

# How-to make an Emmabuntüs refurbishing key with Ventoy



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In the frame of our refurbishing campaign, started in September together with [Debian-Facile](#), [Blabla Linux](#) and [Tugaleres.com](#), we published [our method to make a refurbishing key using Multisystem](#). Unfortunately this solution does not let you make easily this refurbishing key on a Windows system. This is the main reason why we are publishing this new tutorial based on the [Ventoy](#) utility. And on top of it, this new solution make simpler the creation of the refurbishing key under GNU/Linux.

In September 2022 we added a tutorial on [how to use the Ventoy-based refurbishing key in Secureboot mode](#).

This tutorial accompanies the demonstration videos made by [Blabla Linux](#) : [the making](#) of this refurbishing key 2.0, [using it](#) and [what's news about it](#).

Please look at this tutorial on [using a refurbishing USB key](#).

# 1 - Refurbishing key principle

The Emmabuntüs refurbishing key allows you to recondition all kinds of computers by directly cloning a system pre-configured with Emmabuntüs.

**Basic principle:** the [Ventoy](#) software is used to launch a [Clonezilla](#) disk image that will let you select through a list of “clone image” stored on the USB key, to transfer it directly on the target machine. This cloning operation takes about 5 minutes, and thus allows the mass reconditioning of numerous machine in a minimum of time. This operation is handled by two scripts which organize the partitioning of the target disk, and provide Clonezilla with the procedure to follow.

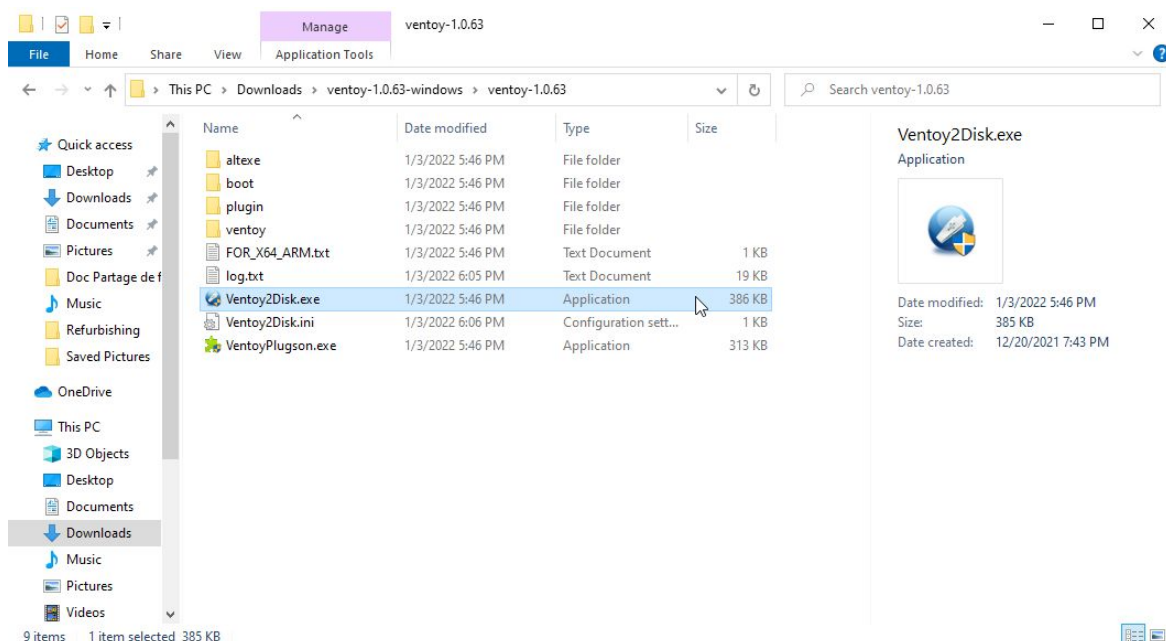
# 2 - Software needed to make the refurbishing key

Visit the [Ventoy](#) download page : <https://www.ventoy.net/en/download.html>

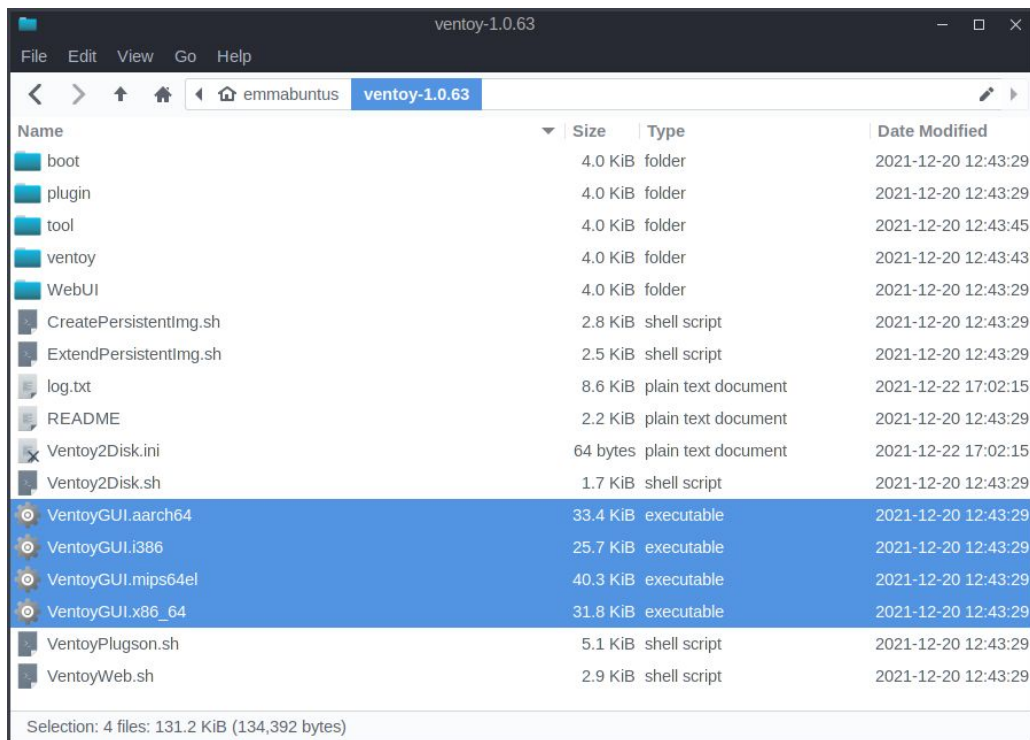
- On Windows, download the file ventoy-x.x.xx.windows.zip
- On Linux, download the file ventoy-x.x.xx.linux.targ.gz

then extract the archive using the tool available on your operating system :

- On Windows, you obtain the following directory including the Ventoy2Disk.exe launcher :

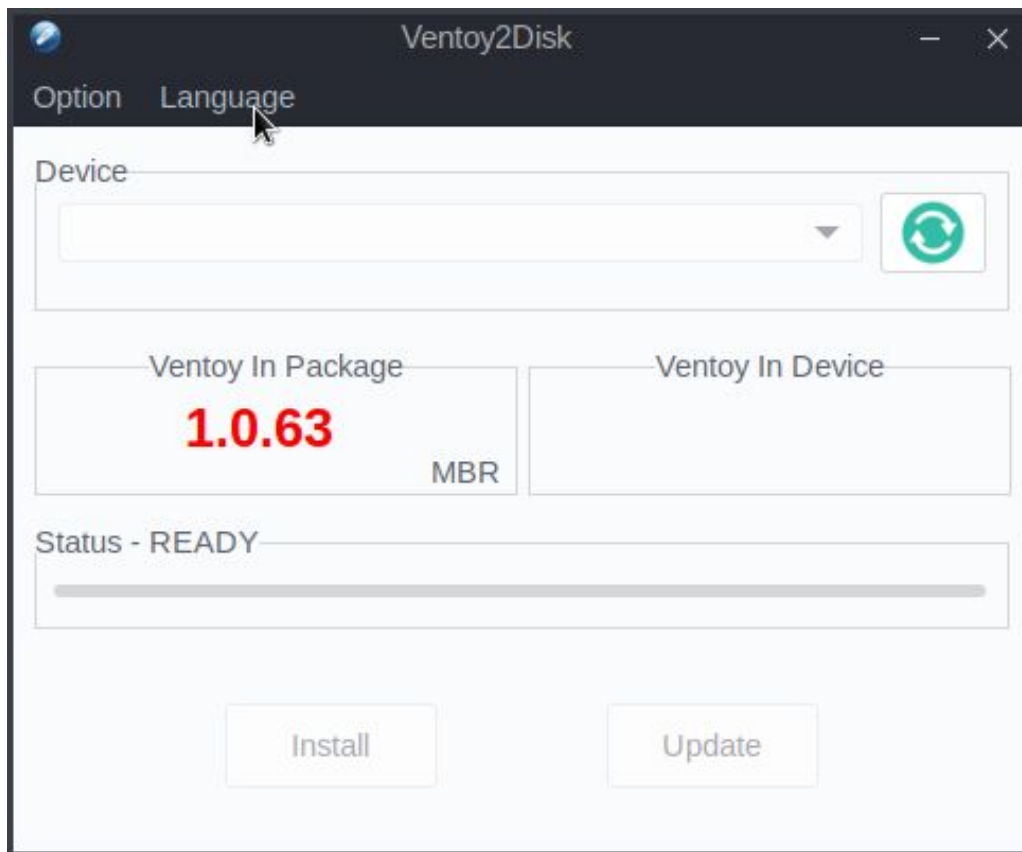


- On Linux, you obtain the following directory including 4 different VentoyGUI.xxxx launchers, each of them corresponding to a specific Linux architecture :



**Note :** on a classic computer, for a 64-bit architecture pick the X86\_64 launcher, and for 32-bit architecture pick the i386 launcher. The two other architectures concern the [ARM](#), and [MIPS](#) processors.

So, double-click on the launcher corresponding to your system architecture, and you should see this window, after entering your password if requested.



**Note :** you can change the language of this utility by clicking on the drop-down list “Language”

### 3 - Hardware needed for the refurbishing key

To generate your refurbishing key, you’ll need a USB stick with some specific properties:

- a capacity of 16 GB minimum
- a good quality (Kingston Data Traveler, Transcend JetFlash 750...)
- a drive of type USB-3, if possible, to take advantage of an optimal I/O speed during the file transfers.

## 4 - Files needed for the refurbishing key

Several files are mandatory to create your refurbishing key. They are all provided by Emmabuntüs, in order to make your job easier.

### Files needed:

- a [Clonezilla](#) ISO image, 32-bit or 64-bit, depending on your needs
- one or several clone image(s) of Emmabuntüs and/or [DFiso](#) that need to be extracted
- five scripts to (a) partition the target disk ("parted.sh"), (b) launch the clone transfer ("clone.sh"), (c) save the clone ("save\_clone.sh"), (d) securely erase the disk ("erase.sh"), and (e) the tool box to test the different components of the computer (toolbox.sh), plus the optional file "clone.ini" which is used by the configuration in automatic mode
- one file to modify the [GRUB](#) menu of Ventoy

You can find all these files in this space : <http://usb-reemploi.emmabuntus.org>

### 4.1 - How to choose my version: 32-bit or 64-bit ? UEFI ?

---

The decision depends on the use you wish to make of this key : if you desire to recondition 32-bit or 64-bit machines. But how to make the difference ? To make a long story short:

- If your computer has a sticker saying "coreDuo", "core2duo", or is dated after 2003, you can pick a 64-bit clone.
- If your computer proudly displays "Pentium IV M" or is dated before 2003, take a 32bits clone , with a i686 version of Clonezilla.

