Install ROS on Windows 10 with VM

ROS is an open-source, meta-operating system for your robot. It provides the services you would expect from an operating system, including hardware abstraction, low-level device control, implementation of commonly-used functionality, message-passing between processes, and package management. It also provides tools and libraries for obtaining, building, writing, and running code across multiple computers.

Note: ROS is currently not supported on **Windows. So, First need to install VirtualBox in order to install** Ubuntu OS. Then, we're gonna install ROS on Ubuntu.

1- install Ubuntu OS

Ubuntu is a Linux distribution based on Debian mostly composed of free and open source software .

- Download Ubuntu from here : https://ubuntu.com/download/desktop

** it downloads as an .IOS file which we can use to mount and install on computer.

2- Install VirtualBox

VirtualBox is a software that lets you run other operating system on top of your current operating system.

- Download VirtualBox from here: https://www.virtualbox.org/wiki/Downloads
  As you are windows user, go ahead and install the **windows hosts**

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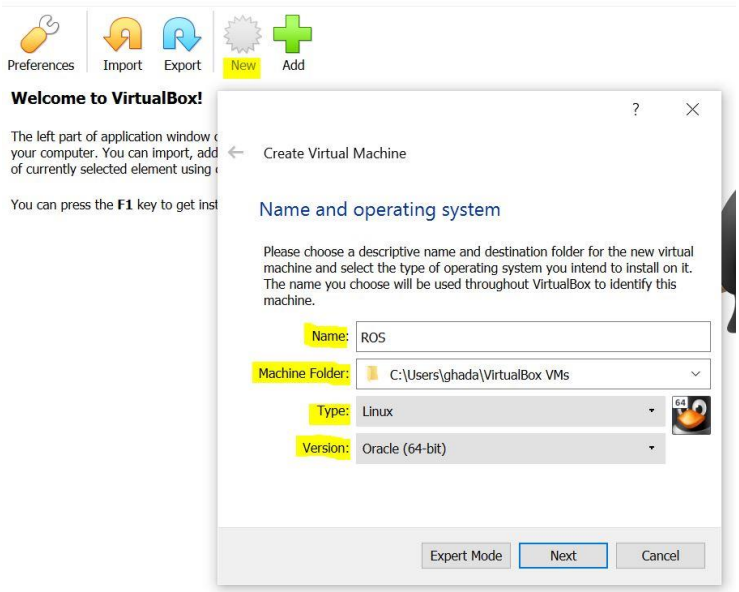
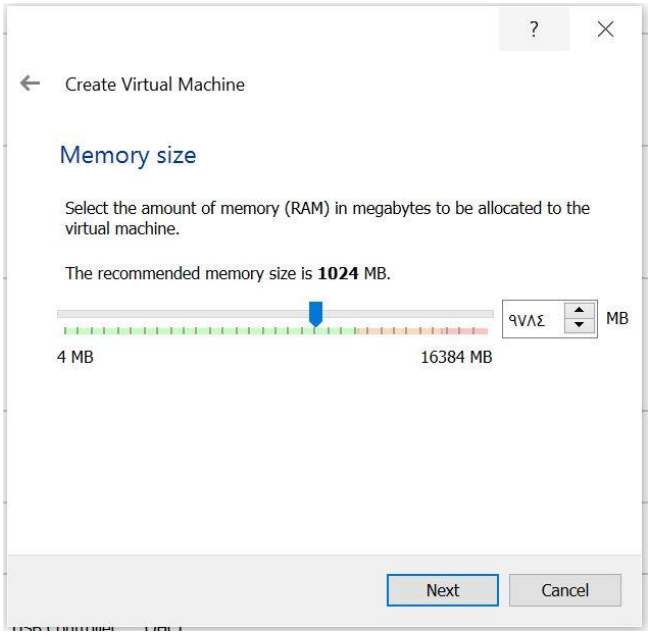
- Open VirtualBox Create new machine :
  - click new
  - name your OS whatever you want it to be. “I’m going with ROS”
  - change the type of OS to Linux
  - version will be automatically chosen for your appropriate version. or you can choose it manually
  - click next



