Clonezilla

The Free and Open Source Software for Disk Imaging and Cloning

Disk to disk clone

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In this example: Clone small disk to larger disk (e.g. 8 GB to 20 GB) (Step by step)

1. Prepare Clonezilla live
2. Boot your Clonezilla live via USB
3. Choose "ToRAM" option in the boot menu
4. Choose language
5. Choose keyboard layout
6. Choose "Start Clonezilla"
7. Choose "disk_to_local_disk"
8. Choose source disk
9. Choose target disk
10. Start cloning
11. Disk is cloned

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- Prepare Clonezilla live ^TOP^

  FIRST OF ALL, BACK UP IMPORTANT DATA BEFORE YOU USE CLONEZILLA LIVE TO DO ANYTHING.

  In this example, the machine has 1 disk (8 GB), we want to clone it to an external disk (20 GB). This is a normal case when you buy a new disk to replace old disk on your machine. Here since we use virtual machine to give this example, we use small disk size, i.e. 8 GB to 20 GB instead of modern disk size.
  Besides, modern "light" laptop normally comes WITHOUT CD drive, or you happen to leave your USB CD drive in another place, it's a good idea to use USB device to boot Clonezilla live. In this example, we use a better, neater method, i.e. put Clonezilla live on the new disk and use it to boot clonezilla live. By doing this, you do not have to burn a CD, or prepare another USB flash drive. This is an one-time-use Clonezilla live, because later the clonezilla live files on new disk will be overwritten. Of course, you still can put Clonezilla live in CD or USB flash drive, then boot it to clone the 8 GB disk to 20 GB disk. The procedure is quite similar. Just remember to choose the correct source and destination disk.

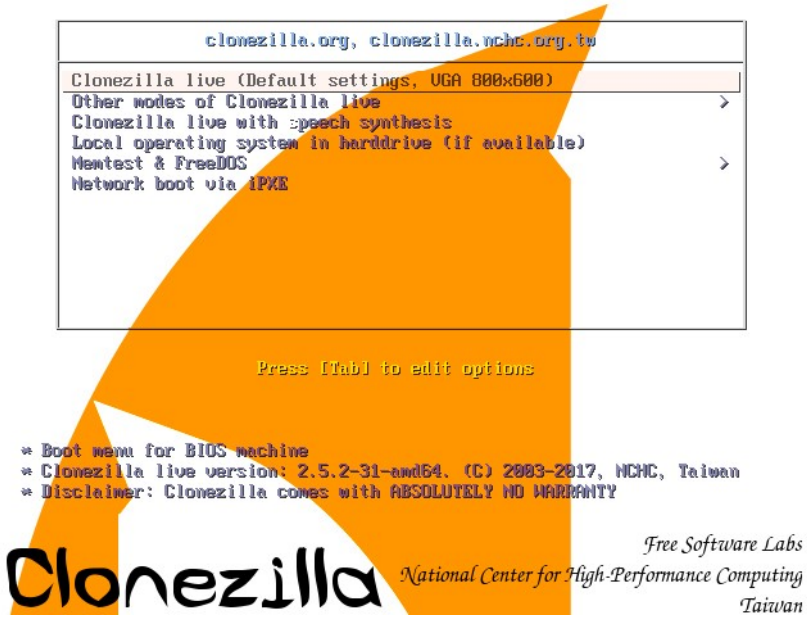
Prerequisite: A new, equal or larger disk, an external disk closure, an USB cable. A running MS Windows or GNU/Linux.

- Put the new disk inside your external disk closure, connect that to your running MS Windows or GNU/Linux via USB cable, then follow here to put Clonezilla live zip file on your external disk and make it bootable.

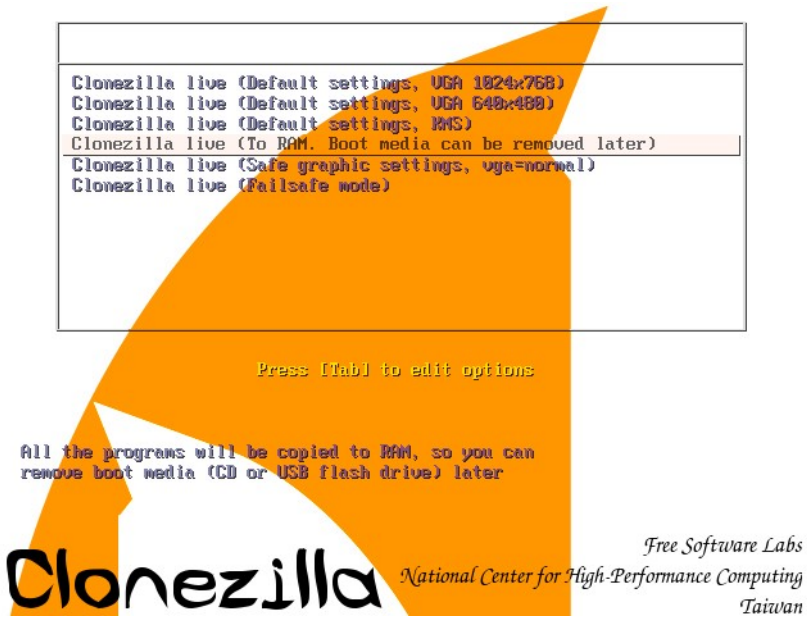
- Boot your Clonezilla live via USB ^TOP^
  - Insert the new hard drive (which is bootable with Clonezilla live builtin) with the USB cable to your machine.
  - Most modern PC comes with USB boot function, you can refer to your montherboard manul to see how to set it during boot. E.g. On the IBM thinkpad X61, you can press F12 and choose USB device to force the machine to boot via USB device.