As far as [UEFI](#), the [BIOS](#) successor, is concerned, the 64-bit version was designed to automatically handle UEFI. In case of doubts, take a clone of each architecture, and the script will only list the compatible clone

Find here after, a summary table of the various compatible versions:

Computer types	Computer examples	Clone	Clonezilla
32bits before 2003	Pentium3, Pentium4	32bits	i686
64bits with RAM <1GB	Pentium4 HT, Dual-Core	32bits	i686/amd64
64bits with RAM 1-3GB	Dual-Core, Core2	32bits/64bits	i686/amd64
64bits with RAM >3GB	Core i3, i5, i7, i9	64bits	i686/amd64
64bits with UEFI	Recent computers starting with Windows 8	64bits UEFI	amd64
64bits UEFI + Secure Boot	Recent computers starting with Windows 8	64bits UEFI SB	amd64 (1)

If possible, we suggest you disable UEFI, and use a non-UEFI clone, see the CSM ([Compatibility Support Module](#)).

**Note 1:** In order to use the key in Secureboot mode, it is necessary to use a [Ventoy version higher than 1.0.07](#), for more information, see our tutorial on Using the Emmabuntüs USB flash drive with the "Secure Boot".

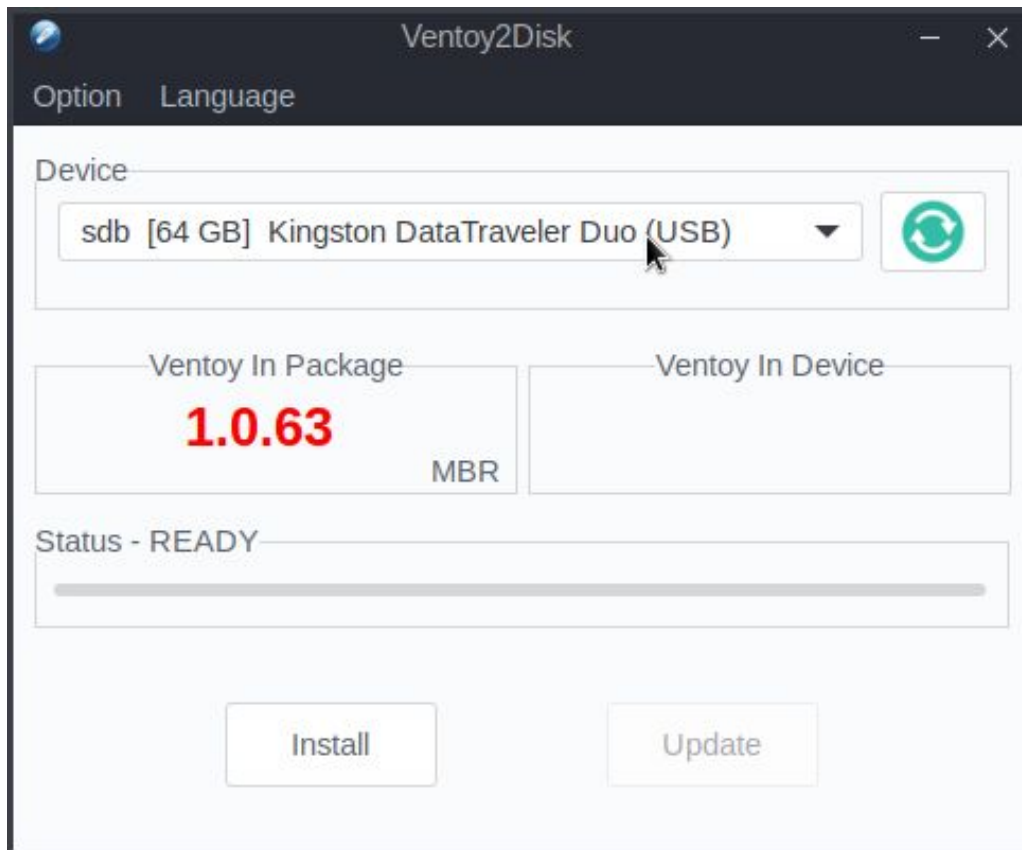
## 5 - The making of the refurbishing key

Here is the summary of the different operations described in the rest of this tutorial :

- plugging the USB key
- initialization of the key using the Ventoy2Disk utility
- formatting of the reserved space by Ventoy2Disk
- copy of Clonezilla to the Ventoy partition
- copy of the scripts and clones to the Images partition
- unmounting the USB key, and using it to refurbish computers.

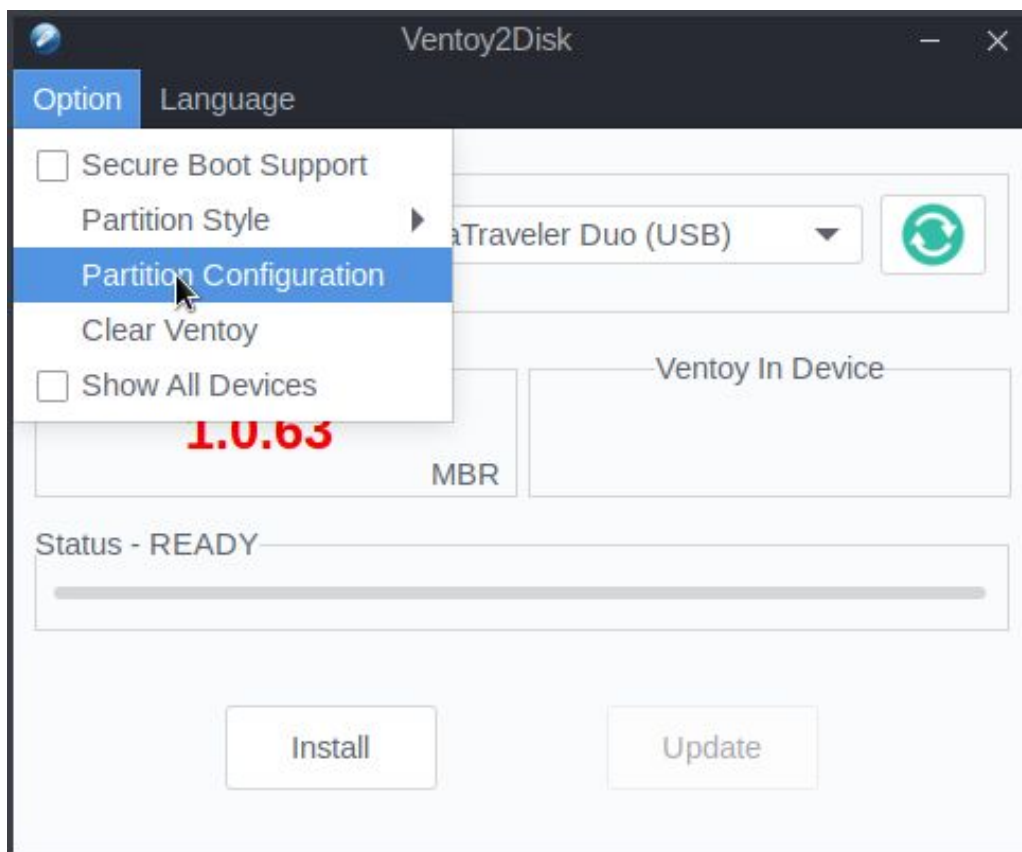
## 5.1 - Initialization of the USB key using the Ventoy2Disk utility

Once the USB stick is plugged into one of your computer USB ports, you can launch the Ventoy2Disk utility that you downloaded in Chapter 2. You should see the name of your USB stick in the 'Devices' drop-down list . If you have several USB sticks connected to your computer, make sure you select the right one.

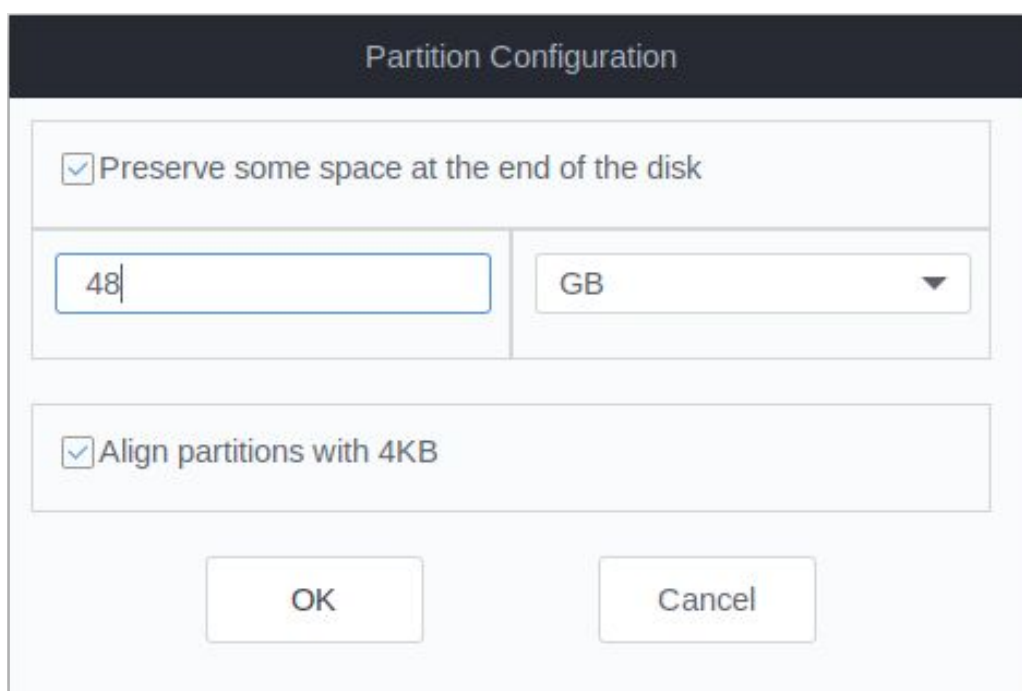


Before you launch the install by Ventoy, it is necessary to reserve some space on the USB key to allow later storage of clones on this very USB key. To do this, go to the "Option" menu, then "Partition configuration":



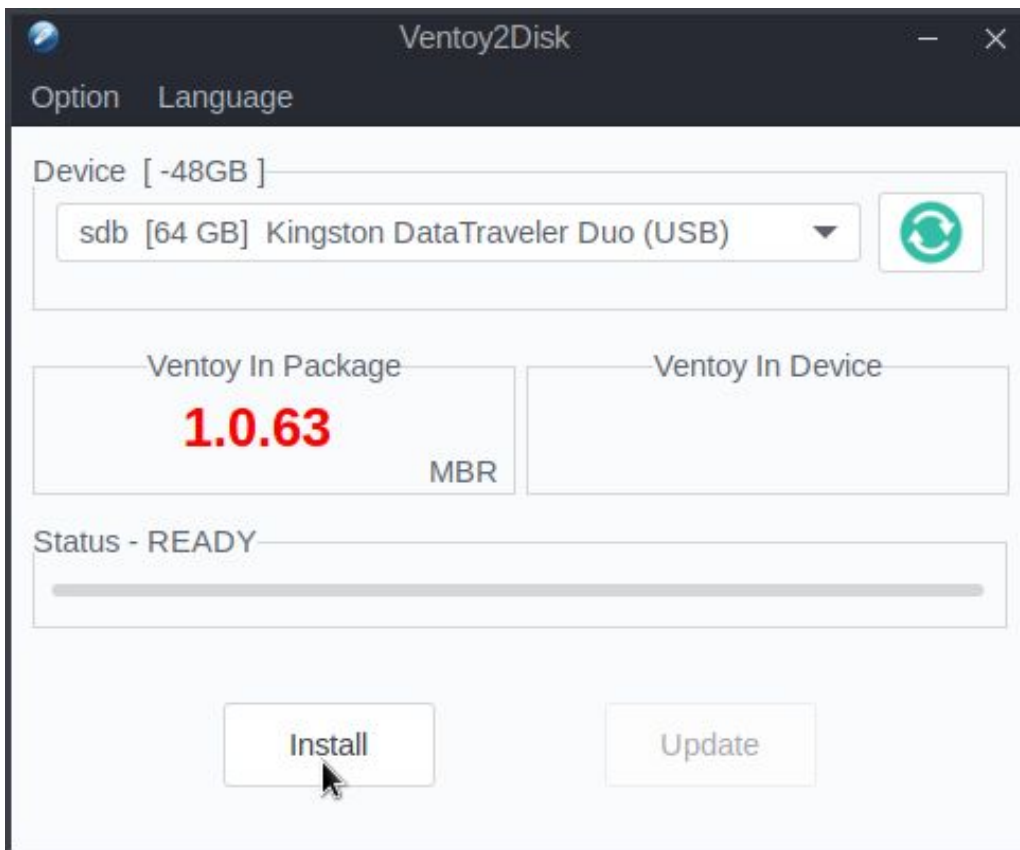


Turn on the « Preserve some space at the end of the disk » option, then enter the amount of GB dedicated to that space, and then click on 'OK' to validate.

