ROS - Virtualizing Ubuntu Linux with Virtual Box

ME 4140 - Introduction to Robotics - Fall 2019

What is a Virtual Machine ? :

- A VM is an Operating System that is *virtualized* in your native operating system
- this is very useful for experimenting and learning
- not perfect for permanent use
- can be resource intensive
- VirtualBox is a popular application used for this process

Overview of Setup Process :

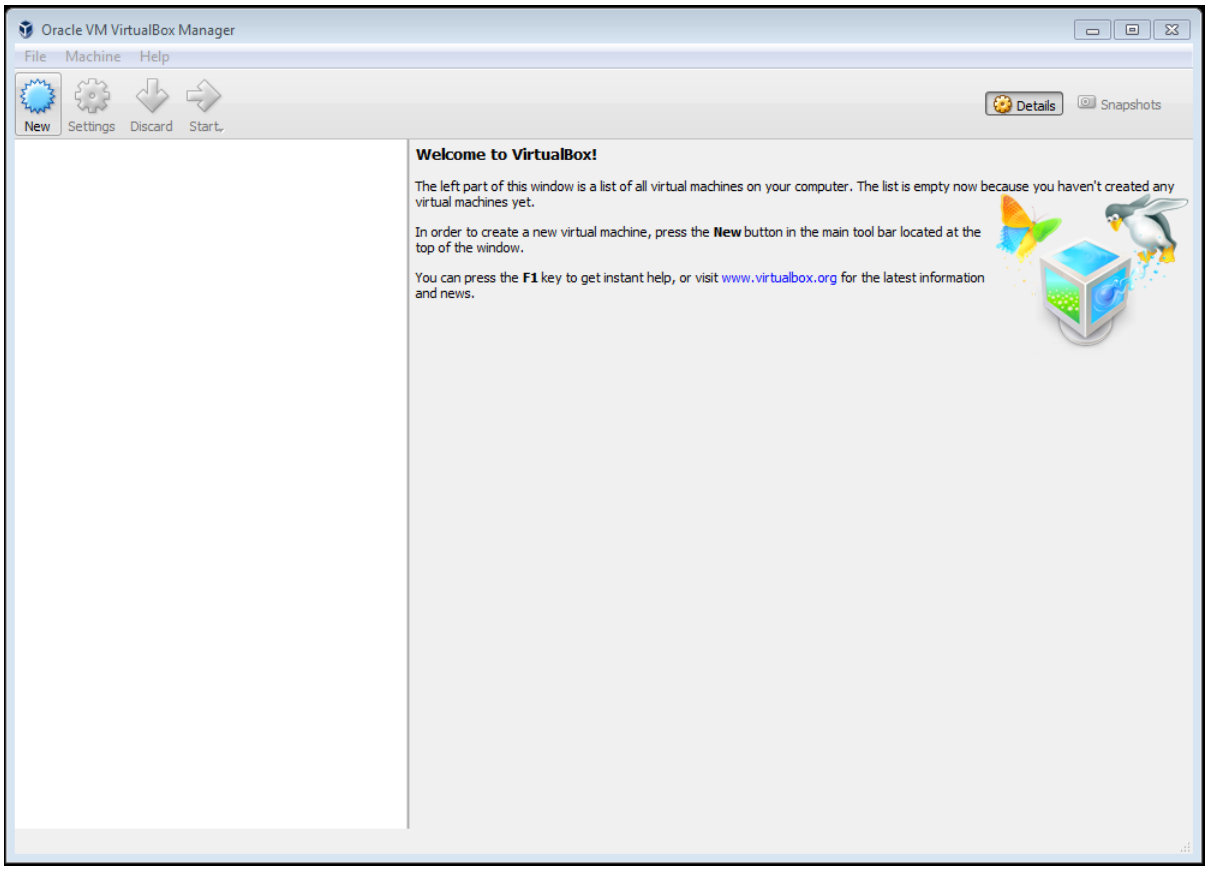
1. First install VirtualBox from Oracle which is an application for *virtualizing* operating systems on top of an existing one.
   (a) Download the install file for VirtualBox. Choose the file that matches your computer.
   (b) Click the file and install VirtualBox on your computer.
2. Next setup a virtual operating system to use as an environment to learn ROS.
   (a) Download or copy the .iso file for Ubuntu 18.04 LTS
   (b) Using VirtualBox install Ubuntu 18.04 LTS as a virtual operating system on your hard drive.
   (c) Briefly test your new OS. The internet must work.
3. Install ROS Melodic
   (a) This is done in the *terminal* in Ubuntu. Follow the step by step instructions carefully.

Virtual Box Installation :

1. Aquire Needed Files (VirtualBox + Ubuntu) :

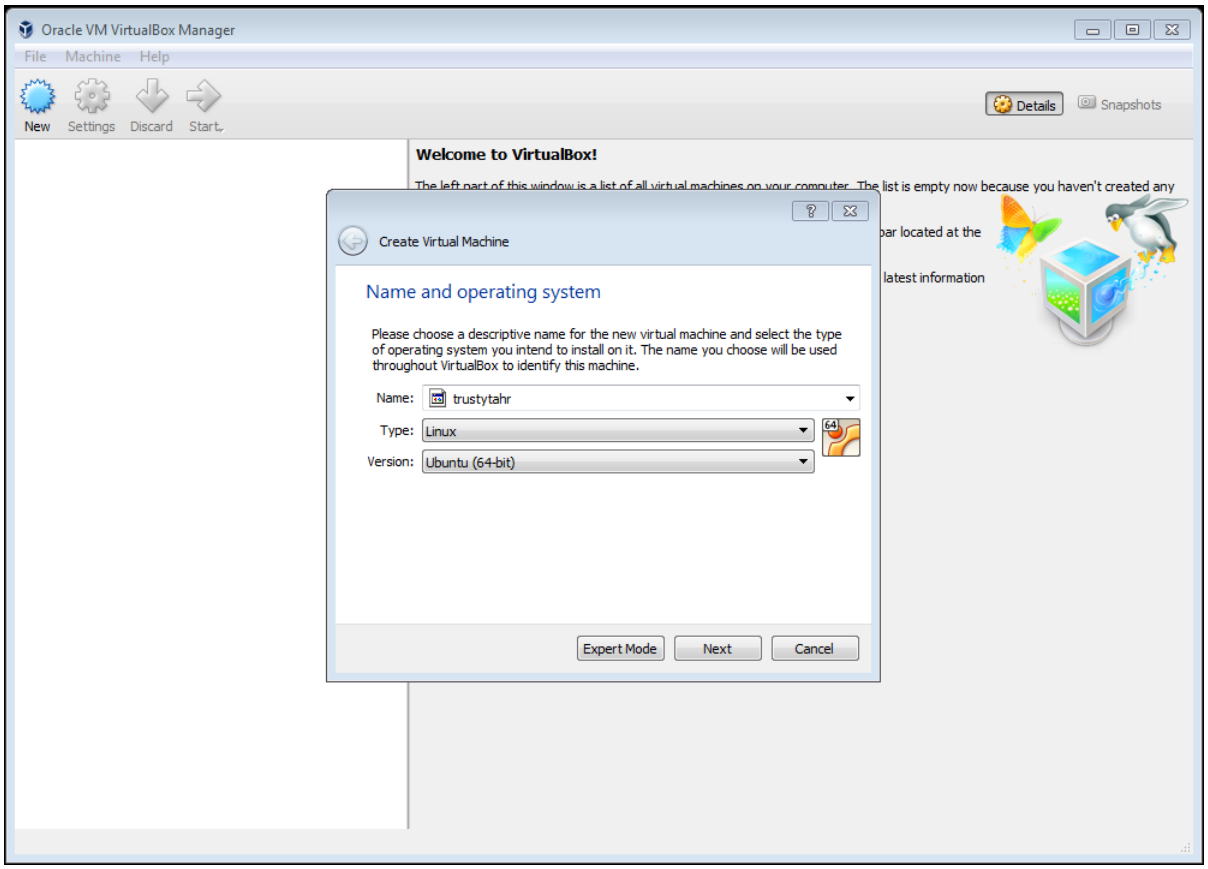
2. Install VirtualBox Application:

3. Open VirtualBox:



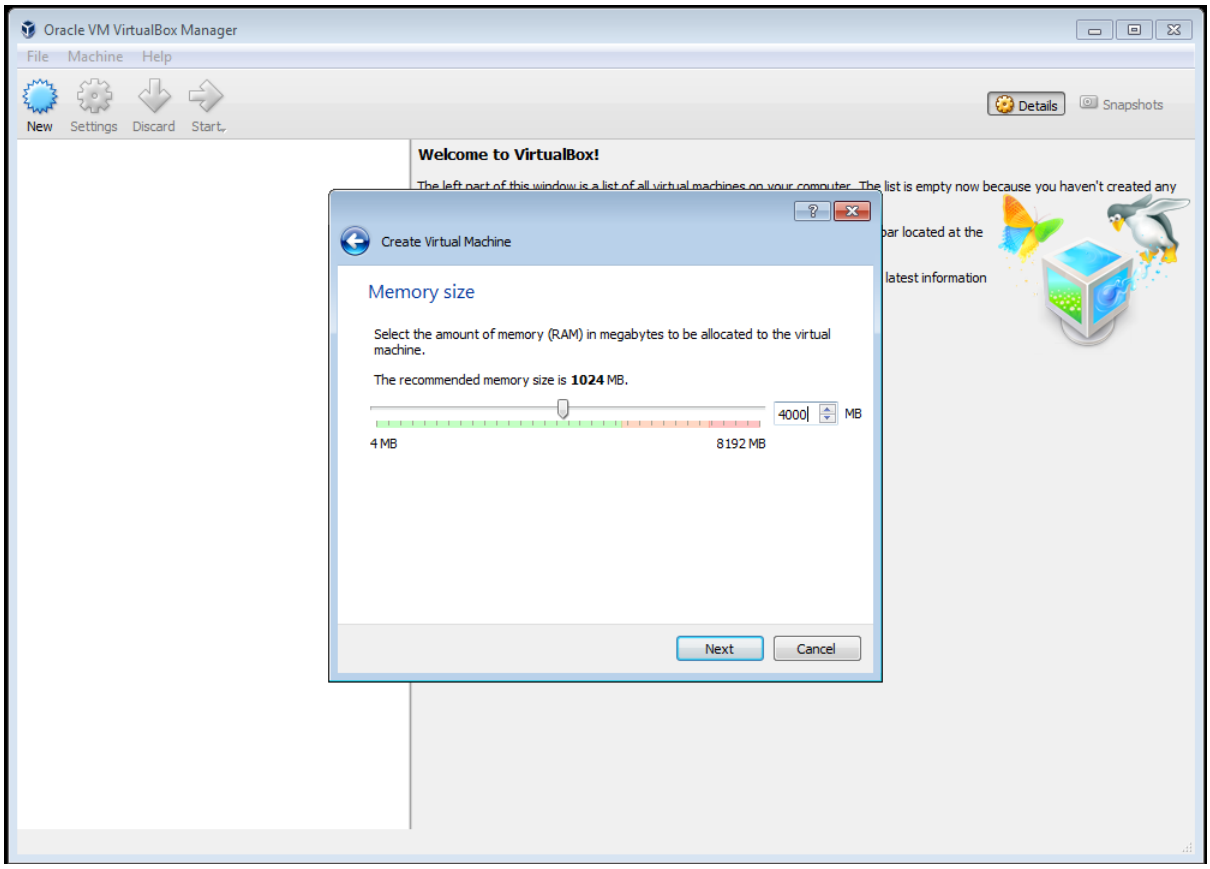
- if you have never used this before the list on the left should be empty
- before you start you should make sure you have an internet connection
- before you start you should make sure you have access to a power supply or battery

4. Create New Virtual Machine:



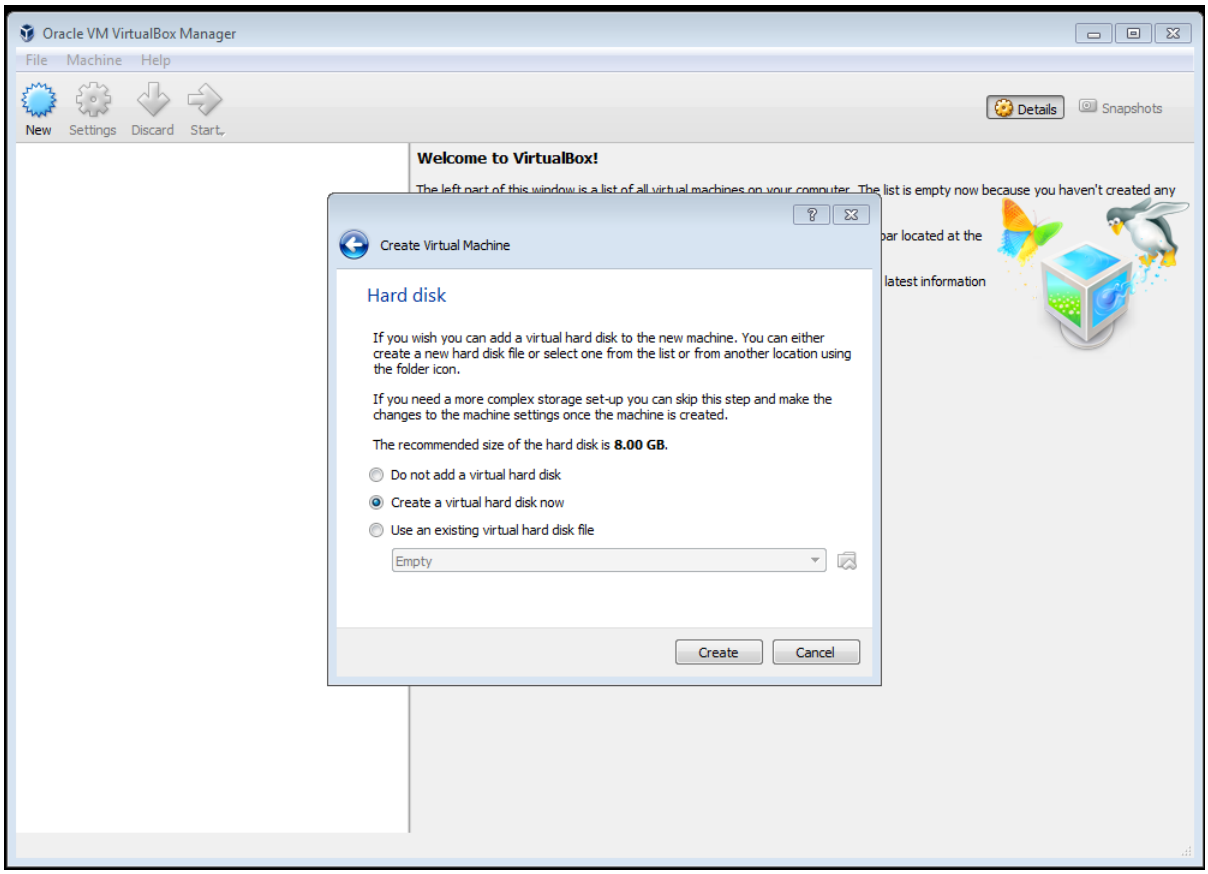
- press the **new** button
- choose a **computer name** (this is your choice but remember it!)
- choose an **operating system** type (Linux)
- choose a **version**, this depends on your physical machine This is probably Ubuntu 64-bit but possbily Ubuntu 32-bit)

