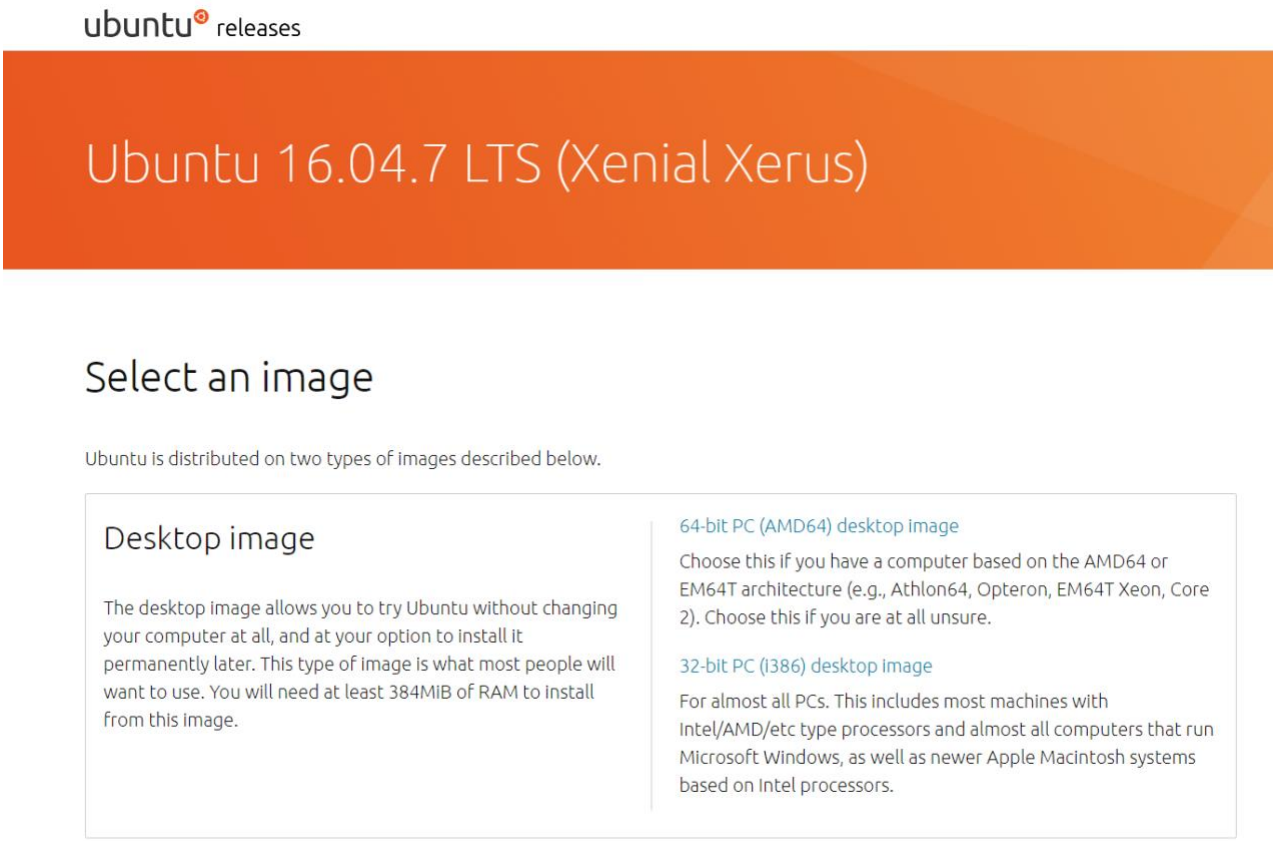
Setting up Ubuntu with VirtualBox

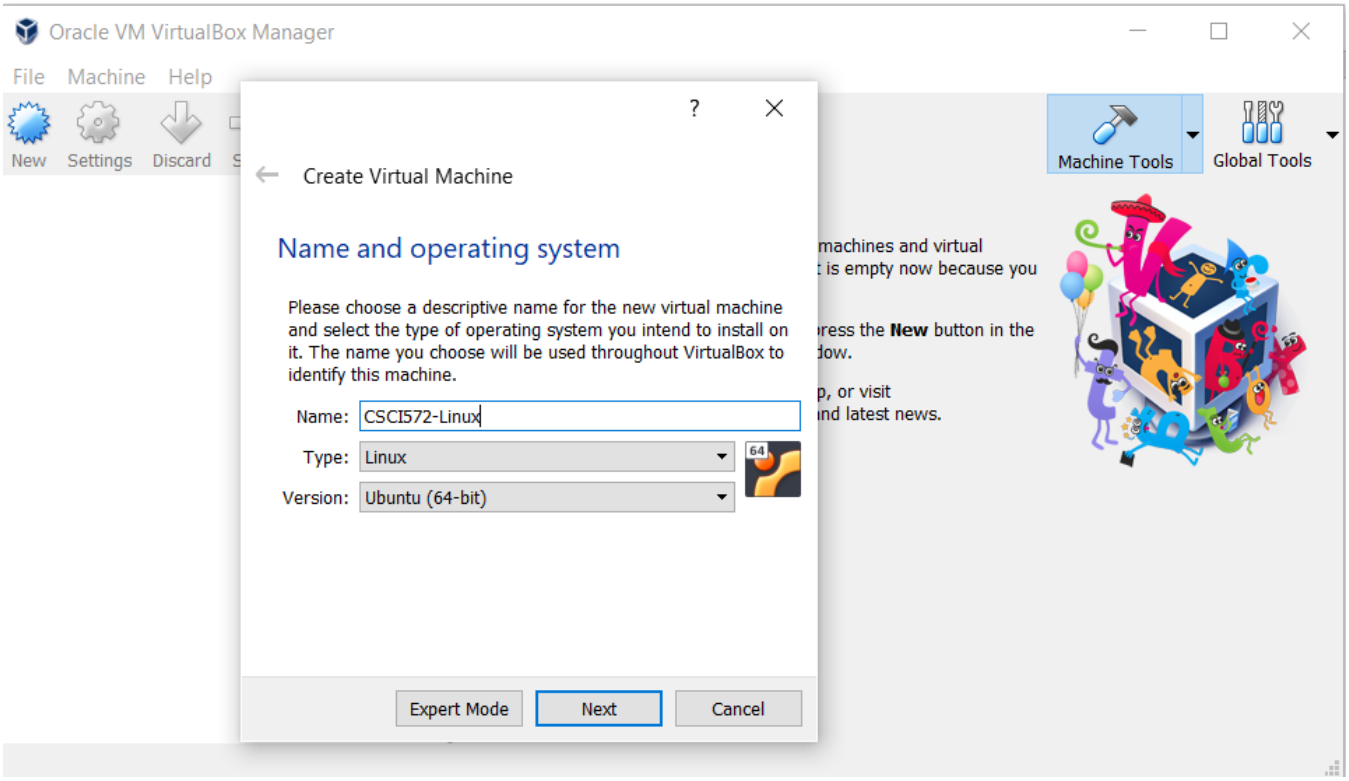
Following is an install guide for setting up VirtualBox with Ubuntu 16.04.7 on your system. If you have problems, more detailed instruction and troubleshooting tips can be found on the Ubuntu site.

1. Download the version of VirtualBox (https://www.virtualbox.org/wiki/Download_Old_Builds_5_2) for your machine (under "VirtualBox 5.2.44", choose the host package that corresponds to your operating system (i.e. if you're installing on Mac, choose the package "OS X hosts", if you're installing on Windows, choose the package "Windows Hosts").