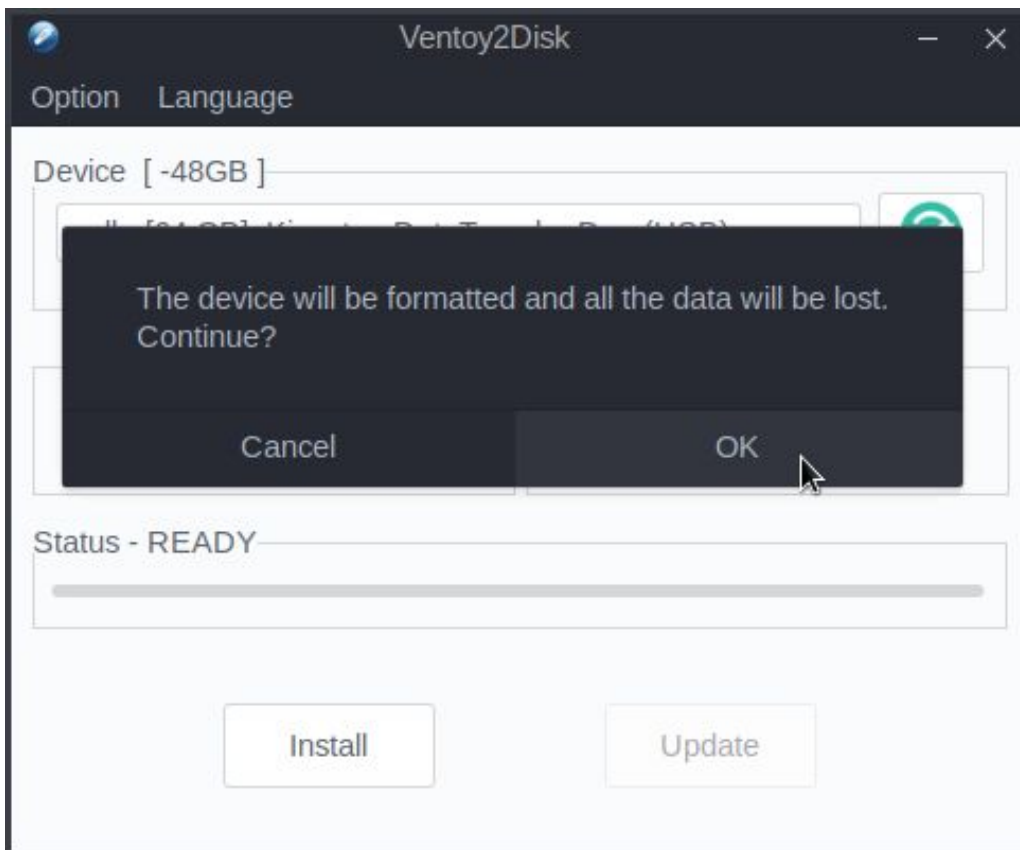


**Note :** in our case, and for a USB key of 64 GB, we preserve 48 GB for the clones, which leaves about 10 GB to the Ventoy partition, to store the Clonezilla ISO for both 32-bit and 64-bit architectures, and two Linux ISO, for example DFiso and Emmabuntüs DE 4, because a flash drive of 64 GB nominal has only 58 GB usable :(

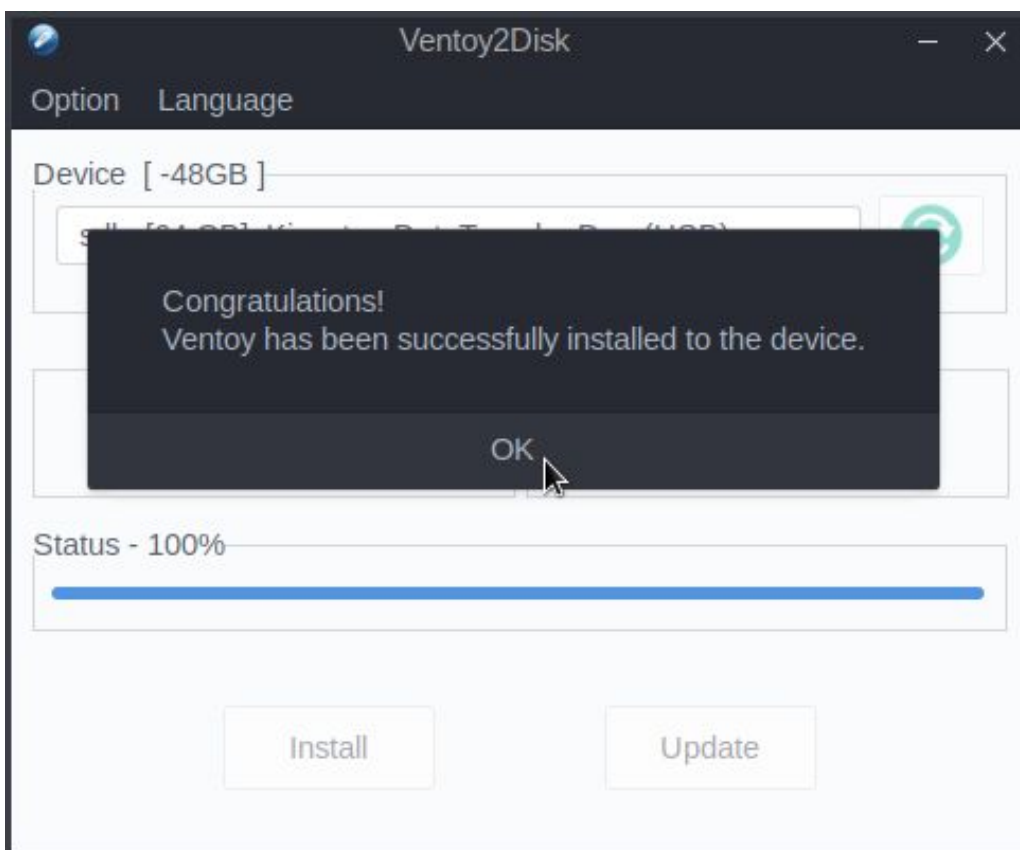
Now you can start the Ventoy USB key initialization process by clicking on the "Install" button.



**Warning** : the utility indicates that all your data on the USB key will be lost, so make sure you have plugged the right USB key on the computer, then click on "OK". A second confirmation is requested, so click again on "OK".

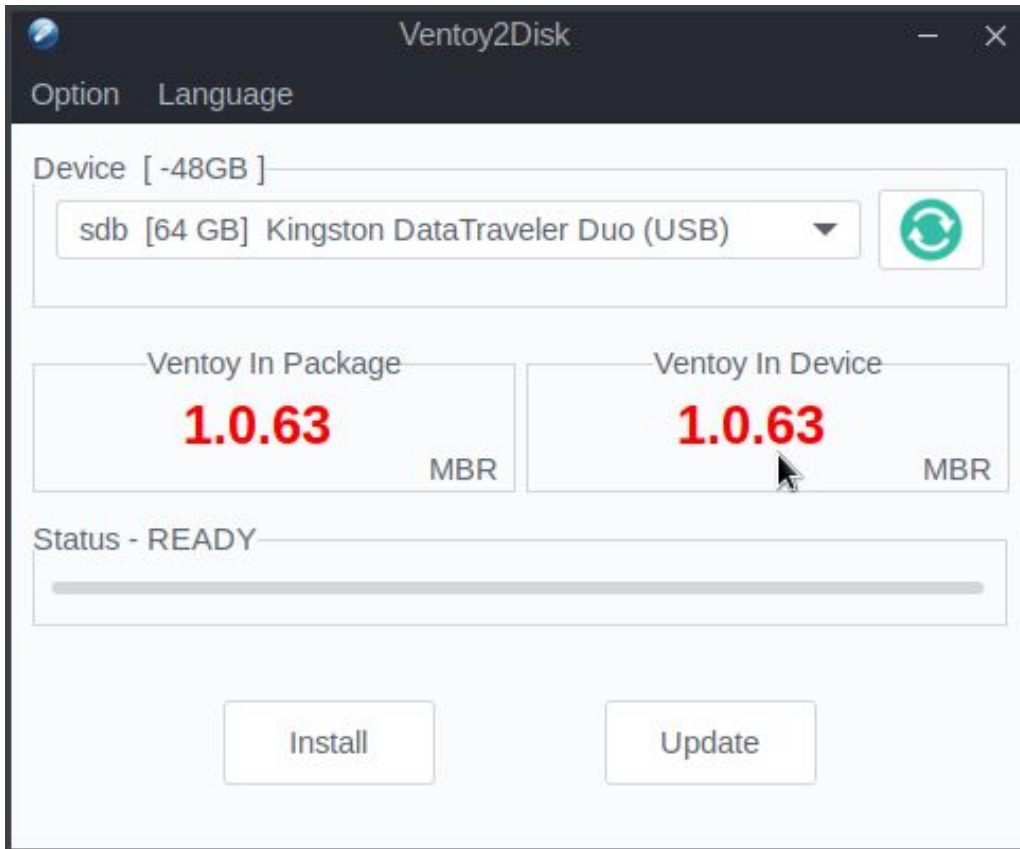


At the end of the installation process, you should see a window like this :



Click on "OK".

You will notice that the field "Ventoy on Device" has been updated with the same tag version as the Ventoy2Disk utility, which means that your USB key is now ready.



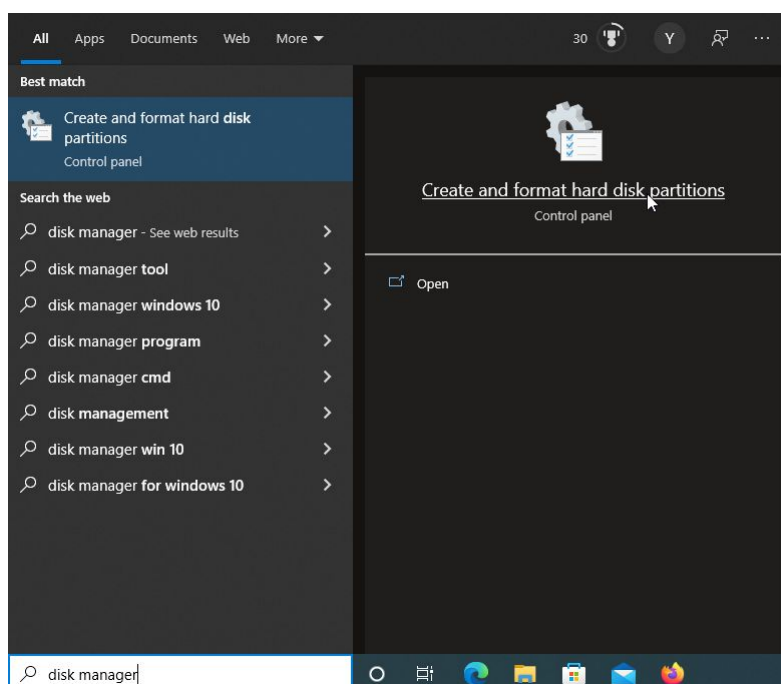
Now you can close the Ventoy2Disk utility.

