Deliverable 2

What is Virtualization?

Virtualization is a replication of hardware to simulate a virtual machine inside a physical machine, basically it simulates a computer inside of another computer this gives for example a way for windows and or mac machines to run linux without having to go and buy a new computer with linux installed as the Operating system.

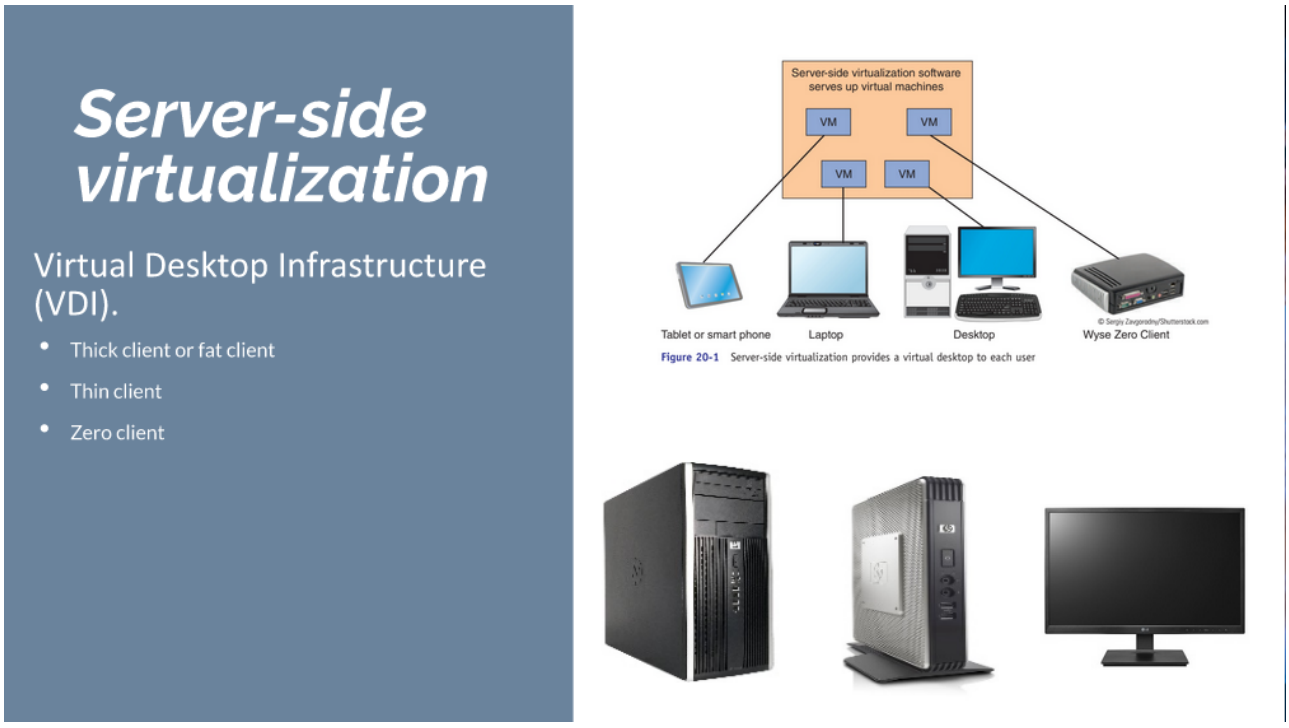
If you are going to virtualize using your own computer you will have to meet certain requirements to have a good experience.

There are two general types of virtualization client-side and server-side

Types of Virtualization

- **Client side virtualization** Client side virtualization is installed to a home computer unlike a server side virtualization you will need to meet the requirements to be cable of virtualization.

- **Server side virtualization** Server side virtualization allows for a companies to host virtual machines for us the public to access. You do not need to install anything because the virtualization takes place on a server from the company. For example websites like DistroTest.net that allow the user to launch virtual machines to test Linux distributions through our web browser.

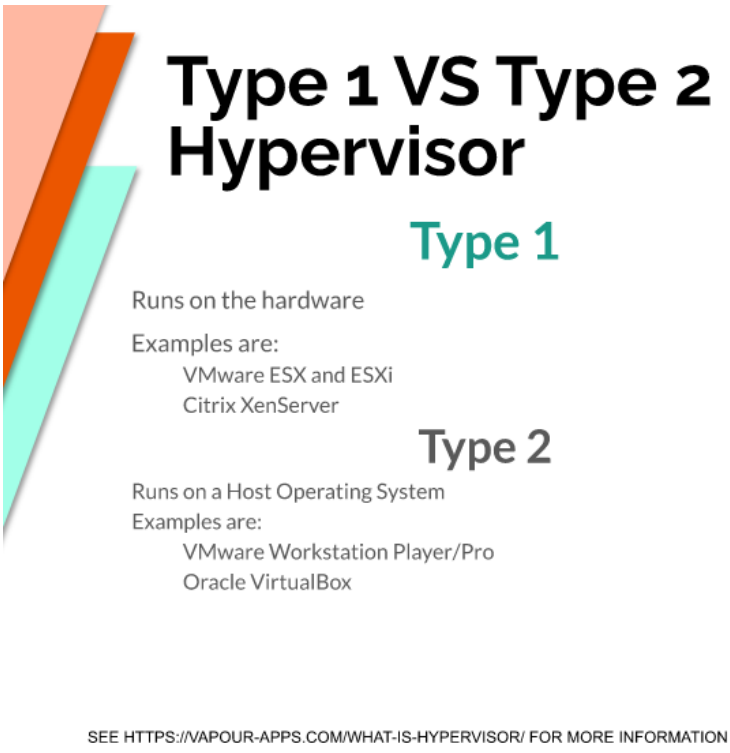


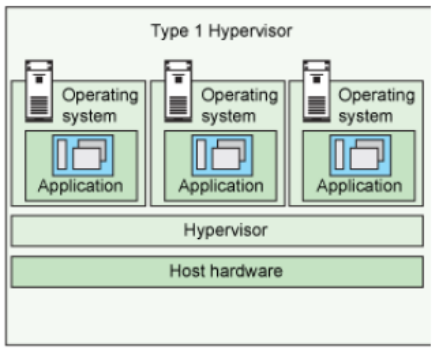
Hypervisor

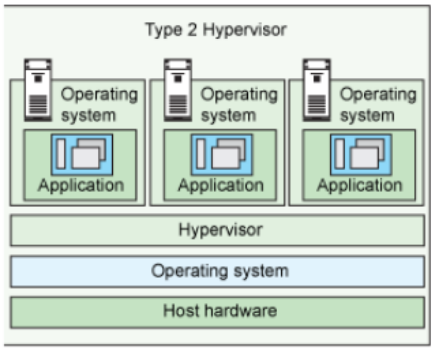
Virtualization requires the use of a hypervisor, a hypervisor enables the hosts hardware to operate multiple virtual machines independent of each other and share the resources such as memory and RAM. There are two different types of hypervisors.