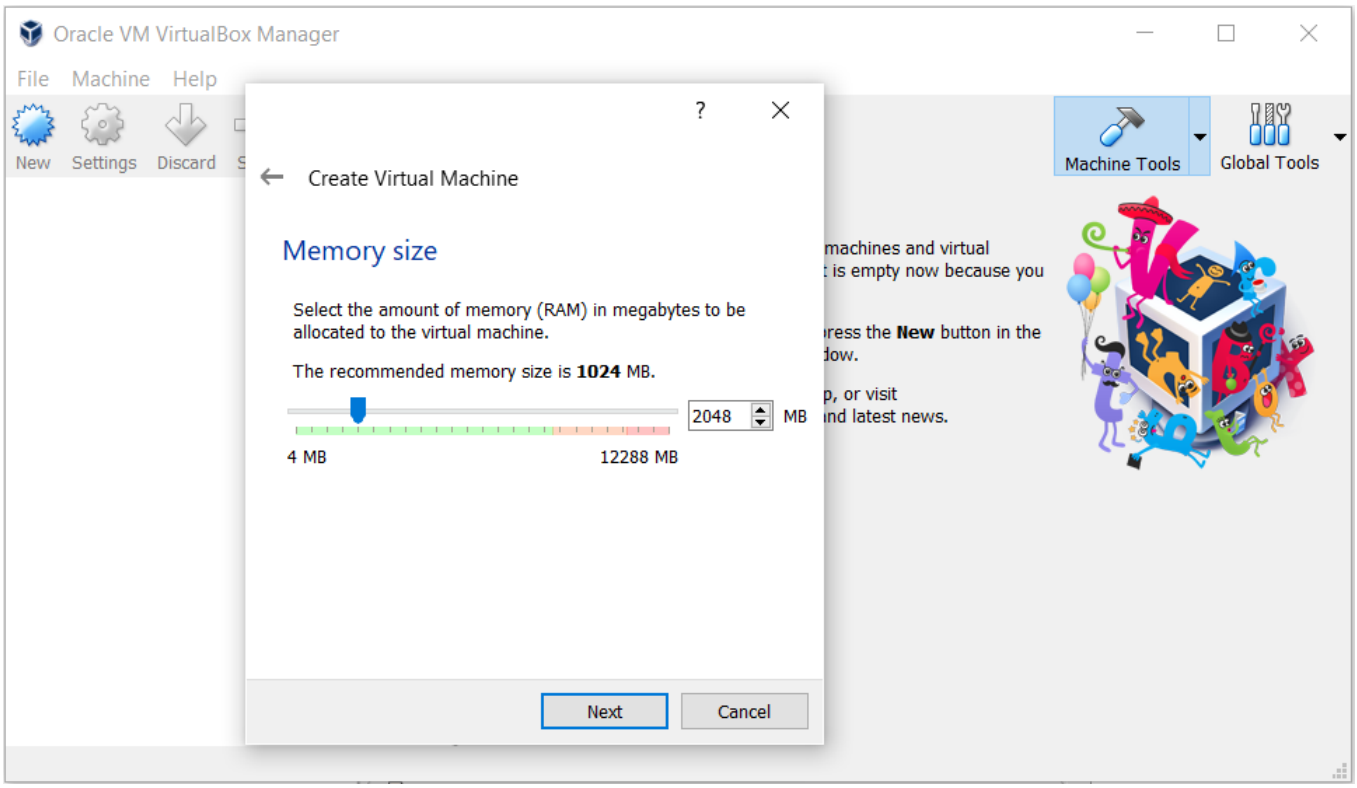
2. Download the 64 bit version of Ubuntu Linux 16.04.7 LTS (http://releases.ubuntu.com/releases/).
3. If your system has less than 2GB RAM select the 32-bit version



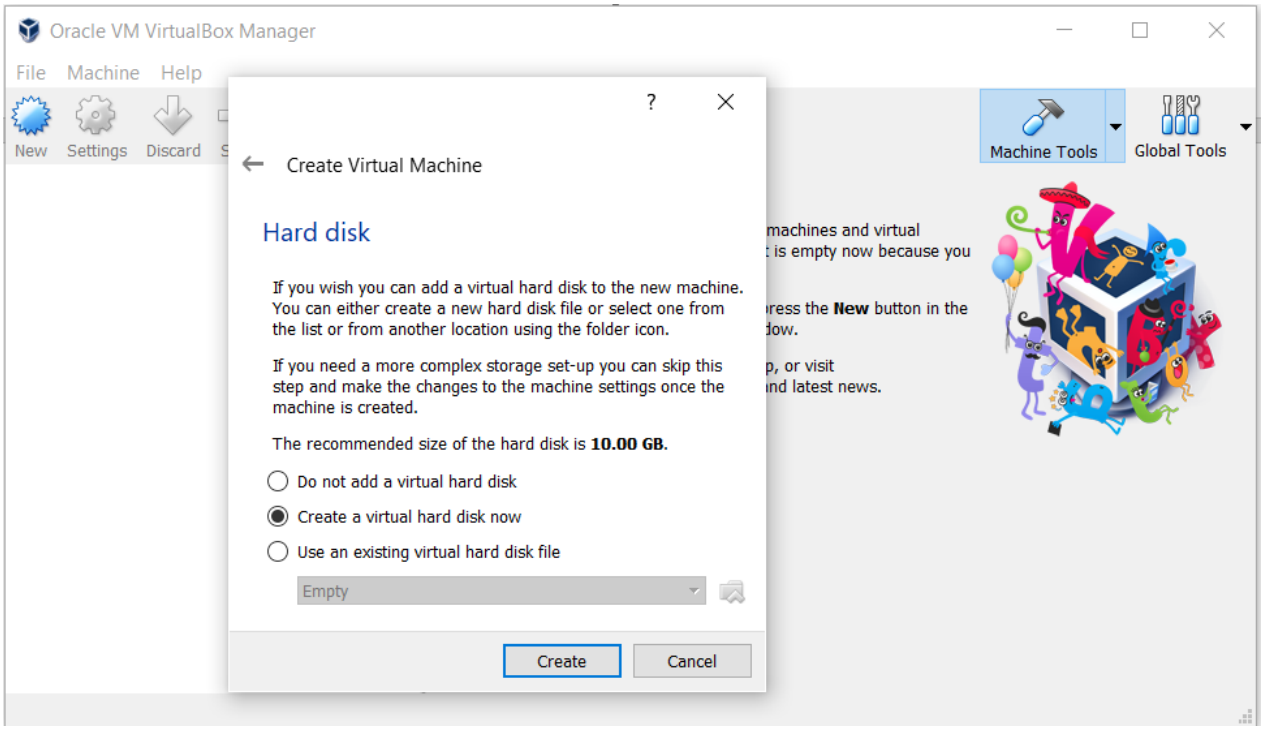
4. Run the VirtualBox-5.2.44-139111-Win.exe file and follow the Installer wizard
5. After the installation, open the VirtualBox application
6. Select “New” from the application ribbon, choose a name for your system, and select Type: Linux and Version Ubuntu (64bit). Remember to select Version: Ubuntu (64-bit)



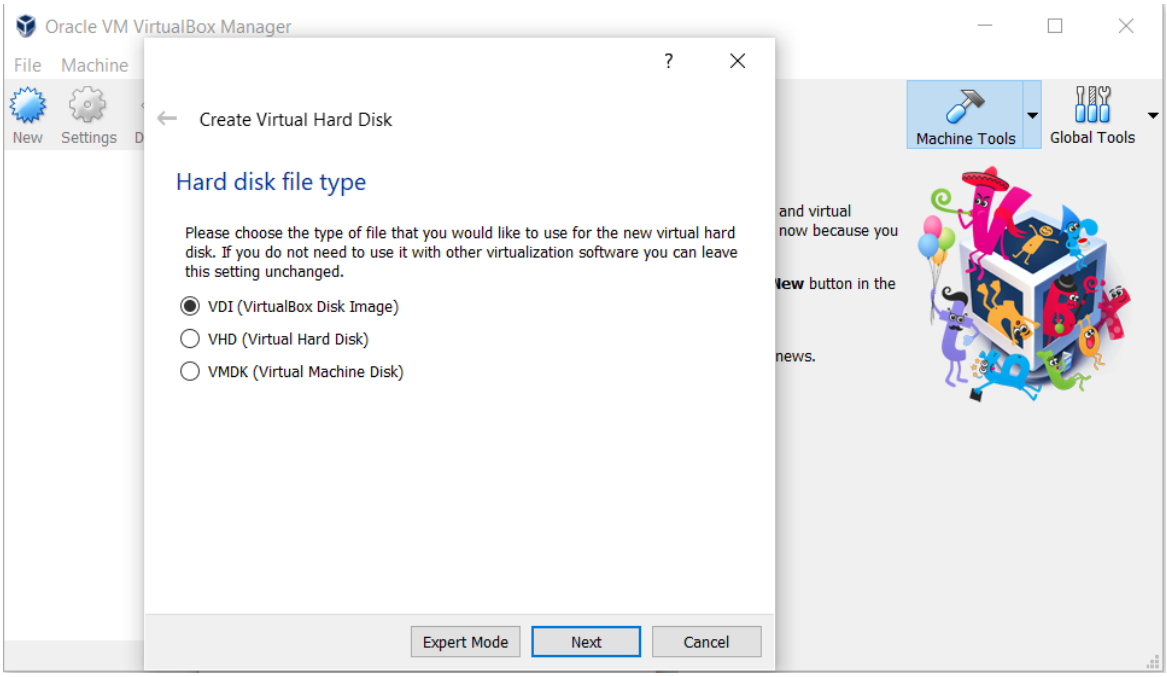
7. Select the amount of memory for your virtual machine (If you have 4GB of RAM or more, generally set this to 2048MB or half your system RAM, whichever is greater).



