- 3. 1. Installation and configuration -

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- Exercises -

You are going to create a new Google Document inside the "3. Linux" folder of your Google Drive, named:

"3. 1. Installation and configuration - Apellidos, Nombre"

being "Apellidos, Nombre" your Last Name and Name.

Share this Google Document with the teacher (jorge@iesdoctorbalmis.com) with "Edit" permissions.

Inside this Google Document you are going to copy and answer all the "Exercises" of this sub-unit.

- 3. 1. 1. Overview of the Installation Process -

First, just a note about re-installations.

With Ubuntu, a circumstance that will require a complete re-installation of your system is very rare; perhaps mechanical failure of the hard disk would be the most common case.

Many common operating systems may require a complete installation to be performed when critical failures take place or for upgrades to new OS versions.

Even if a completely new installation isn't required, often the programs you use must be re-installed to operate properly in the new OS.

Under Ubuntu, it is much more likely that your OS can be repaired rather than replaced if things go wrong.

Upgrades never require a wholesale installation; you can always upgrade in-place.

And the programs are almost always compatible with successive OS releases.

If a new program version requires newer supporting software, the Ubuntu packaging system ensures that all the necessary software is automatically identified and installed.

The point is, much effort has been put into avoiding the need for re-installation, so think of it as your very last option.

The installer is *not* designed to re-install over an existing system.

Here's a road map for the steps you will take during the installation process:

1. Back up any existing data or documents on the hard disk where you plan to install.
2. Gather information about your computer and any needed documentation, before starting the installation.
3. Locate and/or download the installer software and any specialized driver or firmware files your machine requires.
4. Set up boot media such as CDs/DVDs/USB sticks or provide a network boot infrastructure from which the installer can be booted.
5. Boot the installation system.
6. Select the installation language.
7. Activate the ethernet network connection, if available.
8. If necessary, resize existing partitions on your target hard disk to make space for the installation.
9. Create and mount the partitions on which Ubuntu will be installed.
10. Watch the automatic download/install/setup of the *base system*.
11. Install a *boot loader* which can start up Ubuntu and/or your existing system.
12. Load the newly installed system for the first time.

If you have problems during the installation, it helps to know which packages are involved in which steps.

The installer software, `debian-installer`, is the primary element of the installation process.

It detects hardware and loads appropriate drivers, uses `dhcp-client` to set up the network connection, runs `debootstrap` to install the base system packages, and runs `tasksel` to allow you to install certain additional software.

Many more packages play smaller parts in this process, but **debian-installer** has completed its task when you load the new system for the first time.

To tune the system to your needs, `tasksel` allows you to choose to install various predefined bundles of software like a Web server or a Desktop environment.

Just be aware that the X Window System is completely separate from `debian-installer`, and in fact is much more complicated.

- 3. 1. 2. Installing Ubuntu -

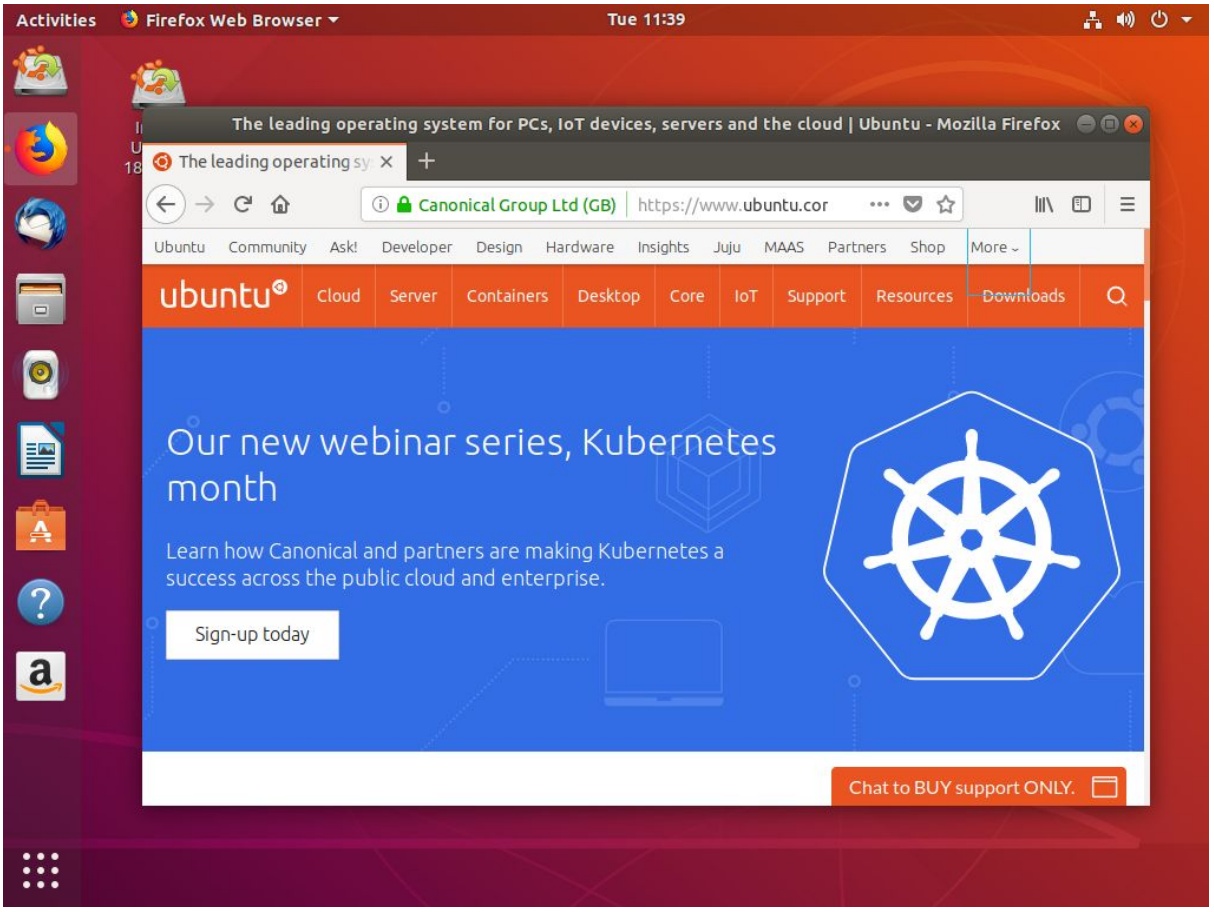
In the case that you have Hyper-V installed in your real computer:

1. You need to deactivate Hyper-V.
2. You have to install Virtual Box.

You are going to install Ubuntu in a Virtual Box machine: with 4 GB of RAM, and a 32 GB (dynamic) hard drive.

1. Overview

The Ubuntu desktop is easy to use, easy to install and includes everything you need to run your organisation, school, home or enterprise. It's also open source, secure, accessible and free to download.



We're going to install Ubuntu desktop onto your computer, using either your computer's DVD drive or a USB flash drive.

2. Requirements

You'll need to consider the following before starting the installation:

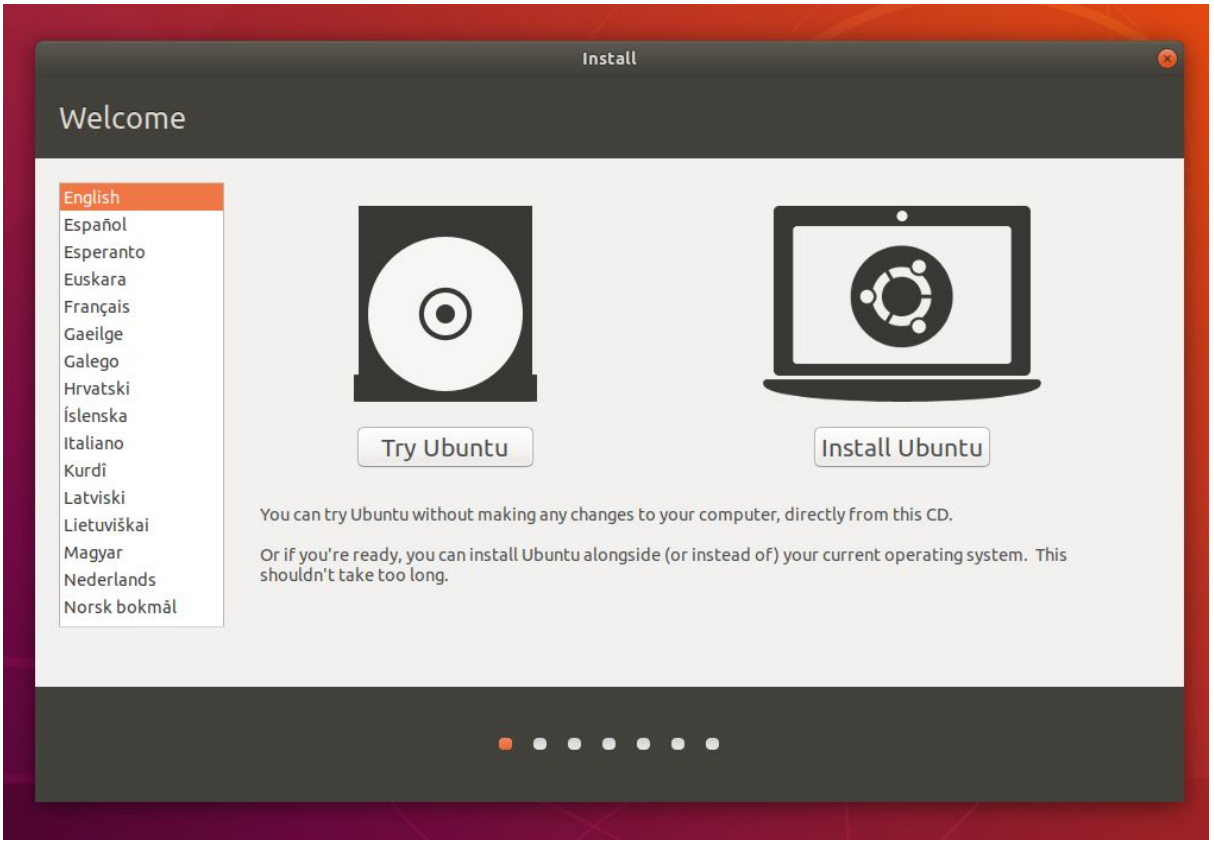
- 2 GHz dual core processor or better.
- 2 GB RAM.
- 25 GB of free hard drive space.
- Either a DVD drive or a USB port for the installer media.
- Make sure you have a recent backup of your data. While it's unlikely that anything will go wrong, you can never be too prepared.
- Internet access is helpful.