Types of Hypervisors

- A type 1 hypervisor runs directly on the host machines hardware. Basically it does not need to load the operating system on the host computer it has direct access to drivers and other hardware. This makes it very secure and runs much faster than type 2.
- A type 2 hypervisor is installed on top of the existing OS of the system and it relies on the host machines OS to manager its access to the CPU, memory, and storage. It is less secure and slower than type 1 hypervisors due to latency because all of the hypervisors work has to go through the hosts OS. They also cost less than type 1.







Virtualbox

VirtualBox is a type 2 virtualization product for enterprise and at home use. It can run on Windows, Linux, Mac and supports a large assortment of guest operating systems.

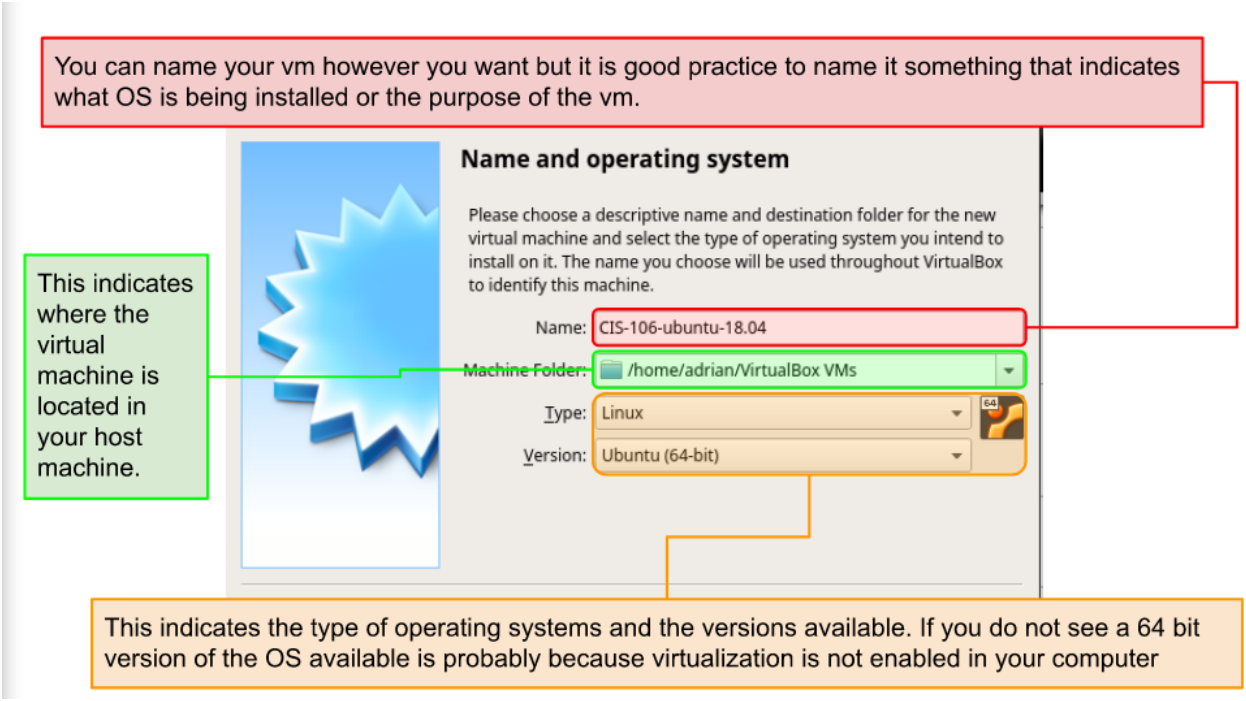
How to install virtualbox in windows 10

1. First you must have virtualization enabled you can enable it through the BIOS of your system.
2. Next download the installer for the Windows host machine from virtualbox.org.
3. Than download the extension pack from the same place.
4. Run the install wizard hit next, yes, and than install

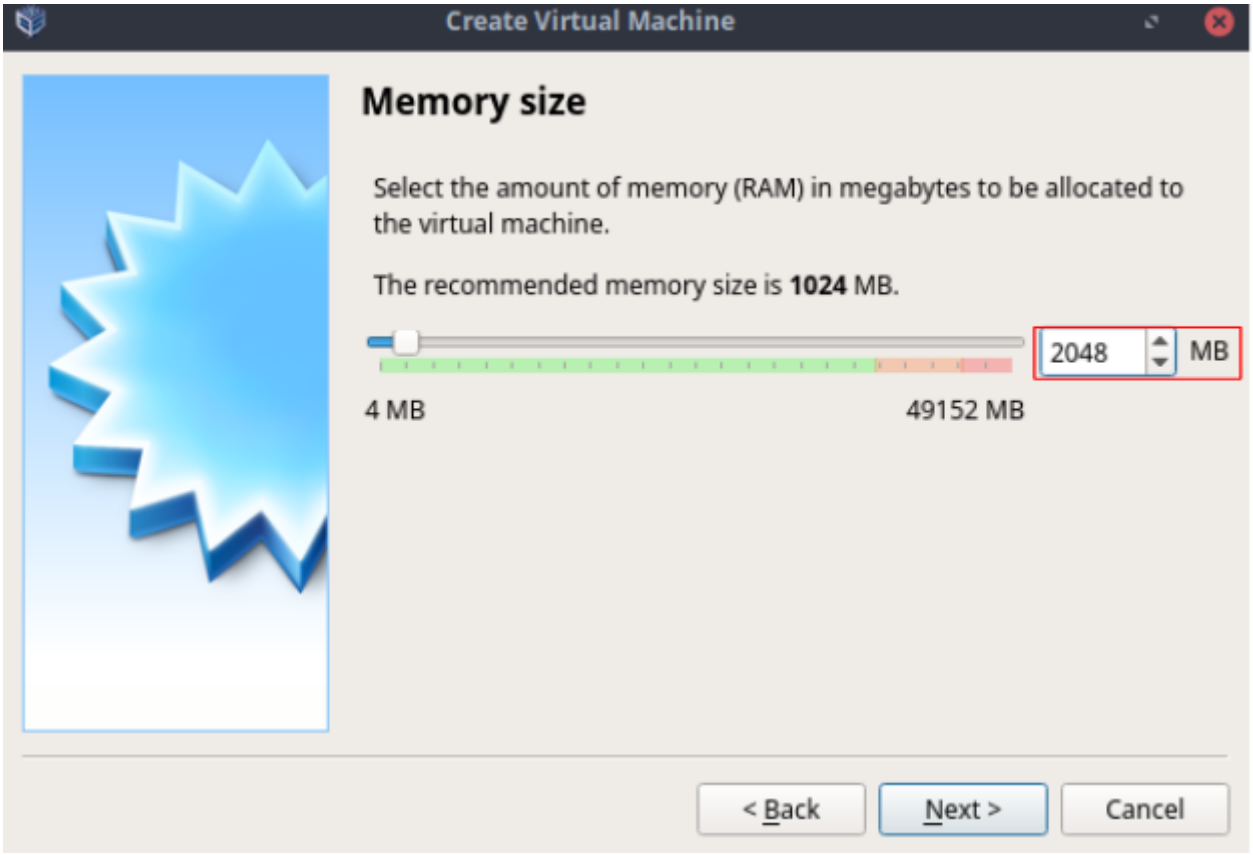
5. After waiting for the install to finish and after restarting your computer you will have successfully installed virtualbox.