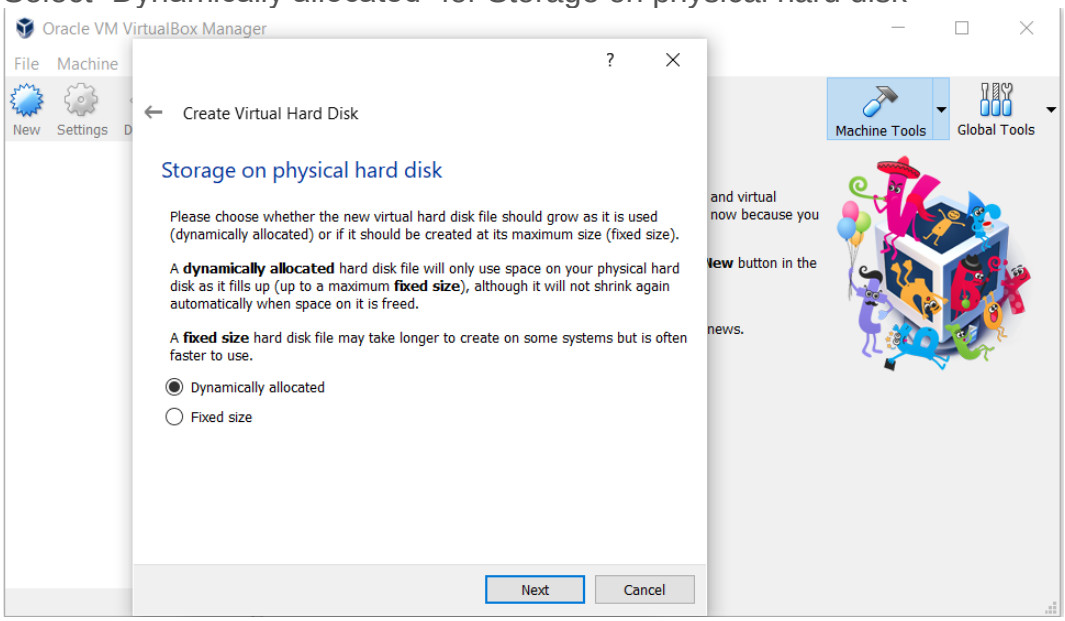
8. Select the “Create a virtual hard drive now” option: Note: your grayed area may say Empty instead of Ubuntu as shown in the figure.



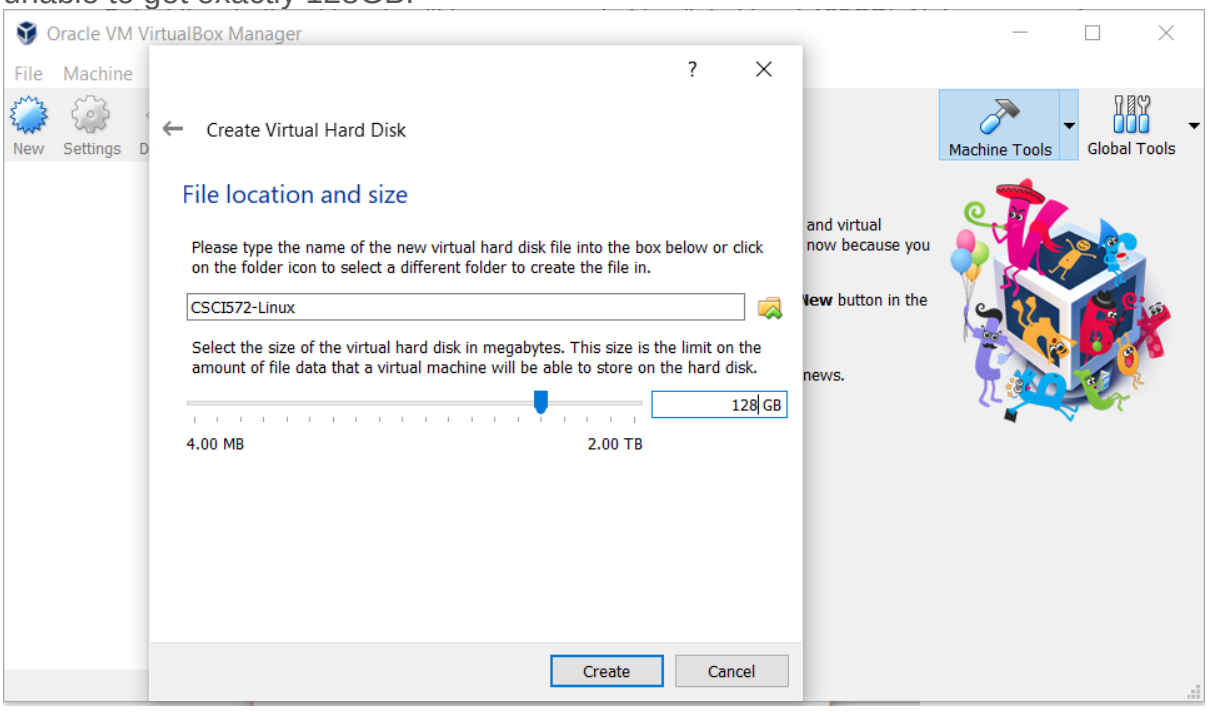
- Select the “VDI (VirtualBox Disk Image)” option for Hard disk File Type



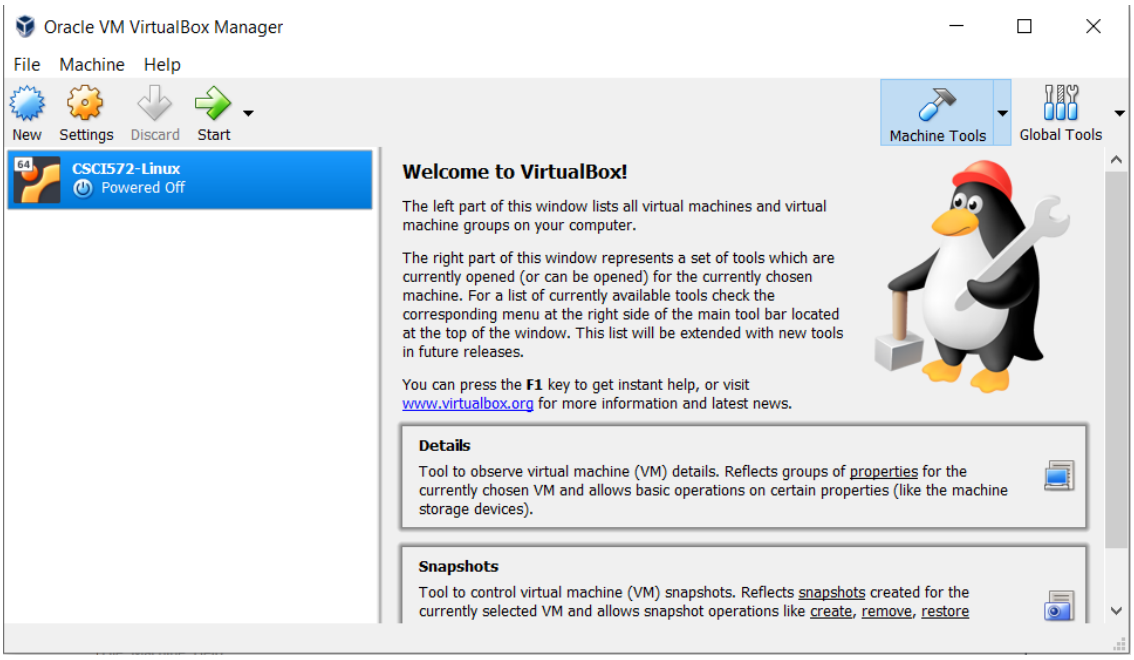
- Select “Dynamically allocated” for Storage on physical hard disk



