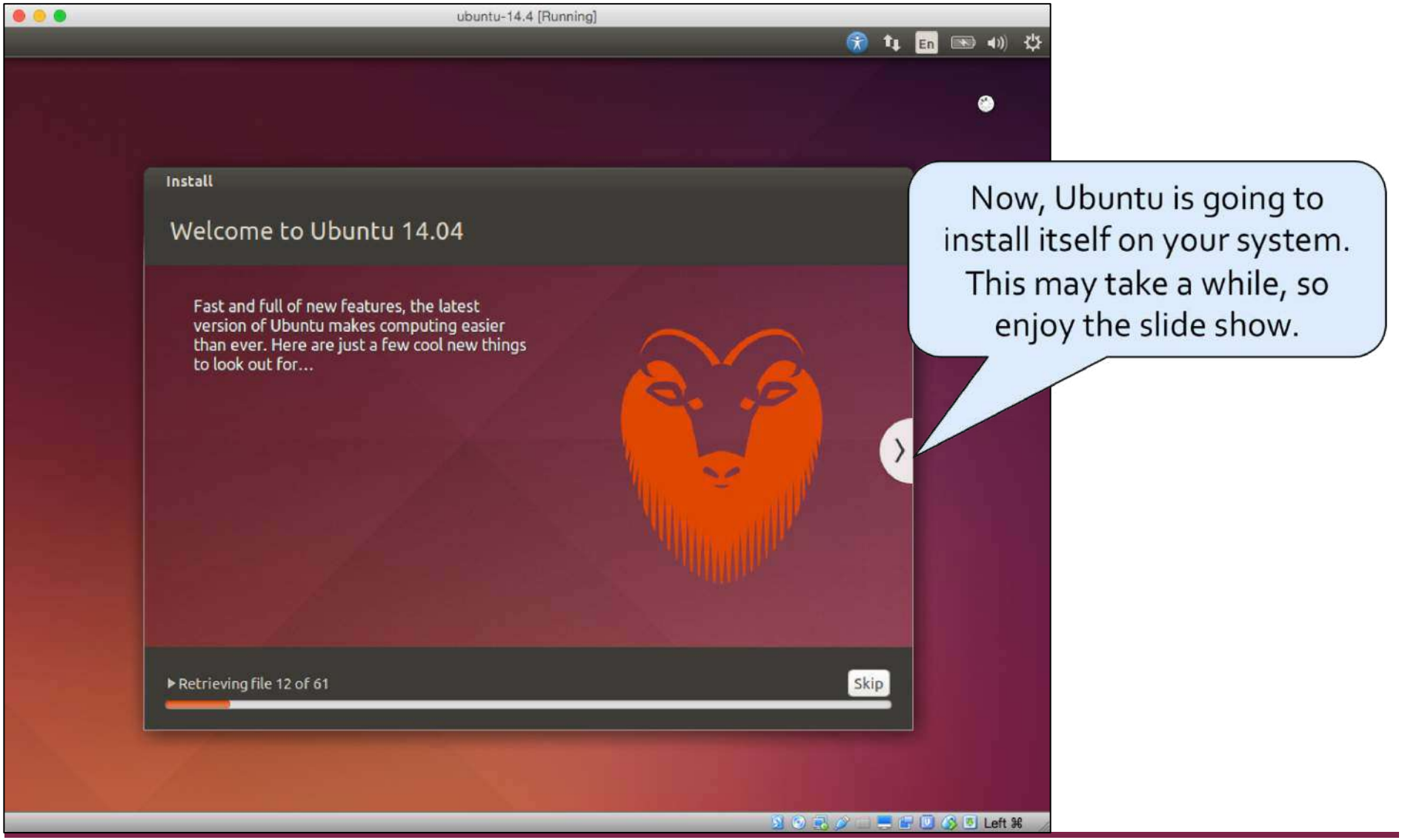
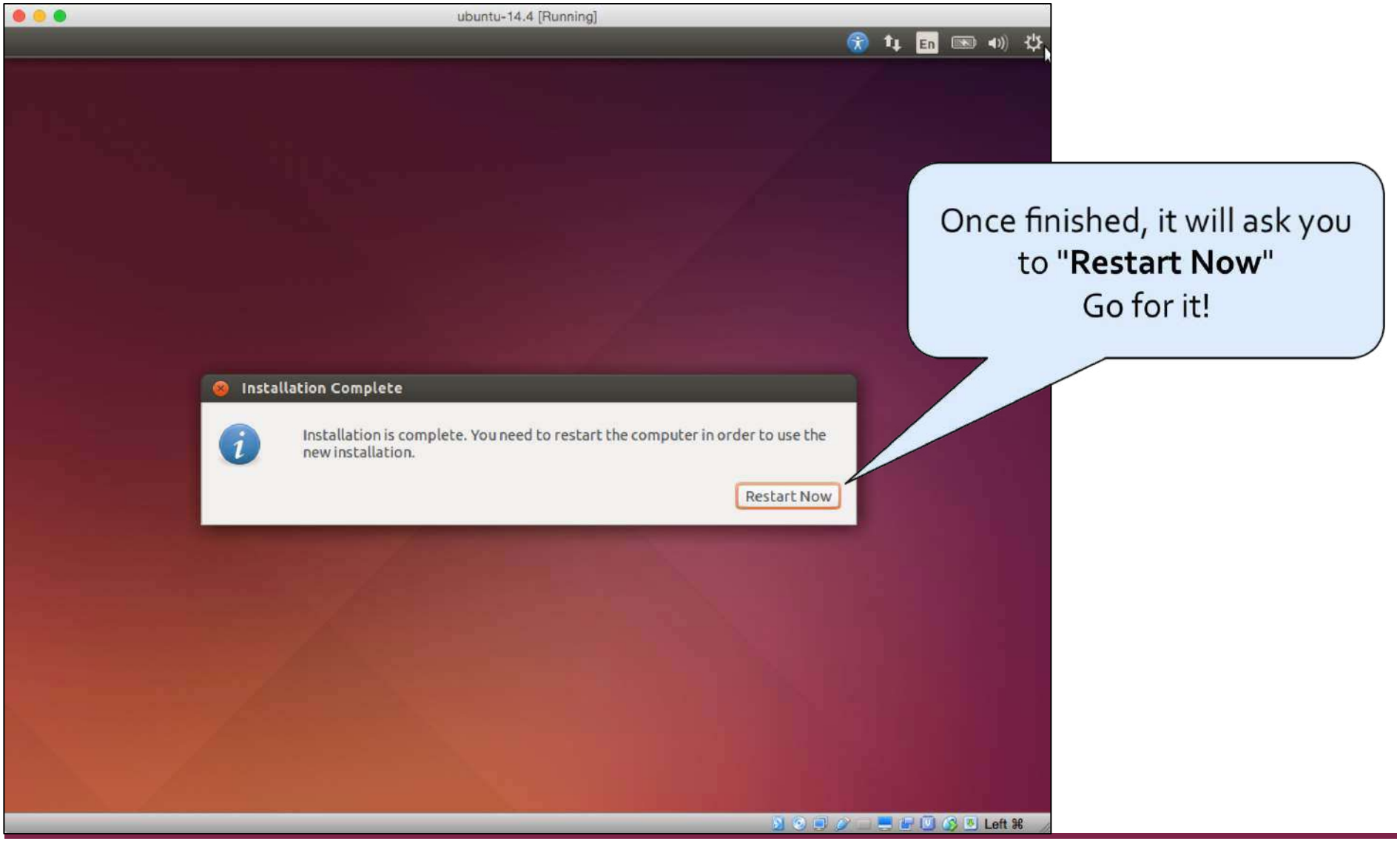