3. Boot from DVD

It's easy to install Ubuntu from a DVD. Here's what you need to do:

1. Put the Ubuntu DVD into your optical/DVD drive.
2. Restart your computer.

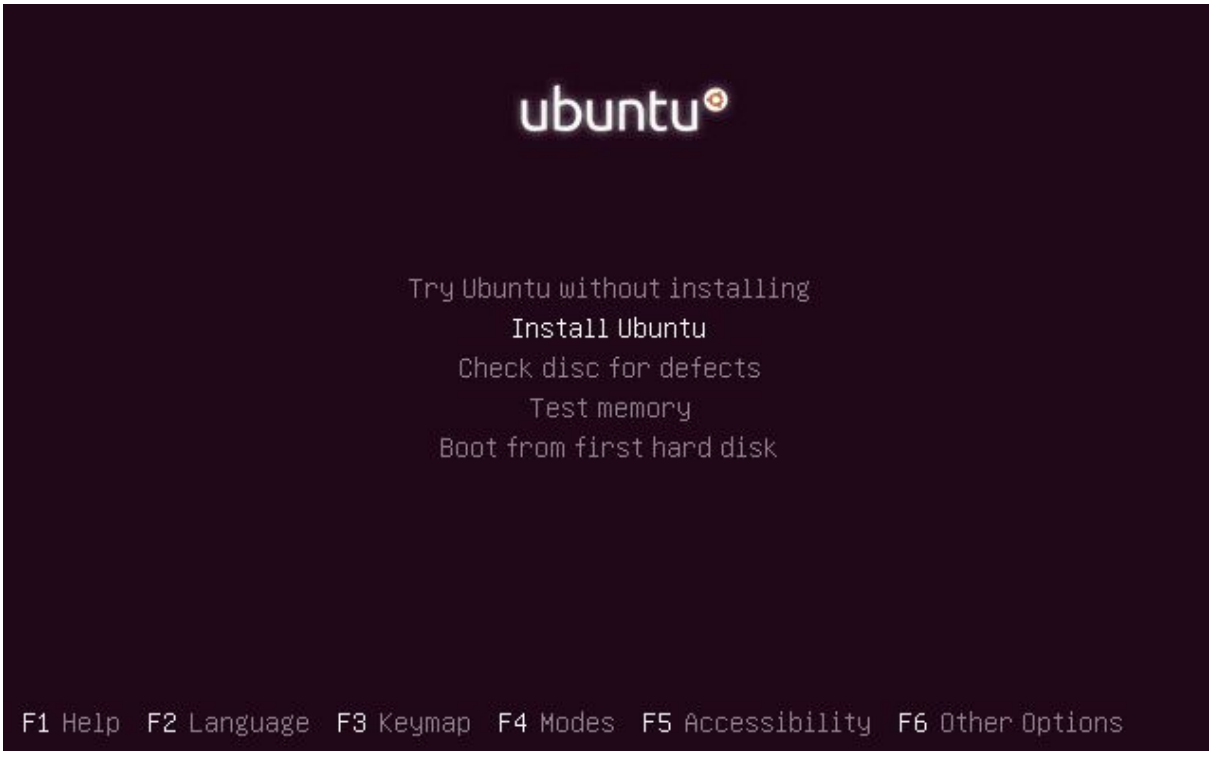
As soon as your computer boots you'll see the welcome window.



From here, you can select your language from a list on the left and choose between either installing Ubuntu directly, or trying the desktop first (if you like what you see, you can also install Ubuntu from this mode too).

Depending on your computer's configuration, you may instead see an alternative boot menu showing a large language selection pane.

Use your mouse or cursor keys to select a language and you'll be presented with a simple menu.