## **5.2 - Formatting the space preserved by Ventoy2Disk**

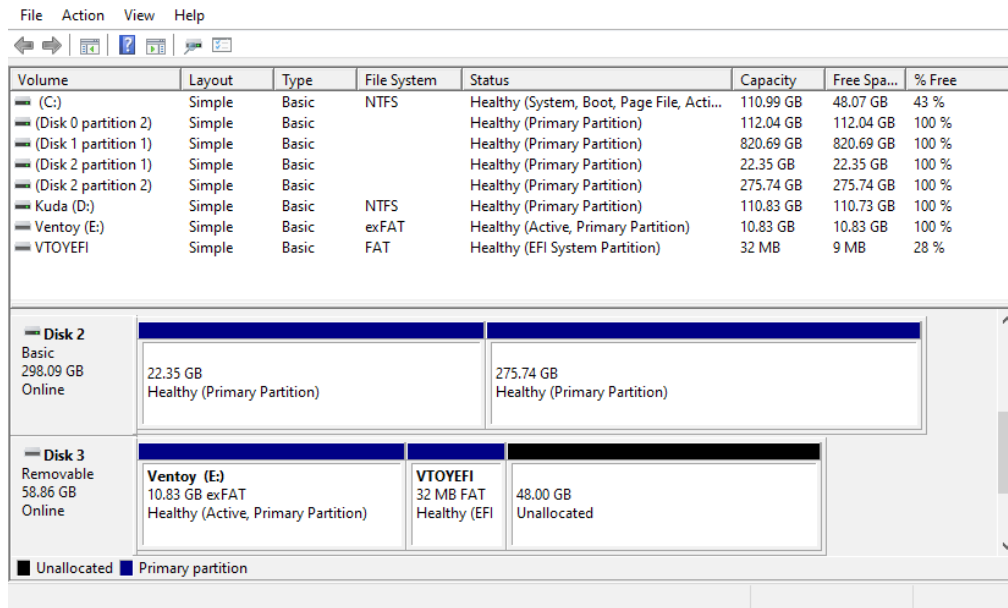
Next, we must format the space preserved by Ventoy2Disk at the end of the USB key.

### **5.2.1 - Formatting on Windows**

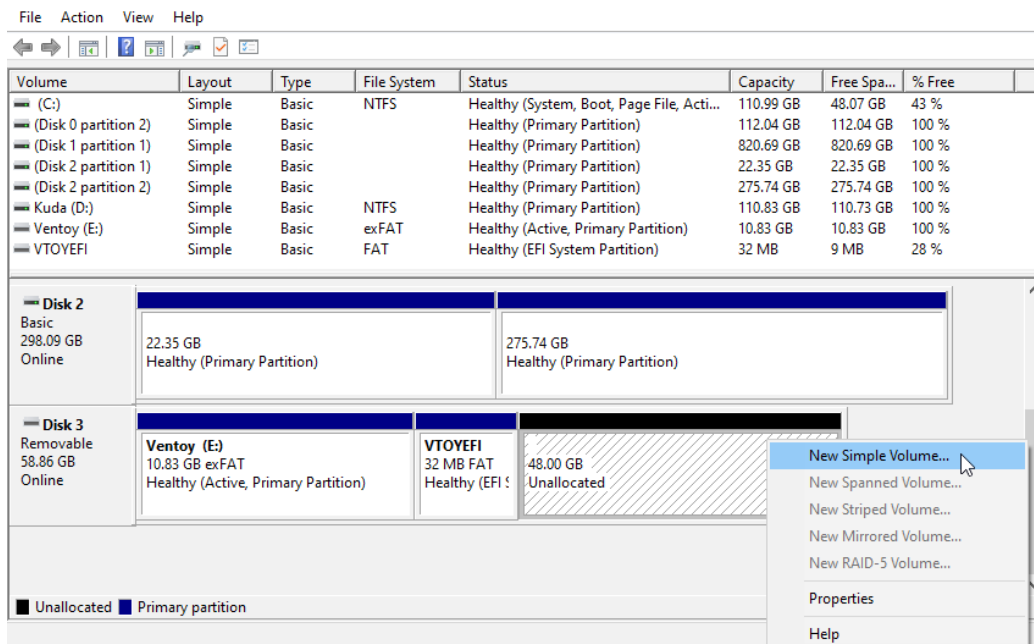
On Windows, use the disk manager.



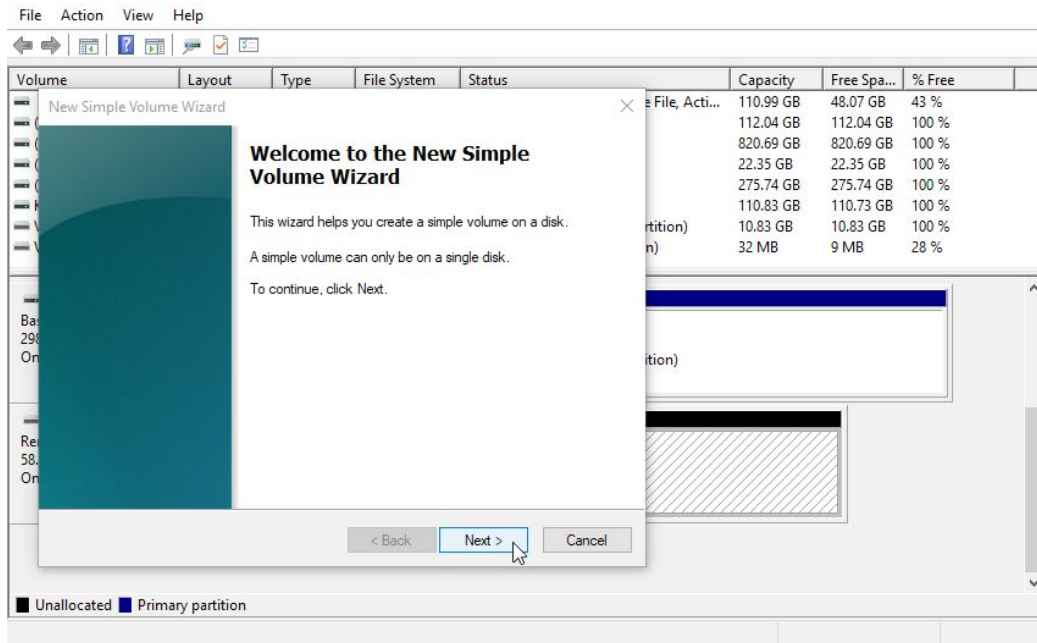
You should see this window popping up :



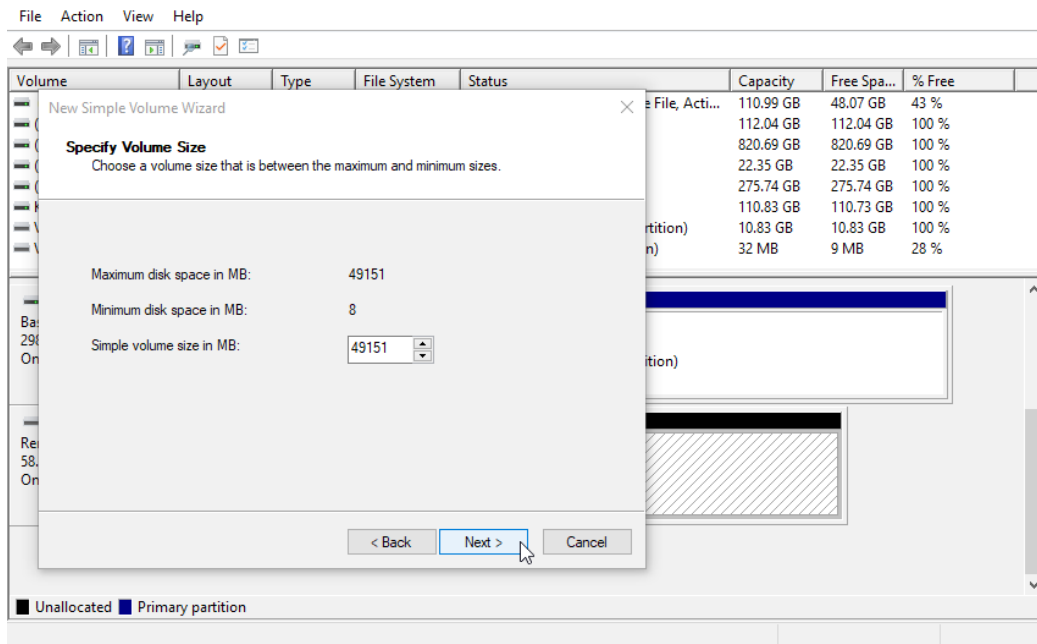
Select the partition which is not yet allocated on the refurbishing key with a right-click and choose the “New Simple Volume ...” action :



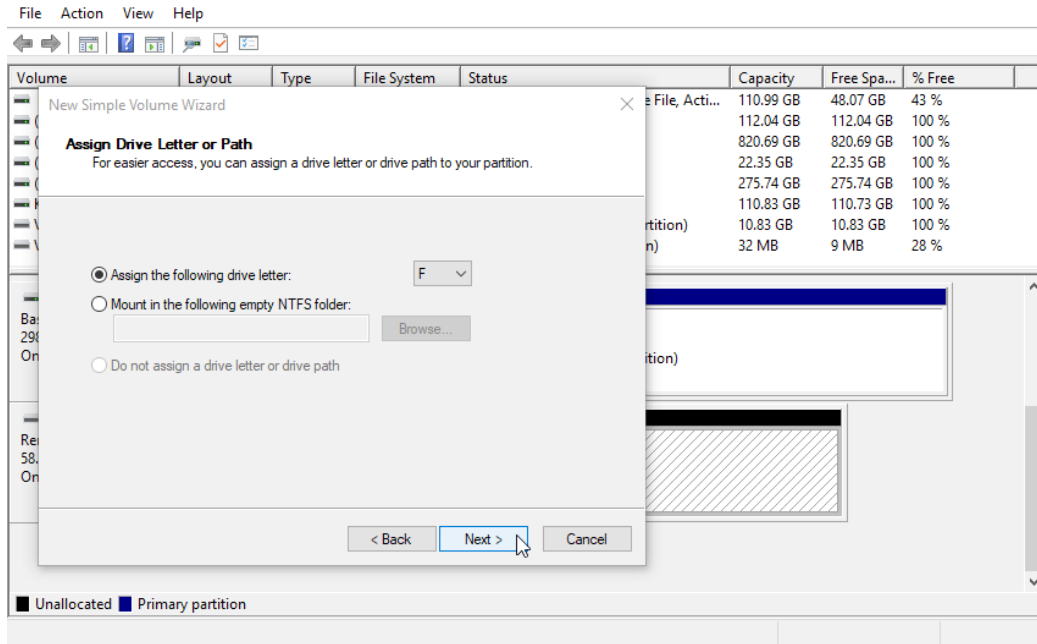
Then click on “Next” within the partition configuration assistant :