- Choose "ToRAM" option in the boot menu ^TOP^

  In the boot menu, we choose "Other modes of Clonezilla live"



  Then choose "Clonezilla live (To RAM. Boot media can be removed later)"

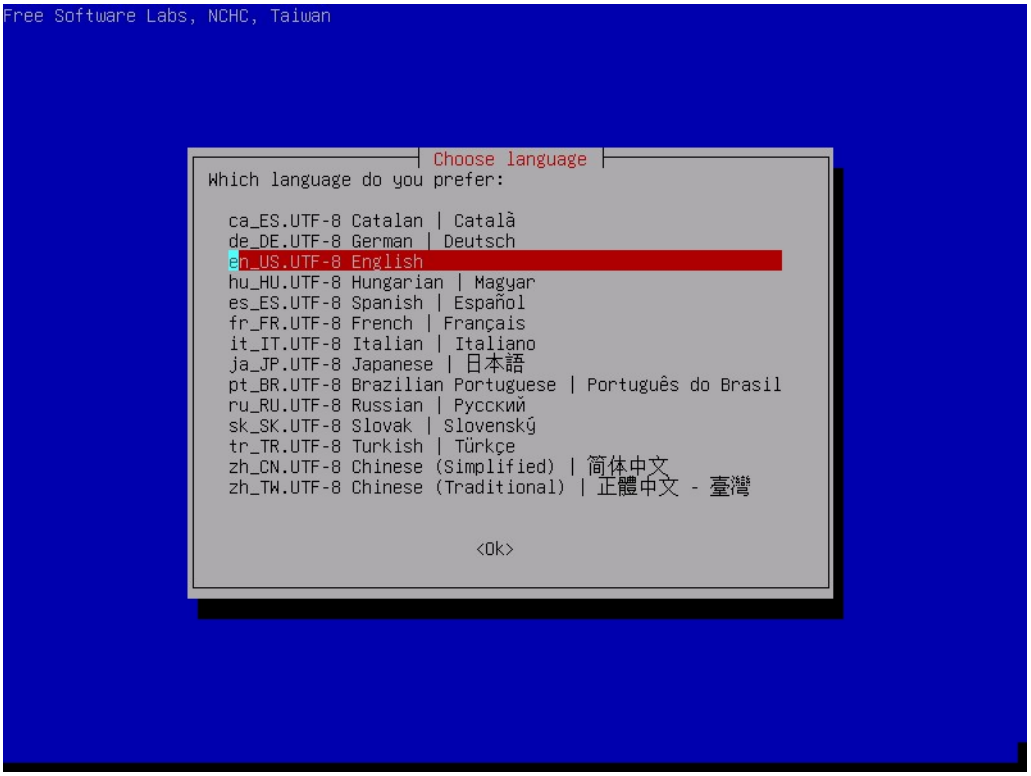


  By doing this, all the Clonezilla live file on the new hard drive will be copied to RAM. Therefore the partition of new hard drive can be released, i.e. it won't be busy and locked by running programs.

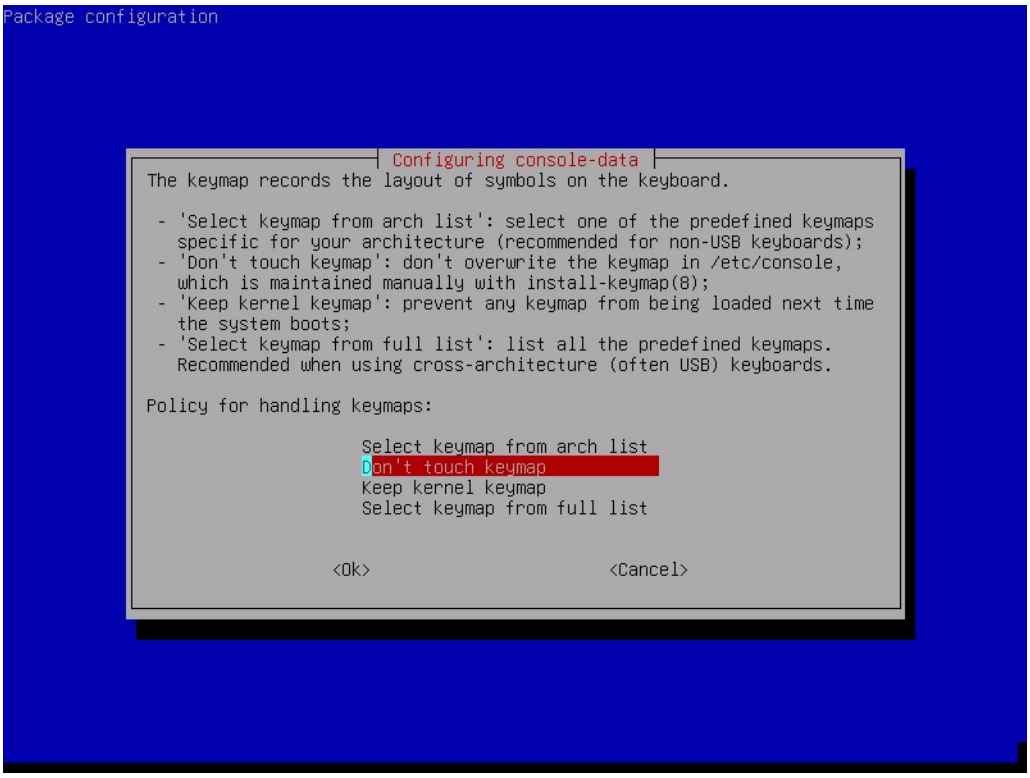
Press Enter, you will see Debian Linux booting process, and it will spend a few minutes when copying the files to RAM:

```
       913,568 100%  929.33kB/s    0:00:00 (xfr#7, to-chk=17/26)
live/ipxe.lkn
       325,992 100%  330.93kB/s    0:00:00 (xfr#8, to-chk=16/26)
live/memtest
       182,704 100%  183.94kB/s    0:00:00 (xfr#9, to-chk=15/26)
live/vmlinuz
     4,397,328 100%    4.18MB/s    0:00:01 (xfr#10, to-chk=14/26)
syslinux/
syslinux/boot.cat
         2,048 100%  400.00kB/s    0:00:00 (xfr#11, to-chk=13/26)
syslinux/chain.c32
        24,560 100%    4.68MB/s    0:00:00 (xfr#12, to-chk=12/26)
syslinux/drblwp.png
        43,283 100%    6.88MB/s    0:00:00 (xfr#13, to-chk=11/26)
syslinux/iso_sort.txt
            44 100%    7.16kB/s    0:00:00 (xfr#14, to-chk=10/26)
syslinux/isolinux.bin
        45,056 100%    7.16MB/s    0:00:00 (xfr#15, to-chk=9/26)
syslinux/isolinux.cfg
         7,440 100%    1.01MB/s    0:00:00 (xfr#16, to-chk=8/26)
syslinux/ldlinux.c32
       122,308 100%   14.58MB/s    0:00:00 (xfr#17, to-chk=7/26)
syslinux/libcom32.c32
       186,500 100%   17.79MB/s    0:00:00 (xfr#18, to-chk=6/26)
syslinux/libutil.c32
        24,148 100%    2.09MB/s    0:00:00 (xfr#19, to-chk=5/26)
syslinux/memdisk
        26,140 100%    2.08MB/s    0:00:00 (xfr#20, to-chk=4/26)
syslinux/menu.c32
        26,596 100%    1.95MB/s    0:00:00 (xfr#21, to-chk=3/26)
syslinux/ocswp.png
        46,464 100%    3.17MB/s    0:00:00 (xfr#22, to-chk=2/26)
syslinux/syslinux.cfg
         7,504 100%  523.44kB/s    0:00:00 (xfr#23, to-chk=1/26)
syslinux/vesamenu.c32
        27,104 100%    1.72MB/s    0:00:00 (xfr#24, to-chk=0/26)
```