7) Installing Ubuntu on the virtual hard drive



7) Installing Ubuntu on the virtual hard drive

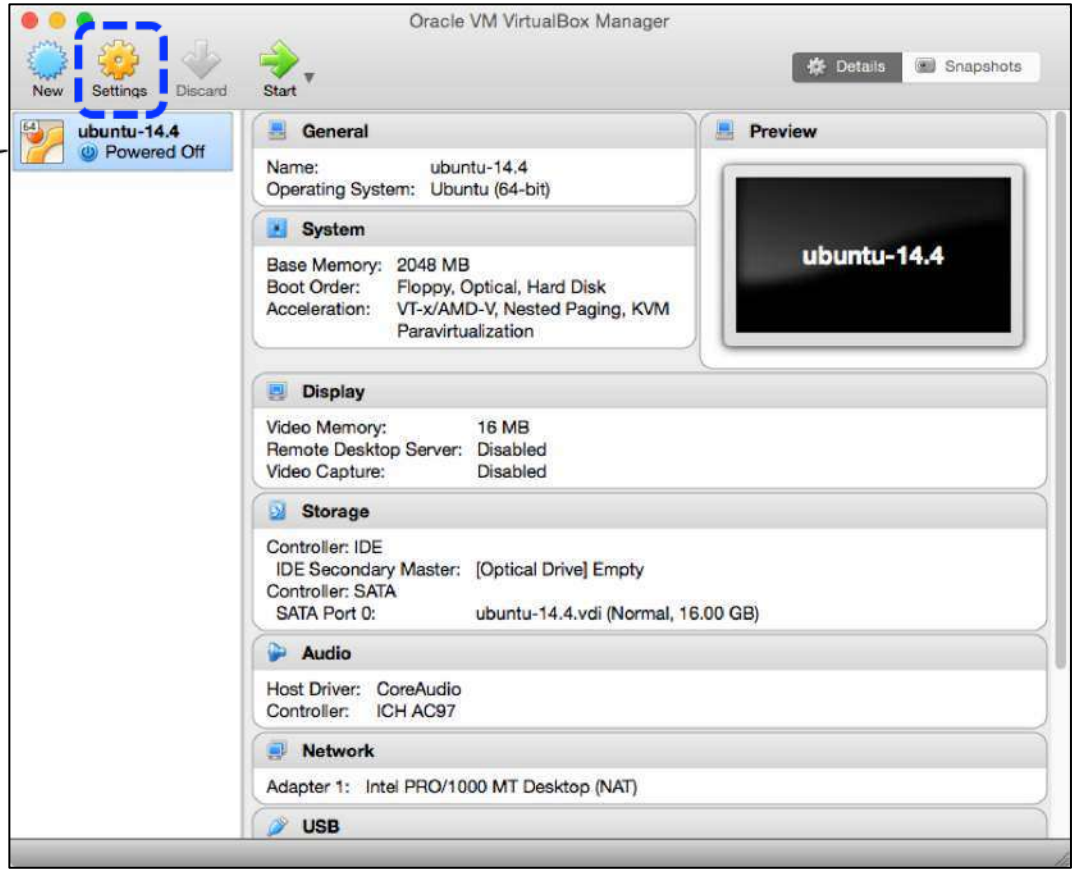


Troubleshooting

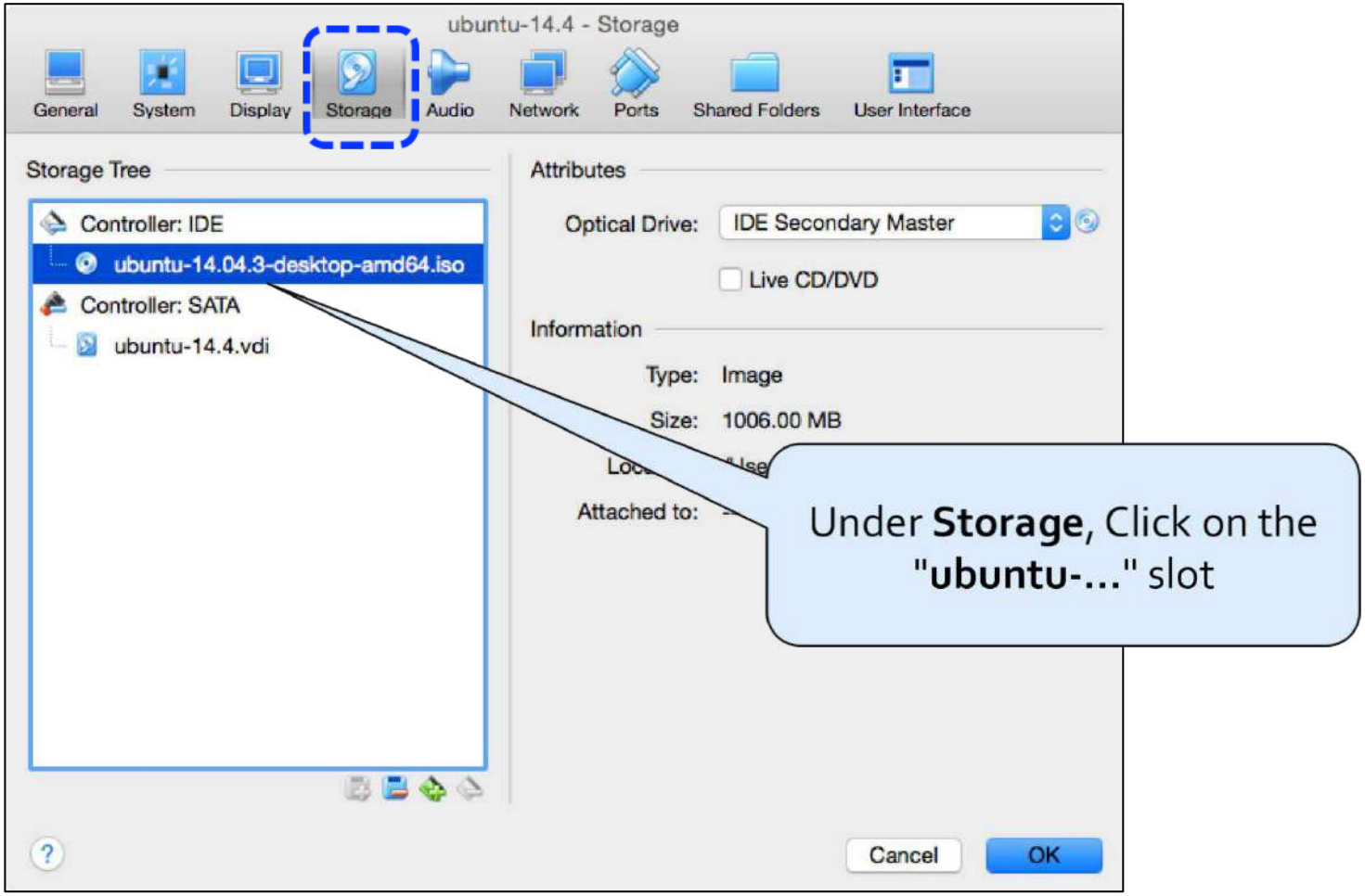
- **Problem:**
  After installing Ubuntu and restarting either
  - Ubuntu tries to install itself again, or
  - VirtualBox/Ubuntu crashes
- **Solution:**
  You may need to eject the installation media (i.e., iso)
  - See the next few slides for more details.

Ejecting the Installation Media
1) Open Settings for your VM

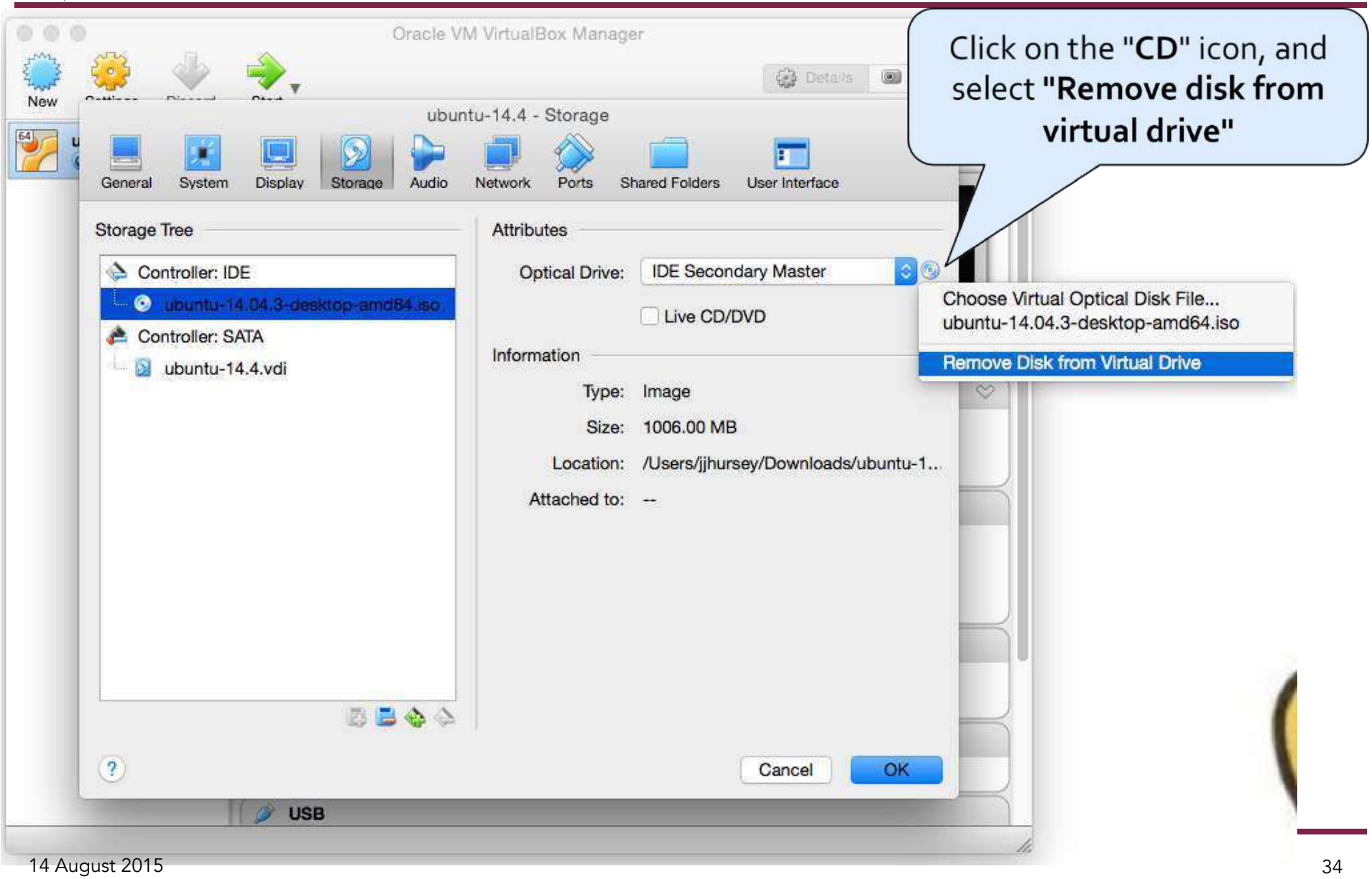
Choose your new VM, then click on **Settings**