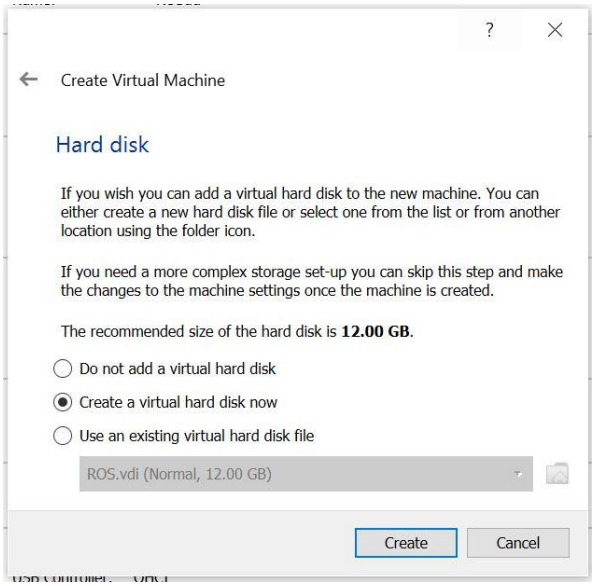
- Select RAM size for your Ubuntu os.

  Note: Ubuntu os need considerable amount of RAM. “I’m going to share a little about half of the RAM with the ubuntu os”



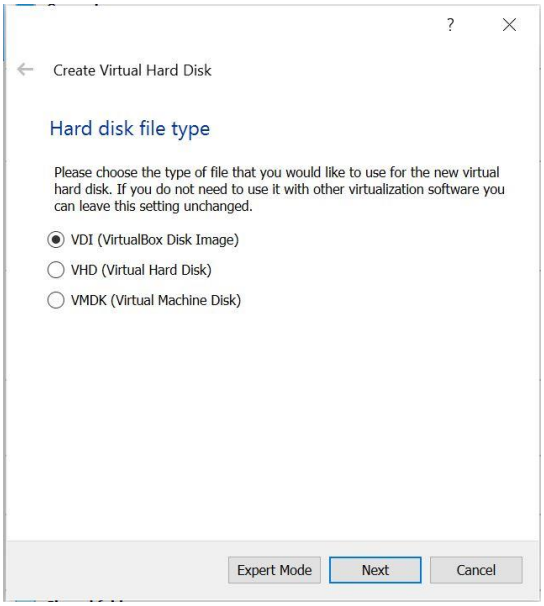
Then Click next

- Create a virtual hard disk.

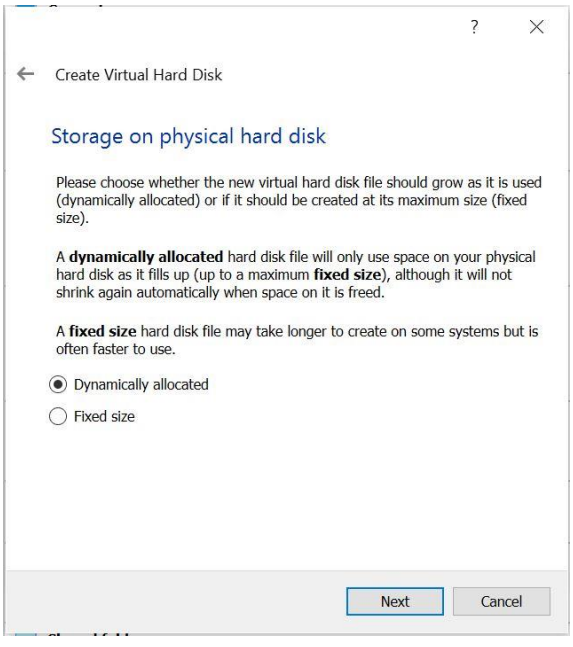


Then click create.

- Hard disk file type
  Go with VirtualBox disk image for the default file type.



- Storage on physical hard disk
  Dynamically allocated disk file will occupy space only as and when you populate it, so we'll choose that.