- Choose language ^TOP^



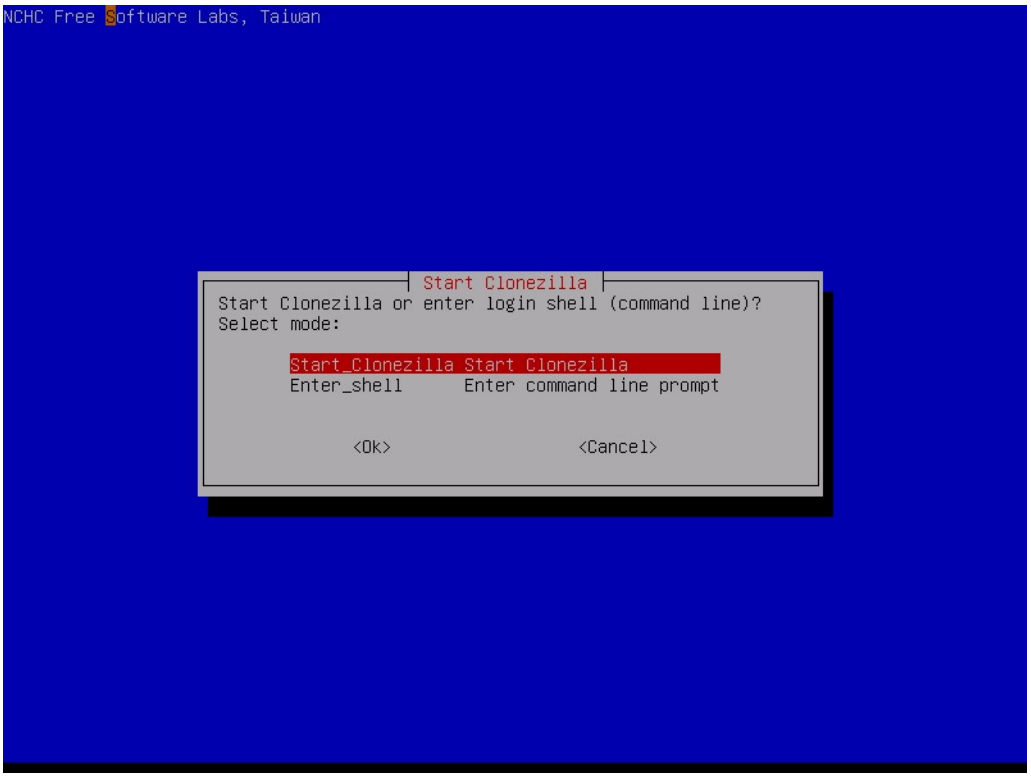
- Choose keyboard layout ^TOP^



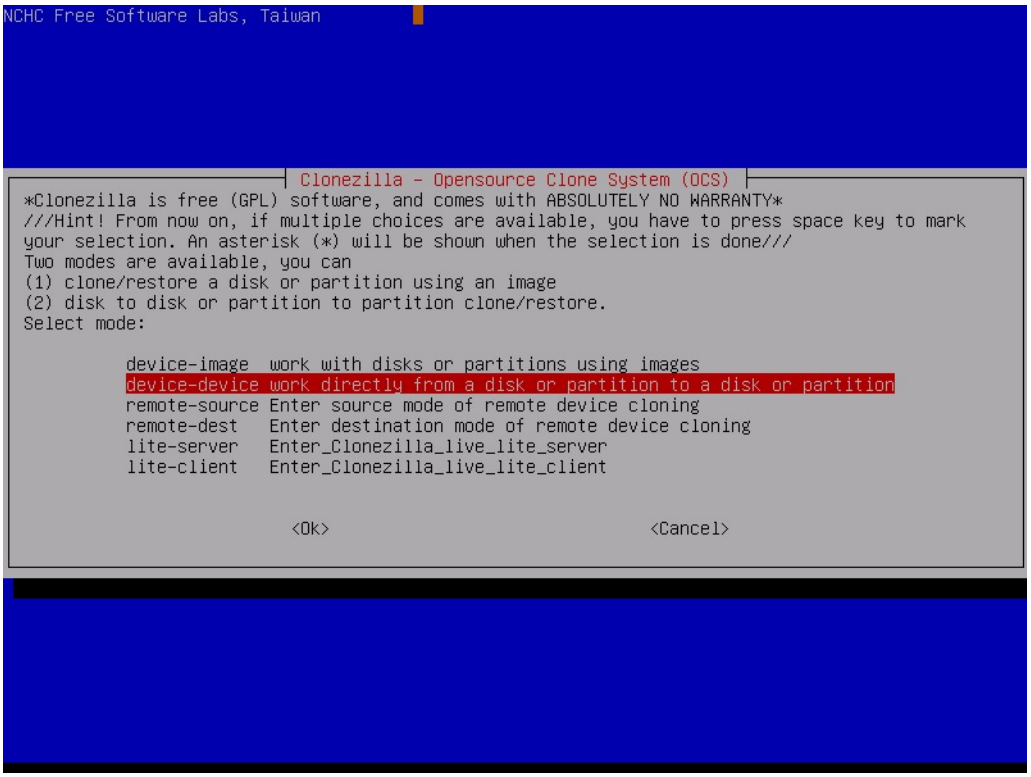
The default keyboard layout is US keybaord, therefore if you are using US keyboard, just press enter (i.e. use the option "Don't touch keymap").
If you want to change keymap, you can either choose "Select keymap from arch list" or "Select keymap from full list".
///NOTE/// There is a bug when choosing French keymap in "Select keymap from arch list", so use "Select keymap from full list" to change keymap if you are using French keyboard.

- Choose "Start Clonezilla"

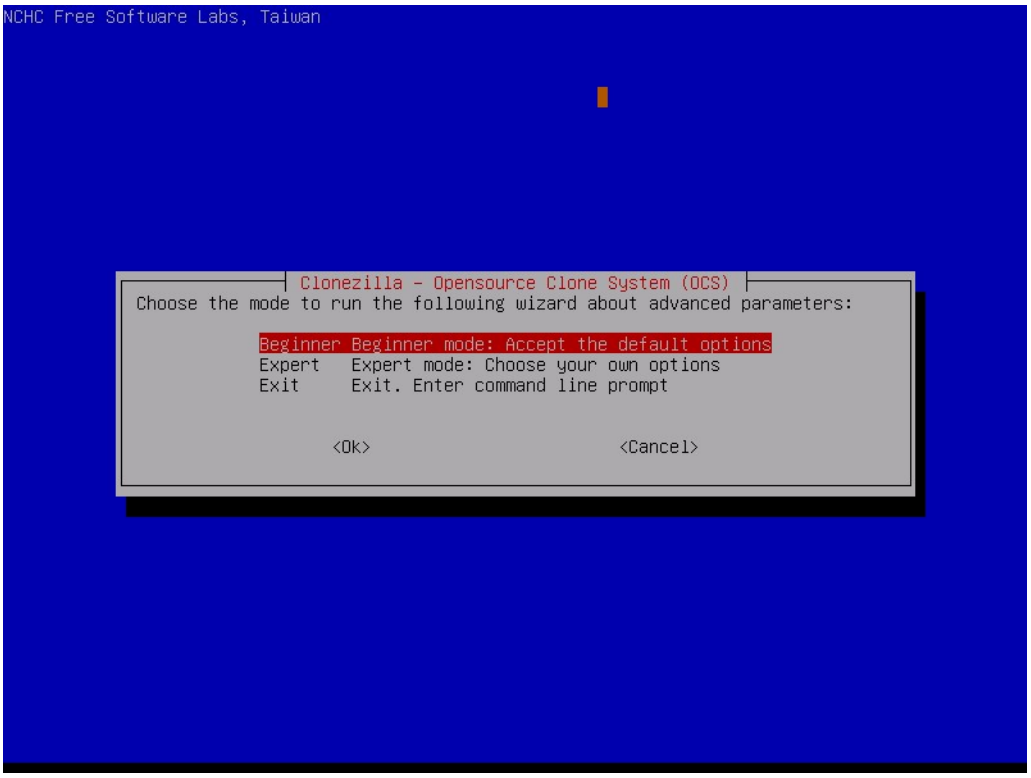
^TOP^



Choose "device-device"



Choose "Beginner"