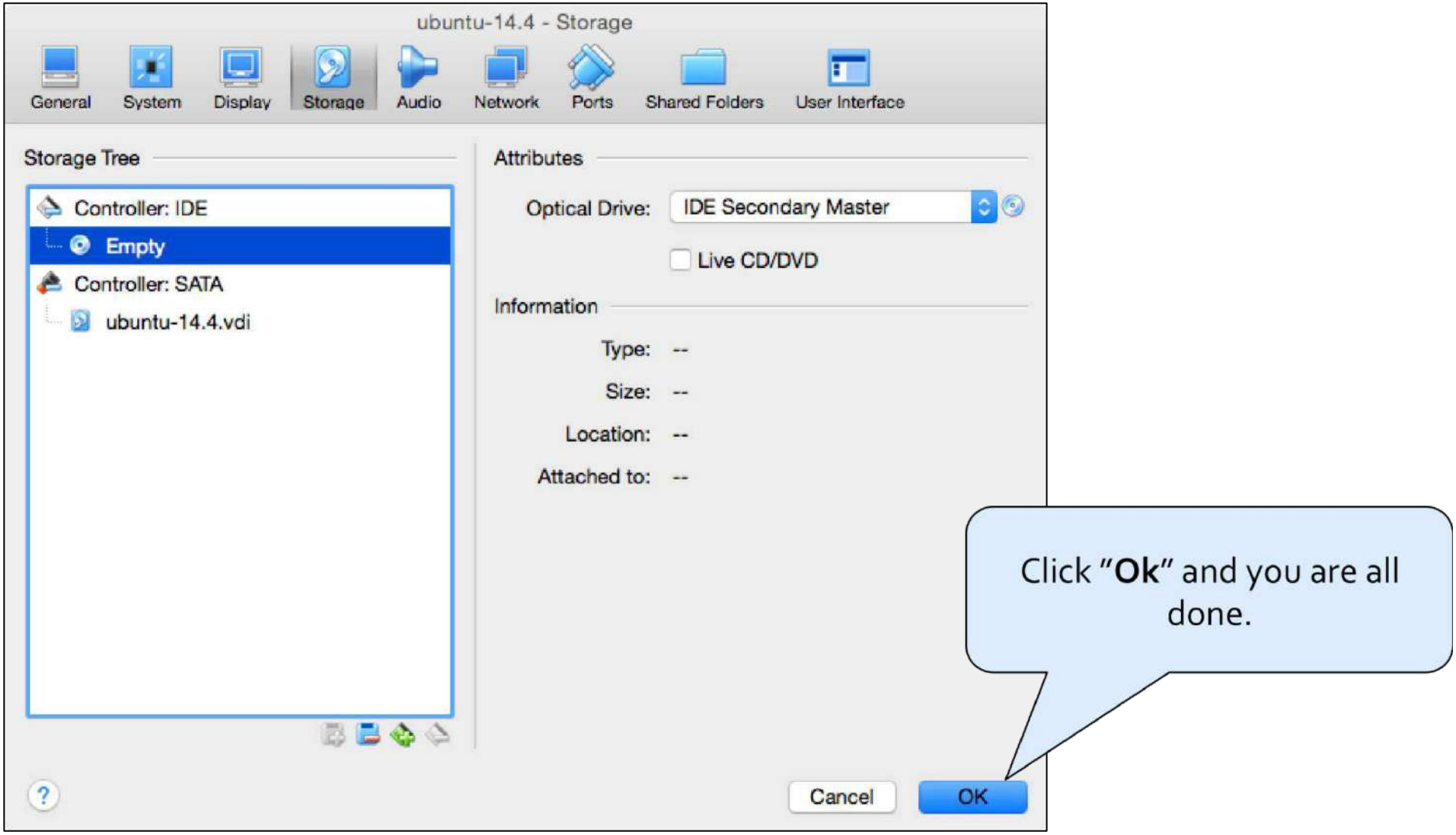
Ejecting the Installation Media
2) Find the installation .iso



Ejecting the Installation Media
3) Remove the disk from the drive



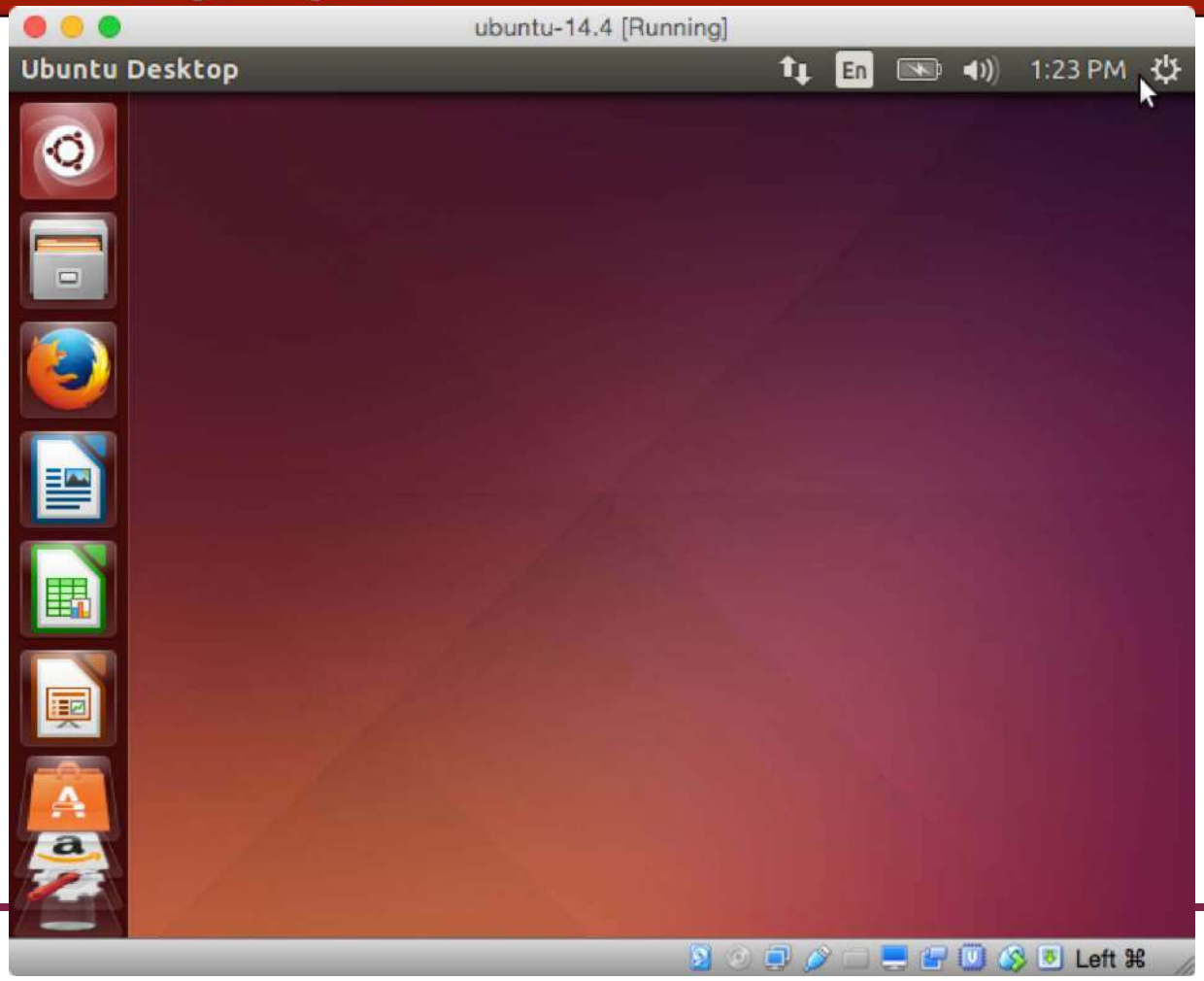
Ejecting the Installation Media
4) All done