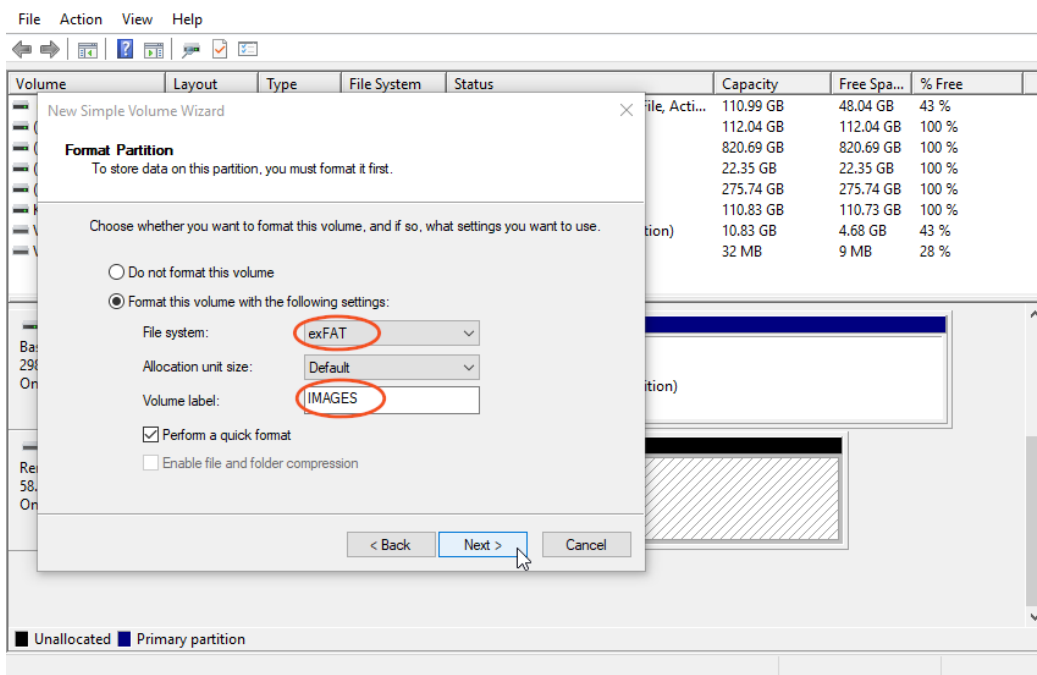
Click on “Next” in the following window :



In the next screen, Windows suggests to assign a letter to this new partition. Leave the letter by default (here it's 'F') and click on "Next"



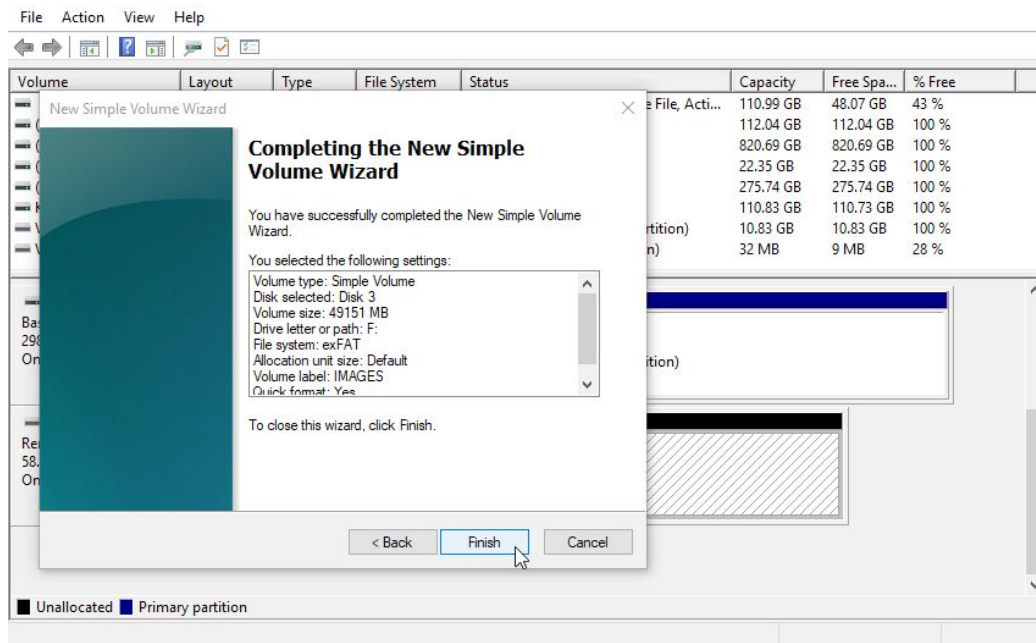
Then, within the following window, select the **exFAT** file system type, enter "IMAGES" in the volume name field, and then click on "Next".



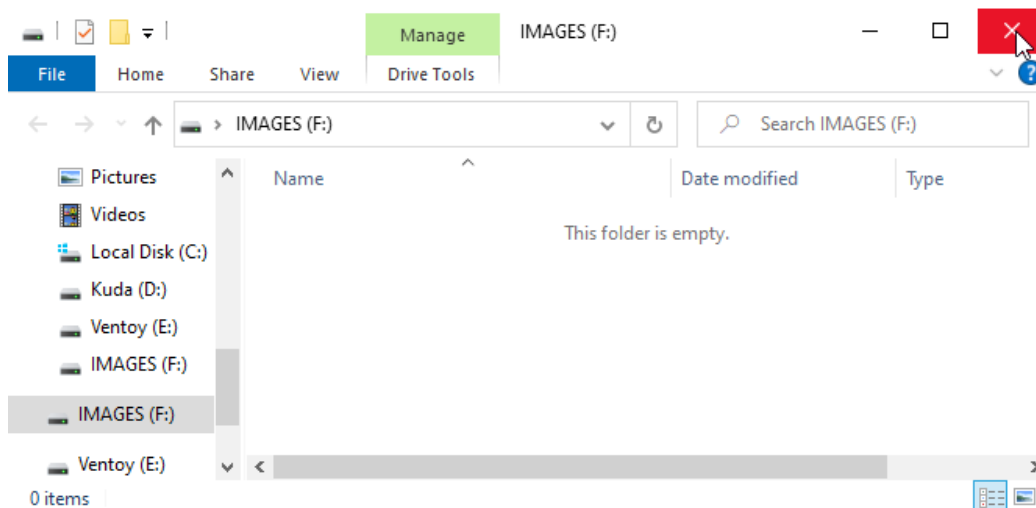
**Note** : we advise you to use a [exFAT](#) format, because it will let you store on this key files bigger than 4 GB and – at the same time – it allows you to use this key on a Linux operating systems to update it.

**Warning** : it is mandatory to name this partition “**IMAGES**” in order for it to be recognized later by the cloning scripts on the key.

Click on “Finish” in the following summary window :

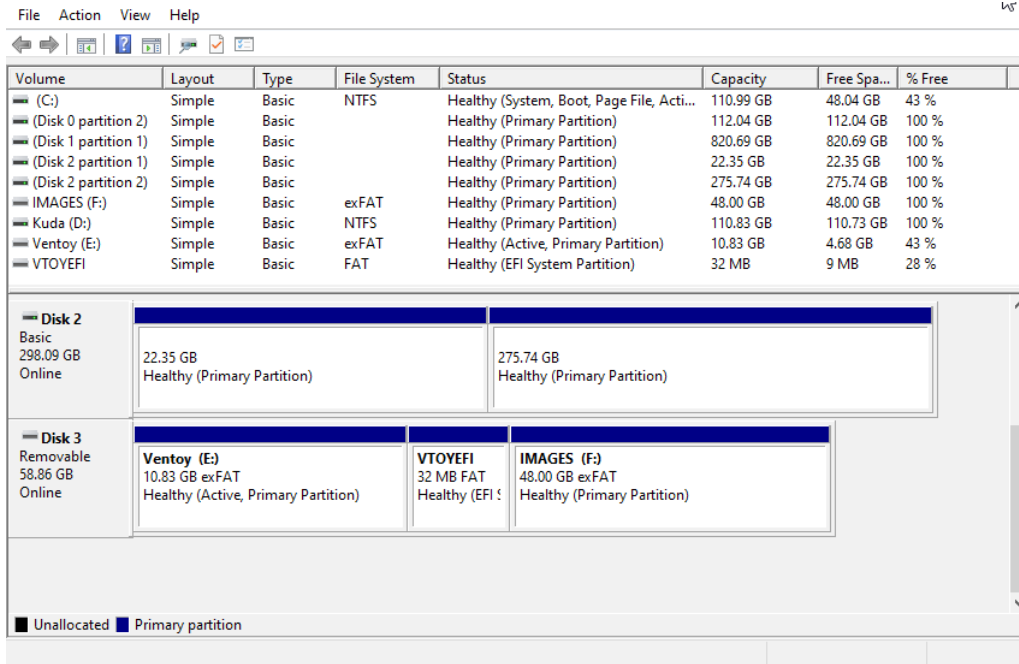


Windows will start formatting the IMAGES partition and after few seconds an Explorer window will open displaying an empty partition top directory :





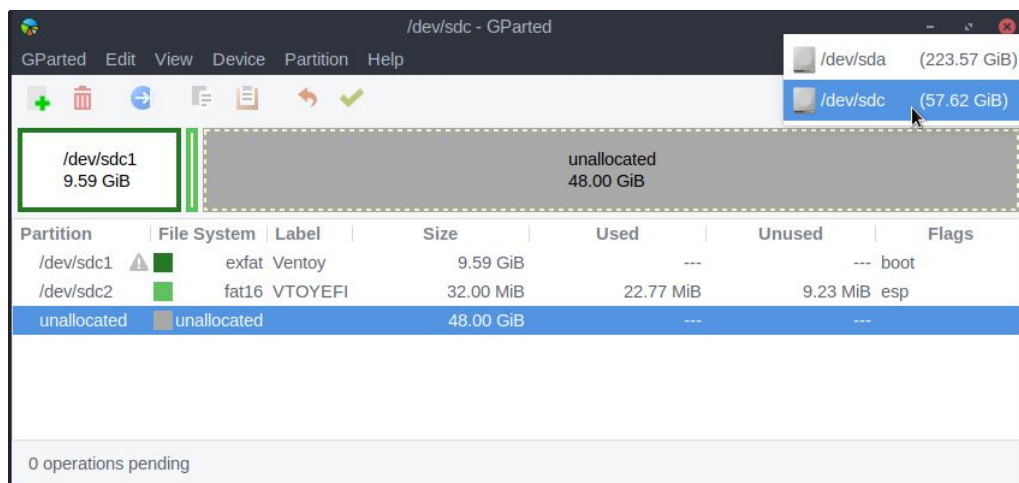
You can close this Explorer window, and look back at the Disk Management screen, where indeed, the “IMAGES” partition was created.