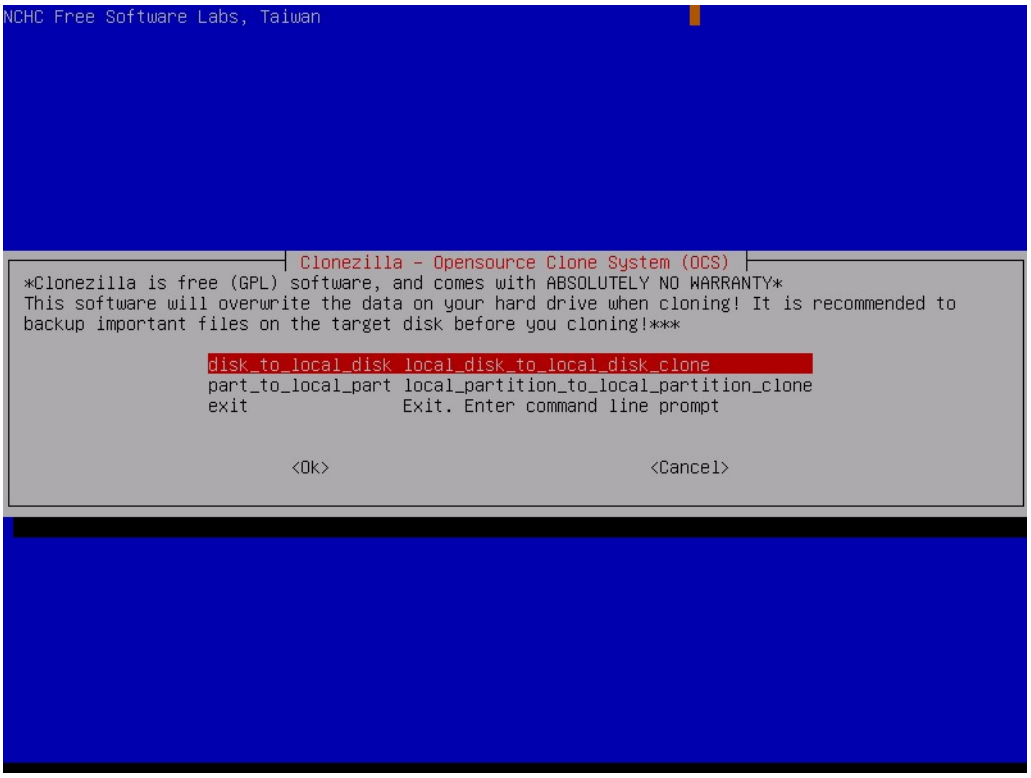


If you choose "Expert" mode, you will have some chances to choose advanced parameters, e.g. tune the CHS values of target disk, how to create partition table on the target disk, etc.. You can see more details here.

///NOTE/// By deafult, Clonezilla will clone the "same" size of source disk to target disk. i.e. in this example, only 8 GB will be cloned to target disk, so the rest of 12 GB on the destination disk