How to create a virtual machine

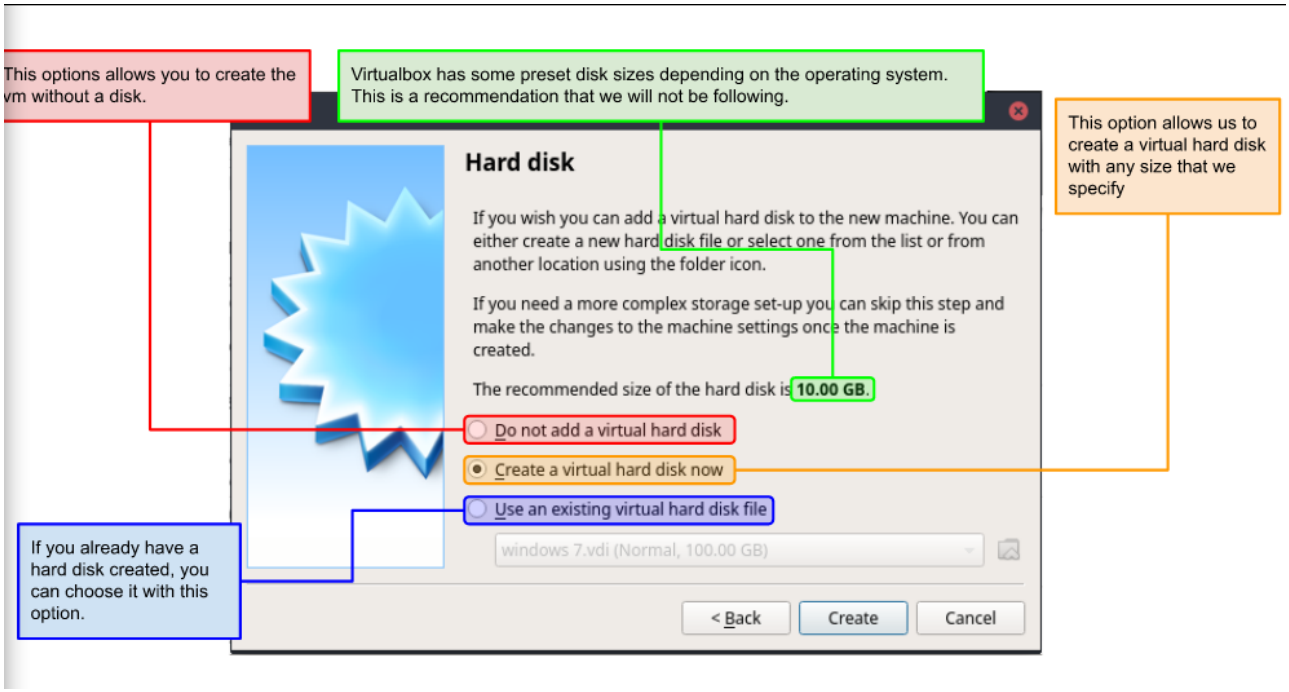
1. First in VirtualBox click the New button to create a new virtual machine.
2. The first step is to name, pick the folder it will be located, the type of operating system and than the version of the operating system.



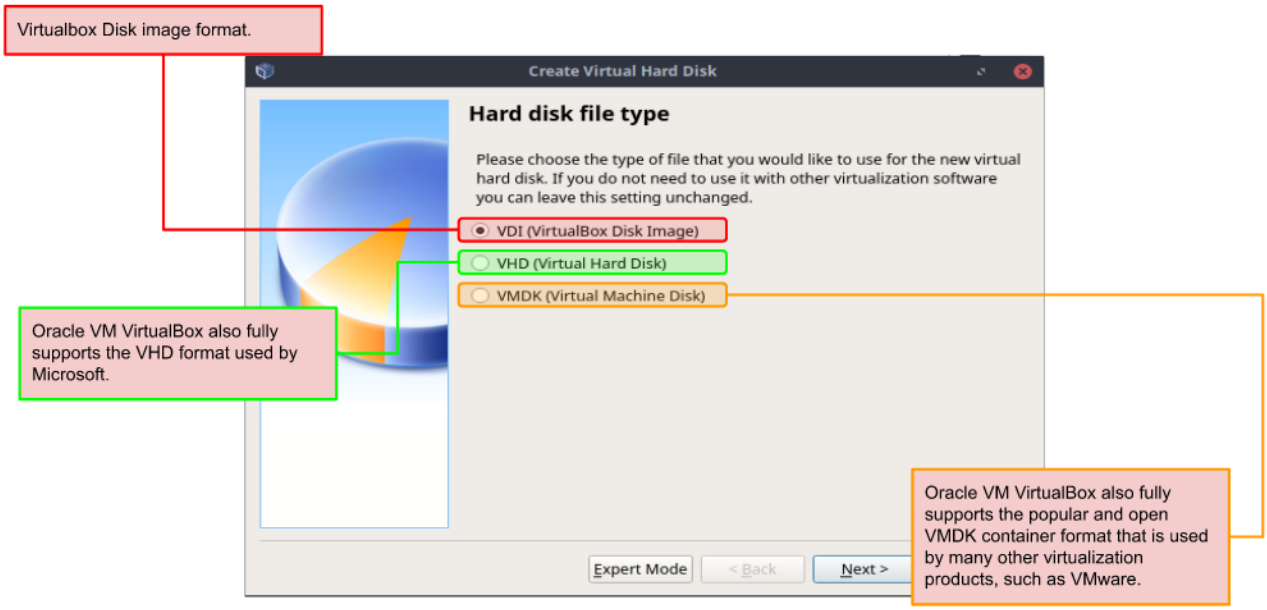
3. Next you set the amount of RAM you want to use for your Virtual machine the amount can vary based on your host computer but you want to use at least 2GB of RAM.



4. Next you choose if you want a virtual hard disk and how much space want to allocate to your VM.

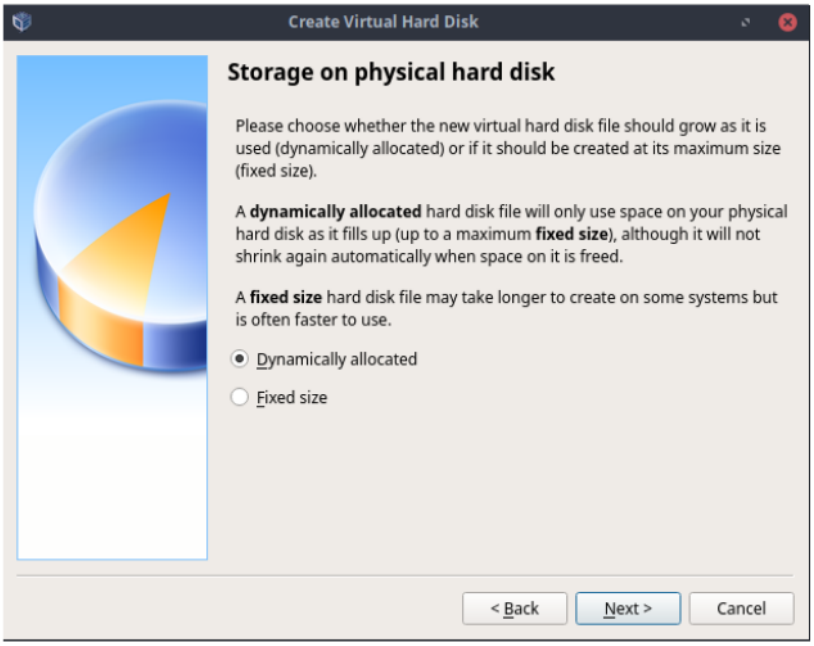


5. Now choose your hard disk file type.



6. Next choose if you want the size of your hard disk to change based on how much you have stored on it or to be a fixed size.