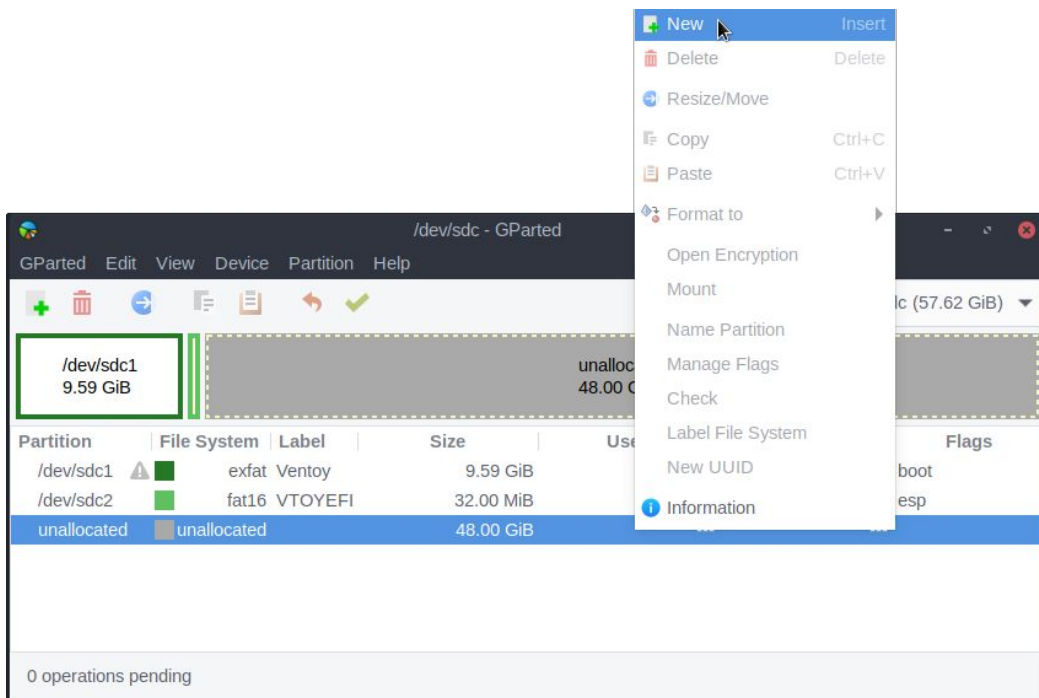
## 5.2.2 - Formatting on GNU/Linux

With a Linux OS you can use the [GParted](#) utility, or any other tool, depending on your GNU/Linux version.

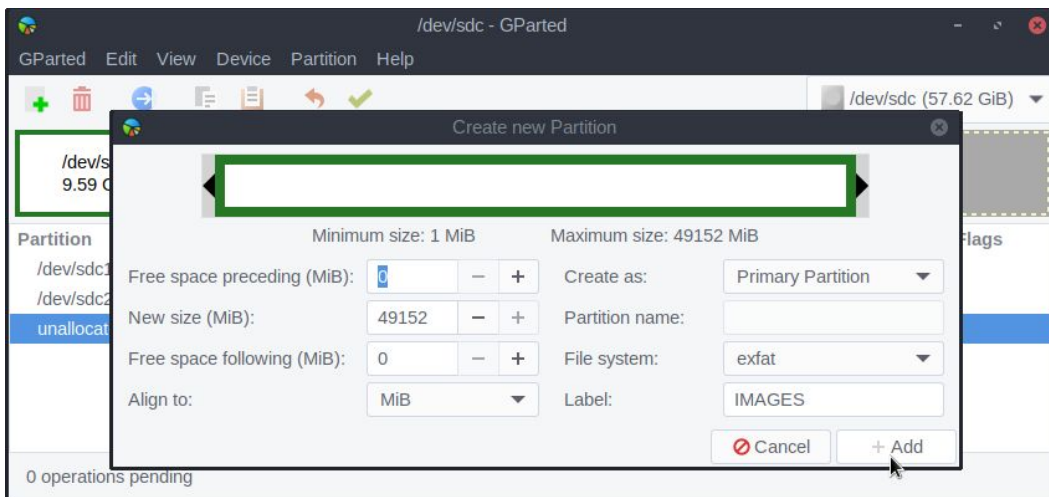
After having launched Gparted, and entered your administrator password, select the USB refurbishing drive from the drop-down menu at the top right :



Now, you need to format the unallocated partition, without modifying the other partitions which are needed for Ventoy to work properly. To achieve this, right-click on the unallocated partition, and click on “New” :



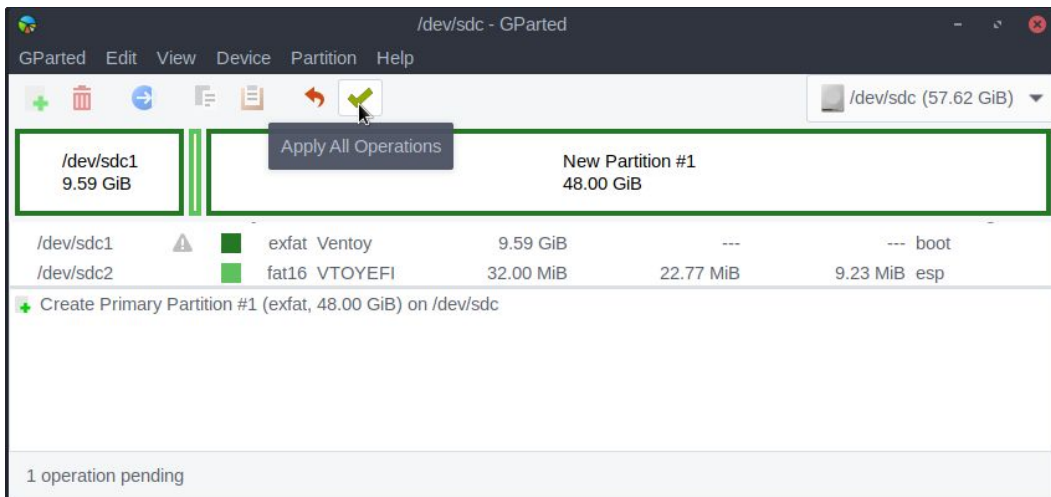
Then, in the window above, select the **exFAT** file system type, and enter “**IMAGES**” in the partition label field, and click on the “Add” button.



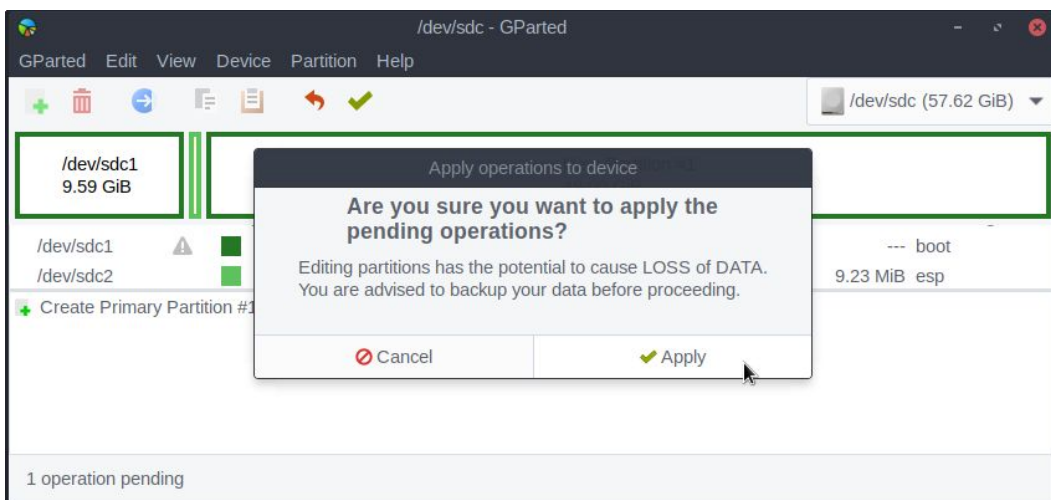
**Note :** we advise you to use a [exFAT](#) format, because it will let you store on this key files bigger than 4 GB and – at the same time – it allows you to use this key on a Windows operating system to update it.

**Warning :** it is mandatory to name this partition “**IMAGES**” in order for it to be recognized later by the cloning scripts on the key.

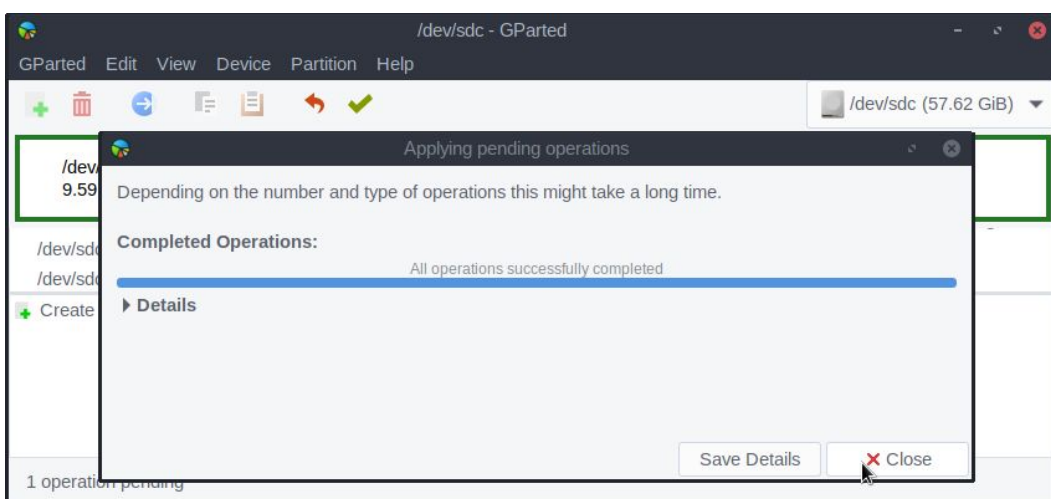
Now, you can click on the green check mark to apply these modifications to the USB key :



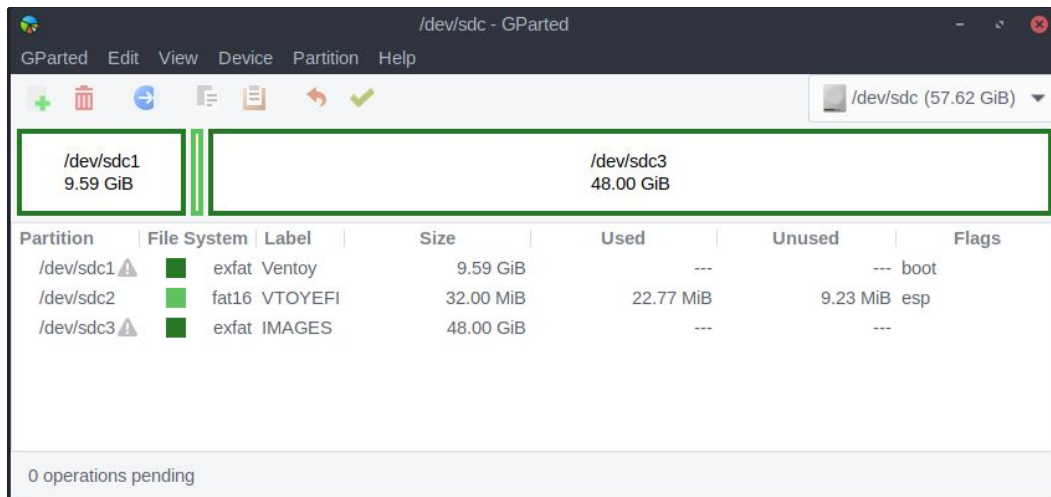
Then click on "Apply" to execute all the pending operations :



The operations completed successfully and you can click on "Close" in the following window :



Now, the preserved space is partitioned, and you can leave Gparted :