will be unallocated. If you want to make use all of the target disk size, remember to enter "Expert" mode and choose option "-k1".

- Choose "disk_to_local_disk"

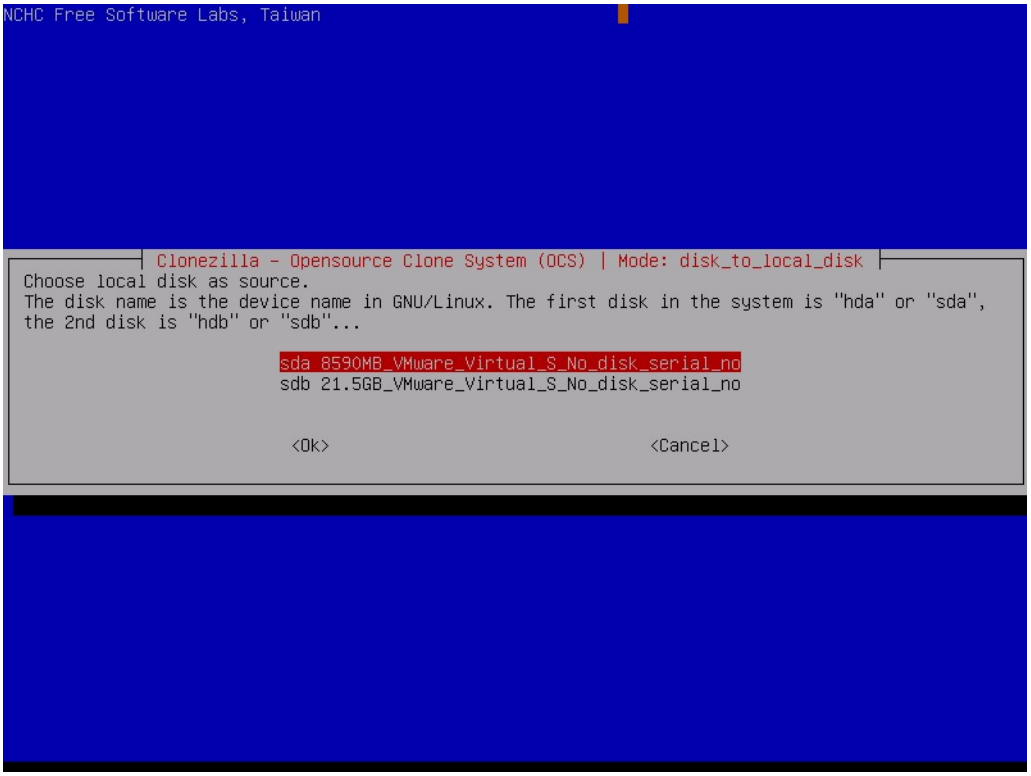
^TOP^



- Choose source disk [^TOP^]

  Here the source disk is sda, which is 8 GB in size".

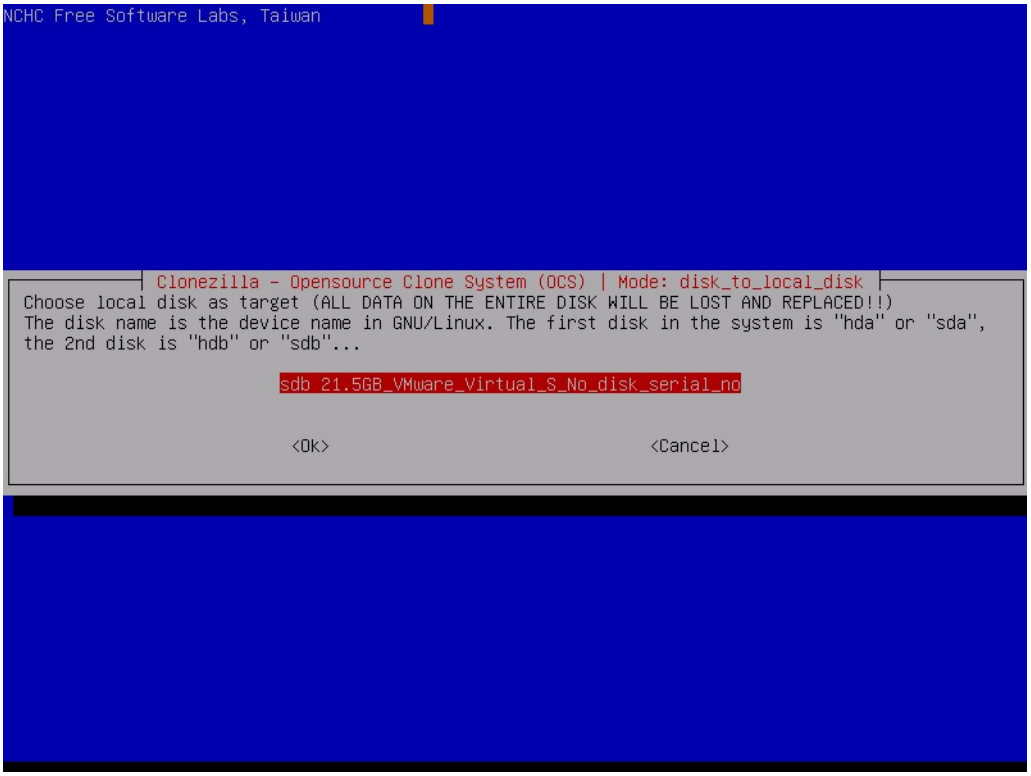
  ///WARNING/// Be careful! Do not choose the wrong disk. Since all the data on the target disk will be overwritten!!!