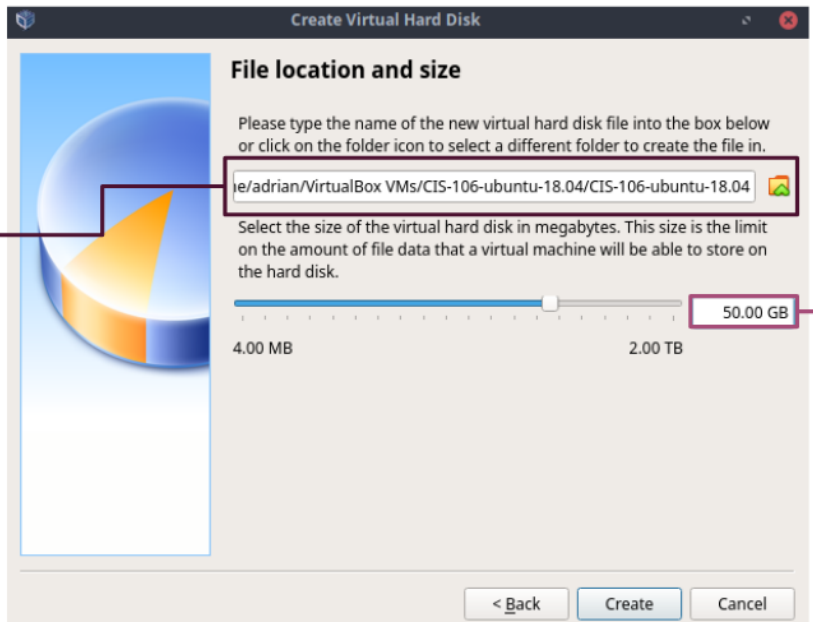
Choosing "Dynamically Allocated" This will initially be very small and not occupy any space for unused virtual disk sectors, but will grow every time a disk sector is written to for the first time, until the drive reaches the maximum capacity chosen



Choosing "Fixed Size" If you create a fixed-size image, an image file will be created on your host system which has roughly the same size as the virtual disk's capacity. So, for a 10 GB disk, you will have a 10 GB file.

7. Now choose the amount of space for your hard disk.

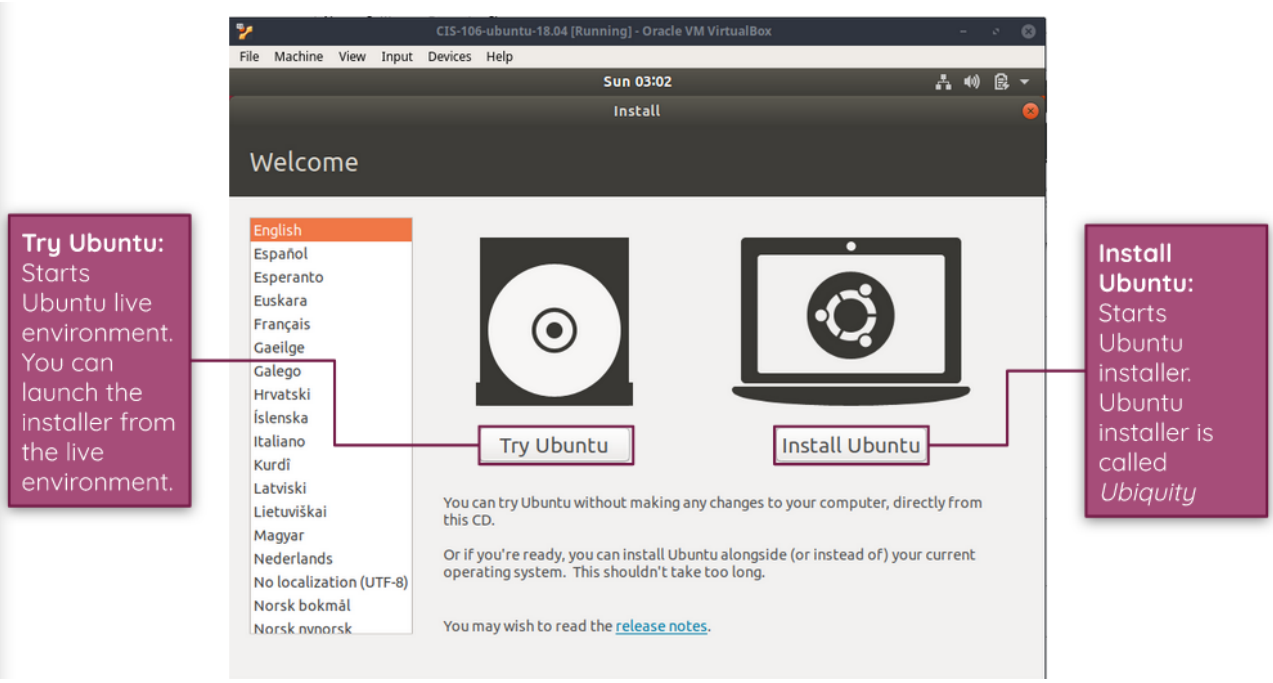
This is the path (location) where your virtual machine will be stored in the host computer