5. Define Virtual Machine Parameters:



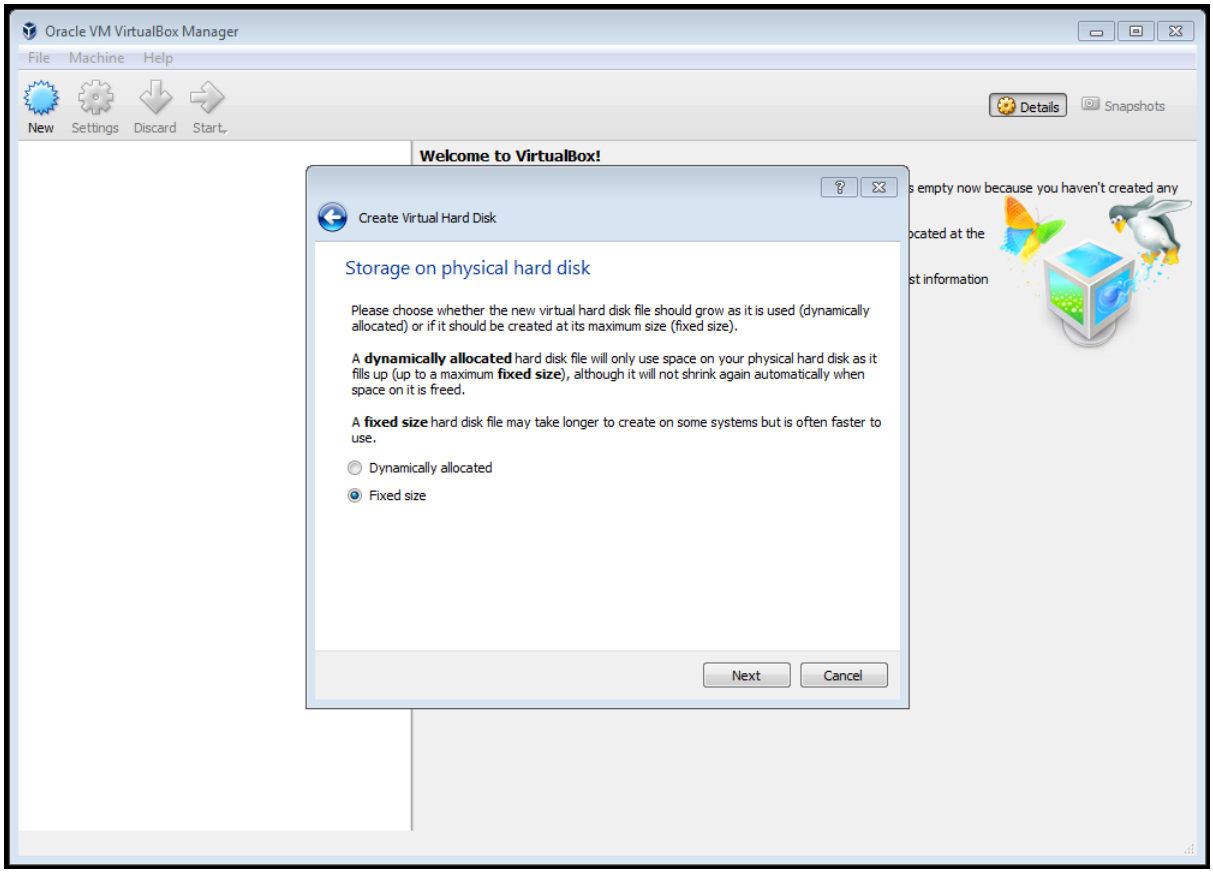
- Choose the amount of RAM you want to allocate to the VM
- This number is based on your available resources. More is better but it helps to leave some for windows. If your computer has 8GB total I suggest no more than 6GB for for VM.

6. Define Virtual Hard Drive Parameters:



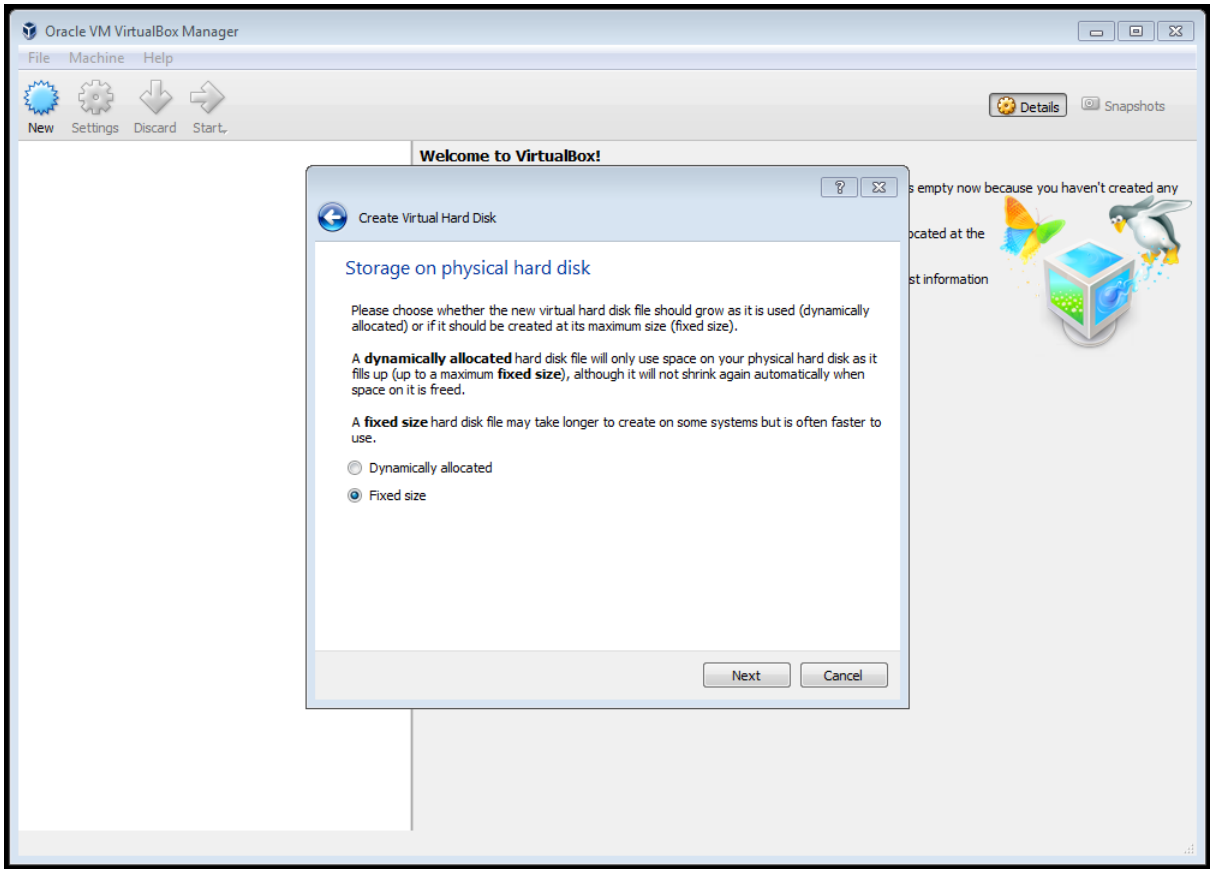
- You must have enough space on your hard drive to virutalize linux and install ros.
- **create a virtual hard drive now**