Select the second option, 'Install Ubuntu', and press return to launch the desktop installer automatically.

Alternatively, select the first option, 'Try Ubuntu without installing', to test Ubuntu (as before, you can also install Ubuntu from this mode too).

A few moments later, after the desktop has loaded, you'll see the welcome window.

From here, you can select your language from a list on the left and choose between either installing Ubuntu directly, or trying the desktop first.

4. Boot from USB flash drive

Most computers will boot from USB automatically.

Simply insert the USB flash drive and either power on your computer or restart it.

You should see the same welcome window we saw in the previous 'Install from DVD' step, prompting you to choose your language and either install or try the Ubuntu desktop.

If your computer doesn't automatically boot from USB, try holding `F12` when your computer first starts.

With most machines, this will allow you to select the USB device from a system-specific boot menu.

F12 is the most common key for bringing up your system's boot menu, but Escape, F2 and F10 are common alternatives.

If you're unsure, look for a brief message when your system starts - this will often inform you of which key to press to bring up the boot menu.

5. Prepare to install Ubuntu

You will first be asked to select your keyboard layout.

If the installer doesn't guess the default layout correctly, use the ‘Detect Keyboard Layout' button to run through a brief configuration procedure.

After selecting *Continue* you will be asked *What apps would you like to install to start with?*

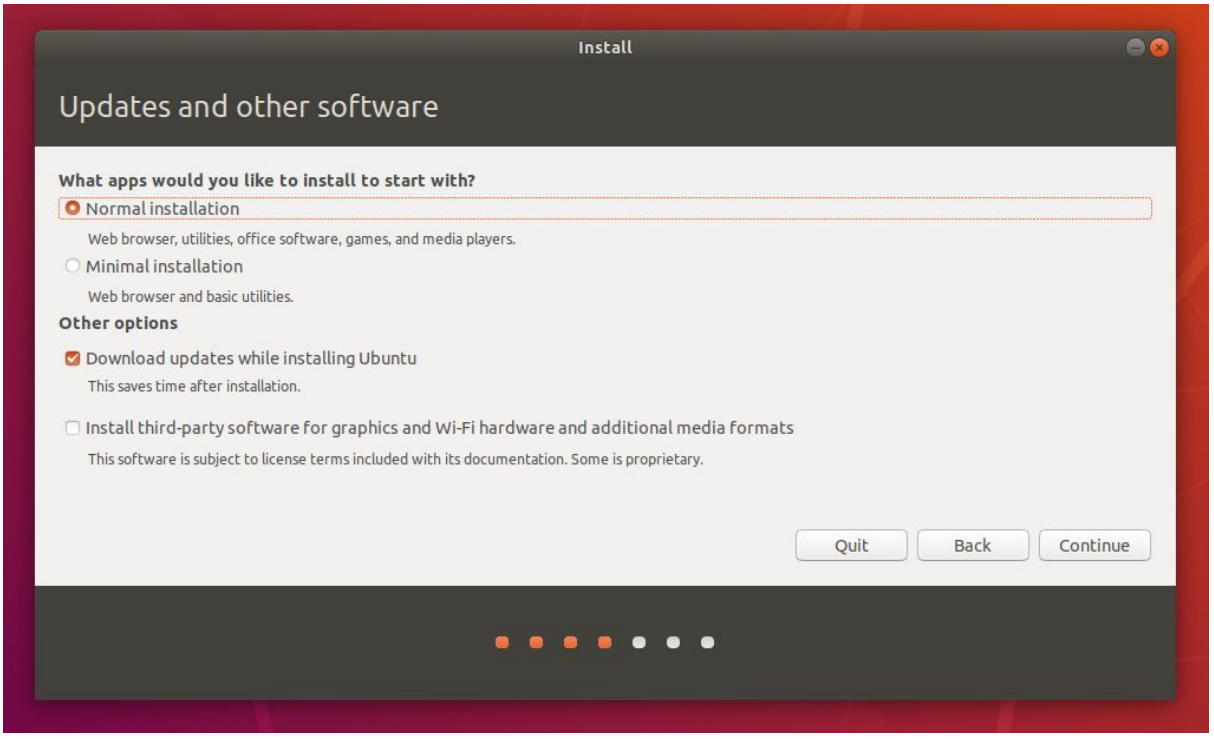
The two options are ‘Normal installation' and ‘Minimal installation'.

The first is the equivalent to the old default bundle of utilities, applications, games and media players - a great launchpad for any Linux installation.

The second takes considerably less storage space and allows you to install only what you need.