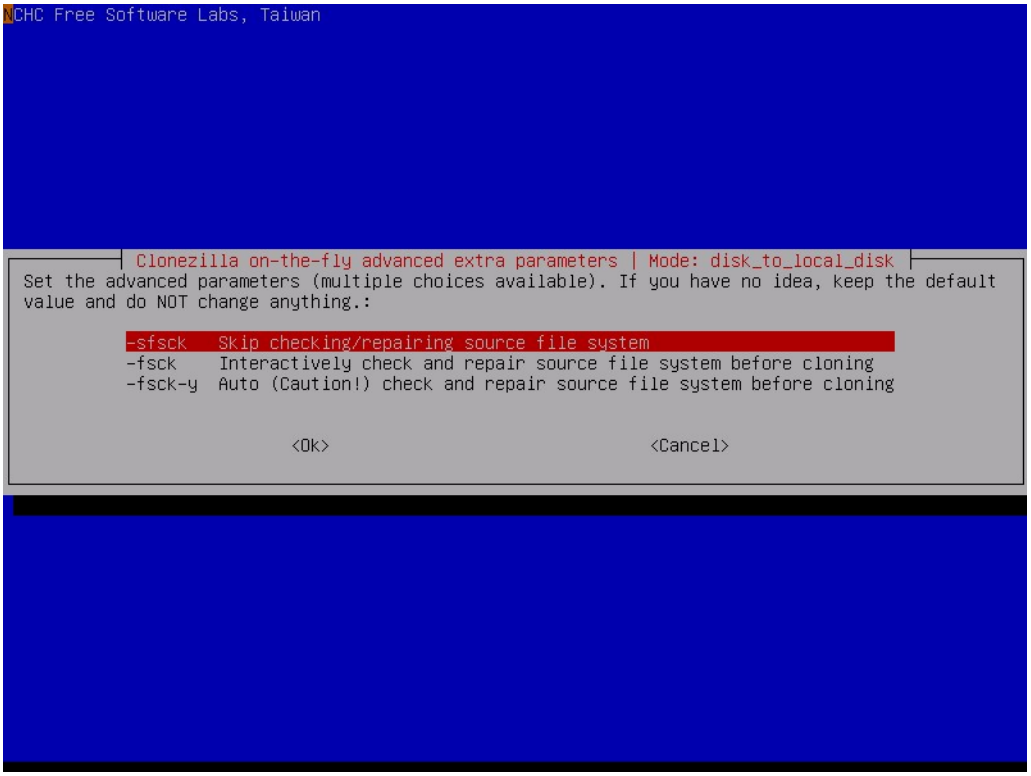
- Choose target disk ^TOP^

Here the target disk is sdb, which is 20 GB in size"

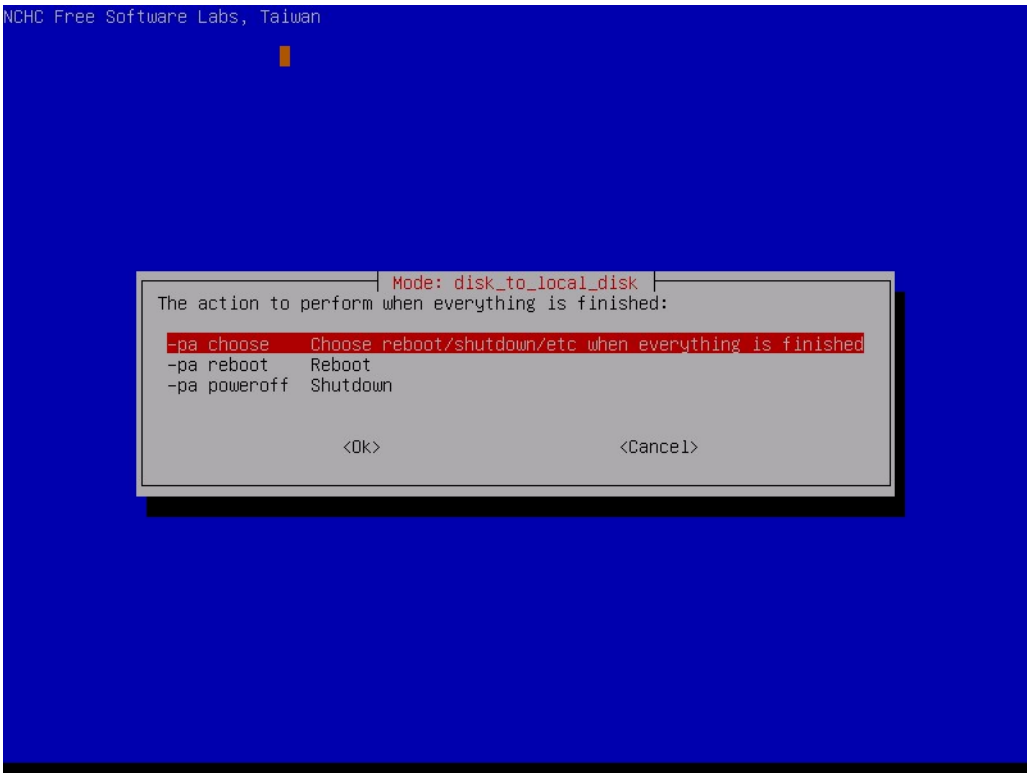
///WARNING/// Be careful! Do not choose the wrong disk. Since all the data on the target disk will be overwritten!!!