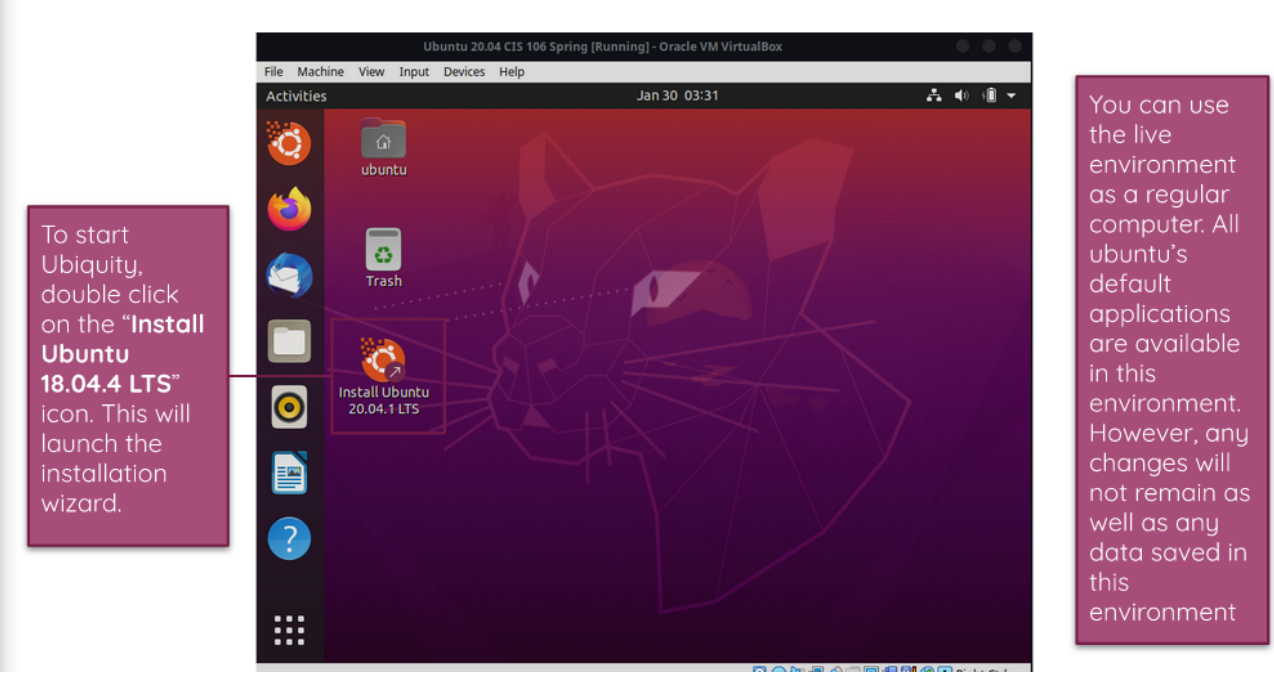
Ubuntu takes about 25 GB of disk space, but since you will be installing additional software and updates, it is good to double that space.

Installing Ubuntu in a virtual machine

1. Launch your virtual machine and you will be but in Ubuntu to install it.

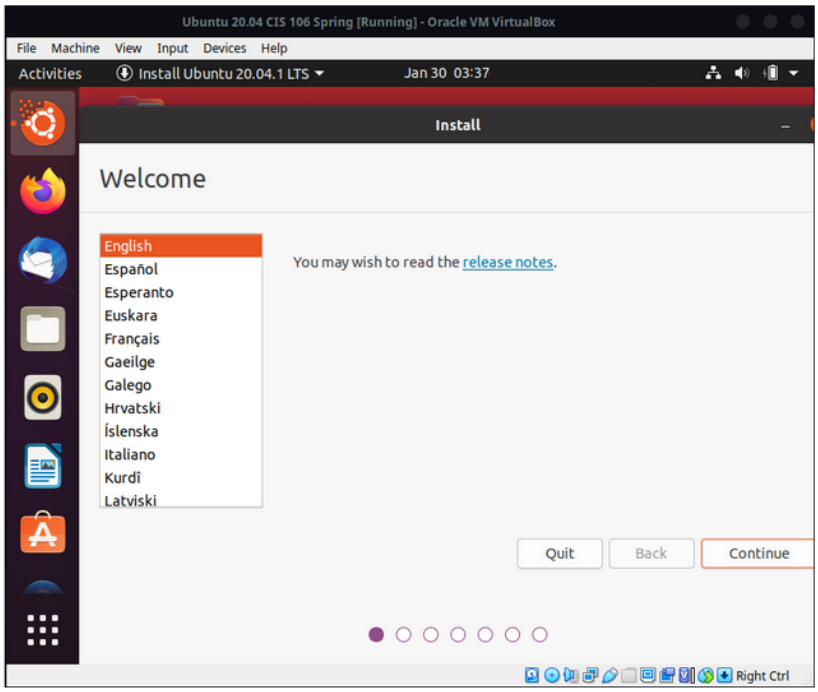


2. Double click the Ubuntu installer.



3. Click what language you want your system in and click continue.

Ubiquity's Welcome screen allows you to select the installation wizard and read the release notes that list all changes in the release. The default language is English.



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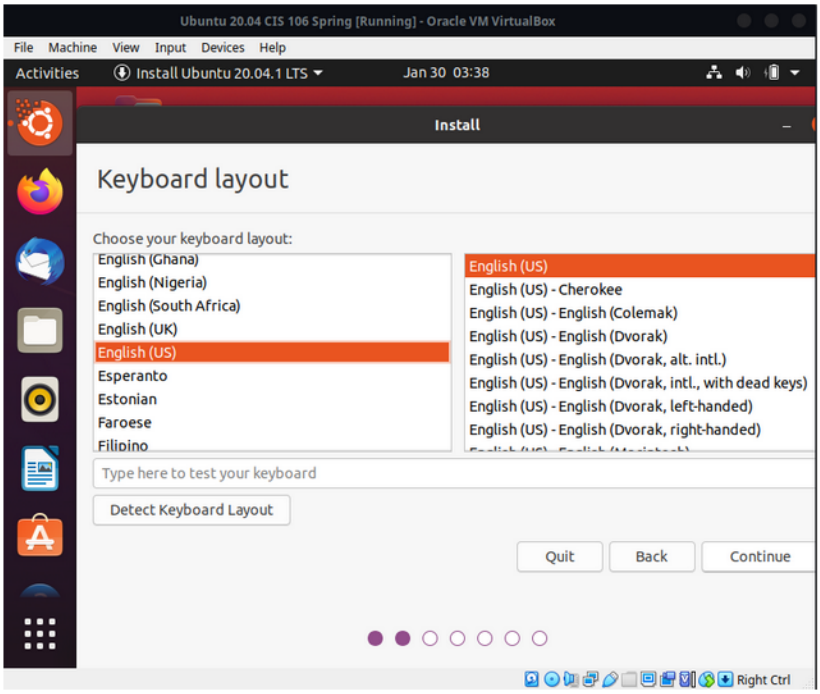
4. Choose your keyboard layout than continue.

Ubiquity's keyboard layout screen will automatically detect your keyboard. However, if the default selection is not correct, you can use the "Detect Keyboard Layout" button to start a keyboard detection wizard.



