Cloning Disks with Clonezilla

In case that there are several devices which have to be set up identically (e.g. RPis, Nucs, ...), it might be helpful to just clone memory disks, once the first one is set up completely. Clonezilla is a tool, addressing exactly this. The following describes three ways of using Clonezilla.

Clonezilla is an operating system and can thus be used via a bootable USB-stick. In the CPM Lab you will find a black one which contains this already. (PICTURE)

Start Clonezilla at the OptiPlex 3070

To start Clonezilla you might have to change some properties in the BIOS. Plug in the USB-Stick containing Clonezilla and start the computer. You will get into the BIOS by pressing F2.

1. Move to *Secure Boot > Secure Boot Enable* and deselect *Secure Boot Enable*.
2. Move to *General > Boot Sequence* and click on *Add Boot Option.* Choose a name, select the file */EFI/boot/grubx64.efi* and confirm it. (Depending on the used Clonezilla version and the underlying BIOS the needed file and its path differ. For more information see here.) Move Clonezilla to the highest priority, apply the changes and exit. After rebooting, Clonezille should start.

Possible Procedures

- Device Device
- Device Image
- Image Device

Device Device

Identify names of memory disks

In this explanation, one SD-card will be cloned to another one directly. Consequently, both SD-cards have to be plugged in at the same time. Because you will need to specify which of them is the source and which the target, you need to identify them clearly. For that purpose, plug them into the computer and open *Disks* (Ubuntu). Their names will be the same in Linux and Clonezilla.

> ⊙ Note: Something like *sdc* is NOT the name of the device. This one changes dependent on the order in which the devices are plugged in.

Navigate through Clonezilla

> ✓ If you want to exit Clonezilla in the start menu, switch to console by entering "c" and then enter "exit". (The next OS specified in the Boot Sequence of the BIOS will start.)

After Clonezilla has been started successfully, you have to navigate through the "submenus" it consists of. Choose

- the first option *Clonezilla live (Default settings, VGA 800x600)*. If you don't do anything this will be chosen automatically after plenty of seconds.
- the language and the keyboard layout as you want (default recommended).
- *start Clonezilla*
- *device-device*
- *expert*
- *disk to local disk*
- the **source** as identified in the beginning
- the **target** as identified in the beginning
- toggle the options as follows by using Space. Deactivate everything except the next two options which should be set:
    - *sector-by-sector copy* (-q1)
    - *inspect checksums* (-cmf)
    - *do not update initramfs on restored GNU/Linux* (-iui)
- keep default (skip *checking/repairing source file system*)
- keep default (*use the partition table from the source disk*)
- *poweroff*

> ⊙ All data, which was saved at the target device, will be lost afterwards!

Finally, confirm everything (warnings, and clone of boot loader) with *y*.

Depending on the size of the devices the cloning process will take up to a few hours.

Device Image

This paragraph addresses the case, in which you want to create an image of an already existing device.

Navigate through Clonezilla

> ✅ If you want to exit Clonezilla in the start menu, switch to console by entering "c" and then enter "exit". (The next OS specified in the Boot Sequence of the BIOS will start.)

After Clonezilla has been started successfully, you have to navigate through the "submenus" it consists of. Choose

- the first option *Clonezilla live (Default settings, VGA 800x600)*. If you don't do anything this will be chosen automatically after plenty of seconds.
- the language and the keyboard layout as you want (default recommended).
- *start Clonezilla*
- *device-image*
- *local dev*
- if not already done, insert the device with your image into the computer, wait five seconds and press enter
- wait until you see the devices you expect and quit with STRG-C
- choose the device you want to read the image from
- select the folder from which you want to read the image
- *expert*
- *savedisk*
- choose a name (e.g. keep default)
- choose disk as source (by Space)
- choose default (-q2 partclone > partimage > dd)
- select "Generate image MD5 checksums" (-gm) and "Image not only accessible by owner" (-noabo) (and let -c and -j2 also selected)
- select default (-z1p Use parallel gzip compression, for multicore/CPU)
- select default split size
- select default (skip checking/repairing source file system)
- select default (yes, check the saved image)
- select default (not to encrypt the image)
- *poweroff*

Finally, confirm everything by enter if you are sure.

Image Device

In case that you already have an image, you can directly clone this image onto your device.

Navigate through Clonezilla

> ✅ If you want to exit Clonezilla in the start menu, switch to console by entering "c" and then enter "exit". (The next OS specified in the Boot Sequence of the BIOS will start.)

After Clonezilla has been started successfully, you have to navigate through the "submenus" it consists of. Choose

- the first option *Clonezilla live (Default settings, VGA 800x600)*. If you don't do anything this will be chosen automatically after plenty of seconds.
- the language and the keyboard layout as you want (default recommended).
- *start Clonezilla*
- *device-image*
- *local dev*
- if not already done, insert the device with your image into the computer, wait five seconds and press enter
- wait until you see the devices you expect and quit with STRG-C
- choose the device you want to read the image from
- select the folder from which you want to read the image

- *expert*
- *restoredisk*
- choose image file
- select target device
- select default options (-g auto, -e1 auto, -e2, -c, -r, -j2)
- keep default (use the partition table from the image)
- keep default (Yes, check the image before restoring)
- the **source** as identified in the beginning
- the **target** as identified in the beginning
- toggle the options as follows by using Space. Deactivate everything except the next two options which should be set:
    - *sector-by-sector copy* (-q1)
    - *inspect checksums* (-cmf)
- keep default (skip *checking/repairing source file system*)
- keep default (*use the partition table from the source disk*)
- *poweroff*

⊕ All data, which was saved at the target device, will be lost afterwards!

Finally, confirm everything by enter if you are sure.