

Tecnologías Multimedia - Study Guide - Milestone 0: OS (Operating System) Provisioning

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1. Description

The InterCom project [3] is a real-time application with a high computational (specially in terms of CPU) demand. It is written in Python [1], an interpreted language that has been ported to **almost all** the current OSs, including mobile **devices**.

This milestone (the installation of a dedicated Linux distribution for running InterCom) is optional, but it is highly recommend to do it because you'll receive technical support in a reasonable amount of time in the case you are in trouble. Futhermore, it is recommend to run InterCom in a Xubuntu 21.04 (Hirsute Hippo) [2], running natively (no **virtualization**). Xubuntu is fully functional (at least for developing our project) and demand a low amount of hardware resources.

The following “guide” helps you to install Xubuntu in an external **USB drive**, which must have at least 8GB of capacity (the minimal installation of Xubuntu needs about 5GB). You will need also a temporal external USB disk with at least 4GB to boot from it the installation Xubuntu image (or to burn an **optical disk**).

2. What do you have to do?

Supposing that you have decided to use Xubuntu in an USB disk, these are the steps you should perform (to install Xubuntu in a “hard” disk partition of your computer the instructions are almost the same):

1. Download the installation **image** from **here**.
2. “Burn” the 4GB USB drive with the image. Depending on your current OS, use the following instructions for **Windows**, **OSX**, **Ubuntu (and derivatives)**, or **the Linux console**. Using the console (example):

```
vruiz@pluton Descargas]$ lsblk # Before connecting the U
NAME          MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
nvme0n1        259:0    0 238,5G  0 disk
+-nvme0n1p1    259:1    0 198,5G  0 part /home
+-nvme0n1p2    259:2    0   8G    0 part [SWAP]
+-nvme0n1p3    259:3    0 513M    0 part /boot/efi
+-nvme0n1p4    259:4    0 31,5G   0 part /
```

```
[vruiz@pluton Descargas]$ lsblk # After connecting the USB
NAME                MAJ:MIN RM   SIZE RO TYPE MOUNTPOINTS
sda                  8:0    1  29,2G  0 disk
+-sda1                8:1    1   512M  0 part
+-sda2                8:2    1  28,7G  0 part
nvme0n1              259:0    0 238,5G  0 disk
+-nvme0n1p1          259:1    0 198,5G  0 part /home
+-nvme0n1p2          259:2    0     8G  0 part [SWAP]
+-nvme0n1p3          259:3    0   513M  0 part /boot/efi
+-nvme0n1p4          259:4    0  31,5G  0 part /
[vruiz@pluton Descargas]$ sudo dd bs=4M if=xubuntu-21.04-d
1929379840 bytes (1,9 GB, 1,8 GiB) copied, 151 s, 12,8 MB/
466+1 registros leídos
466+1 registros escritos
1958051840 bytes (2,0 GB, 1,8 GiB) copied, 152,555 s, 12,8
```

3. Boot the image. Most of PCs can choose the boot device by pressing the F12-key when the PC is booting. On a Mac, you need to keep pressed the alt-key when it is booting.

4. Select the option Try Xubuntu without installing.
5. When the OS is running, configure the network. Thus, you will have access to the latest version of the packages during the installation.
6. Insert now the (at least) 8GB USB drive where Xubuntu will be installed. Be aware that this device will be formatted, and therefore, all the current content will be lost.
7. Select Install Xubuntu 21.04 LTS.
8. Select English as the language used during the installation and the installed system. This will help in the case you need to search information in the Internet, providing the error descriptions in English.
9. Select your keyboard layout (probably Spanish).
10. Open a terminal and write:

```
df -h
```

to see all the mounted disk partitions and their capacity. Notice that no partition of `/dev/sda` (the hard disk) should not be mounted (although you can do that, you don't need to mount any partition of the hard disk), the partition `/dev/sdb1` (with the Xubuntu image) should be mounted, and finally, if the first partition of the second external USB drive has been recognized by **Thunar** (the default file manager in Xubuntu), it should appear as `/dev/sdc1`. This partition should be unmounted to install on it Xubuntu. Anyway, if you continue with the installation process without unmounting it, the installer will ask you to do it. In this description, it has been supposed that your computer only has one hard disk.

11. Choose `Download updates while installing Xubuntu` and `Install third-party software for graphics and Wi-Fi hardware and additional media formats`, in order to have access to the ultimate software available for Ubuntu (and derivatives).
12. Choose `Erase disk and install Xubuntu`. Ignore the `Advanced Features`. Then, wait for a couple of minutes :-/

13. Select the drive corresponding to the ≥ 8 GB USB drive (`/dev/sdc`). Don't choose `/dev/sda` (the main disk of your computer)! Again, Select `/dev/sdc`!!
14. At this point of the installation you should consider (depending on the amount of RAM memory installed in your computer and the size of the USB drive) to create an specific partition for doing **swapping**. The rule of the thumb is to create a partition with the same size that the RAM. However, probably you cannot do that in a 8GB USB drive because at least 5GB are needed for a Xubuntu installation. Anyway, keep in mind that this step is optional because you can always perform swapping on a file (a process slightly slower than using the dedicated partition). Consider also that InterCom requires only some MB of memory for running and therefore, probably you are not going to need to swap any **memory page** at all. Said that, if you decide to create a specific swap partition, click on Advanced Partitioning Tool and do the modifications you want.
15. Very important: **double check that the boot loader (**GRUB**) will be installed in `/dev/sdc1`!!**.

16. Click on Install Now. You'll read something similar to:
If you continue, the changes listed below will be written
- WARNING: This will destroy all data on any partitions you
- The partition tables of the following devices are changed:
SCSI8 (0,0,0) (sdc)
- The following partitions are going to be formatted:
partition #1 of SCSI8 (0,0,0) (sdc) as ESP
partition #2 of SCSI8 (0,0,0) (sdc) as ext4
17. Choose your time zone.
18. Configure you personal account (user and password), **hostname** and **login** process.
19. Wait for the end of the installation and boot your new Xubuntu. Don't worry if GRUB labels Xubuntu as Ubuntu. This is normal.

3. Timming

You should reach this milestone at most in one week.

4. Deliverables

None.

5. Resources

- [1] The Python Foundation. [The Python Website](#).
- [2] Canonical Ltd. [xubuntu](#).
- [3] The students of [Tecnologías Multimedia](#) at the UAL. The [InterCom](#) project.