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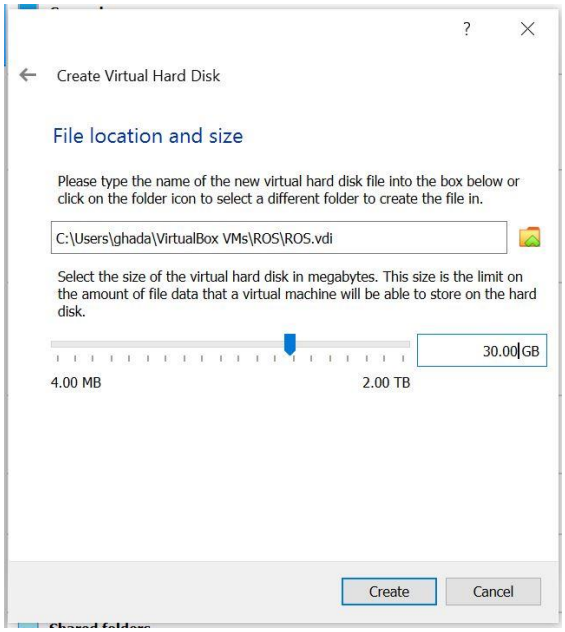
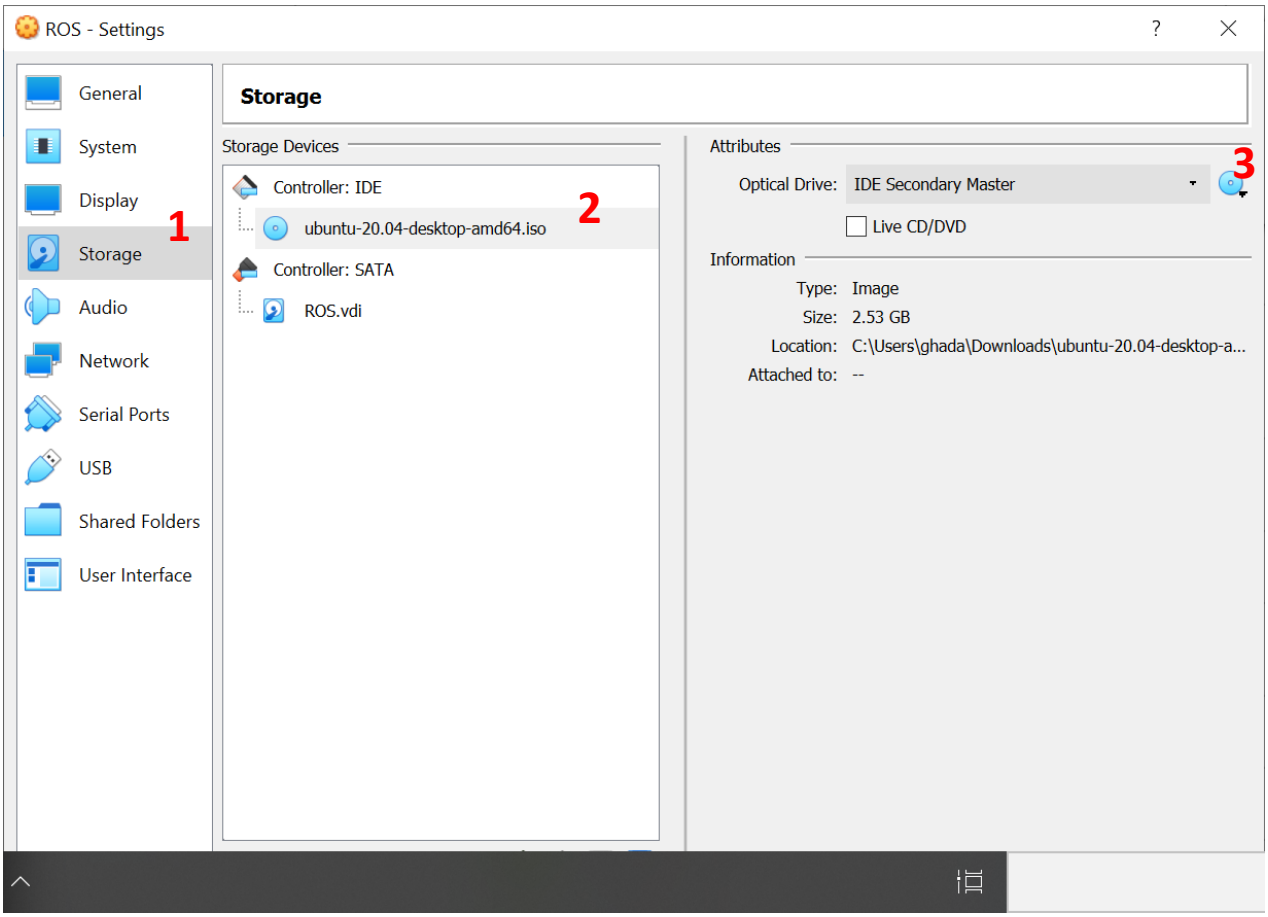
- File location and size
  This is where you can enter the size of your virtual hard disk.
  “I’m going with 30 GB”