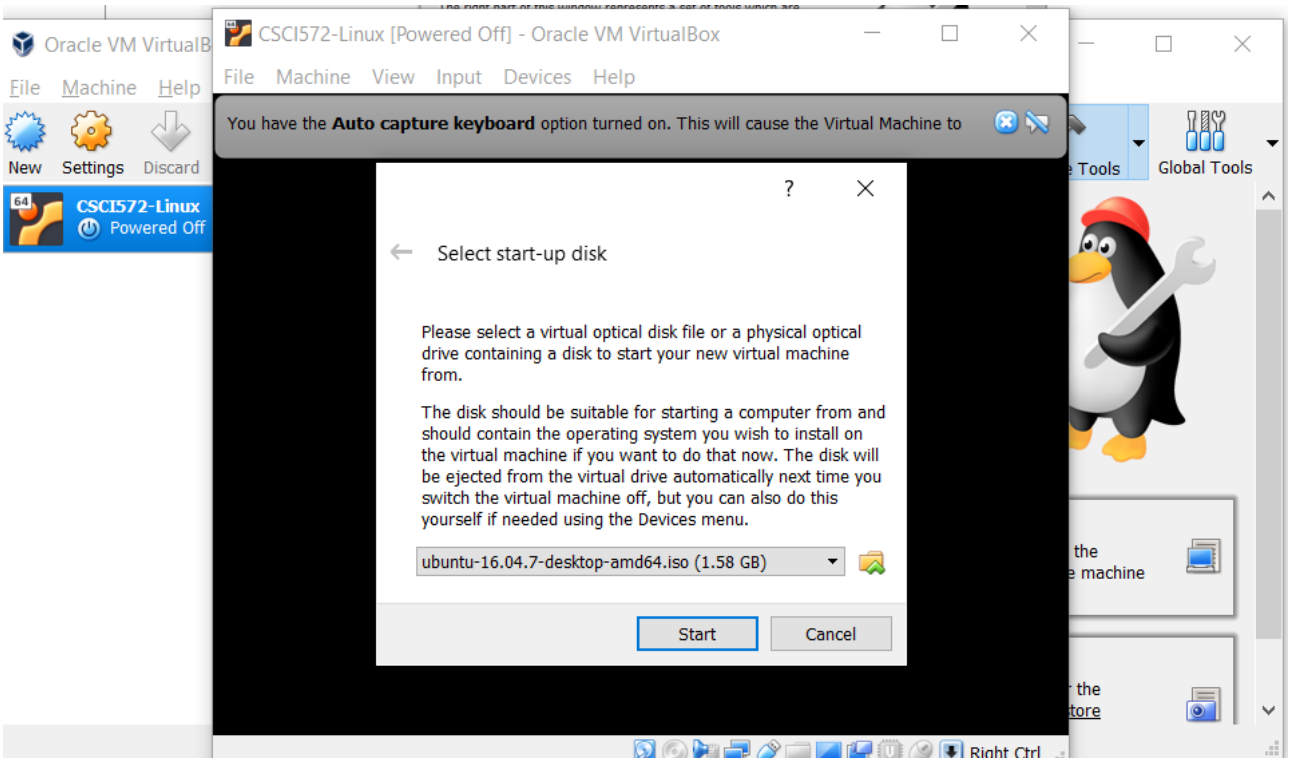
Select the starting drive size (it is recommended to allot at least 128GB). Note: you may be unable to get exactly 128GB.



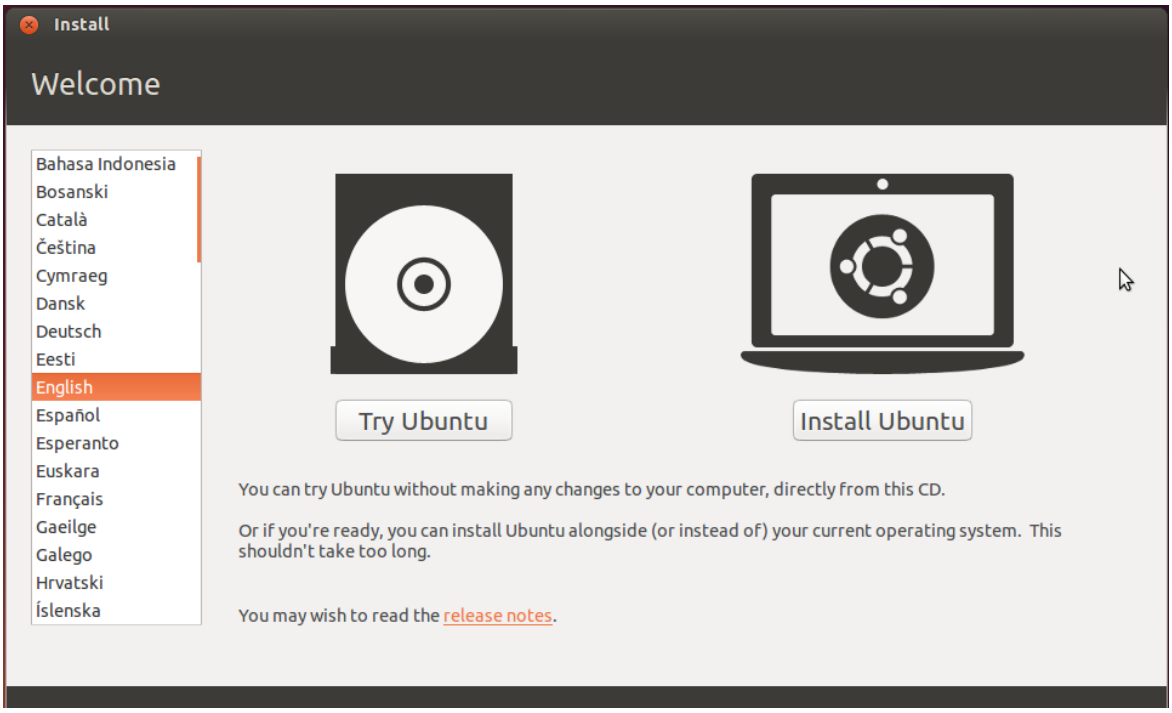
9. With your new instance selected, select start from the application ribbon.