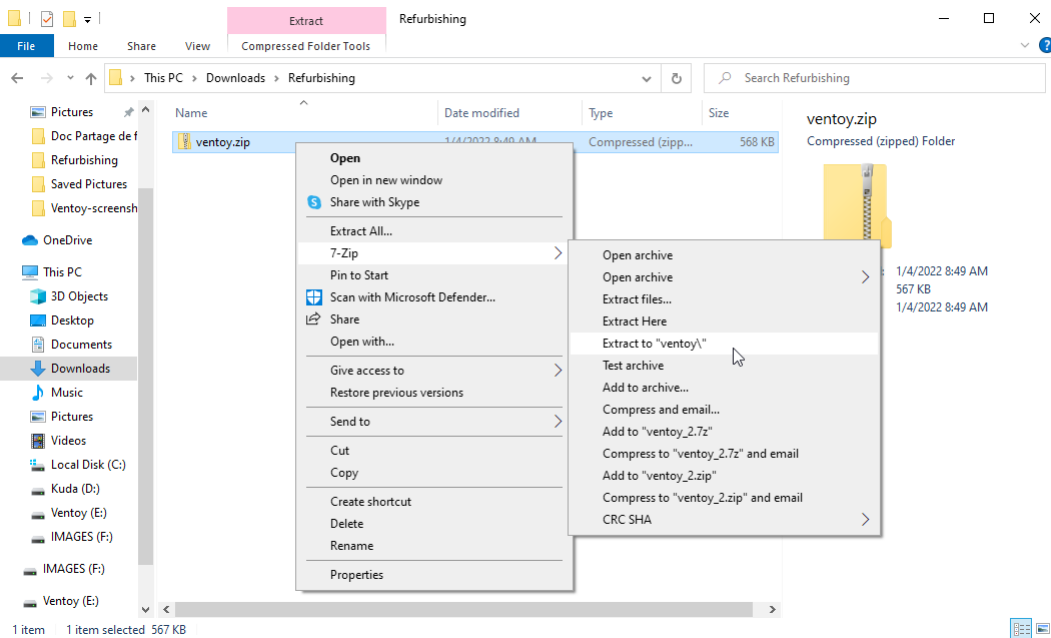
### 5.3 - Copy of Clonezilla in the Ventoy partition

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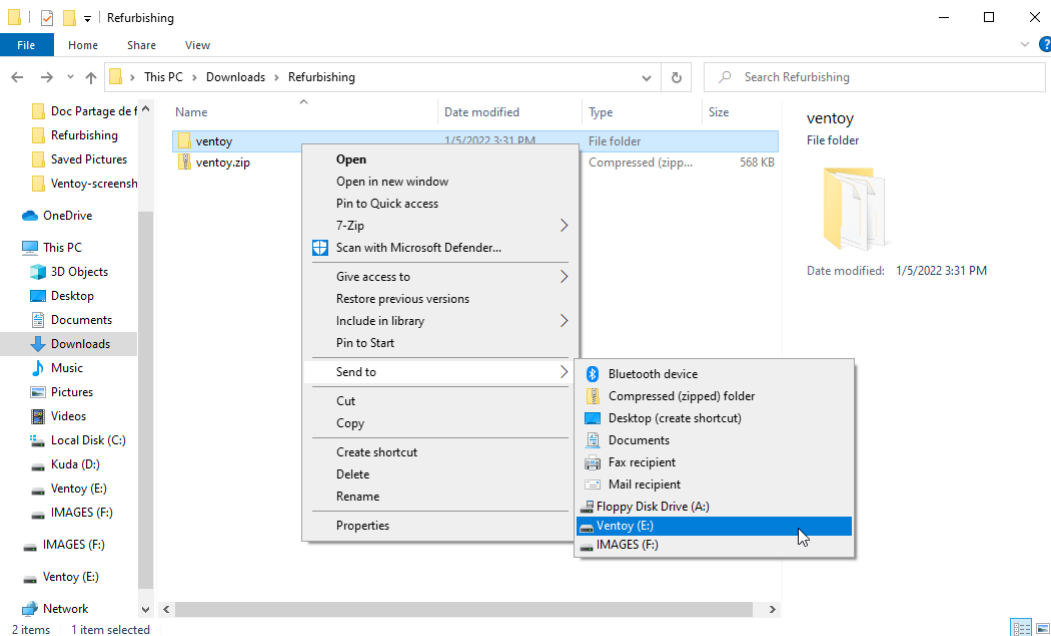
Once your key is installed with Ventoy2Disk, you must copy the necessary files to finalize the Ventoy configuration. They are available on [our page dedicated to the refurbishing key](#) :

- Clonezilla ISO for 32 and/or 64-bit
- Ventoy GRUB configuration directory for the refurbishing key, which is contained in the ventoy.zip file
- possibly ISO files of GNU/Linux distributions, or even ISO of Windows ;)

**First, you will need to extract the ventoy.zip archive. Here we are using the “7-Zip” utility.**



Right-click on the zip file and then on the “Extract to ‘ventoy\’” operation.

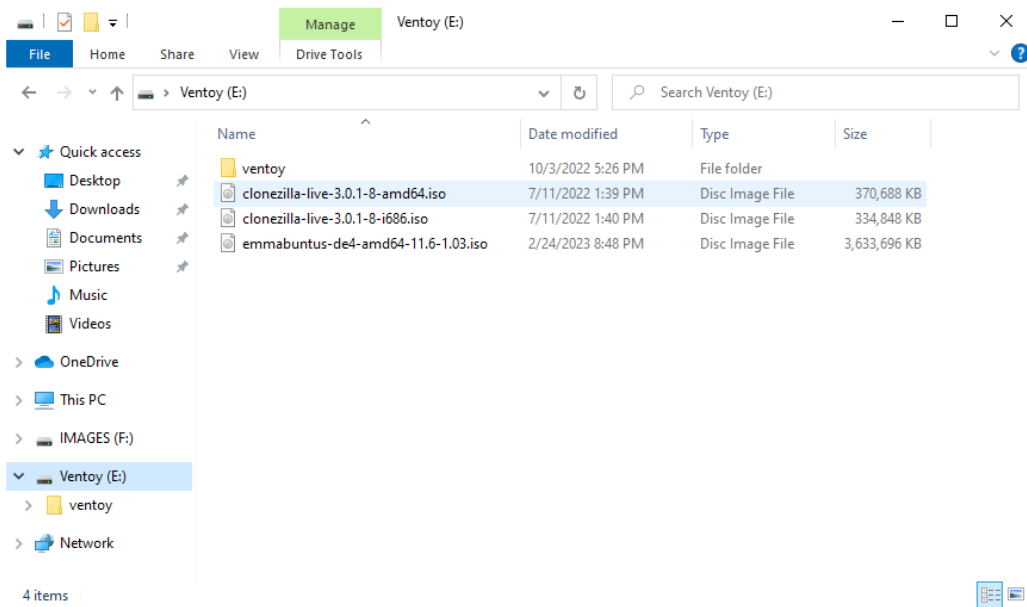


The “ventoy” GRUB configuration folder is created and you can move it to the Ventoy partition, for example with a right-click on it followed by “Send to” and “Ventoy (E:)”.

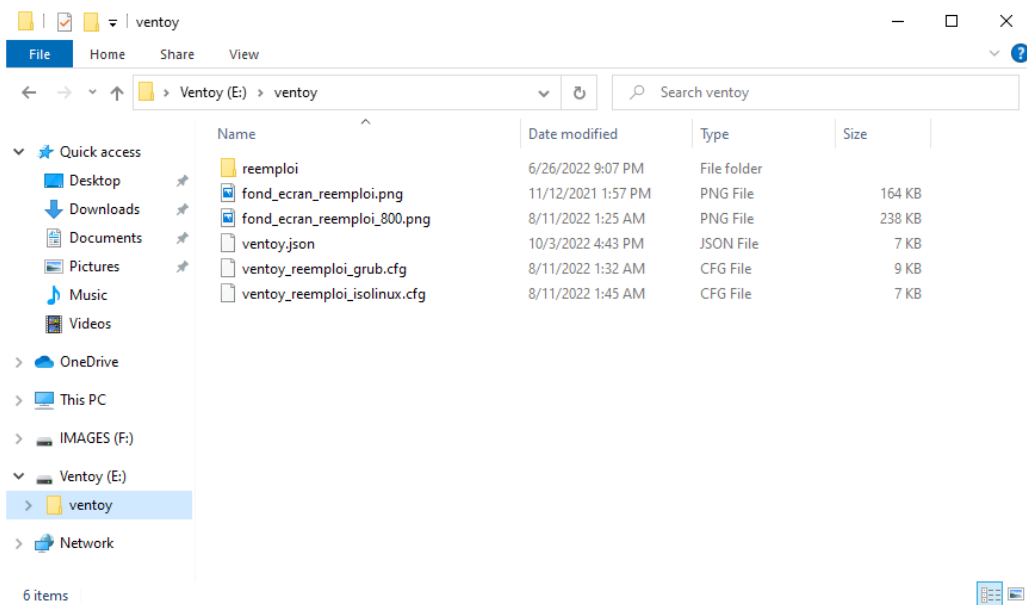
Then copy desired Clonezilla ISO files and optionally some other system ISOs. At this point, you should get this on that partition :

- On Windows :

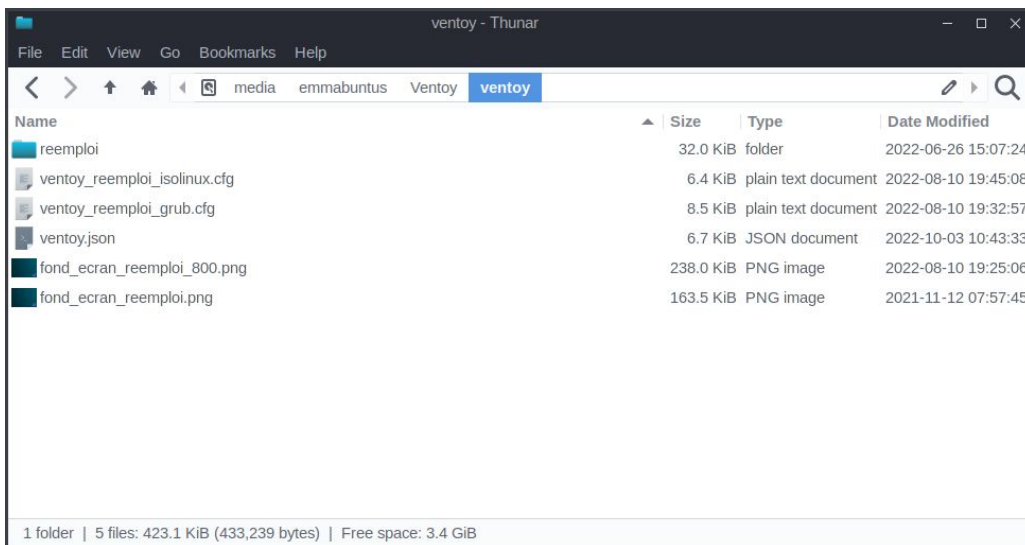
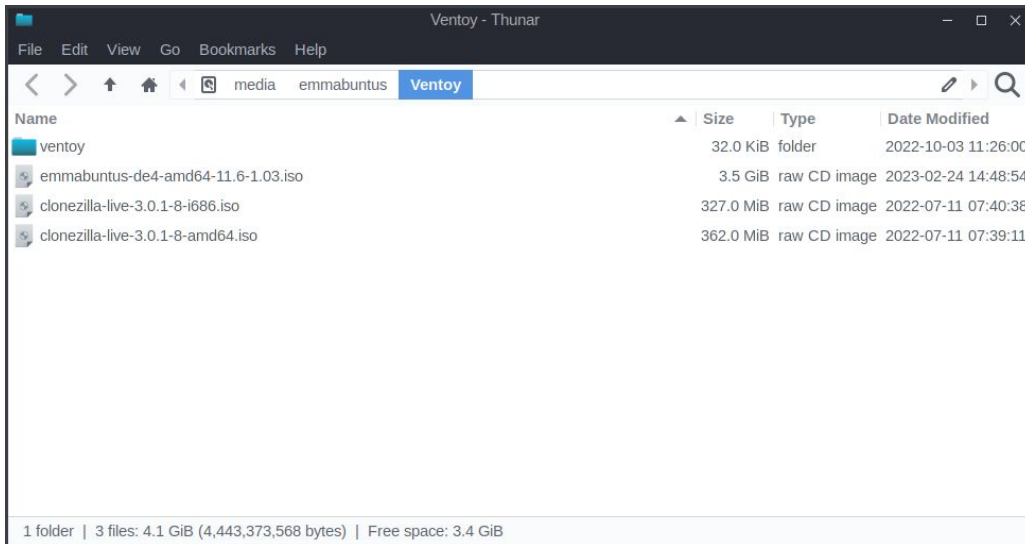
The root of the Ventoy (E:) partition



and the details of the “ventoy” GRUB config folder :