Setting up Guest Additions - Ubuntu

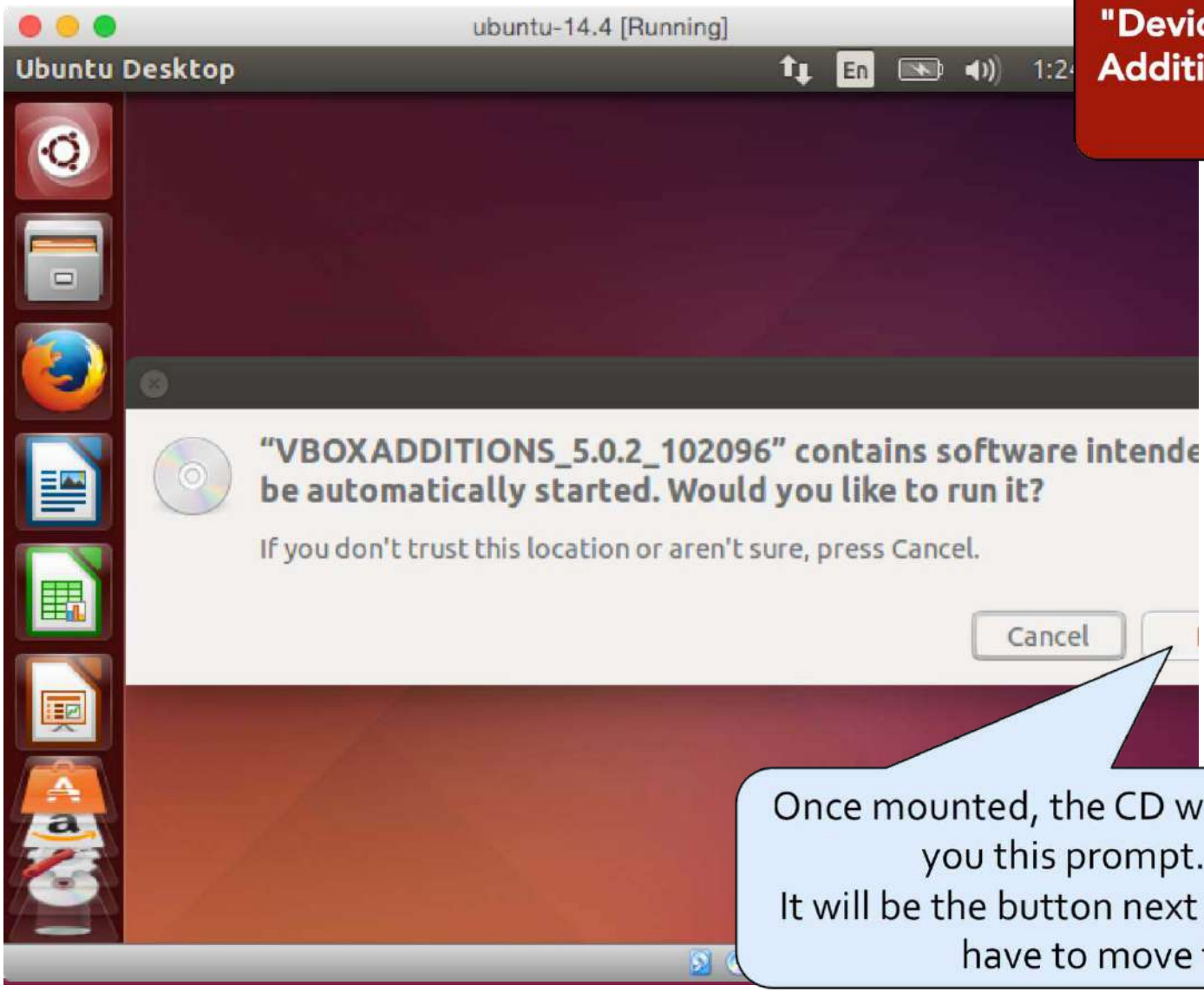
Tiny Window

Often when Ubuntu starts up for the first time it does so in a small window that is difficult to use.
You need to install the "Guest Additions" to allow the Ubuntu virtual machine to notice when the VirtualBox window is resized.
Once installed you can expand the window as you would any other application on your system.



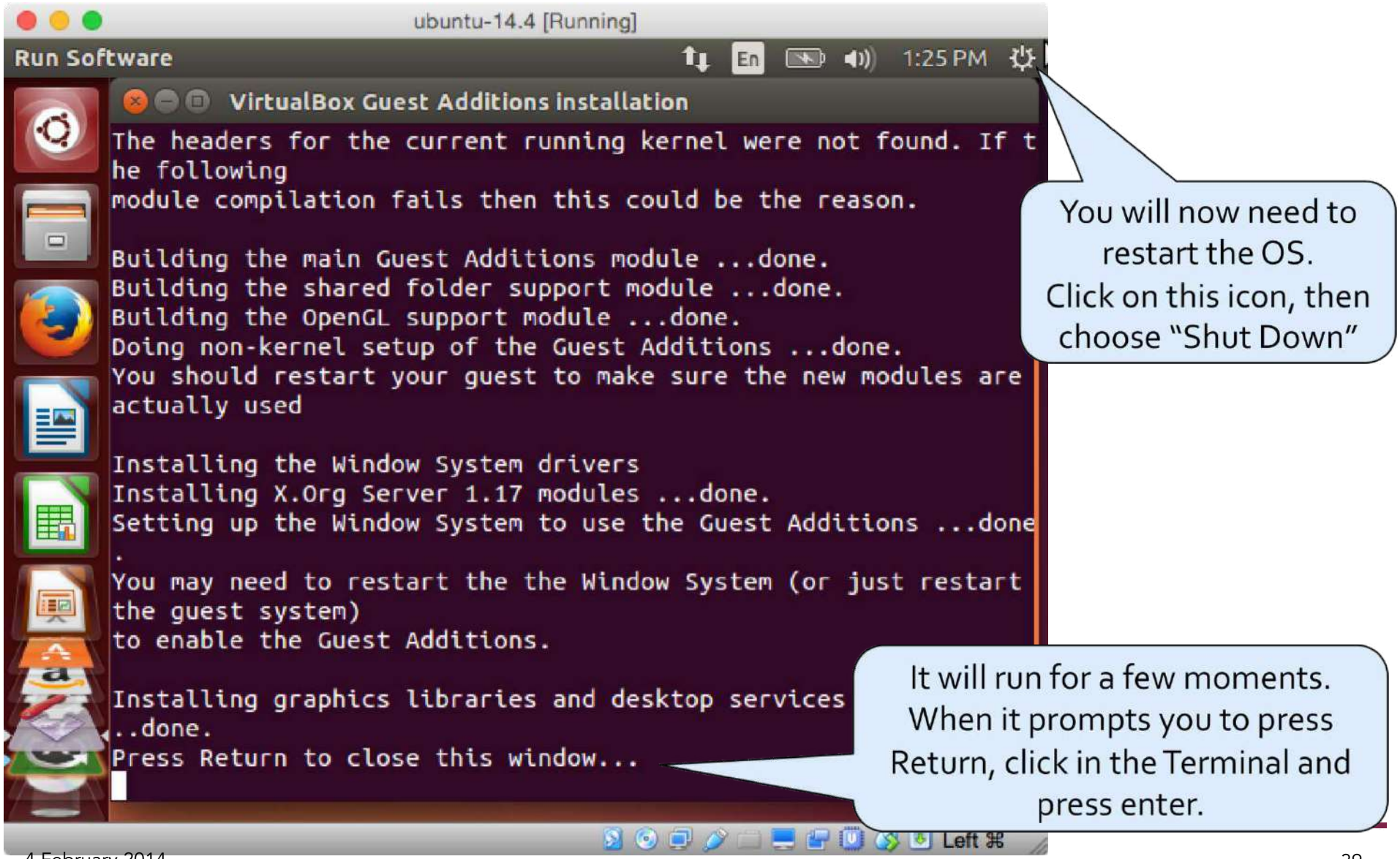
1) Install VirtualBox Guest Additions

From the VirtualBox menu (outside of Ubuntu). Choose "Devices" -> "Insert Guest Additions CD Image"



Once mounted, the CD will cause Ubuntu to give you this prompt. Choose "**Run**"
It will be the button next to "Cancel", you might have to move the window.