Select if the source file system need to be checked or not:

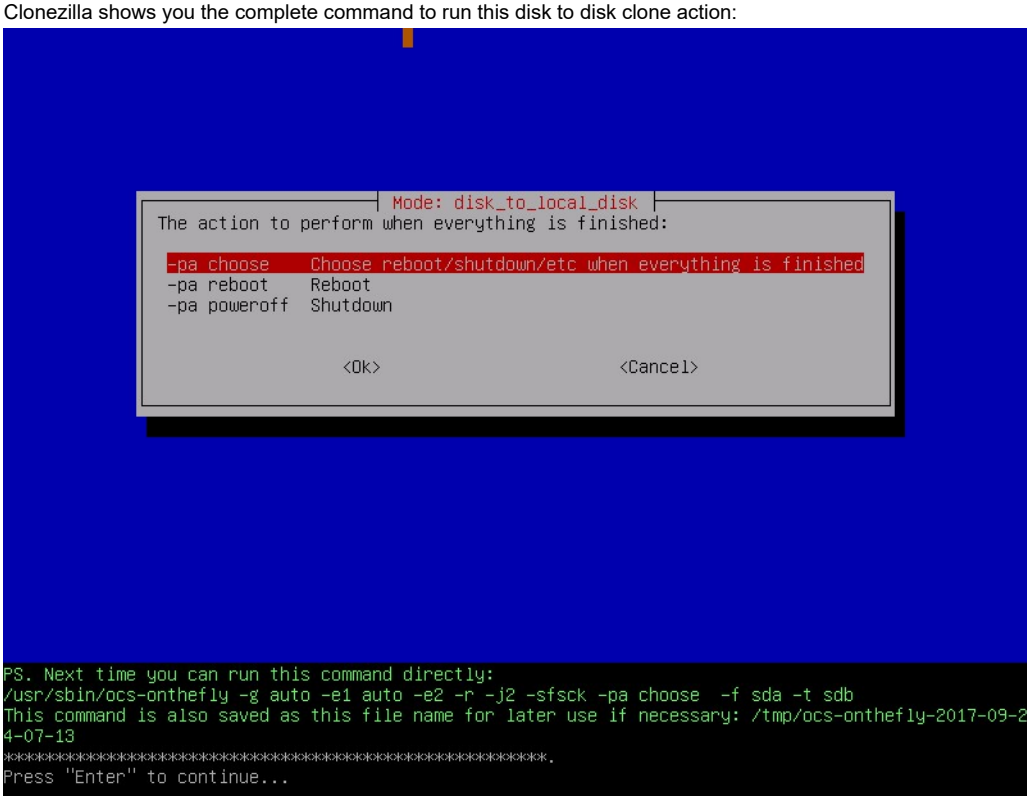


Select the mode you want after the disk cloning is done:



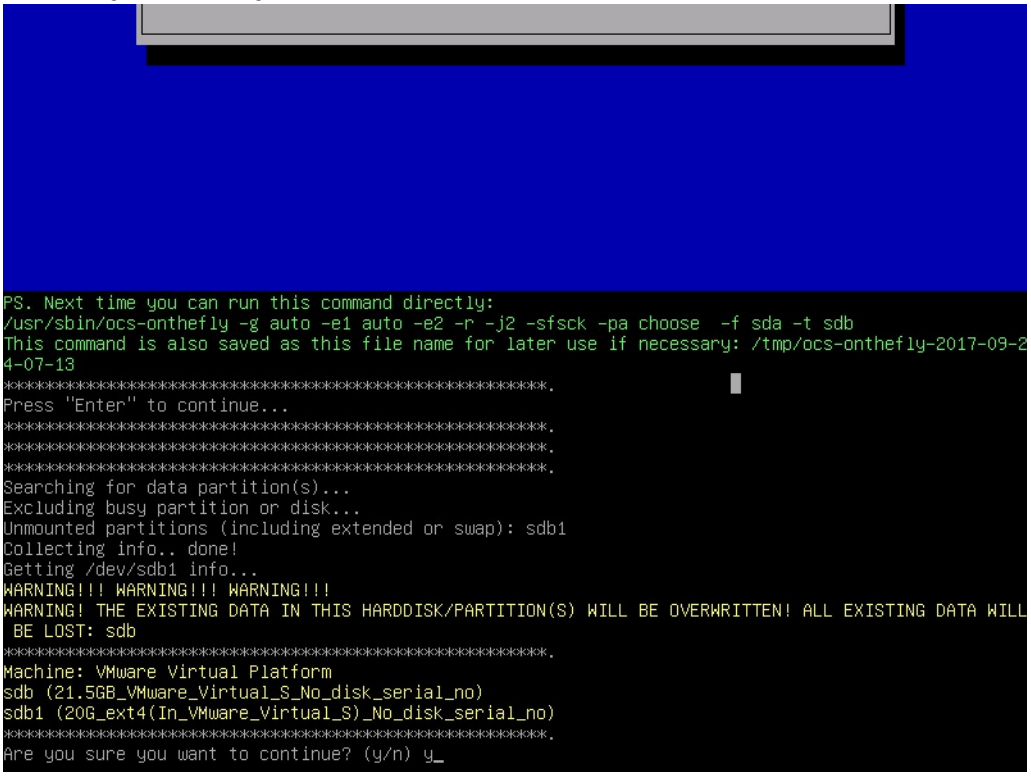
By default we will choose later, but if you have decided, you can choose to reboot or poweroff the machine.