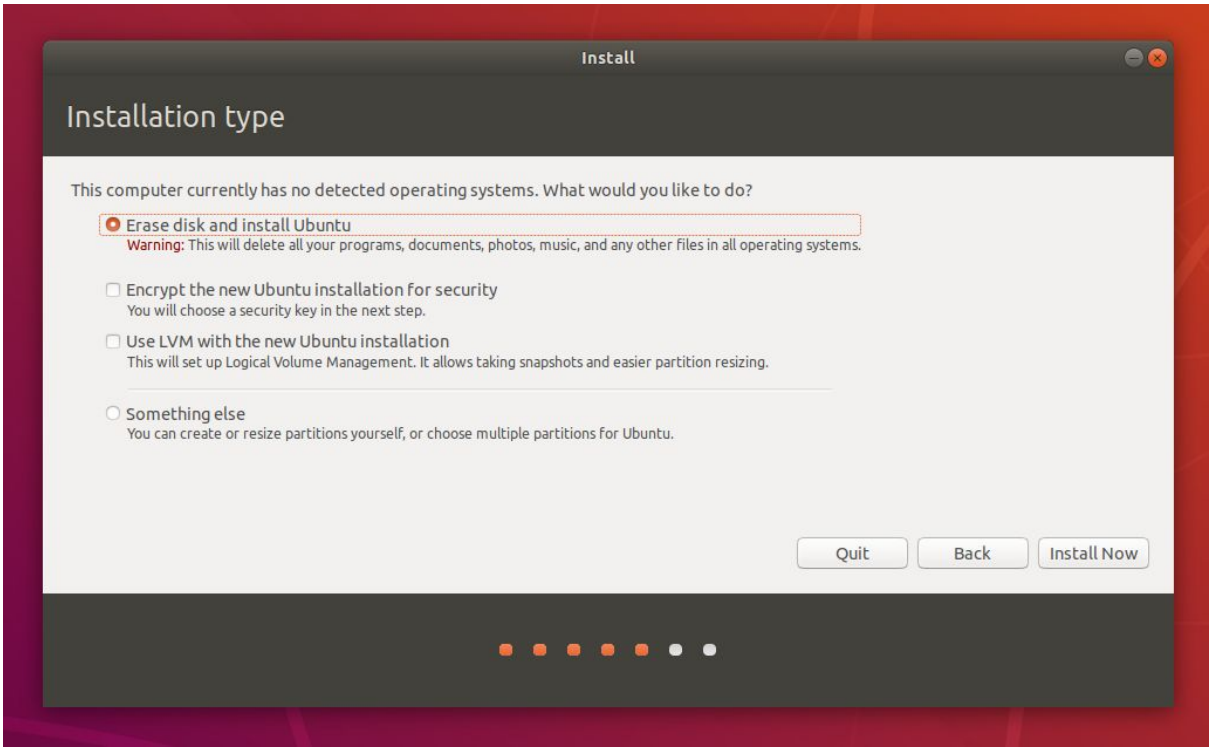
Beneath the installation-type question are two checkboxes; one to enable updates while installing and another to enable third-party software.

- We advise enabling both `Download updates` and `Install third-party software`.
- Stay connected to the internet so you can get the latest updates while you install Ubuntu.
- If you are not connected to the internet, you will be asked to select a wireless network, if available. We advise you to connect during the installation so we can ensure your machine is up to date



6. Allocate drive space

Use the checkboxes to choose whether you'd like to install Ubuntu alongside another operating system, delete your existing operating system and replace it with Ubuntu, or — if you're an advanced user — choose the '**Something else**' option.



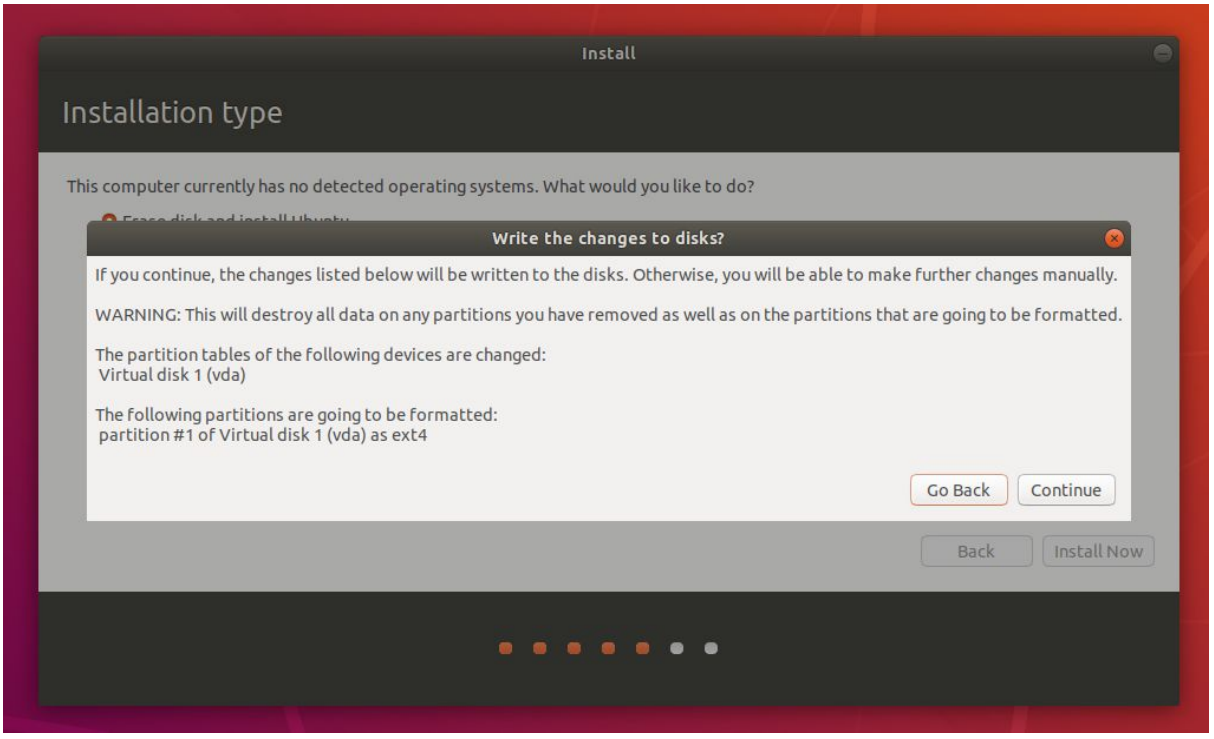
Options related to side-by-side installation or erasing a previous installation are only offered when pre-existing installations are detected.