2) Install VirtualBox Guest Additions

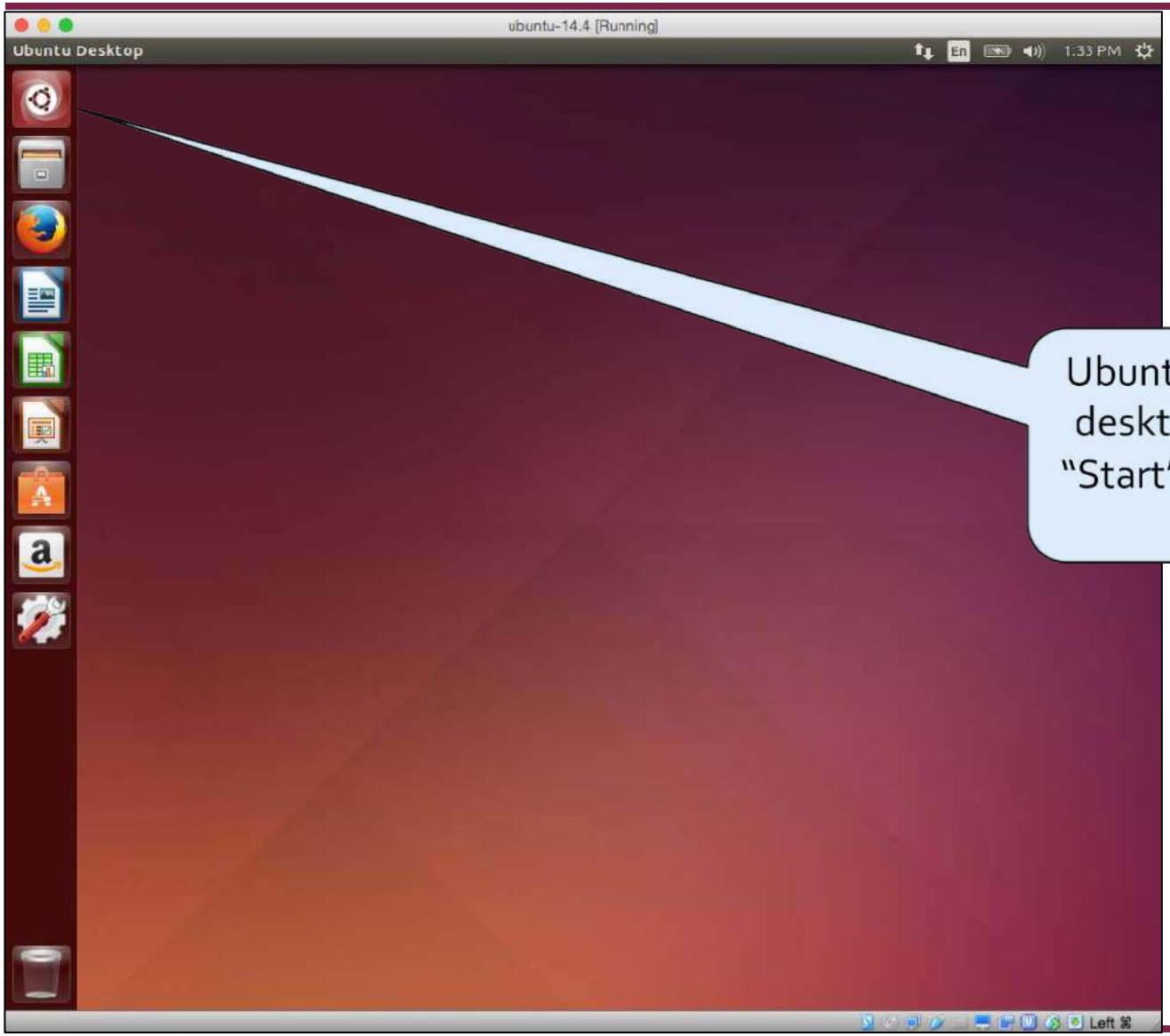


Other Useful Links

- VirtualBox Guest Additions Manual
  - https://www.virtualbox.org/manual/ch04.html
  - In particular take a look at the “Shared Folders” capability for an easy way to share files between the host machine and the virtual machine.

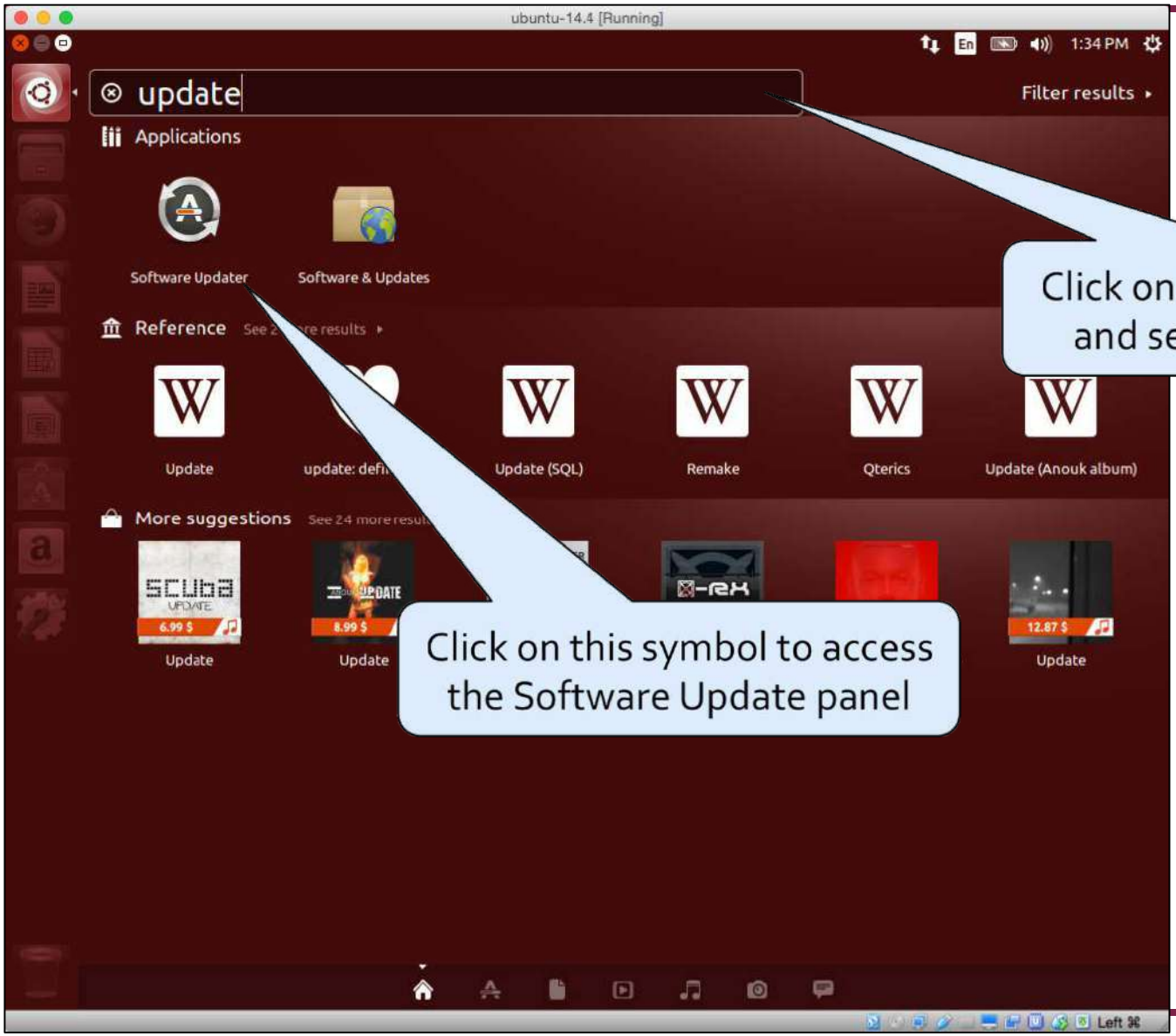
Setting up Ubuntu

1) Welcome!