7. Virtual Hard Drive Setup:



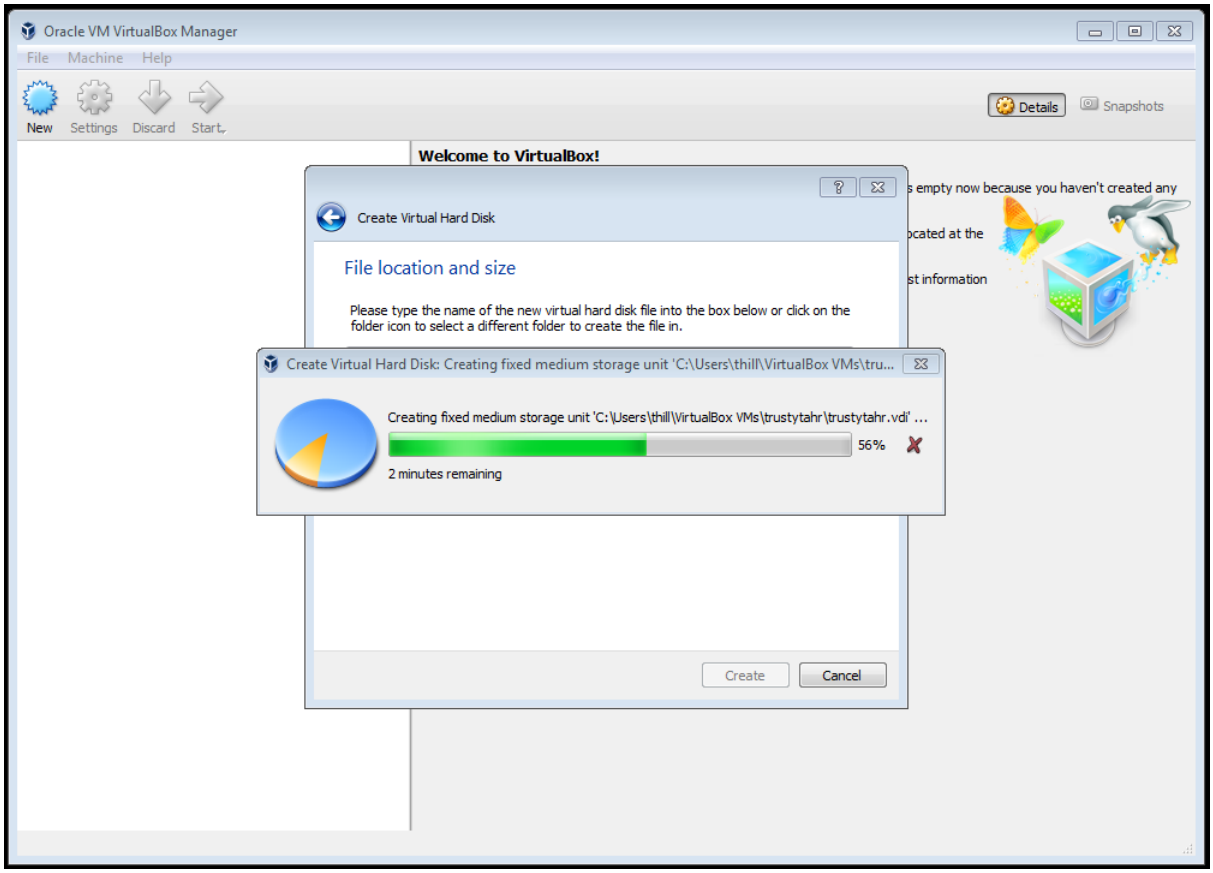
- Create a **fixed size** virtual hard drive.

8. Virtual Hard Drive Setup:



- Choose the virtual hard drive type.
- VDI is recommended.

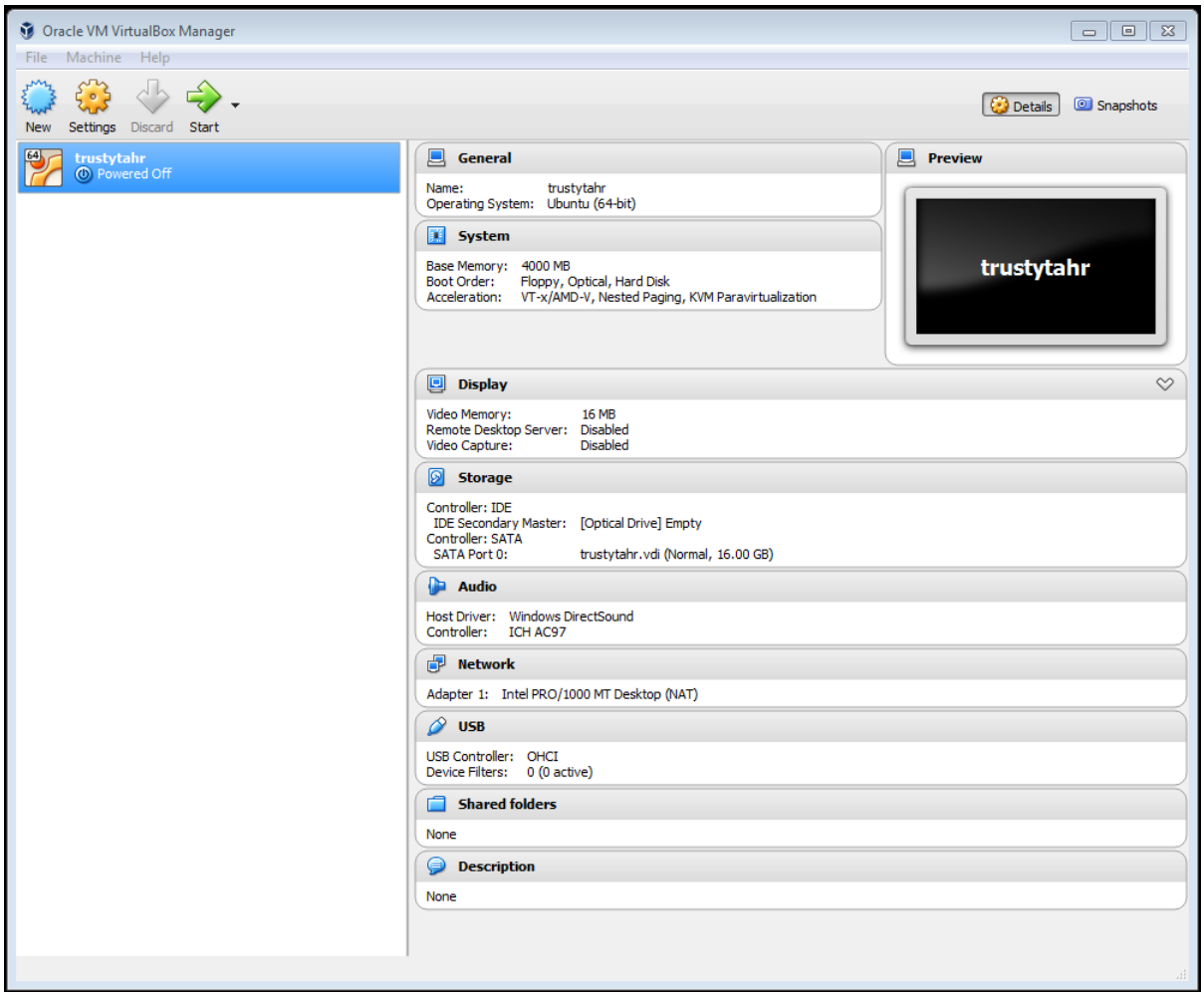
9. Virtual Hard Drive Setup :