- On Linux :



## 5.4 - Copy of the clones and scripts into the IMAGES partition

Once your key is formatted with its "IMAGES" partition, you need to copy in there the necessary files provided on [our page dedicated to the refurbishing key](#) :

- the cloned image(s) to be used, see our tutorial on "[Making a clone for the Emmabuntüs USB refurbishing key](#)".
- the cloning guide script : "clone.sh"
- the partitioning guide script : "parted.sh"
- the script to backup the referenced hard disk in a clone : "save\_clone.sh"
- the script to securely erase the hard disk that will receive the clone : "erase.sh"
- the script to test the various components of the computer : "toolbox.sh"
- the optional "clone.ini" file, which is only necessary for the cloning configuration in automatic mode



The « clone.ini » file must be located at the root of the “IMAGES” partition, and let us define four clones by default via the four following variables :

- CLONE\_LEGACY\_32=
- CLONE\_LEGACY\_64=
- CLONE\_UEFI\_64=
- CLONE\_UEFI\_SB\_64=

In order to use this feature, enter the folder name of the clones you want to install, respectively in the “BIOS Legacy” 32/64-bit modes, in the “UEFI” 64-bit mode and in the “UEFI” Secureboot 64-bit mode.

Please note also that the “Legacy\_32” clone is installed if you launch the 32-bit Clonezilla version, and the “Legacy\_64” one if you launch the 64-bit Clonezilla version. The “UEFI\_64” and “UEFI\_SB\_64” clones can only be installed if you launched the 64-bit Clonezilla version on a computer started in UEFI or UEFI Secureboot mode.

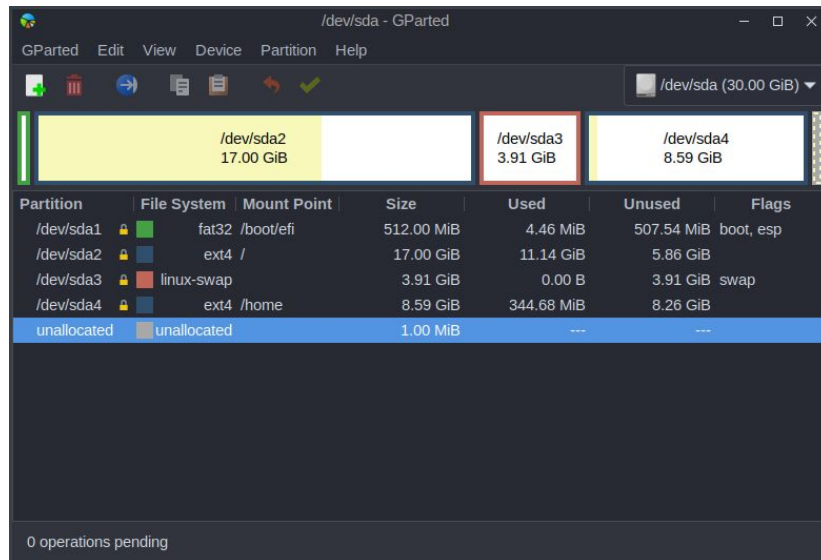
In order to use this clone in automatic mode when your clone contains two system partitions instead of one, for example the root and the home partition, you will have to fill in one of these four additional variables present in the "clone.ini" file:

- CLONE\_LEGACY\_32\_NUMBER\_PART\_EXTEND=
- CLONE\_LEGACY\_64\_NUMBER\_PART\_EXTEND=
- CLONE\_UEFI\_64\_NUMBER\_PART\_EXTEND=
- CLONE\_UEFI\_SB\_64\_NUMBER\_PART\_EXTEND=

To do this, enter the number of the partition between 1 and 2 that you want to extend in the order of the partitioning scheme of your clone.

For example with the following UEFI 64 bits clone partitioning scheme:





If you want to extend the root partition on sda2, enter 1 in the variable `CLONE_UEFI_64_NUMBER_PART_EXTEND`, or 2 if you want to extend the `/home` partition on sda4.

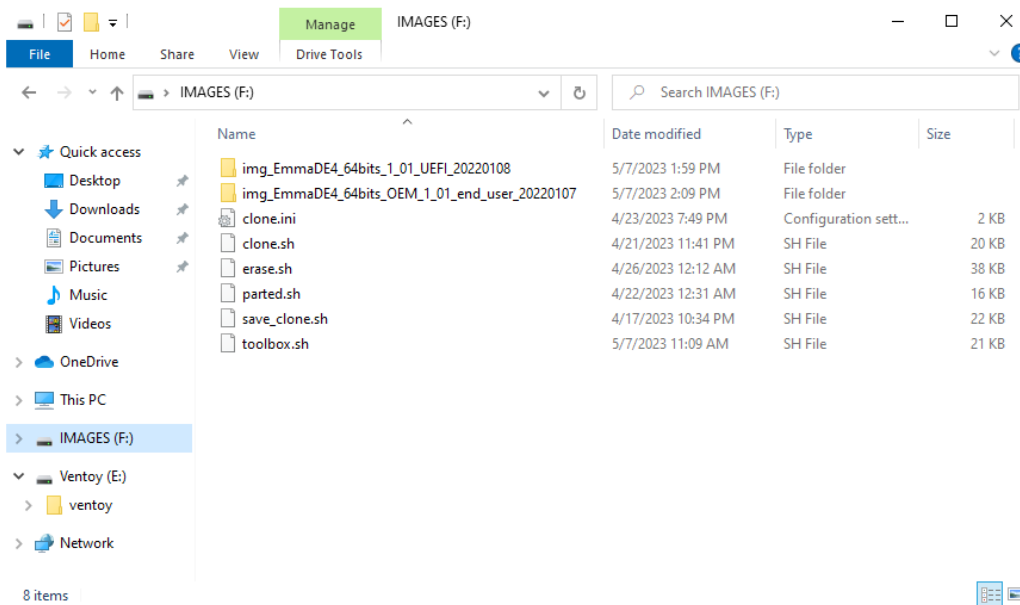
**Note:** If this variable is not filled in when using cloning in automatic mode, the script will stop and then ask you to enter the number representing the partition you want to extend:

```
EFI variables are not supported on this system
Emmabuntüs reusable USB key (https://emmabuntus.org)
Sources are available on http://usb-reemploi.emmabuntus.org
USB Key found on /dev/sdb3 and selected hard drive on /dev/sda
Please wait, we are looking for Legacy clones present on your re-use USB key sitting on /dev/sdb3 .
..
Several clones were found on the USB key, please type the number of the clone you want to install :
1 - 2022-10-16-15-18-img_clone_EmmaDE5_home_64
2 - 2022-10-16-16-35-img_clone_LinuxMint_DEM_Home_64
3 - img_EmmaDE4_64bits_1_01_20220107
4 - 2023-04-20-21-29-img_clone_MXLinux_21.1_BIOS_Home_64
Enter a number above, then validate: 1
Clone name : 2022-10-16-15-18-img_clone_EmmaDE5_home_64
/!\ Warning : Do you want to partition the disk /dev/sda, all data will be erased ? [y/N]: y
/!\ Warning : Do you want to partition the disk /dev/sda, all data will be erased ? [y/N]: y
Target disk to partition : /dev/sda
Clone : 2022-10-16-15-18-img_clone_EmmaDE5_home_64
Mode UEFI : off
Number of Linux partition greater than 1.
Please indicate the number of the partition to be extended :
1 - sda1
2 - sda6
Enter a number above, then validate: 2
```

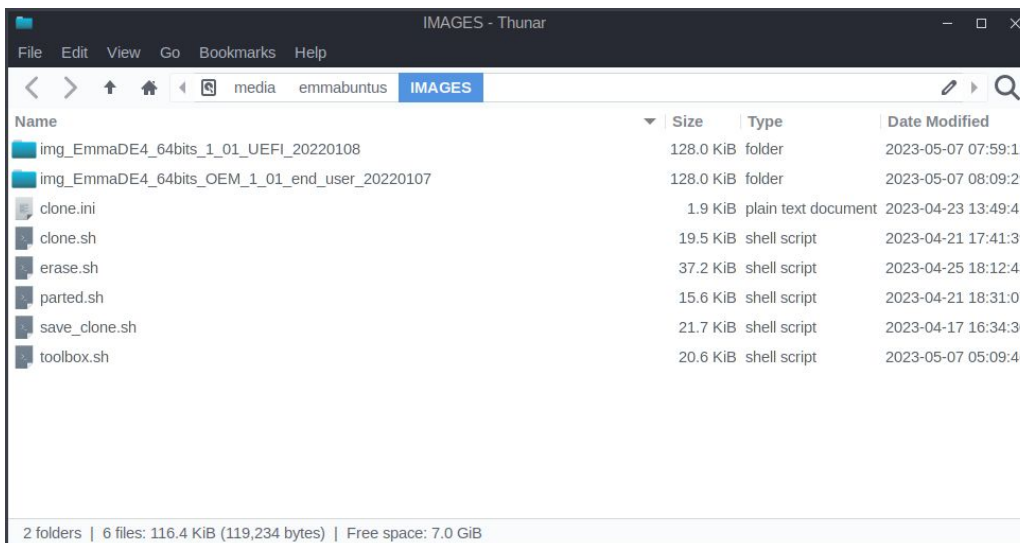
First of all, you will need to extract the archive(s) of the clone(s) you wish to transfer. To do this, use your favorite archive extraction utility in your file explorer, right-click on the archive file and then "Extract here".

Then copy the folders containing the clones, and the five scripts clone.sh, parted.sh, save\_clone.sh, erase.sh, toolbox.sh as well as clone.ini to the partition named "IMAGES", and you should get this on that partition :

- on Windows :



- on Linux :



Now you just have to test your USB flash drive, see [this usage tutorial](#) or [this nice video](#) from our friend Amaury aka Blabla Linux :)

## 6 - Tips and advice

The handling of the UEFI or BIOS boot order is different for each computer model : the procedures are normalized, but it happens that sometimes one way of doing functions better than another one ... So find here after a small list of tips and advice that you can take into account if you face some issues during your tests.

- The UEFI handling is managed automatically by the refurbishing scripts. However it is better to deactivate the UEFI feature on the computer to be refurbished, in order to increase the compatibility level between hardware and software.
- If you use computers equipped with SECURE-BOOT feature, we suggest to disable this option, when possible.
- This tutorial recommend the use of a 16 GB USB key, in order to add at least one "clone image". However you can perfectly use 32 or 64 GB USB key to be able to add all the images compatible with your architecture, and let the end users pick the version of their choice.

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