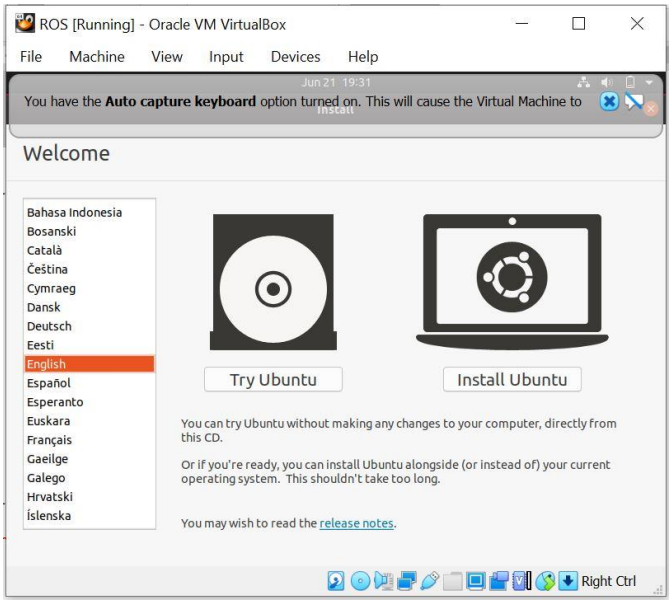


  Click create

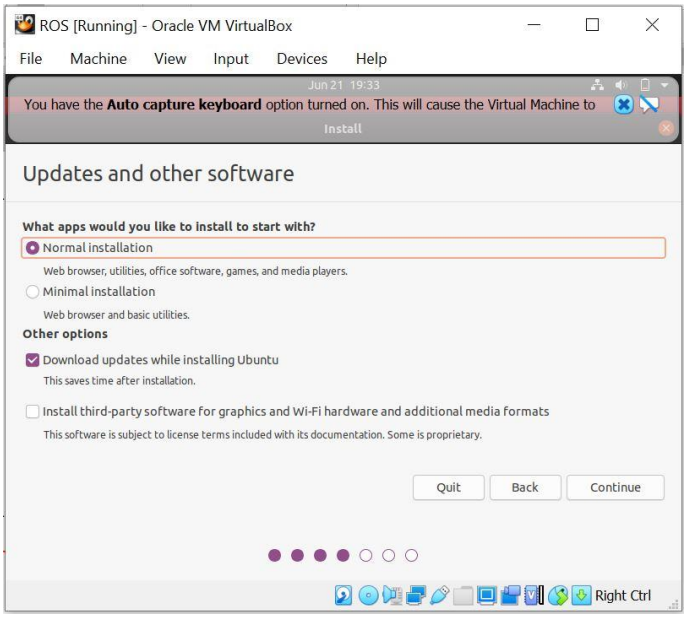
- Upload Ubuntu ISO file
  ** Before we boot up our OS, we must first choose the ISO file that we downloaded for.
  - click settings icon
  - storage
  - CD icon in controller
  - Optical Drive > CD icon > choose a disk file > “choose ubuntu IOS file that we installed in step 1 “



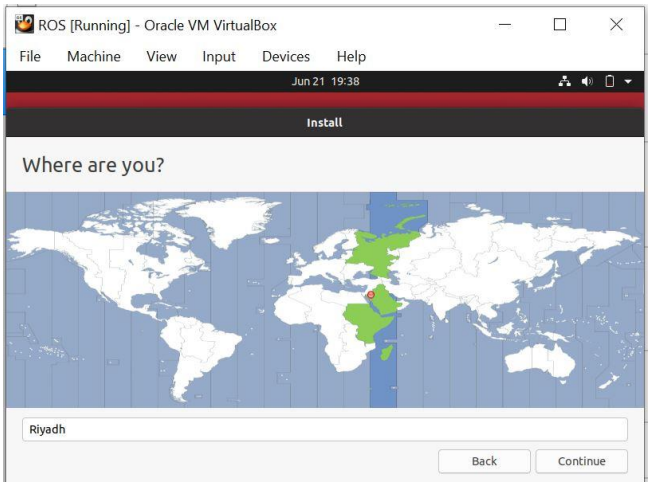
- Boot up our Ubuntu OS
  - click on start icon
  - once Ubuntu boots up, click install ubuntu



  - choose your keyboard layout
  - updates and software, choose normal installation



  - choose erase disk and install Ubuntu
  - click install now
  - choose your time zoon.