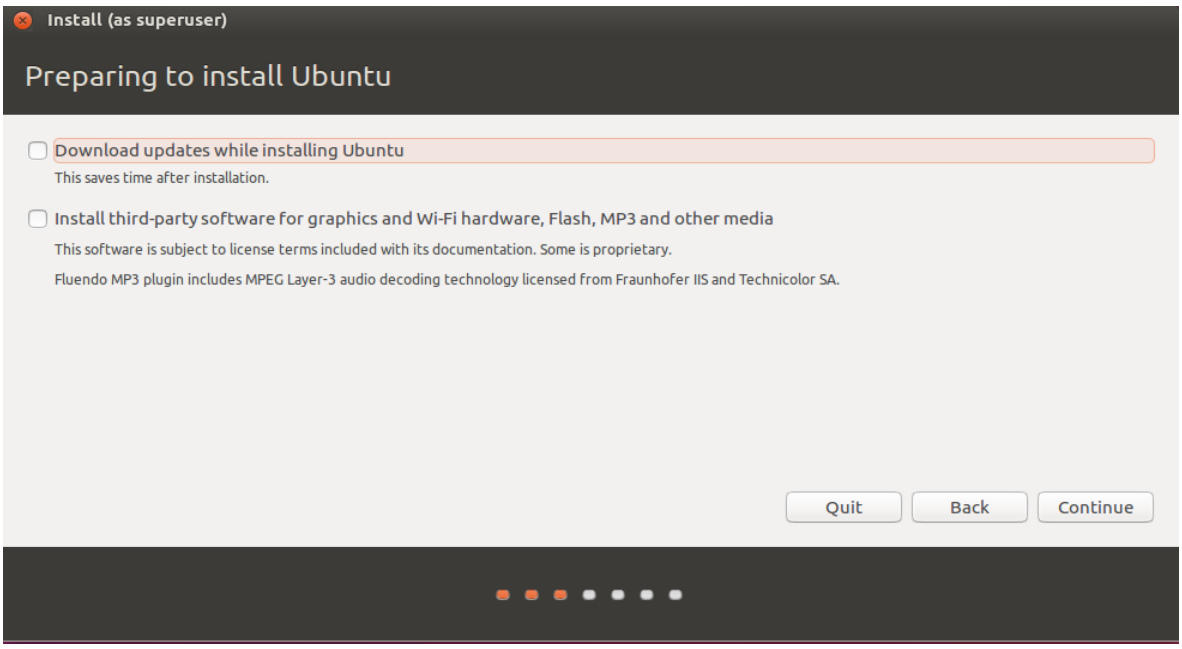


10. When prompted, select the previously downloaded Ubuntu iso file as the virtual optical disk file by clicking on the folder icon and click on Start

