Making a clone to be used with the Emmabuntüs refurbishing key

Written by the Emmabuntüs Collective
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The Emmabuntüs refurbishing USB flash drive (or refurbishing USB key) allows you to refurbish all sort of computer by cloning a pre-configured GNU/Linux system.

Since the update of our refurbishing key in October 2022, it supports default installations of many GNU/Linux distributions. So, we have decided to stop providing pre-configured clones as standard, and to stop updating the ones on this page, except for very specific requests coming from associations we collaborate with.

This tutorial will help you to make your own clone, and we are also available on our forum to help you in the making.

You may not find the version that suits you among the clones we provide and this tutorial explains how to make a clone compatible with our refurbishing USB key.

This tutorial accompanies the Blabla Linux video on how to make a clone for the refurbishing USB key.
1 - Clone principle

A clone is used to duplicate an operating system on other computers whose systems will then be strictly identical copies of the one used to make the clone.

To make the clone, the first operation to perform is to install your GNU/Linux operating system, then to customize it before proceeding to the realization of the clone thanks to the Clonezilla utility.

2 - Partitioning scheme for the clone drive

The latest versions of our refurbishing key released from October 2022, no longer require to respect the partitioning schemes indicated below, and are compatible with the default installations of the following distributions:

- Emmabuntüs Debian Edition 4 1.02 with classic installer or Calamares
- Debian-Facile 11.5 32 bits
- Ubuntu, Xubuntu, Kubuntu 22.04.1 desktop amd64
- LinuxMint 21 Xfce, Cinnamon 64 bits
- LMDE 5 Cinnamon 64 bits
- MX-Linux 21.2.1 x64
- Majaro xfce 21.3.0
- Fedora Workstation Live x86_64 36+1.5

If you want to use a GNU/Linux distribution that is not supported by our refurbishing key, then we recommend that you follow the partitioning schemes shown below.
For a 32 or 64 bits GNU/Linux operating system in “BIOS Legacy” mode, use the following partition scheme and in the same order:

For a 32 or 64 bits GNU/Linux operating system in UEFI or Secureboot mode, use the following partition scheme and in the same order:

**Note**: in order to be able to duplicate your clone on hard disks of different sizes and especially small sizes, while you are using you a large physical hard disk to install your reference operating system, we advise you to oversize the SWAP partition, in order to be able to duplicate this future clone on smaller size disks, because the SWAP partition is assimilated by Clonezilla to a zero size partition, whatever its real size was.
3 - Hardware needed for the refurbishing key

To create your refurbishing key, you will need a USB flash drive that meets certain criteria:

- a minimum capacity of 16 GB
- being of good quality (Kingston Data Traveler, Transcend JetFlash 750...)
- if possible of the type USB-3 to take advantage of the maximum I/O speed when transferring files.

4 - Clone creation with Clonezilla

Before proceeding to the creation of your clone, we advise you to prepare your USB flash drive following our flash drive creation tutorials using Ventoy under either Windows or Linux.

Then proceed to launch the USB key, and select Clonezilla to start the operation of copying the clone on the USB key. The screenshots below are based on a Ventoy refurbishing key usage.

Select a 64-bit version of Clonezilla for referenced operating system in 64-bit: Legacy, UEFI or Secureboot. And you can also use this 64-bit version of Clonezilla even if your referenced operating system is 32-bit one, providing your processor has a 64-bit architecture.
**Note**: you will only need to use the 32-bit version of Clonezilla if you are using a processor that is 32-bit only, i.e. a processor prior to **Pentium 4**.
4.1 - Creation in automatic mode

To save the clone in automatic mode, please select the 4<sup>th</sup> entry in the screen capture shown below:

![Clonezilla Live USB Image]

This script will save the clone on the refurbishing key and name it `DATE-img_clone`, `DATE-img_clone_UEFI` or `DATE-img_clone_UEFI_SB` depending on the current system mode: Legacy / UEFI / UEFI_Secureboot.

You can customize some options of the copy or the backup of the clone, like the compression mode, the control files added to the clone, the clone image verification etc. by modifying the “save_clone.sh” file header, which resides in the “IMAGES” partition.

**Note**: in theory, the backup operation should take place without any intervention from the user, except in the case of anomalies detected by the script, which performs the following checks:

- size of the partitions on the reference hard disk compared to the limits of the partition scheme or to obtain a generic clone;
- available space on the refurbishing key to store the clone compared to the usable size of the system / (root) partition of the reference hard disk.
During these checks the script offers advice in case of anomalies, so that you get a clone that is compatible with our reuse key, and as generic as possible, i.e. it can be used with different sizes of target hard drives.

Depending on the type of anomaly, the operator will have the choice to continue the backup or to stop the script.

**Note:** If you make several clones, we advise you to rename their root directory with names allowing you to identify them easily.