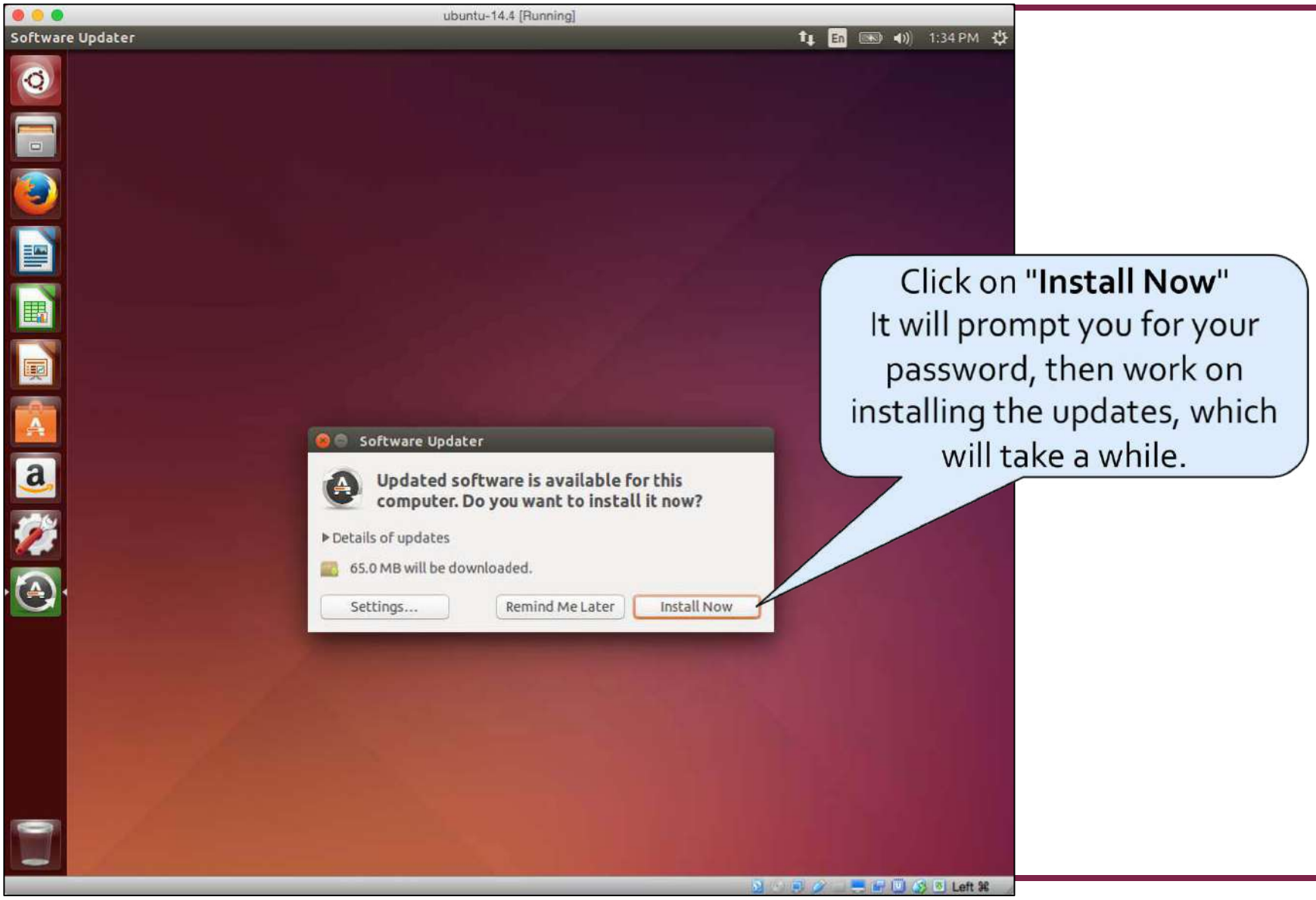


Ubuntu Boots into a familiar desktop type setting with a "Start"-like button at the top of the sidebar.

2) Software Update



2) Software Update



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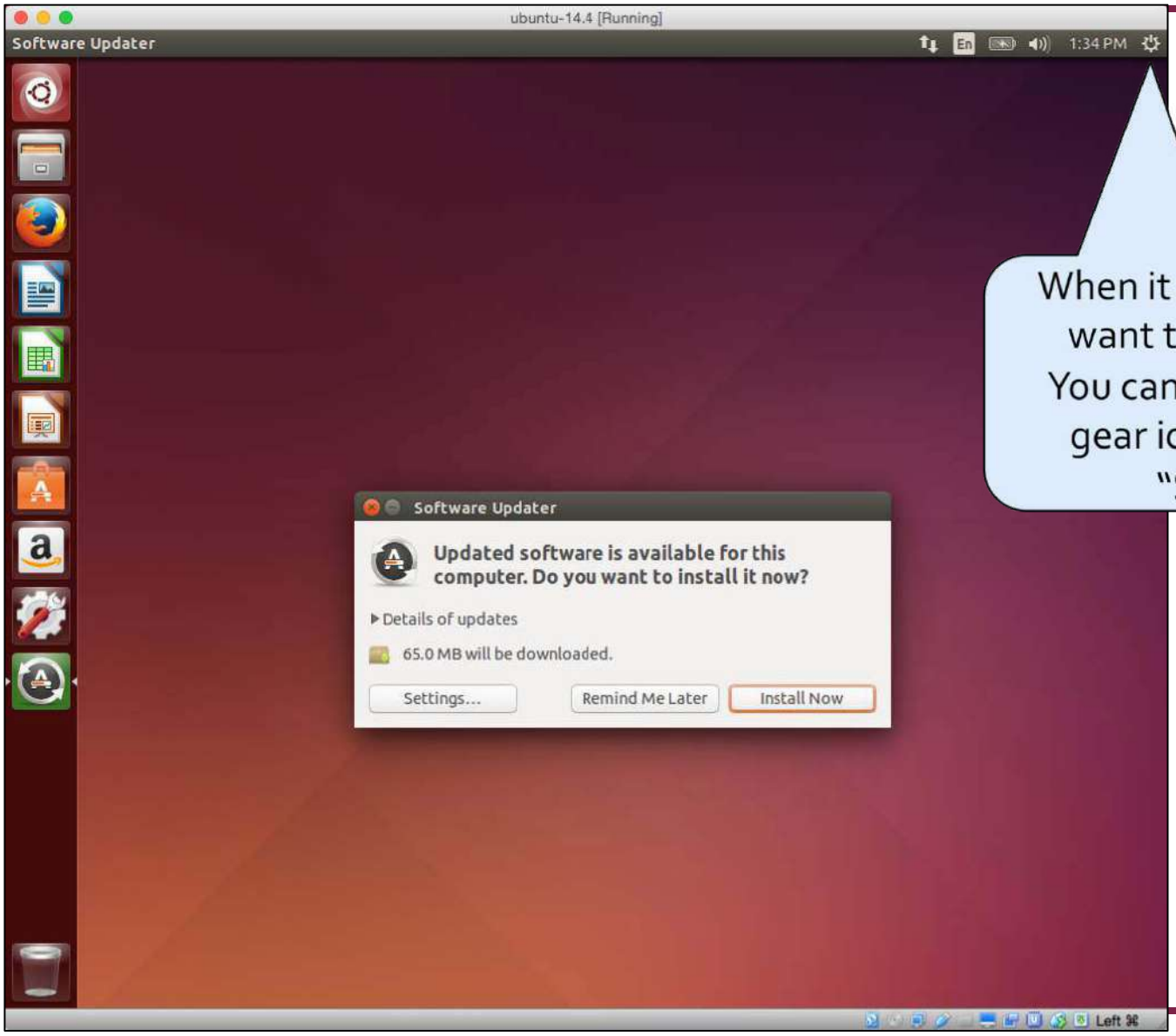
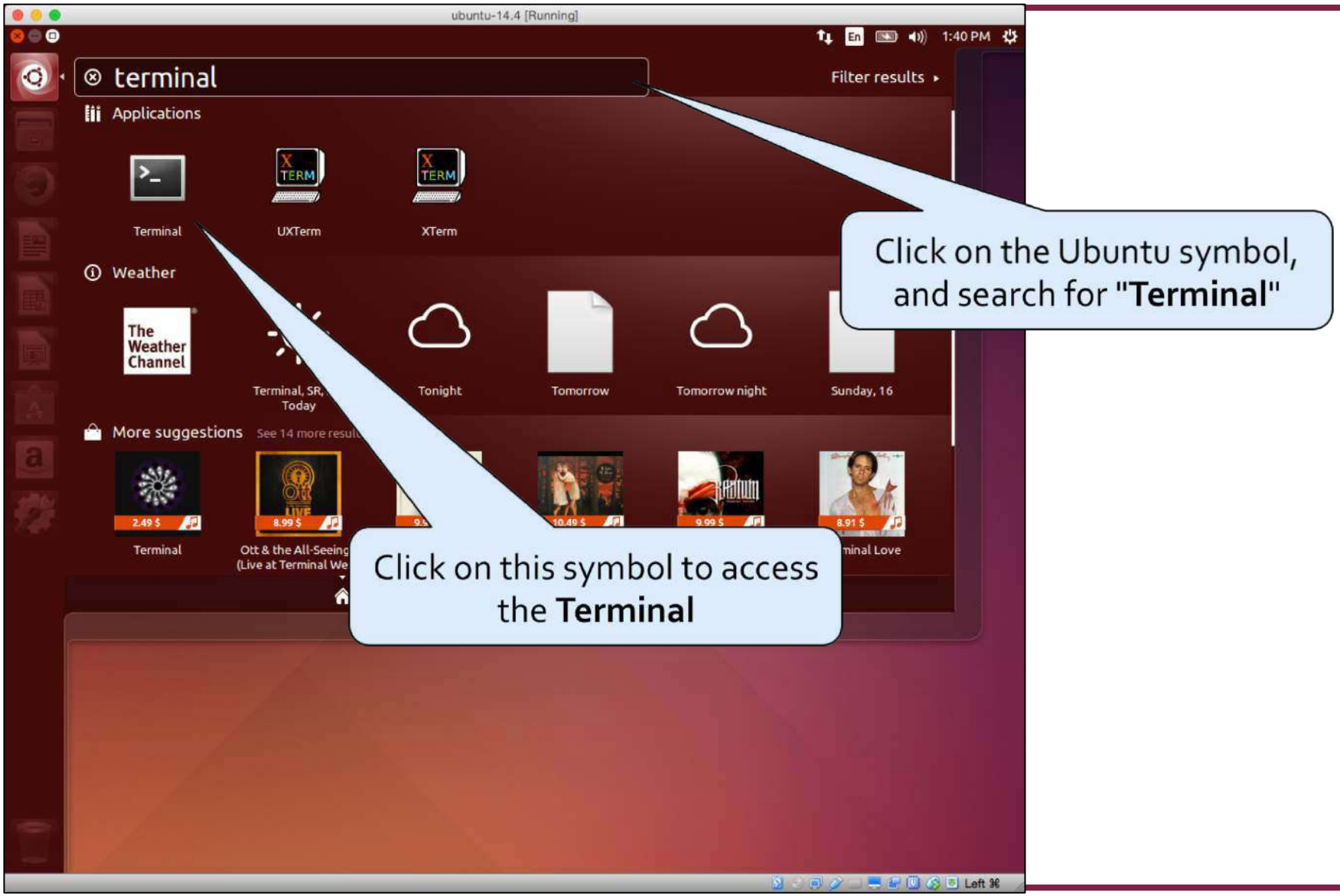