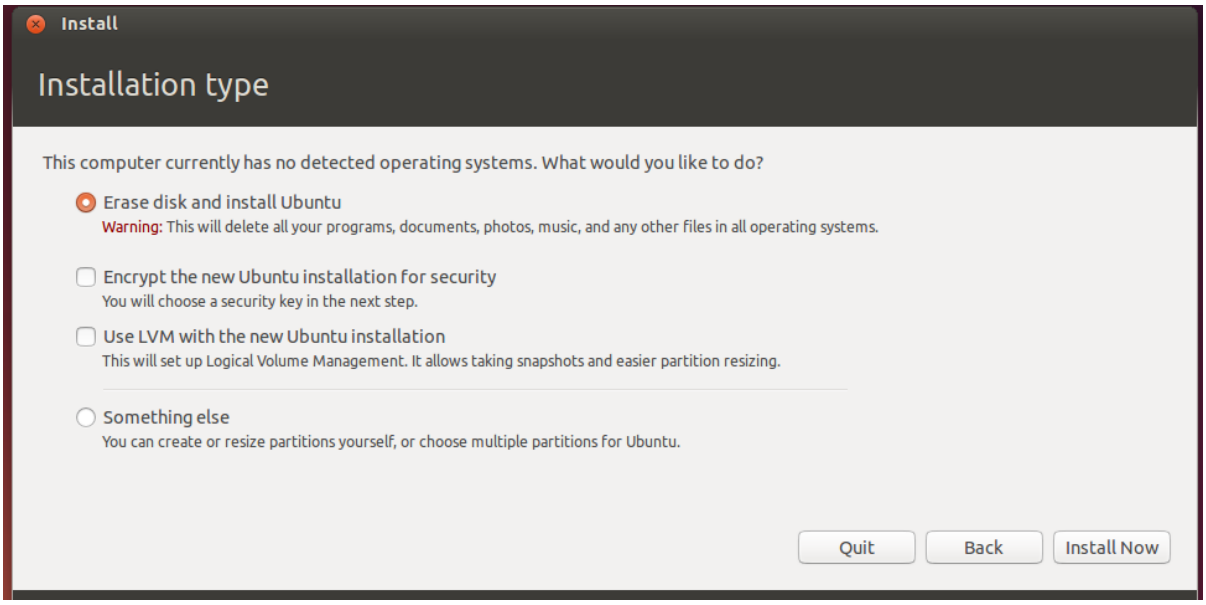


11. Click on Install Ubuntu



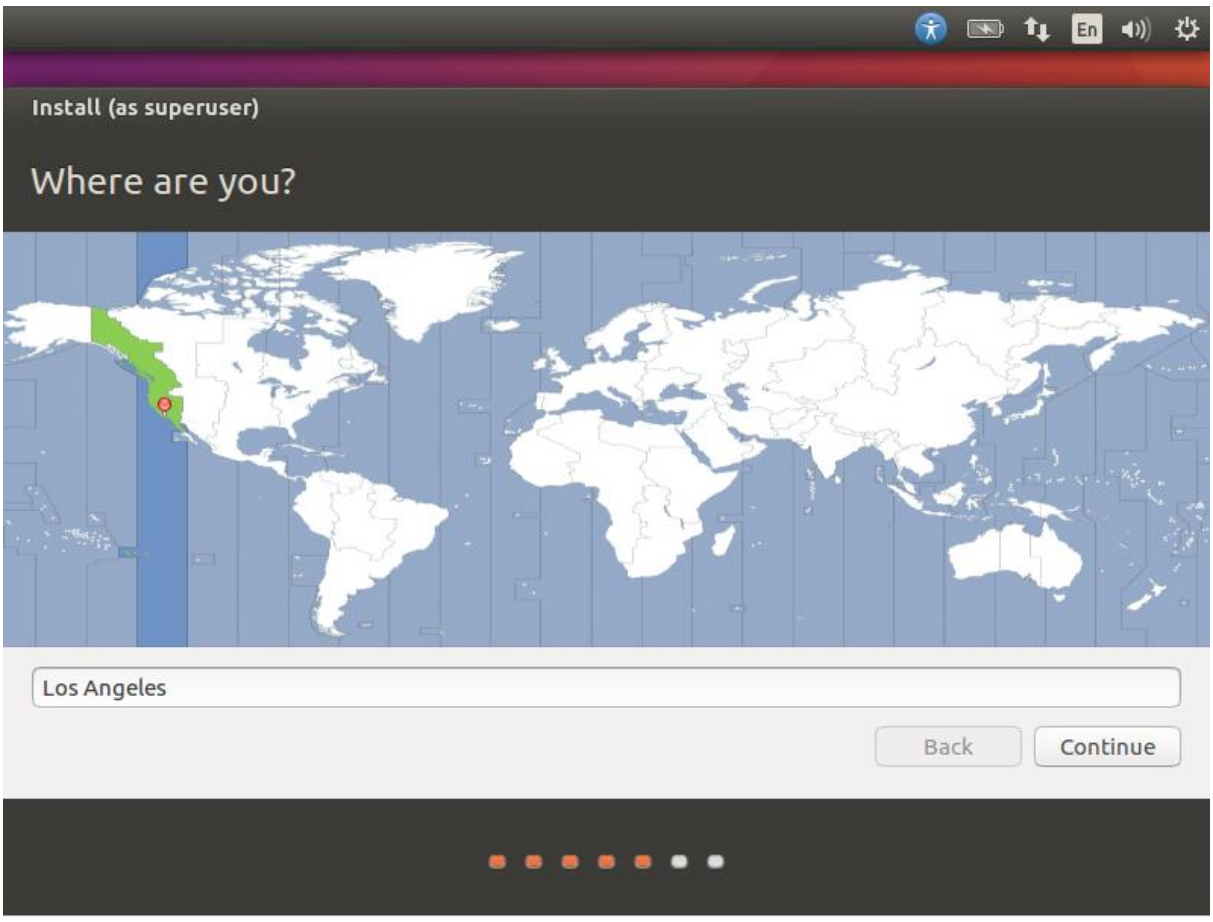


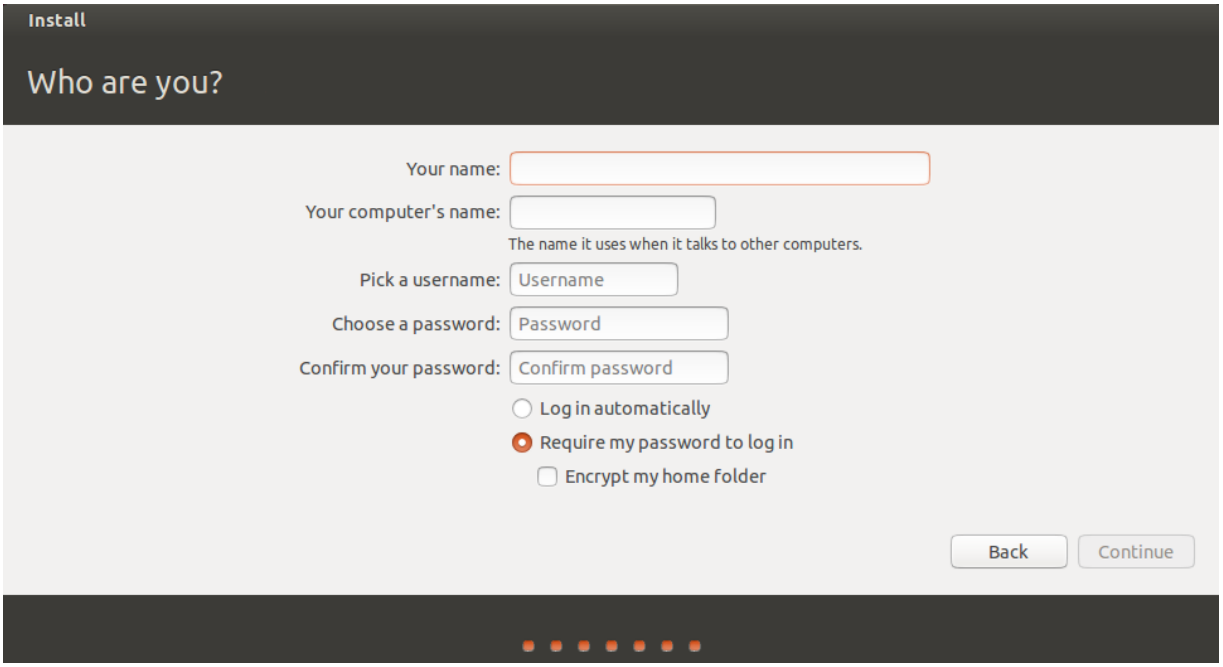
Click on Continue and select “Erase disk and install Ubuntu” and click on “Install Now”. Messages may appear indicating Auto capture of keyboard and mouse pointer. The messages can be removed. If prompted about “Write the changes to disk?”, click Continue.



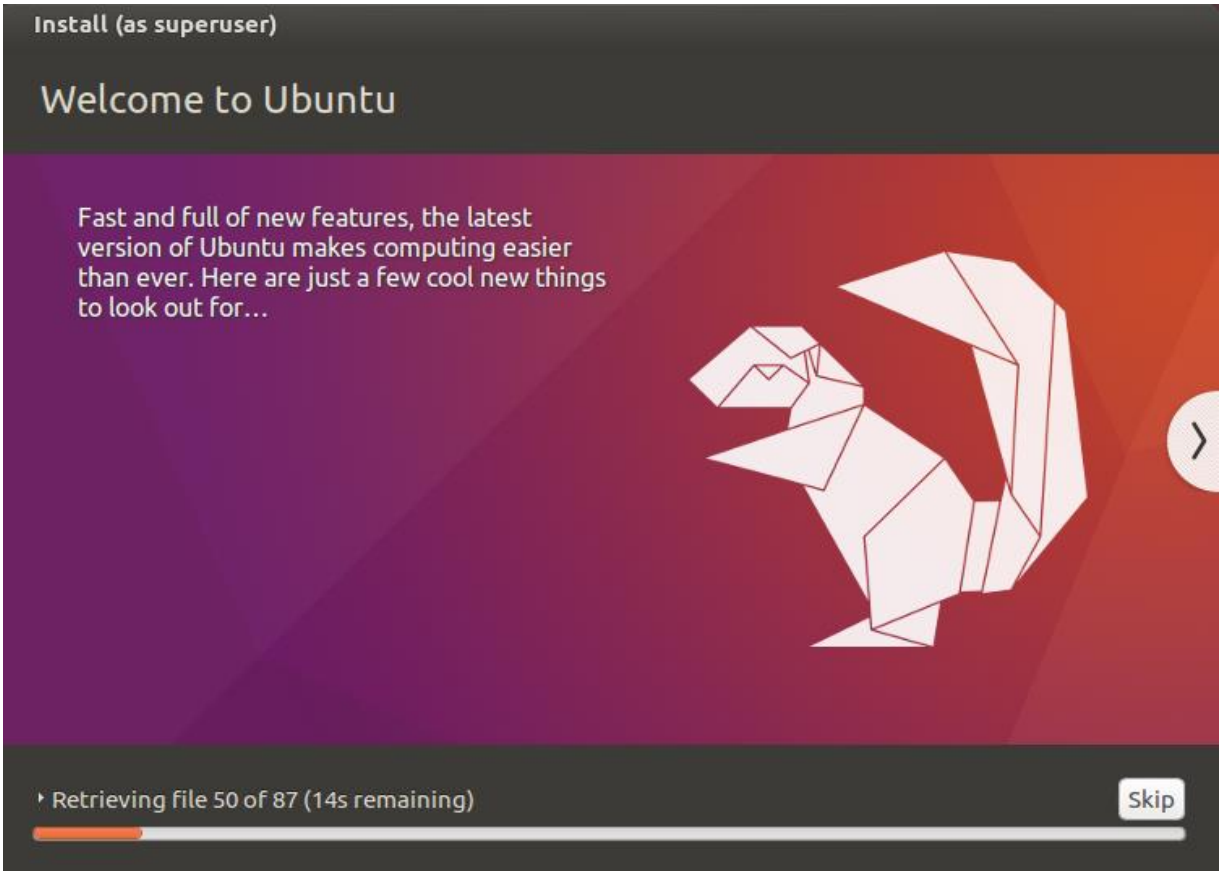
12. Follow the prompts to install Ubuntu. Select Location and Language. Enter your username and

    Password for the Ubuntu system. Select “Log in automatically” if you want to log in without password when the Ubuntu machine is started from VirtualBox.