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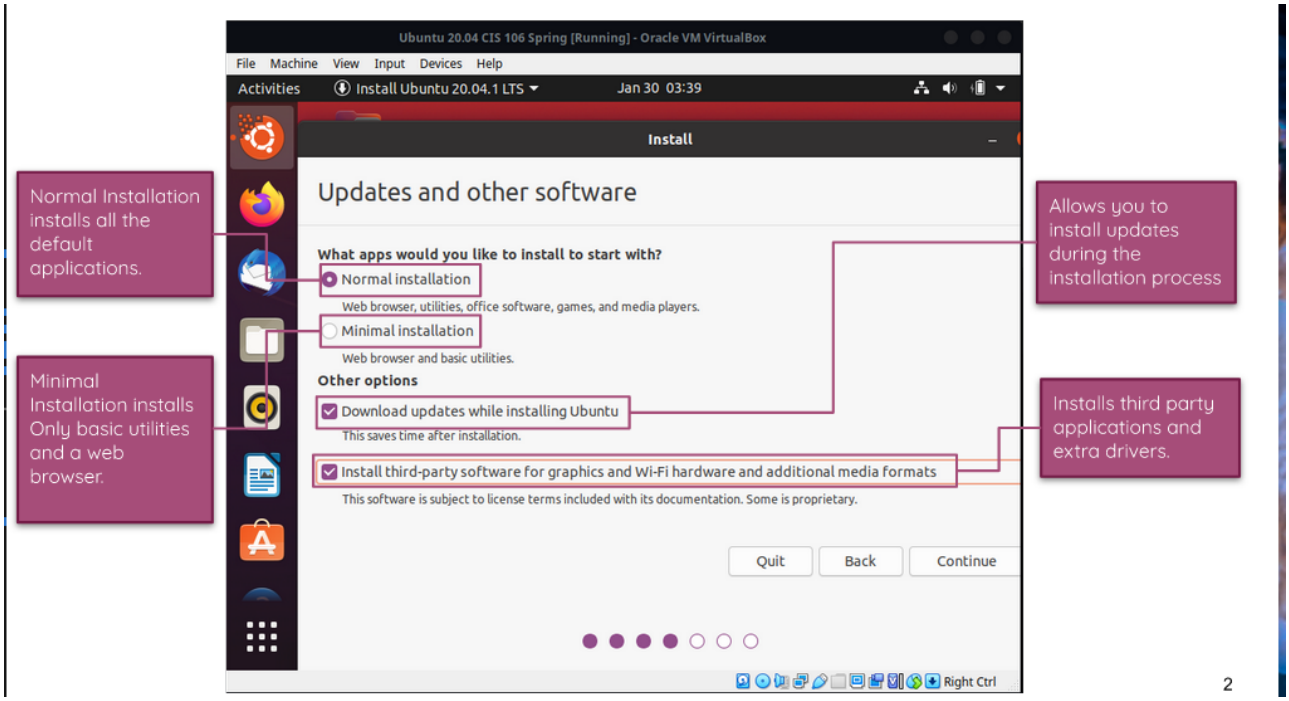
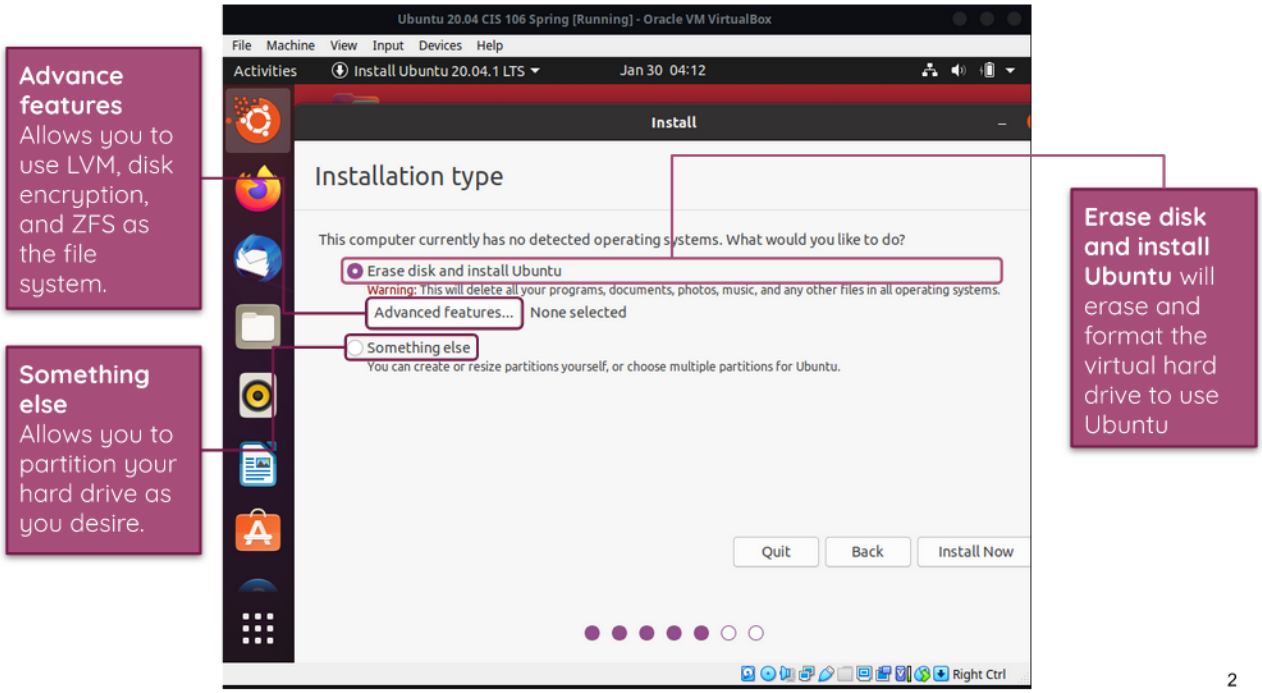
5. Choose what type of installation you want and choose any other options needed.