7. Begin installation

After configuring storage, click on the 'Install Now' button.

A small pane will appear with an overview of the storage options you've chosen, with the chance to go back if the details are incorrect.

Click `Continue` to fix those changes in place and start the installation process.

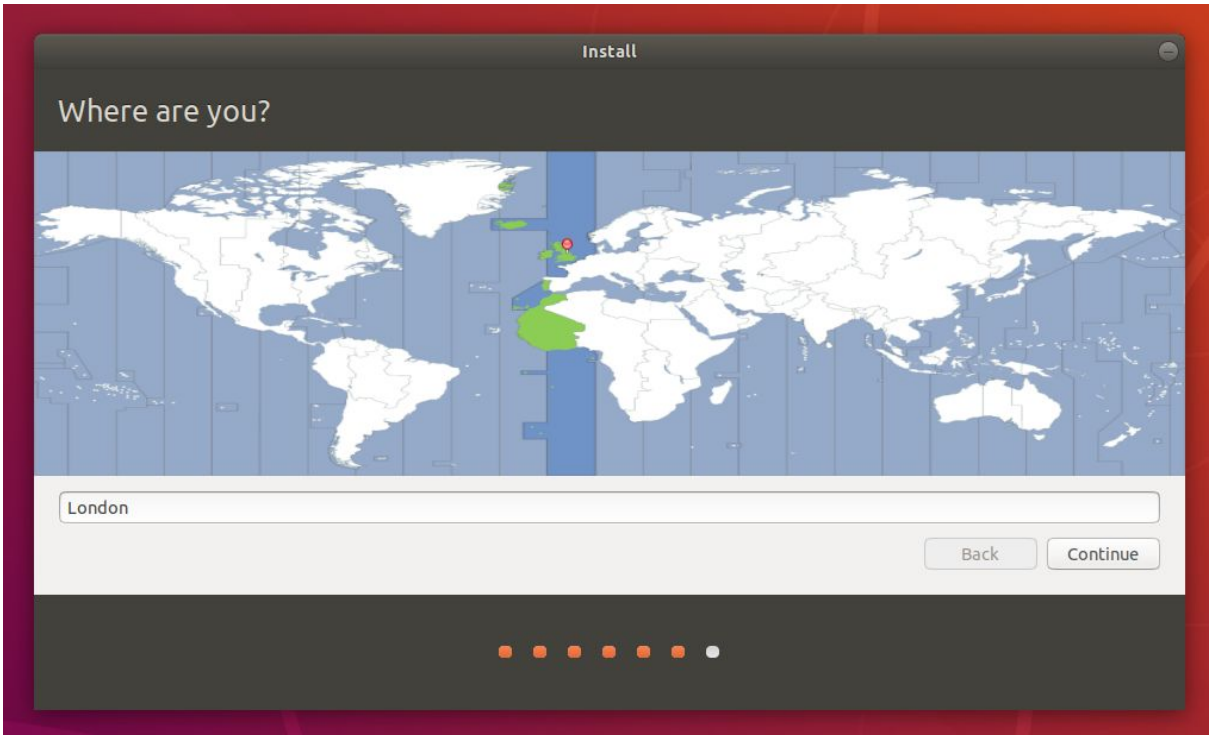


8. Select your location

If you are connected to the internet, your location will be detected automatically.