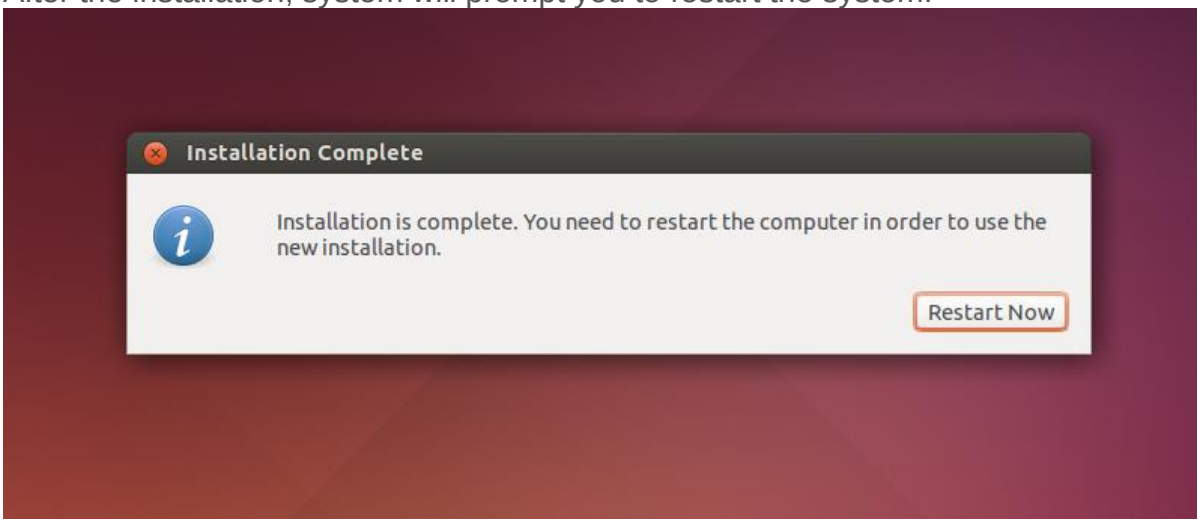




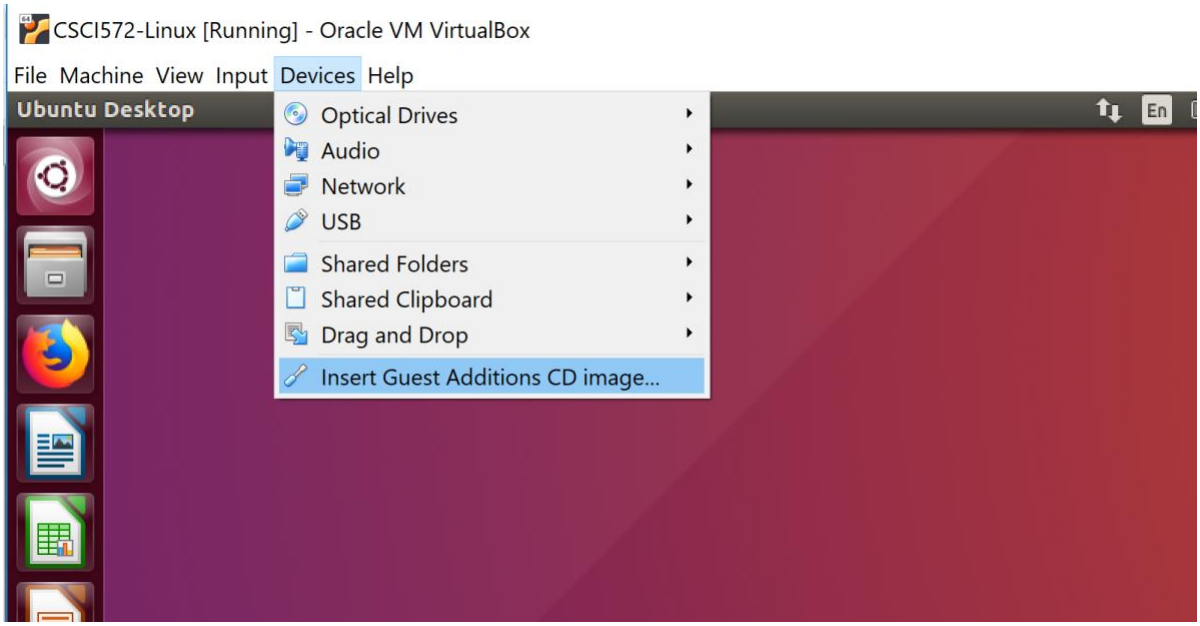
Ubuntu Installation will begin after you click on Continue. This will take a while, be patient.



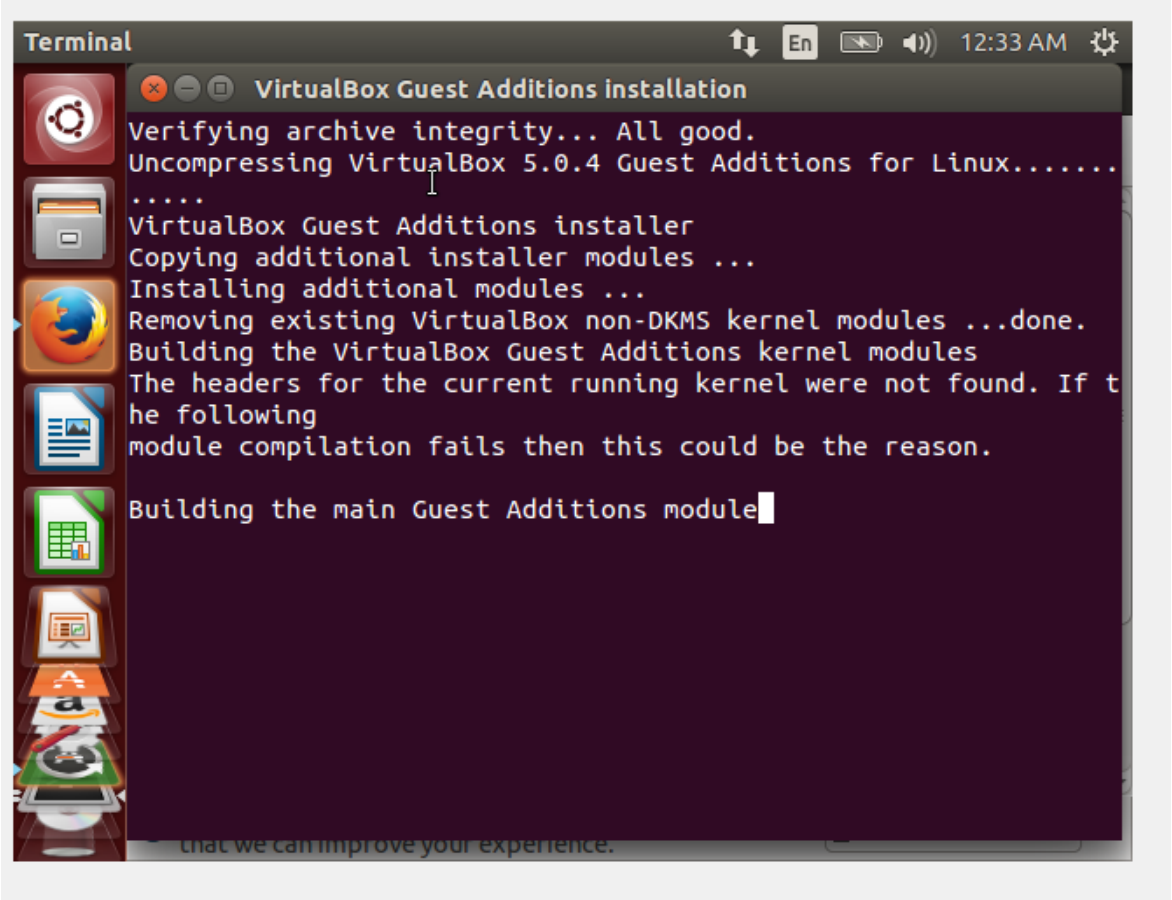
13. After the installation, system will prompt you to restart the system.



14. Adding Guest Additions (extensions to help Ubuntu run better when virtualized).
    1. After restarting your system, open a terminal and run "sudo apt-get install build-essential module-assistant linux-headers-generic".
    2. From the menu, select Devices > Insert Guest Additions CD Image.



    3. Select "Run" when prompted and enter your password. You should see the following screen if it is running successfully.



Note: If you get an error “Unable to mount CD …”, then follow these instructions

1. Install kernel headers and build tools

Virtualbox guest additions are compiled for the target system, so it needs the necessary kernel headers and related programs. Install the following 2 packages.

```
$ sudo apt-get install build-essential module-assistant
```

Now run

```
$ sudo m-a prepare
```

Mount manually

If it does not mount by itself, then you can manually mount it. Find out the device using blkid and then use the mount command to mount it somewhere in your home directory

```
# find out the device

$ sudo blkid

/dev/sr0: LABEL="VBox_Gas_5.2.18" TYPE="iso9660"
```

```
# Or use the lsblk command

$ sudo lsblk -o NAME,TYPE,SIZE,LABEL,MOUNTPOINT,MODEL

NAME   TYPE   SIZE LABEL                      MOUNTPOINT MODEL

sda    disk     8G                                      VBOX HARDDISK

├─sda1 part     6G                            /

├─sda2 part     1K

└─sda5 part     2G                            [SWAP]

sr0    rom   55.3M VBox_Gas_5.2.18           CD-ROM
```

Note down the device name which is "/dev/sr0" here. Next we have to mount this device (cdrom) to access the contents.

```
# create directory to mount

$ mkdir cdrom



# mount the cd

$ sudo mount /dev/sr0 ~/cdrom/

mount: block device /dev/sr0 is write-protected, mounting read-only



# get inside the mounted directory

$ cd cdrom/

~/cdrom$ ls

32Bit        cert                   VBoxSolarisAdditions.pkg

64Bit        OS2                    VBoxWindowsAdditions-amd64.exe

AUTORUN.INF  runasroot.sh           VBoxWindowsAdditions.exe

autorun.sh   VBoxLinuxAdditions.run  VBoxWindowsAdditions-x86.exe
```