Troubleshooting

- **Problem:**
  After installing updates in Ubuntu and restarting the screen does not resize any longer.
- **Solution:**
  Try reinstalling the Guest Additions then rebooting.
  - See the previous slides for more details.

3) Find the Terminal



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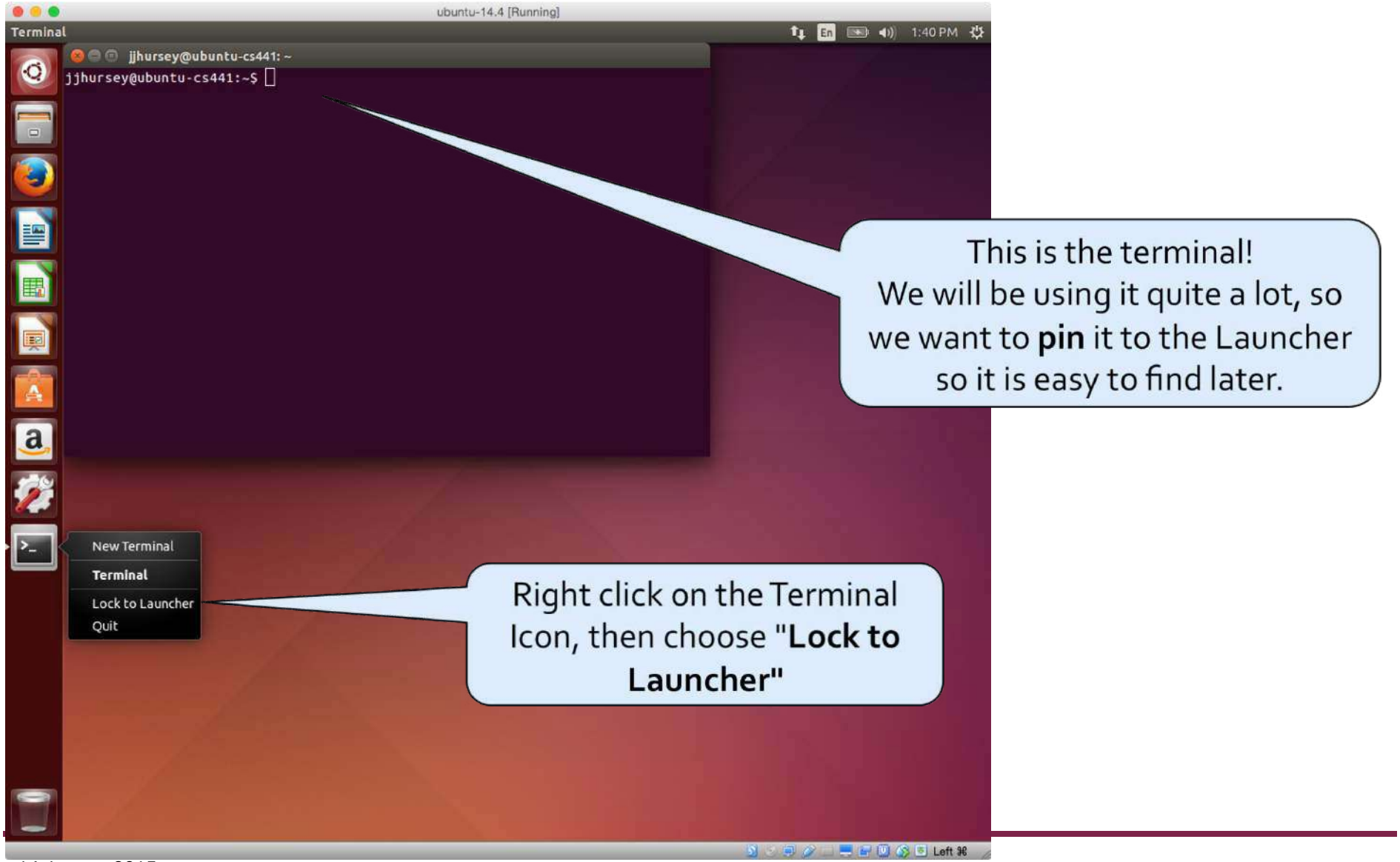
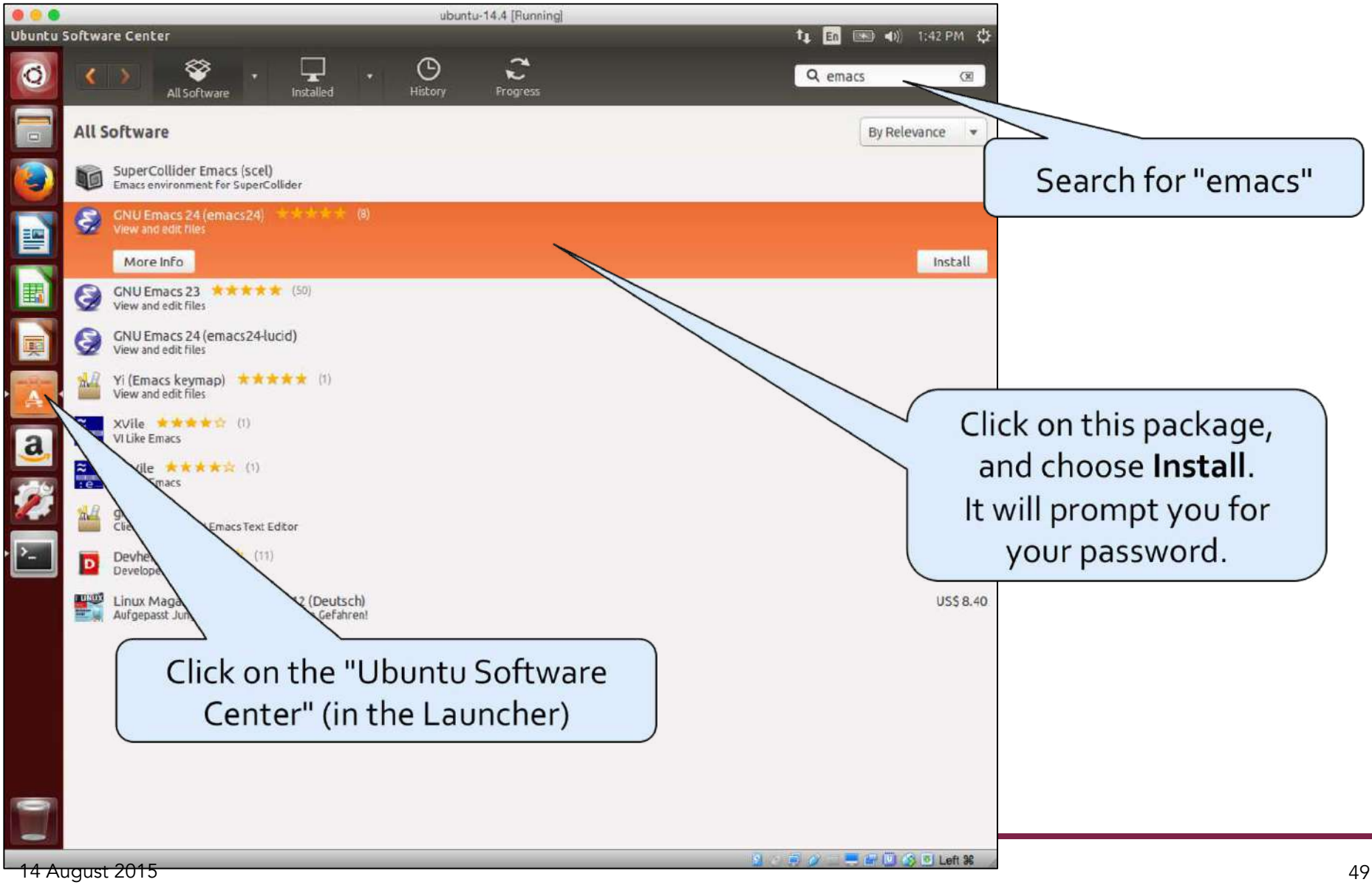
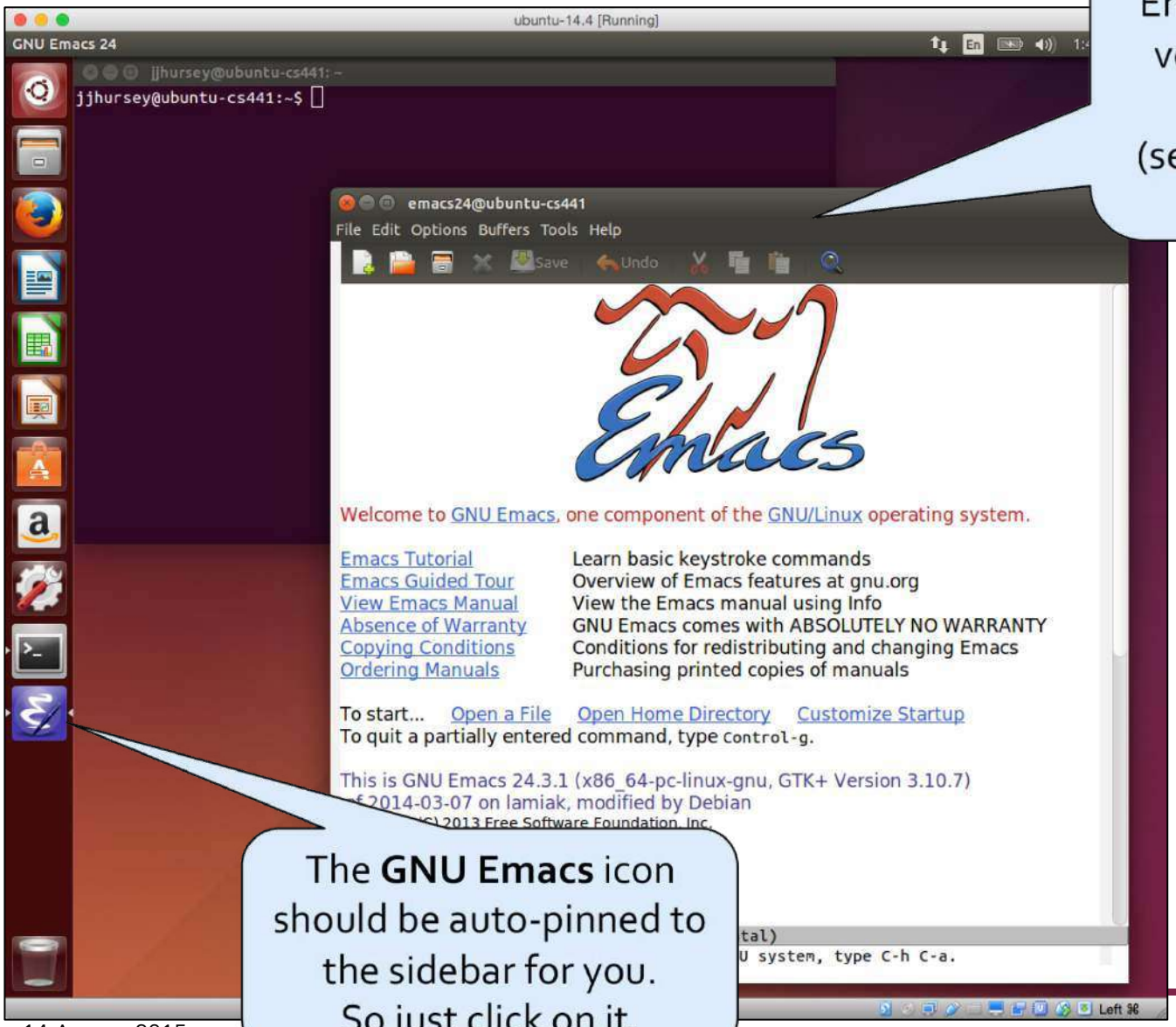