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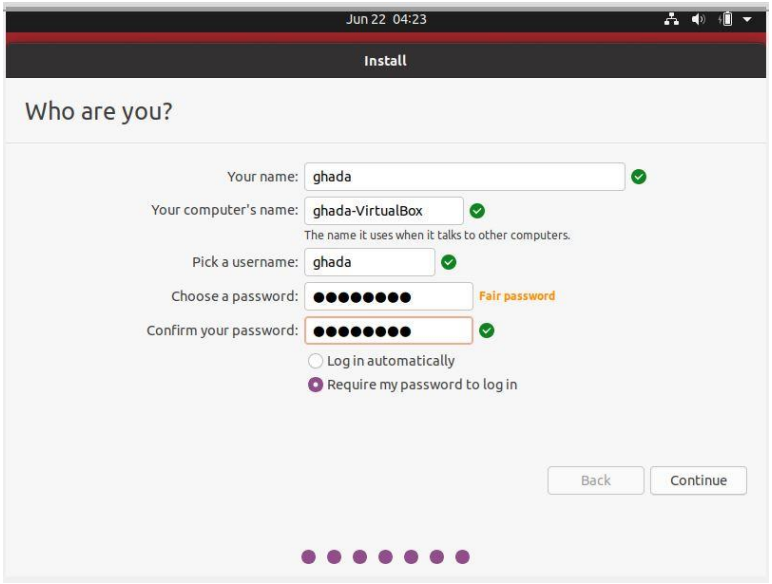
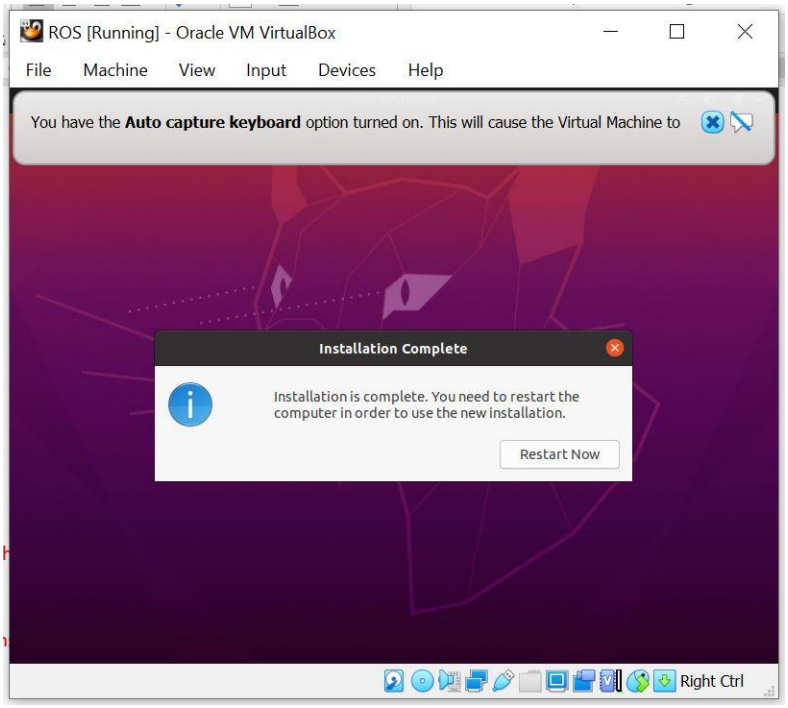
- fill in your username, password , etc. and then continue



- click restart now



There we go! Ubuntu is now ready for ROS …

3- Install and set up ROS

- Open terminal on ubuntu
- Set up the system before installing ROS so that we don't deal with any frustration during actual installation:

```
sudo apt update
```

- upgrade all the packages to the last version using this command:

```
sudo apt upgrade
```

- Installation
  - Setup your sources.list :

```
sudo sh -c 'echo "deb http://packages.ros.org/ros/ubuntu $(lsb_release -sc) main" > /etc
/apt/sources.list.d/ros-latest.list'
```

  - Set up your keys:

```
sudo apt-key adv --keyserver 'hkp://keyserver.ubuntu.com:80' --recv-key C1C
F6E31E6BADE8868B172B4F42ED6FBAB17C654
```

  - Update your your Debian package is indexed by running sudo apt update again :

```
sudo apt update
```

  - There are 4 options for installation. I'm gonna install desktop-full

```
sudo apt install ros-noetic-desktop-full
```

- Environment setup:
  - You must source this script in every **bash** terminal you use ROS in.

```
source /opt/ros/noetic/setup.bash
```

  - Bash

```
echo "source /opt/ros/noetic/setup.bash" >> ~/.bashrc
source ~/.bashrc
```

  - Zash

```
echo "source /opt/ros/noetic/setup.zsh" >> ~/.zshrc
source ~/.zshrc
```

- Check the ROS version to ensure that you have installed it correctly

```
Rosversion -d
```

AND THAT'S IT.

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