- choose the size of your virtual hard drive
- to virtualize Ubuntu and install ROS it is recommended to make a 16 GB VDI
- you can experiment with 'lighter versions'
  - lubuntu
  - many more
  - I am working on this

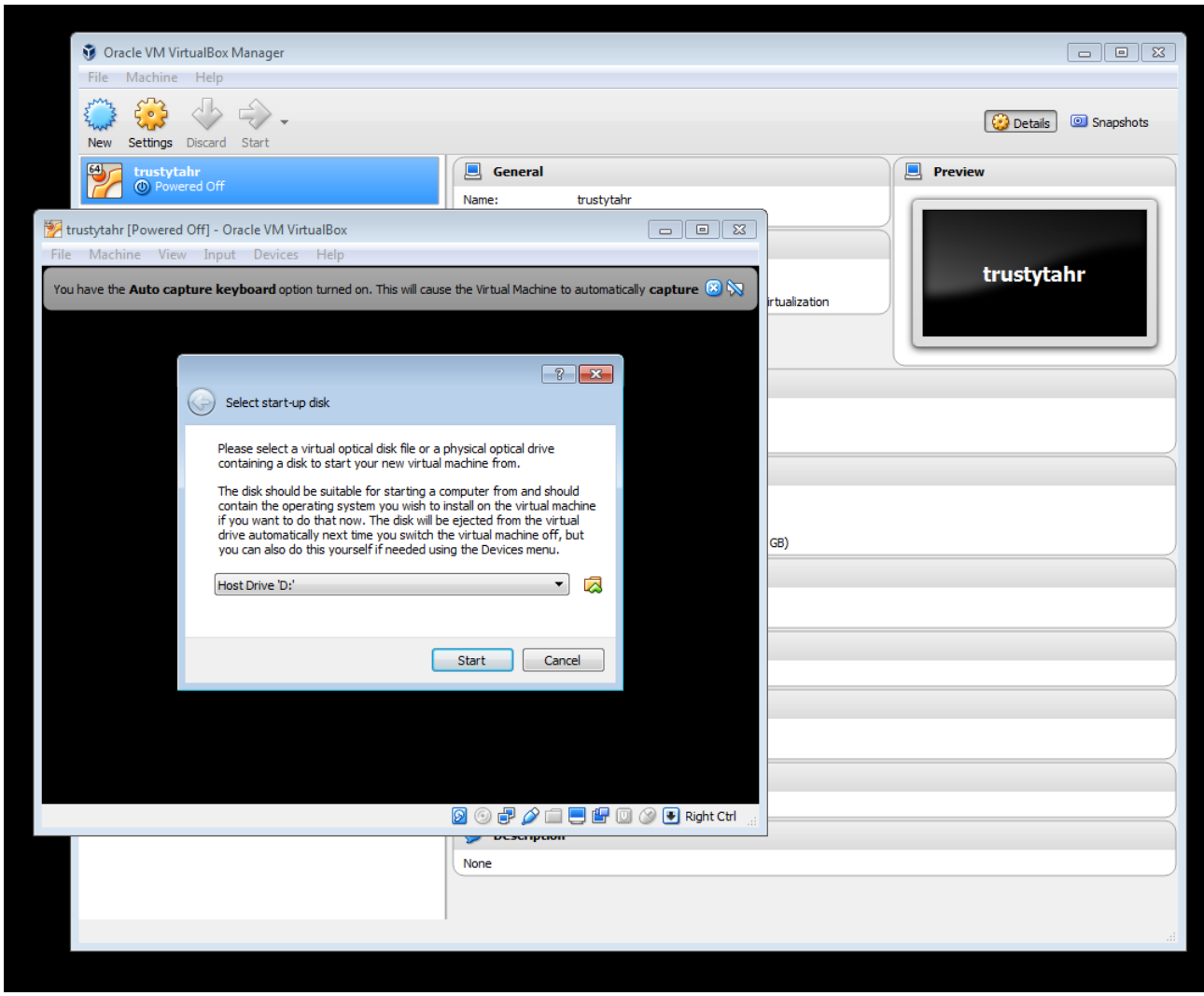
Ubuntu OS Installation and Setup :

1. Start the VM for the first time:



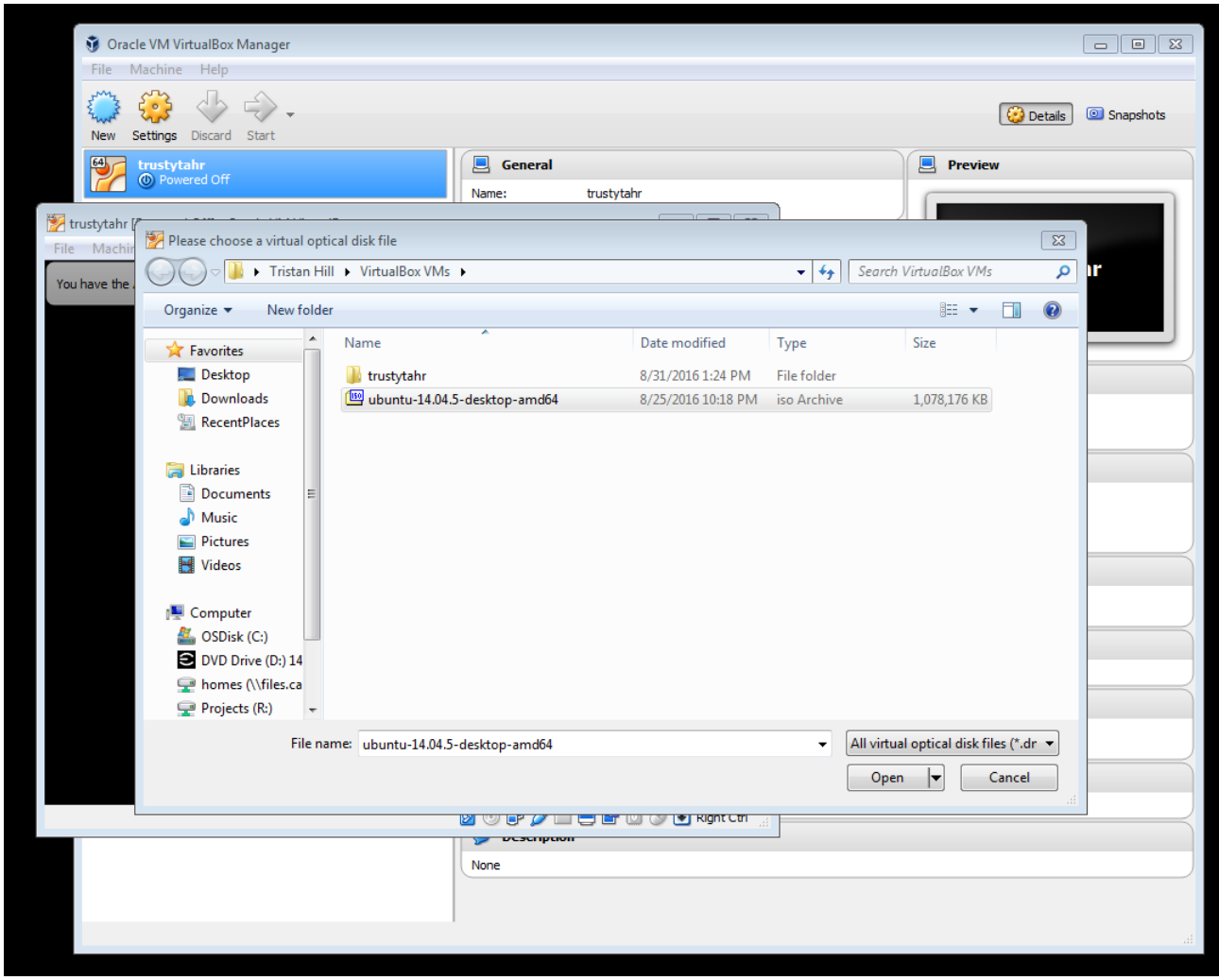
- select your newly created VM
- press the green start button
- wait for it...