Check your location is correct and click 'Forward' to proceed.

If you're unsure of your time zone, type the name of a local town or city or use the map to select your location.

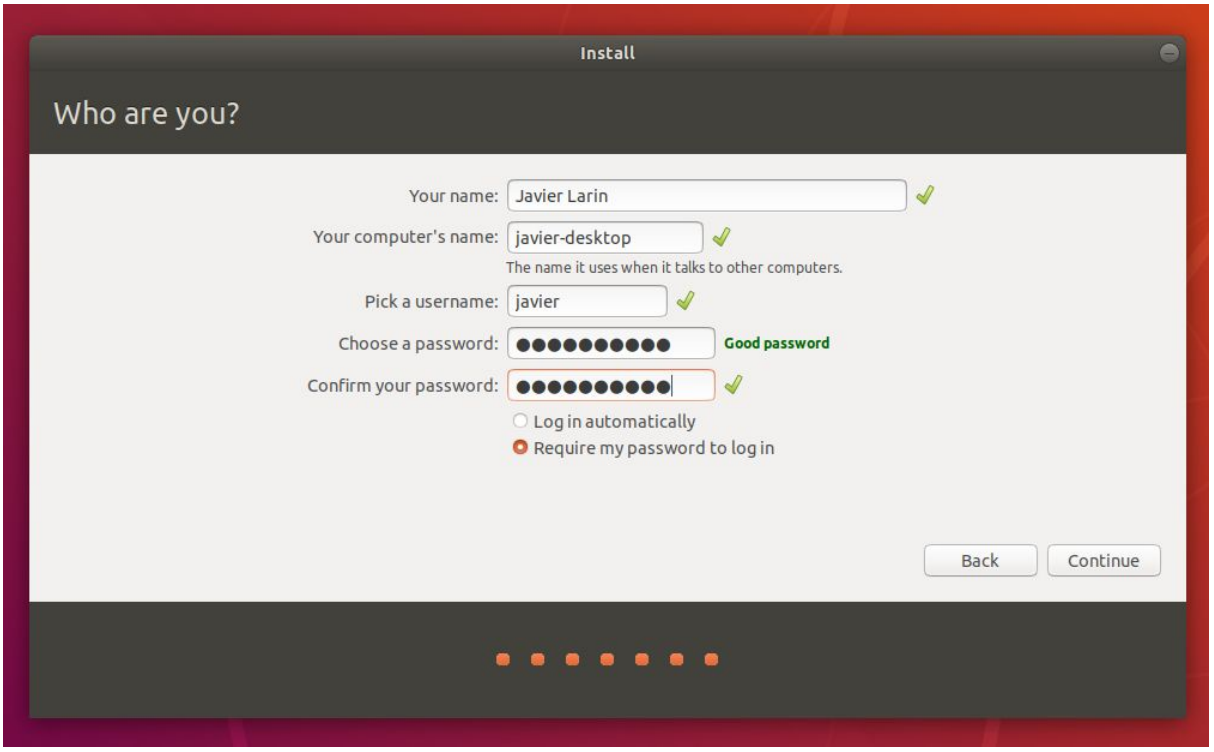


If you're having problems connecting to the Internet, use the menu in the top-right-hand corner to select a network.

9. Login details

Enter the following details:

- Your name: Alumno.
- Your computer's name: linux-XY (being "XY" the last 2 digits of your real computer's IP).
- Username: alumno
- Password: alumno
- Choose: "Require my password to login".



If you enable home folder encryption and you forget your password, you won't be able to retrieve any personal data stored in your home folder.

10. Virtual Box Guest Additions

Installing Virtual Box Guest Additions

Install Virtual Box Guest Additions going to the Virtual Box menu, selecting "Dispositivos" -> "Insertar imagen de CD de las <<Guest Additions>>...".

Enter the password of the user and clic "Run" to install Virtual Box Guest Additions.

If that does not install Virtual Box Guest Additions, you can do the following:

1.- Open the Terminal and write:

sudo apt install gcc make perl

2.- Execute the following commands:

sudo apt update

sudo apt install virtualbox-guest-dkms

Sharing the clipboard between your Windows real machine and your Ubuntu virtual machine

After installing Virtual Box Guest Additions, in your virtual machine, go to the Virtual Box menu, select "Dispositivos" -> "Portapapeles compartido" -> "Bidireccional".

Now you can copy and paste text between your real machine and your virtual machine.

Drag and drop files between your Windows real machine and your Ubuntu virtual machine

In your virtual machine, go to the Virtual Box menu, select "Dispositivos" -> "Arrastrar y soltar" -> "Bidireccional".

This "drag & drop" feature to copy and paste files between your real machine and your virtual machine, it seems that works only between "File Explorer" (Windows, real machine) and "Files / Nautilus" (Ubuntu, virtual machine), not copying to the Ubuntu Desktop.