4) Install Emacs (your new favorite editor)



5) Launch Emacs

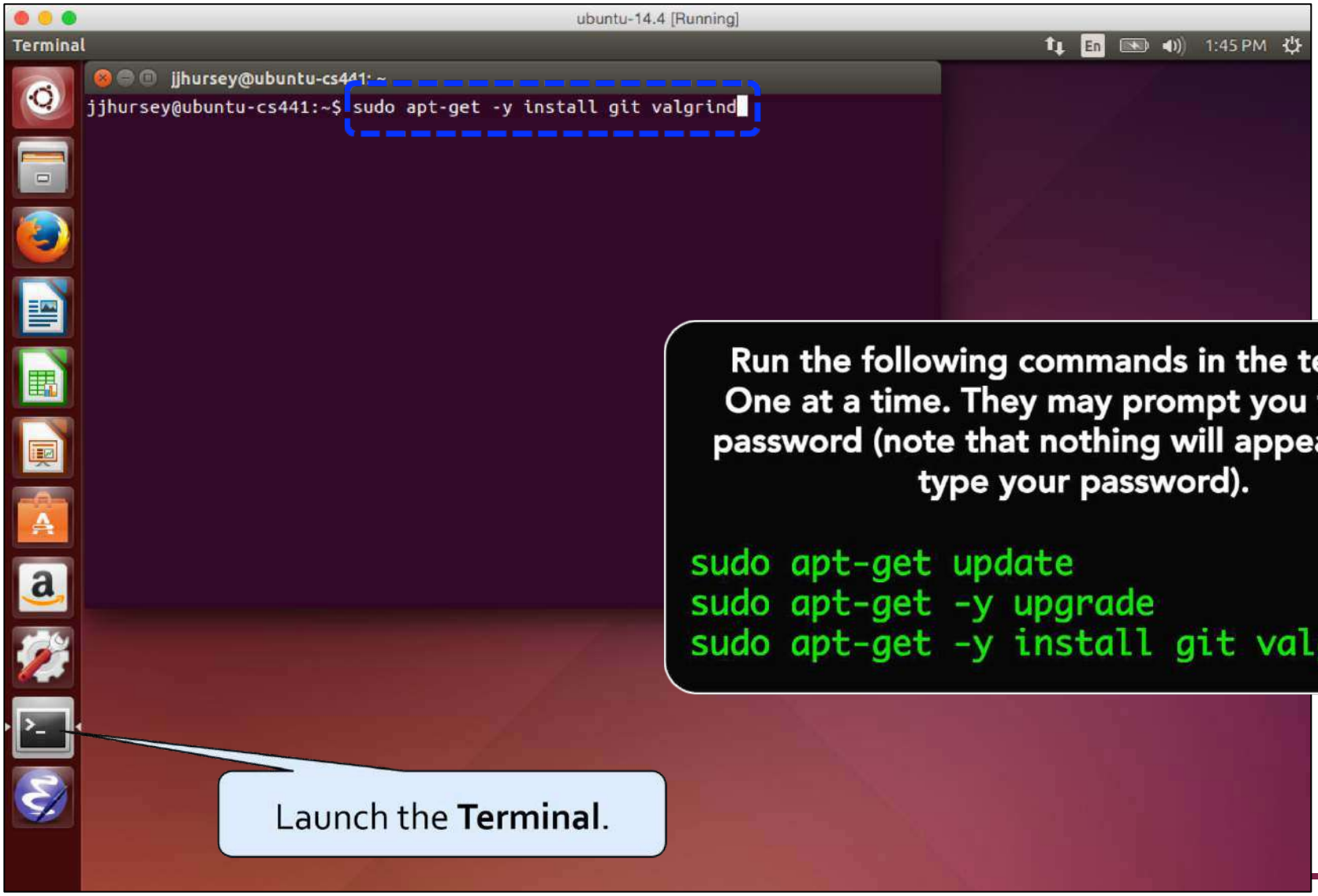


This is Emacs!
Emacs is a widely used and versatile IDE. It just takes some getting used to.
(see additional Tutorials for more information)

The **GNU Emacs** icon should be auto-pinned to the sidebar for you.
So just click on it.

6) Install git & valgrind

These tools are not easily installed from the Software Center, so we will use the terminal to access the backend installed called apt-get



All Done

This one time setup is finished!

Other Useful Links

- Desktop Ubuntu manual
  - https://help.ubuntu.com/14.04/ubuntu-help/index.html