**Warning:** In order to work properly on a UEFI computer, the refurbishing key needs to have clones with the "UEFI" suffix. Same thing for a Secure boot computer, it needs clones with the suffix SB or UEFI_SB, because Secureboot clones are compatible with UEFI not Secureboot ones.
4.2 - Creation in manual mode

Select the first entry of the screenshot below to launch Clonezilla in classic mode. This entry was originally planned in our refurbishing key to realize clones in manual mode:

![Clonezilla refurbishing key](image)

Select your language:

![Language selection](image)

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You can keep the keyboard English layout, or change it as you want:

Then launch the “Start Clonezilla” command:
Select the "Device-image" mode to copy the entire disk containing your customized operating system to the USB stick:

Now we are going to select the device where the clone will be copied, and for that select the "local_dev" mode since your USB key will be connected to your computer:
Clonezilla will now ask you to plug in your local device, and to wait 5 seconds, then press "Enter" to continue:

```
Before cloning, you have to assign where the Clonezilla image will be saved to or read from. We will mount that device or remote resources as /home/partimag. The Clonezilla image will be saved to or read from /home/partimag.

Select mode:

Local device  Use local device (C:A: hard drive, USB drive)
ssh_server Use SSH server
samba_server Use Samba server (Network Neighborhood server)
nfs_server Use NFS server
webdav_server Use WebDAV server
enter_shell Enter command line prompt. Do it manually
run_disk Use memory (OK for BT from raw device)
skip Use existing /home/partimag (Memory! NOT RECOMMENDED)

<C> <Cancel>
```

Now select the "sdb3" partition on your USB refurbishing key if, as here, you are using a refurbishing key under Ventoy:

```
Then click on the tab key to activate the "Done" button and validate, because you are going to put your clone at the root of your partition:

Select the beginner mode which is suitable for making the clone, and it is not necessary here to use the expert mode:

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Select the "Savedisk" mode which allows you to save your entire disk containing your customized operating system, then <OK> to validate:

<table>
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<th>Savedisk</th>
<th>Saved local disk backup images</th>
</tr>
</thead>
<tbody>
<tr>
<td>savedisk</td>
<td>Save local partitions as an image</td>
</tr>
<tr>
<td>restoredisk</td>
<td>Restore an image to local disk</td>
</tr>
<tr>
<td>restoreparts</td>
<td>Restore an image to local partitions</td>
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<tr>
<td>1-to-1-disks</td>
<td>Restore an image to multiple local disks</td>
</tr>
<tr>
<td>recovery-iso-zip</td>
<td>Create recovery Clonezilla Live</td>
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<tr>
<td>chk-img-restoreable</td>
<td>Check if the image restorable or not</td>
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<tr>
<td>cut-img-compression</td>
<td>Convert image compression format as another image</td>
</tr>
<tr>
<td>encrypt-img</td>
<td>Encrypt an existing unencrypted image</td>
</tr>
<tr>
<td>decrypt-img</td>
<td>Decrypt an existing encrypted image</td>
</tr>
<tr>
<td>exit</td>
<td>Exit. Enter command line prompt</td>
</tr>
</tbody>
</table>
Enter the name of your clone, then <OK> to validate:

Now you need to select the hard disk containing your customized operating system. Usually there is only one hard drive already selected, unless you have several hard drives on your computer, and in that case you need to select the one you want to clone to the USB stick:
Select the "-z9" compression mode which gives the best compression ratio, and validate:

Choose the compression option. If you have no idea keep the default value and do NOT change anything.

- z9 gzip compression (fast with a smaller image)
- z9 bzip compression (very fast and small image like gzip)

[Ok] [Cancel]

Activate the verification and repair option, case of ...
Ask for the verification of the clone after its backup, you can never be too careful with USB media ;)

Do not encrypt your image, i.e. the clone, unless you want to protect it with a password:

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Choose the finish mode that is best for you:

Clonezilla gives you the command line it will execute and a report. Type the letter "y" to accept and validate to continue:

```
PS: Next time you can run this command directly:
/home/ocl/clone-2021-12-31-14-img-clone sda

This command is also saved as this file name for later use if necessary: /tmp/ocl/2021-12-31-14-img-clone-2021-12-31-14-l3

Press "Enter" to continue...

Activating the partition info in /proc... done!

Selected device [sda] found!

The selected devices: sda

Searching for data/swap/extended partition(s)... done!

Excluding busy partition on disk...

Unmounted partitions (including extended or swap): sdb1 sdb2 sda5

Collecting info... done!

The data partition to be saved: sda5

The swap partition to be saved: sdb1

The extended partition to be saved: sda2

Activating the partition info in /proc... done!

Selected device [sda5] found!

The selected devices: sda5

Setting /dev/sda5 info...

The following step is to save the hard disk/partitions(s) on this machine as an image:

--------------------------------------------------------------------------
Machine= VirtualBox

sda (25.36G_VBOX Hard Disk ...bd70fe831cd3df1bad)

sda5 (21.3G_514(50.3G_VBOX Hard Disk ...bd70fe831cd3df1bad)

-> /home/partimage/2021-12-31-14-img-clone"

Are you sure you want to continue? (y/n) y
```
The copy operation is starting:

Followed by the verification of the image just copied to the USB stick:
Your clone was successfully saved. Press “Enter” to continue:

You can stop Clonezilla, and now you just have to test your embedded clone on our refurbishing key to clone a new computer :)
It is also possible to use a virtual machine like Oracle VM VirtualBox or VMware Workstation Pro to install your reference GNU/Linux operating system and then copy it via Clonezilla to your refurbishing key. The method for copying the clone to the reuse key is the same as the one used with a physical hard disk except that you need to use an ISO image of PLOP Boot Manager in your virtual machine's CD/DVD drive to allow the refurbishing USB stick to be launched in the virtual machine.
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