Sharing files between your Windows real machine and your Ubuntu virtual machine

In your virtual machine, go to the Virtual Box menu, select "Dispositivos" -> "Carpetas Compartidas" -> "Preferencias de carpetas compartidas...".

Click on the right icon "Agregar nueva carpeta compartida".

On "Ruta carpeta" choose your real machine's folder that you want to share with your virtual machine and give it a **"NAME"** on "Nombre carpeta".

Check "Hacer permanente".

In your virtual machine, open the Terminal and write:

sudo mkdir /media/shared

to create the **"shared"** folder where you will mount your real machine's folder.

In your virtual machine, open the Terminal and write:

sudo mount -t vboxsf NAME /media/shared

being **"NAME"** the name you have used when you did "Agregar nueva carpeta compartida".

If you want this mount to be permanent (everytime you restart your Ubuntu virtual machine), do the following.

BE CAREFUL EXECUTING THE FOLLOWING STEPS: YOU CAN BREAK YOUR UBUNTU VIRTUAL MACHINE AND MAKE IT IMPOSSIBLE TO START !!!

In your virtual machine, open the Terminal and write:

sudo gedit /etc/modules

and add the following line to that file:

vboxsf

In your virtual machine, open the Terminal and write:

sudo gedit /etc/fstab

and add the following line to that file:

NAME /media/shared vboxsf defaults 0 0

Now restart your Ubuntu virtual machine, and a **"shared"** unit should appear on the Desktop.

This **"shared"** unit is the shared folder between your Windows real machine and your Ubuntu virtual machine.

11. Network

After you have installed Ubuntu, and you have logged into the system, you have to configure the network settings.

If you are using Virtual Box, go to: Configuración -> Red -> Conectado a: "Adaptador puente".

Go to Settings -> Network.

Here you can assign the IP to your Ubuntu machine: for example, you can use 192.168.0.**X**, being "**X**" your real computer's IP + 200.

Here you can also configure the proxy, that is going to be the teacher's PC: 192.168.0.100:8080.

To configure the proxy in order to have Internet connection for the **apt** command you have to do the following:

sudo gedit /etc/apt/apt.conf

Inside this file, copy the following:

Acquire::http::proxy "http://192.168.0.**100:8080**";

Acquire::ftp::proxy "http://192.168.0.**100:8080**";

Acquire::https::proxy "http://192.168.0.**100:8080**";

(Remember that 192.168.0.100:8080 is the teacher's IP address and port for the Proxy).

Open Mozilla Firefox and check that you have Internet connection.

Execute the following and check that the apt command has Internet connection:

sudo apt update

12. Network settings

Some useful network commands are:

sudo apt install net-tools

sudo apt install ifupdown

To install other network tools.

ifconfig -a

To check the network interfaces.

ping *machine*

To check if we have network connection with another machine.

sudo ifconfig *network-interface* up

For enabling a network interface.

sudo ifconfig *network-interface* down

For disabling a network interface.

To change the TCP/IP settings with the Terminal, modify the following file:

sudo gedit /etc/netplan/01-network-manager-all.yaml

```
# Let NetworkManager manage all devices on this system
network:
  version: 2
  renderer: NetworkManager
  ethernets:
    enp0s3:
      dhcp4: no
      addresses: [192.168.0.XY/24]
      gateway4: 192.168.0.100
      nameservers:
        addresses: [8.8.8.8,8.8.4.4]
```

Being **enp0s3** your network interface, and **XY** the IP you want.

After that:

sudo netplan apply

Notice that now you will 2 different TCP/IP settings, and you have to select which one is the active.

This can be useful if you use your computer in different LAN enviroments (work, home...) and you need different TCP/IP settings in each enviroment.

13. Installing programs and packages

One option to install programs in Ubuntu is using the GUI app named **"Ubuntu Software"**.

Other option to install programs is using the **"Terminal"** and commands.

Some useful commands are:

sudo apt update

It updates the repository database.

sudo apt upgrade

It upgrades the operating system and the programs installed.

Other way to upgrade the operating system and the programs installed is using the GUI: go to Settings -> Software Updater.

sudo apt install *name-of-the-package*

It install the *name-of-the-package*.

sudo apt install synaptic

It installs Synaptic, a visual package management system that is like doing **sudo apt install** but with GUI.

sudo apt install update-manager

Maybe you will have this program already installed in your Ubuntu computer.

It installs update-manager or "Software Updater", a program to manage the updates of the programs and the operating system: like doing **sudo apt upgrade** but with GUI.

sudo apt install tasksel

It installs tasksel.

sudo tasksel

It provides a simple interface for users who want to configure their system and to install software collections that they have not selected during the operating system installation.

sudo apt-get install guake -y

It installs a program to manage the terminal.

For example, with the F12 key you will have a Terminal where you can use tabs to open different Terminal sessions.