Start compiling

Once you are inside the cdrom directory, run the script named VBoxLinuxAdditions.run

```
cdrom$ sudo ./VBoxLinuxAdditions.run

Verifying archive integrity... All good.

Uncompressing VirtualBox 5.2.18 Guest Additions for Linux.....

VirtualBox Guest Additions installer
```

```
Copying additional installer modules ...

Installing additional modules ...

Removing existing VirtualBox DKMS kernel modules ...done.

Removing existing VirtualBox non-DKMS kernel modules ...done.

Building the VirtualBox Guest Additions kernel modules ...done.

Doing non-kernel setup of the Guest Additions ...done.

Starting the VirtualBox Guest Additions ...done.

Installing the Window System drivers

Installing X.Org Server 1.15 modules ...done.

Setting up the Window System to use the Guest Additions ...done.

You may need to restart the hal service and the Window System (or just restart

the guest system) to enable the Guest Additions.


Installing graphics libraries and desktop services components ...done.
```

Note the line

```
Building the VirtualBox Guest Additions kernel modules ...done.
```

If it shows done, then virtualbox guest additions are compiled successfully.
Now restart the guest OS.

3. Verify that guest additions are working

After rebooting the OS, the screen resolution of the guest OS should adjust with the window size of virtualbox. Other things like mouse scroller, copy paste from guest to host should also work.

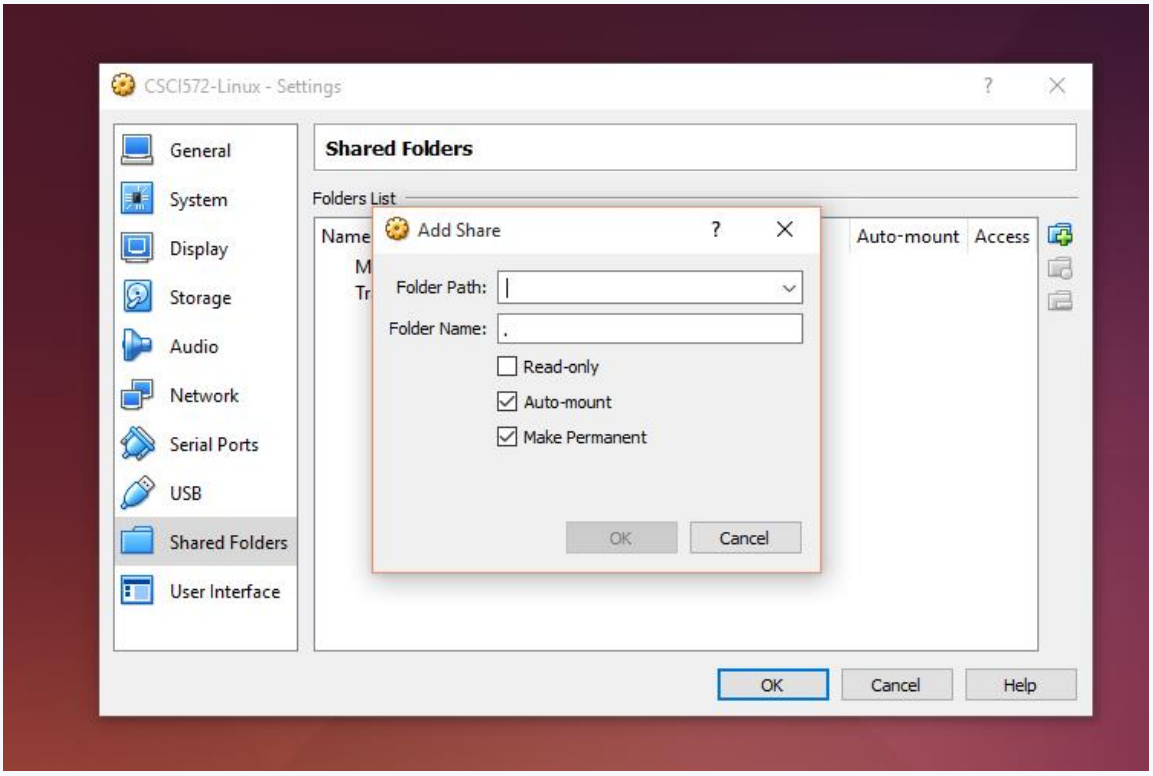
You can verify that the guest additions are loaded with the following command

```
# check loaded modules

$ lsmod | grep -io vboxguest

vboxguest


# check module

$ modinfo vboxguest
```

```
filename:       /lib/modules/4.15.0-112-generic/misc/vboxguest.ko

version:        5.2.44 r139111

license:        GPL

description:    Oracle VM VirtualBox Guest Additions for Linux Module

author:         Oracle Corporation

.....


$ lsmod | grep -io vboxguest | xargs modinfo | grep -iw version

version:        5.2.44 r139111
```

15. After installing guest additions, you can share folders across the guest and host OS, allowing each of them to access each other's files. The folder exists on the host OS and is shared to the guest OS. The guest may or may not be given the permission to write to the shared folder.

Click Devices > Shared Folder > Shared folder settings on the VirtualBox window. Click the plus icon on the right side and select the directory from the host OS that you want to share with the guest OS. If you choose "Make permanent" it becomes a Machine folder, else it is a Transient folder. You also have the option to make it read only, so that the guest OS cannot make modifications to the folder.

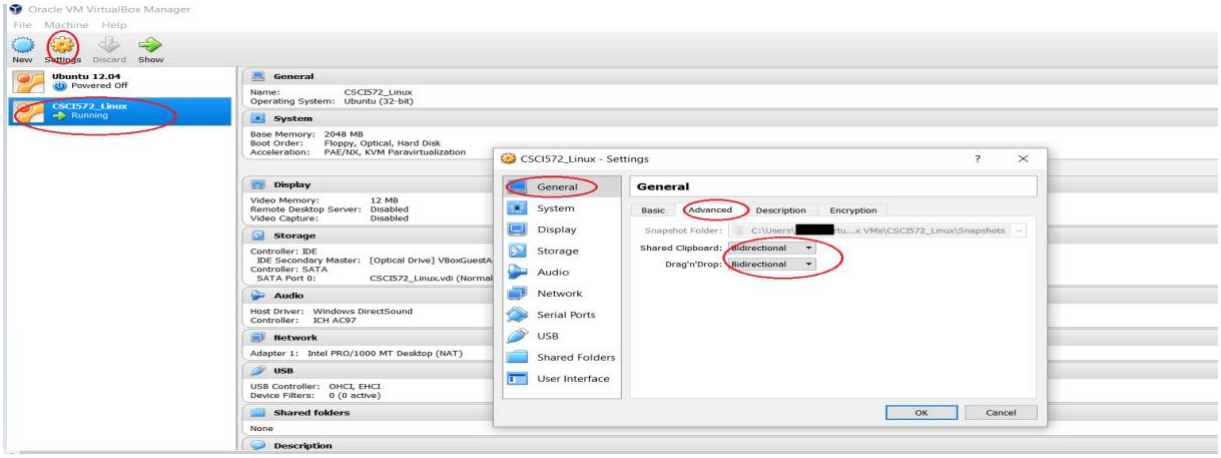


16. Once you have specified the shared directory, it is time to mount it inside the guest OS. The list of shared folders would show you the name and path of the shared directory. Note down the name, and mount it using the following command

```
# create a directory in your home directory
$ mkdir shared

# mount using the mount command. SHARENAME is the name of the shared directory
$ sudo mount -t vboxsf SHARENAME ~/shared

# or
$ sudo mount.vboxsf SHARENAME ~/shared
```

Tips:

1. To enable copy-paste between guest and host:



2. Apache Solr runs on Java 8 or greater. Please make sure to download Java 8 jdk before proceeding to the rest of the tutorials.