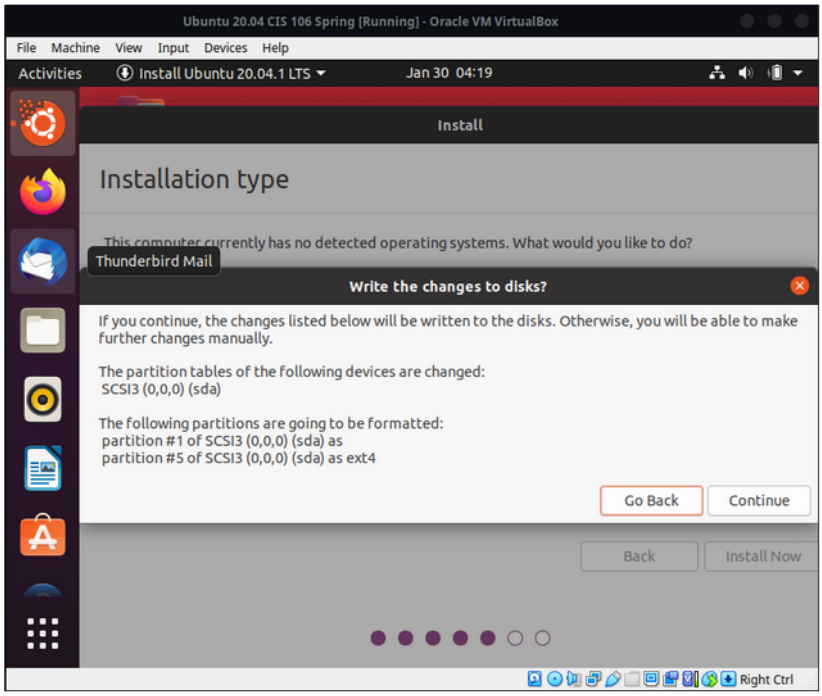


6. For the installation type pick erase disk and install ubuntu.



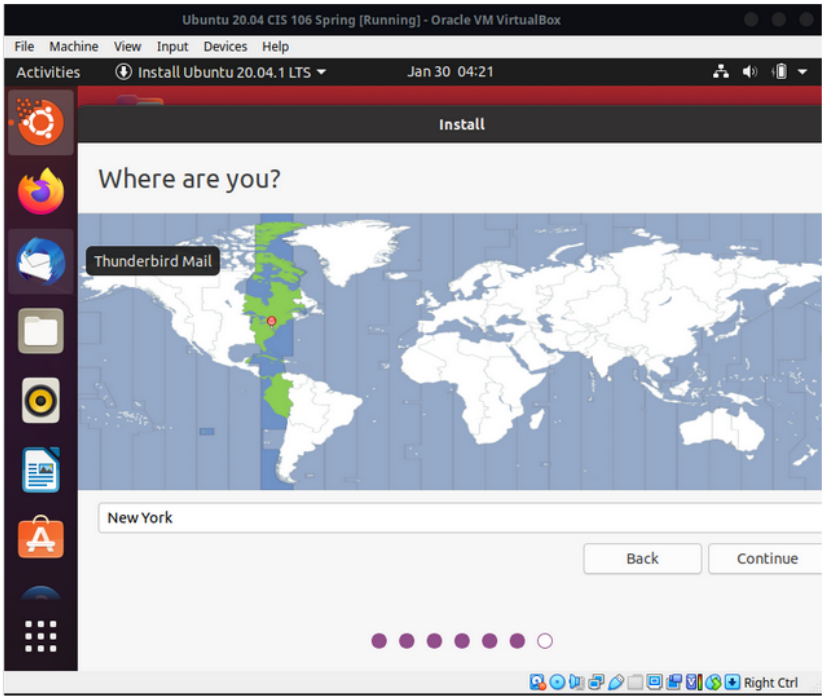
7. Click continue to the warning the installer gives you.

Ubiquity warns you to review the changes made to the disk before continuing. If you followed the steps so far, it is safe to continue.

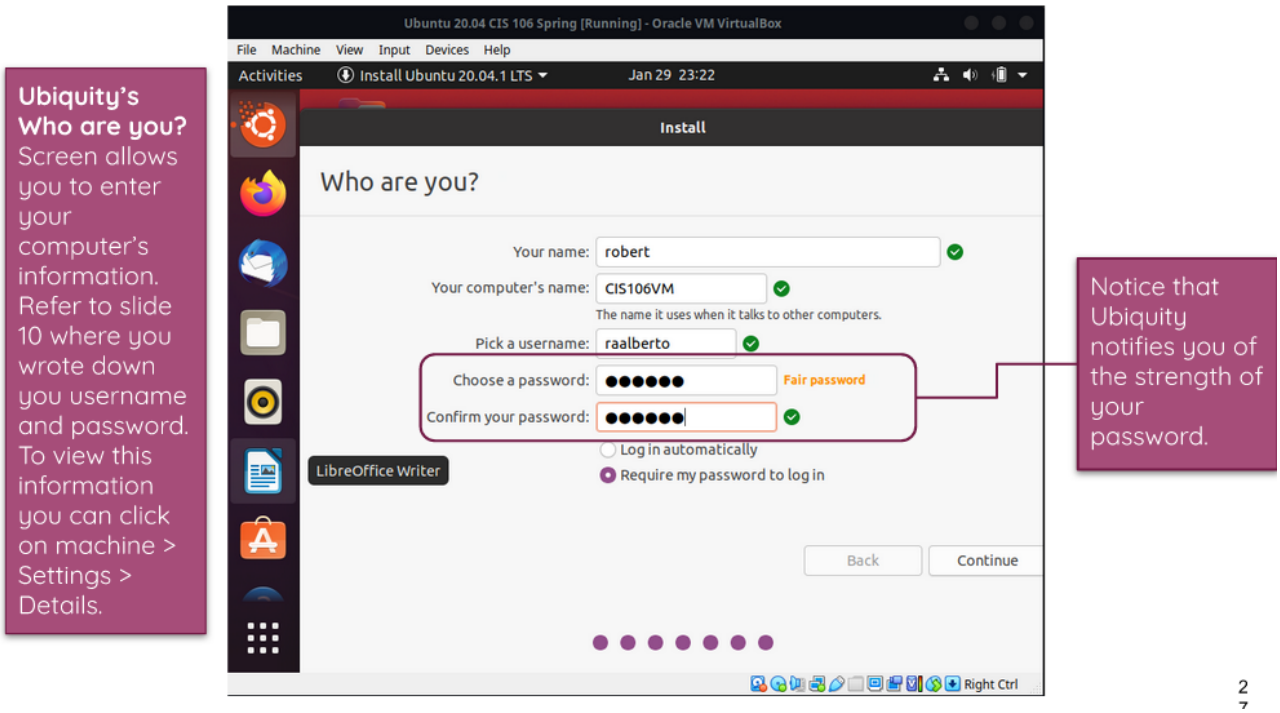


8. Click whatever your location is on the where are you screen and than continue.

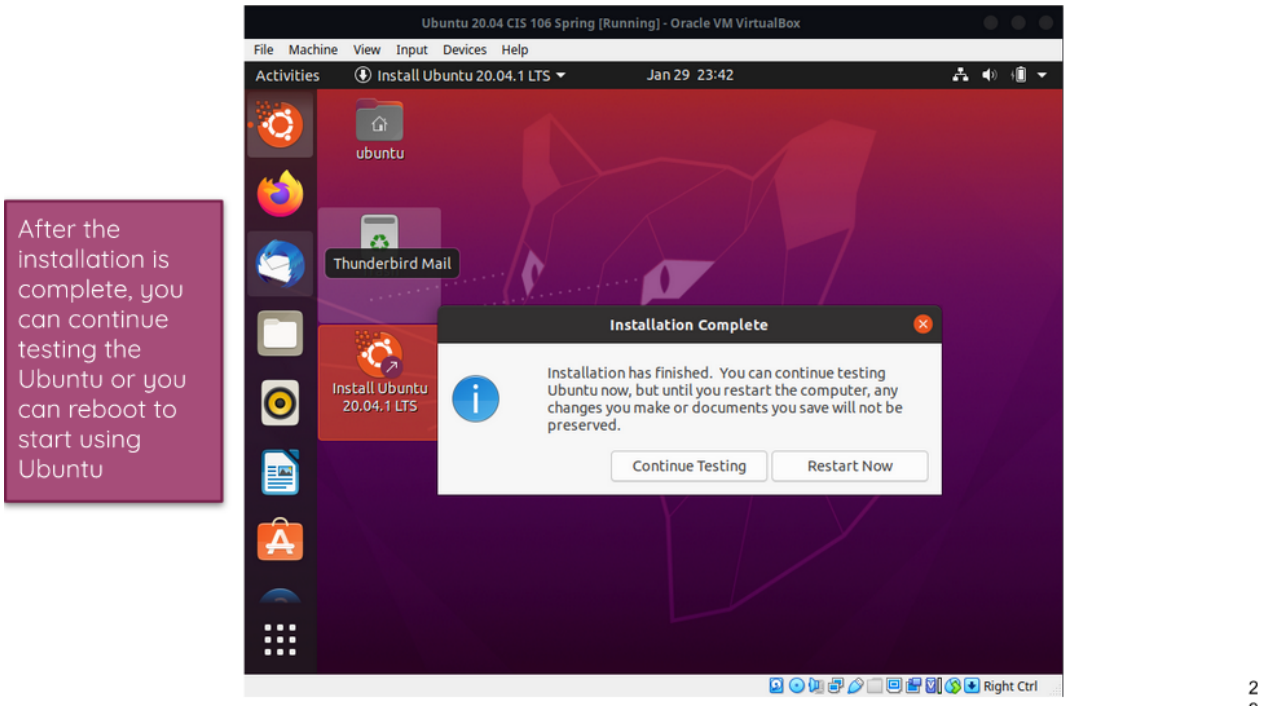
Ubiquity's Where are you screen? Screen allows you to select your location for setting the time zone. By default, ubiquity will select the location based on you computer's locale. However, this can be overwritten by sliding the location selector