2. Start the VM for the first time:



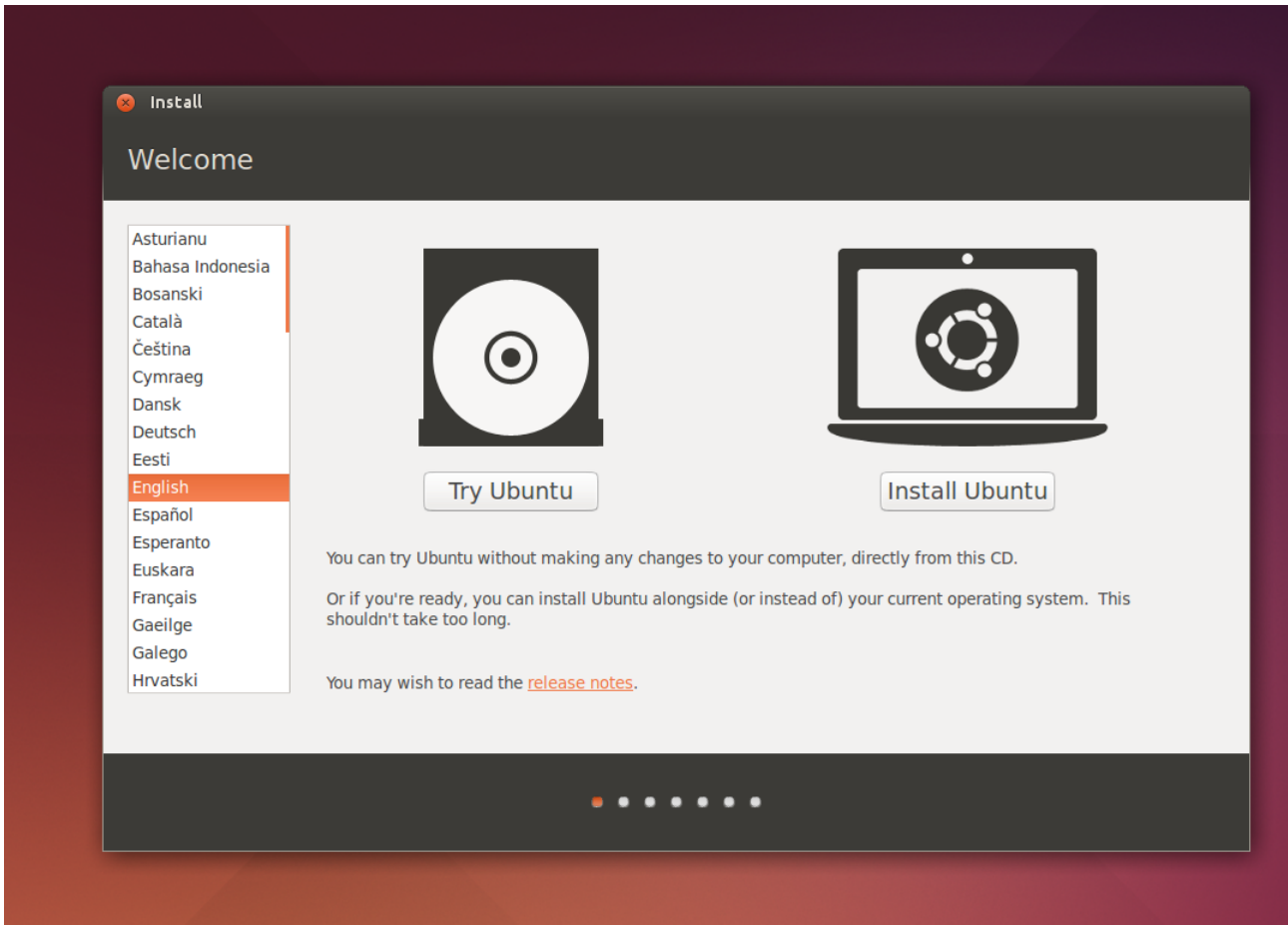
- choose to select media from a local folder
- wait for it...

3. Start the VM for the first time:



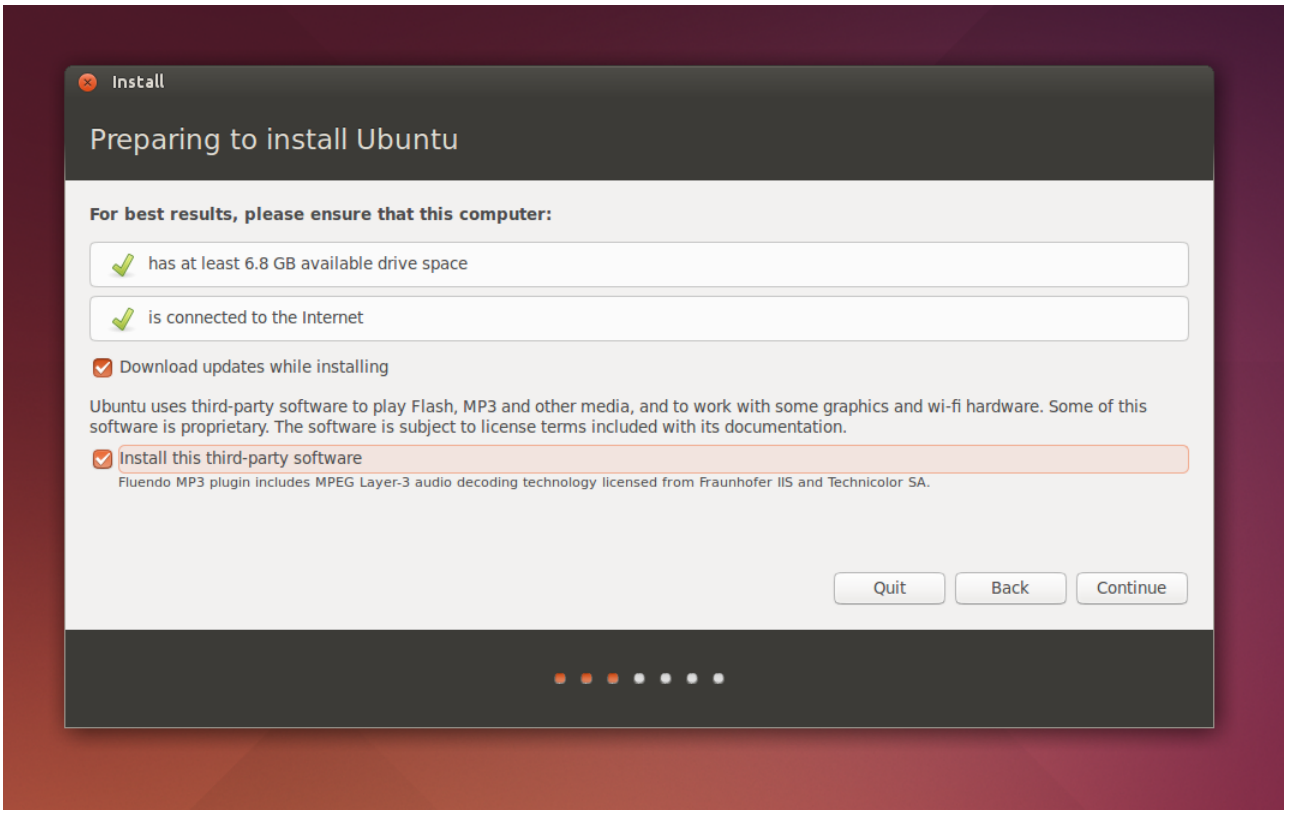
- choose the Ubuntu .iso file that you aquired
- it is recommended that the media is on the local machine
- wait for it...

4. Ubuntu Installation:



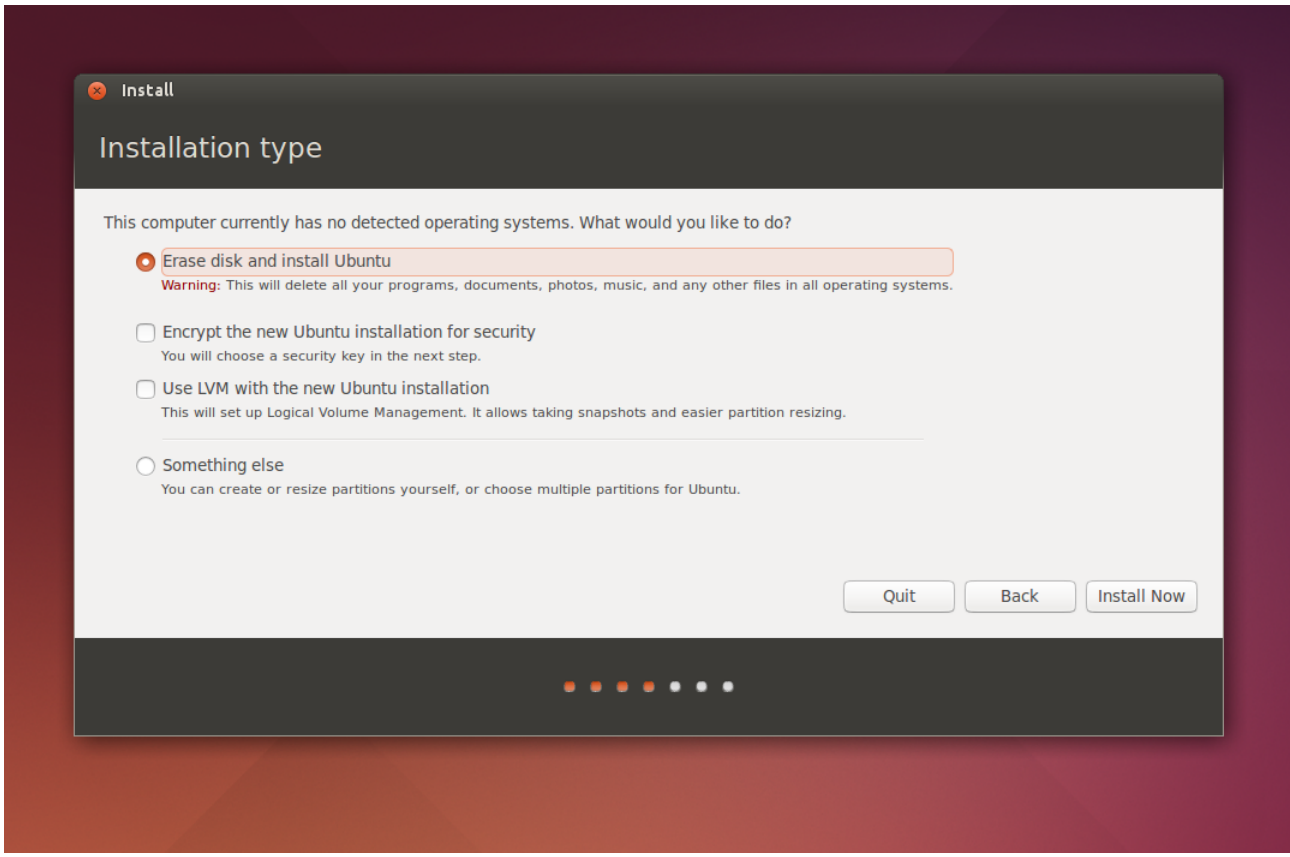
- **Install Ubuntu** (harmless if using VirtualBox)
- try is just temporary (single session)
- wait for it...

5. Ubuntu Installation:



- check that you meet the requirements
- click the two check boxes for proprietary drivers

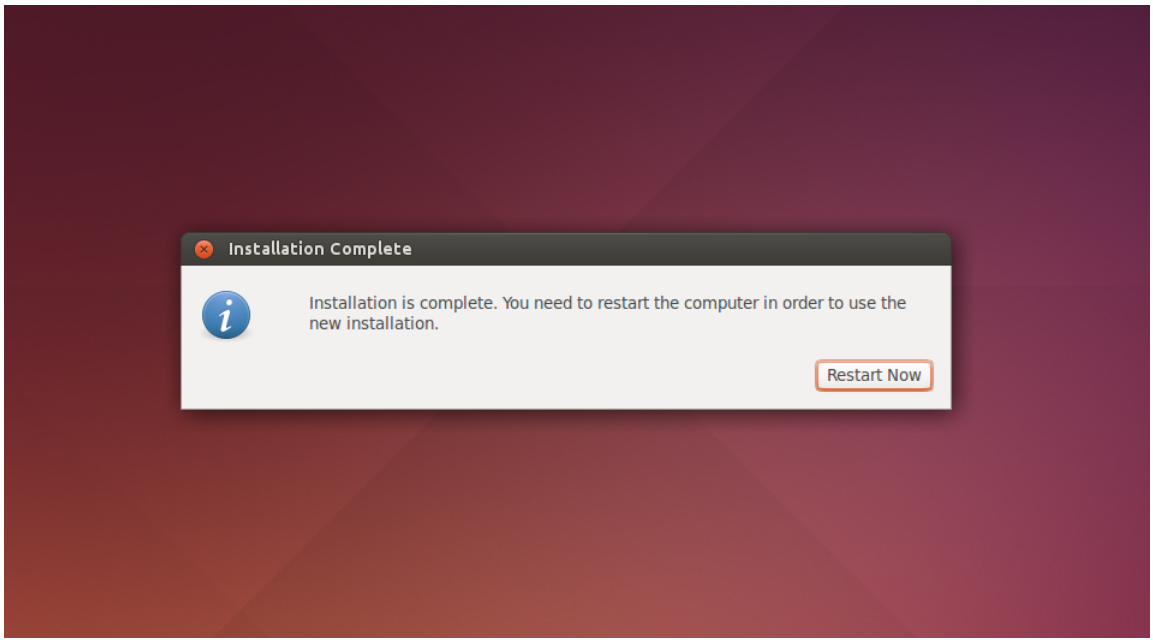
6. Ubuntu Installation:



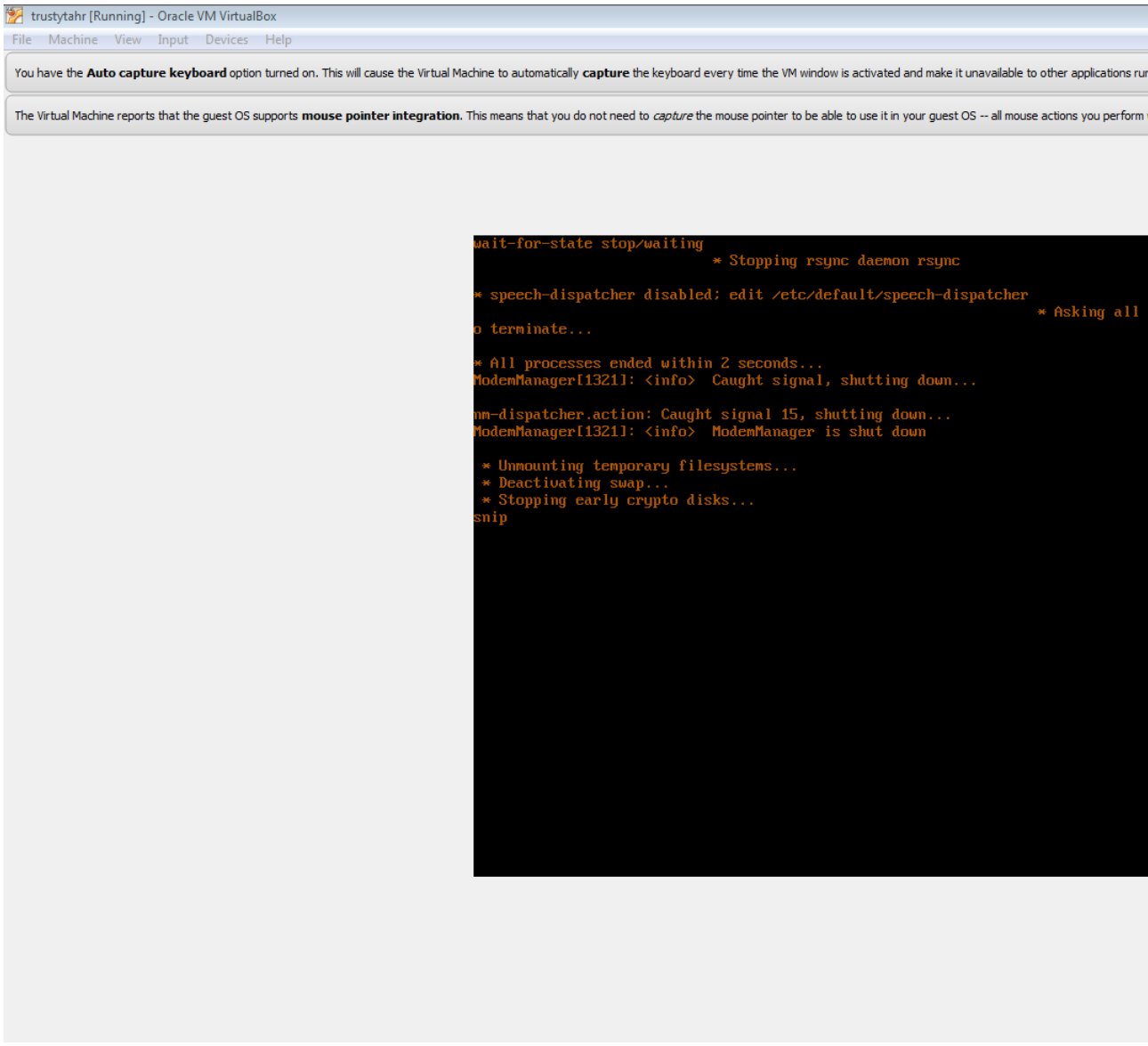
- **Erase Everything and Install Ubuntu** (harmless if using VirtualBox)
- DANGEROUS AND PERMANENT IF NOT USING VIRTUALBOX
- wait for it...

7. Wait Wait Wait:

8. Shut Down The VM:

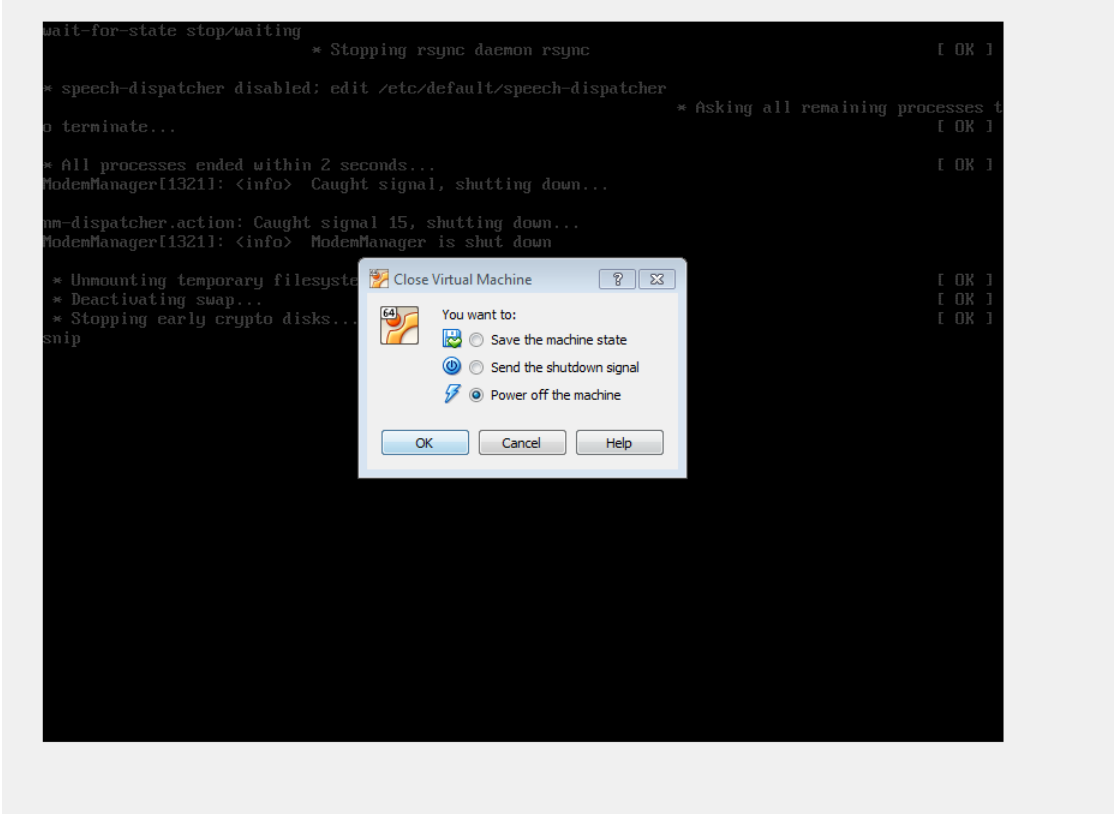


9. Shut Down The VM:



- wait for it...
- after waiting a few moments you may have to close the window of the VM

10. Finally!:



- POWER OFF the Machine

11. Now restart the VM!!!:
    - the VM you made should be in the left list
    - select it and click start
    - the Ubuntu OS should appear