9. On the Who are you screen enter your computers name, username, and password than click continue.

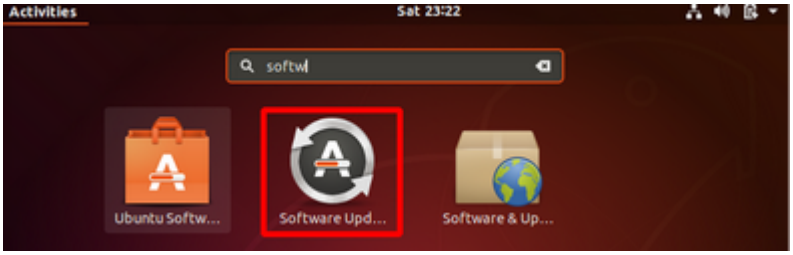


10. After waiting for the installation to finish restart the virtual machine and your install will be complete.



Updating Ubuntu

There are two ways to update Ubuntu one is to simply type software update into your applications.



The other is to use the command `sudo apt update; sudo apt upgrade -y`

Installing software In Ubuntu

Any software can be installed in Ubuntu by using the command line.

- You can install using the command `sudo apt install + package name`
- For example if you would like to install a program to play Tetris you can use a program called quadrapassel and use the command `sudo apt install quadrapassel -y`
- You can also delete software in a similar way with the command `sudo apt remove + package name`
- For example `sudo apt remove quadrapassel -y` will remove the Tetris game.

Basic Linux Commands

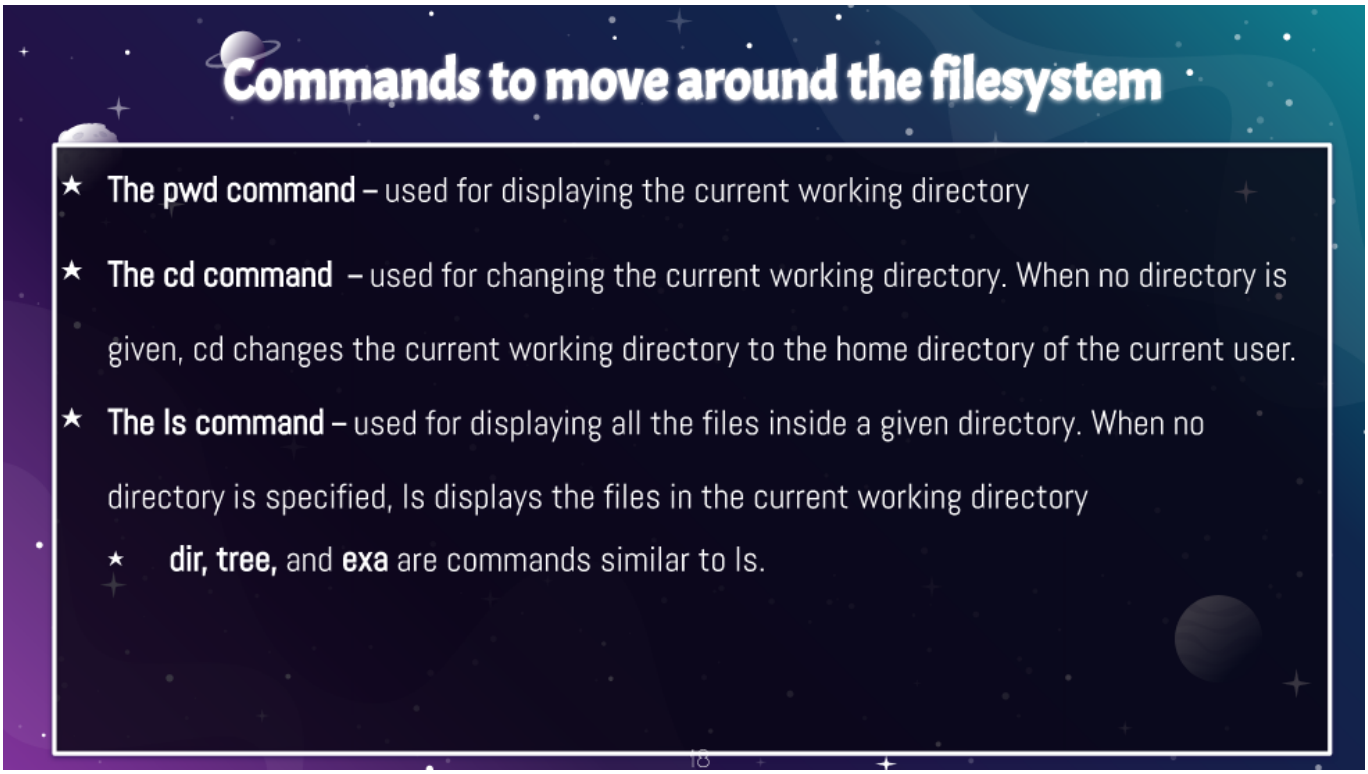
There are many simple commands to use in linux some include:

command	what it does
echo	display a line of text
fortune	print a random, hopefully interesting, adage
cowsay	configurable speaking/thinking cow (and a bit more)
lolcat	rainbow coloring for text
figlet	display large characters made up of ordinary screen characters
toilet	display large colorful characters
rig	Random Identity Generator
man	shows the manual for any command

Navigating the filesystem

The linux file system has many commands that are useful to navigate through it. For example:

Command	What it does	Syntax	Example
pwd	Display the current working directory	pwd	pwd
cd	Change the current working directory	cd + destination	cd /home/user/Documents
ls	Display all the files inside a given directory	ls + option + file or dir	ls -a ~/Pictures



Managing files and directories

There are very powerful commands that can be used to manage files and directories in the Linux system some include:

Command	Description	Syntax	Examples
mkdir	Creates a single or multiple directories	mkdir + name of directory	mkdir wallpapers
touch	Creates files	touch + filename	touch list
rm	Removes files	rm + filename	rm list
rmdir	Remove empty directories	rmdir + directory name	rmdir wallpapers
mv	Moves and renames directories	mv + source + destination	mv Downloads/cat.png Documents/

Command	Description	Syntax	Examples
cp	Copies files/directories	cp + files to copy + destination	cp Downloads/wallpapers.zip Pictures/
ln	Create a hard link	ln + file + destination	ln file ~/Downloads/fileHL
man	Shows the manual for commands	man + command	man ls