Clonezilla shows you the complete command to run this disk to disk clone action:

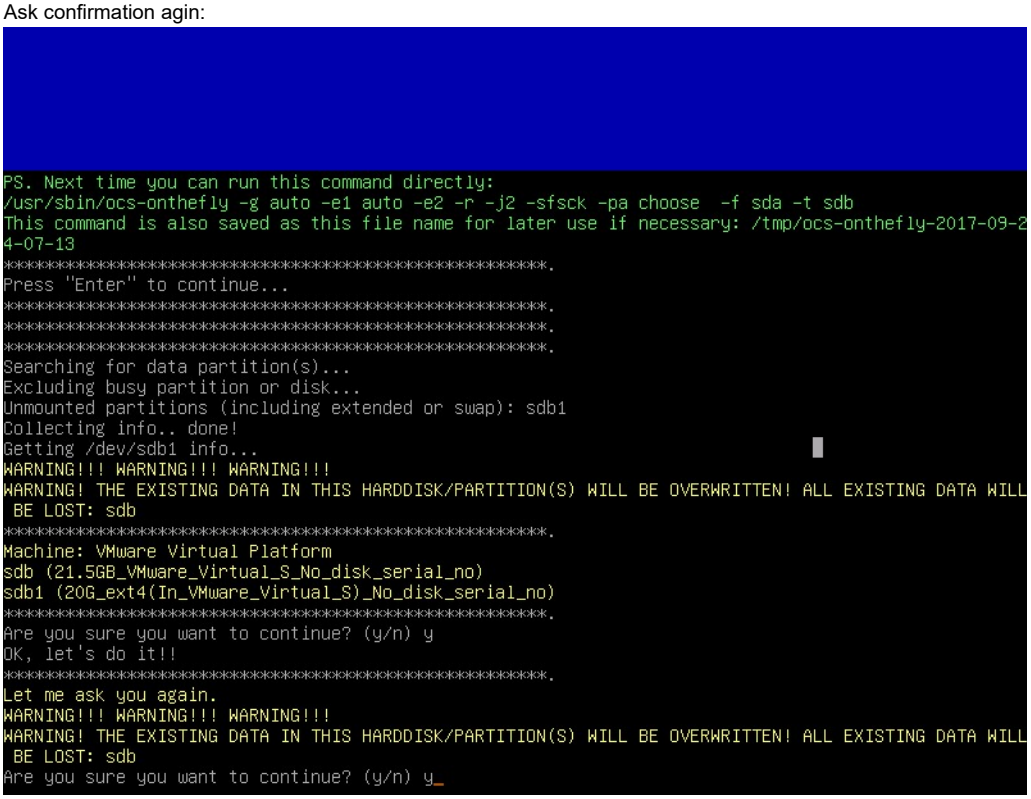


- Start cloning [^TOP^]

Before doing the real cloning, Clonezilla will ask confirmation:



Ask confirmation agin:



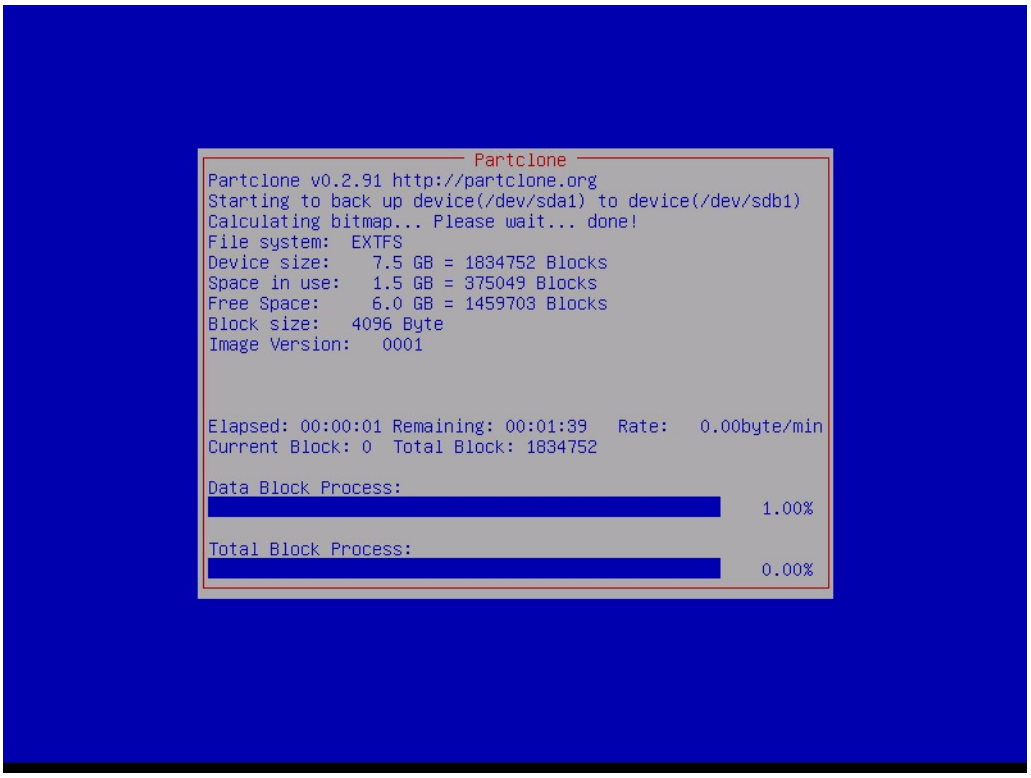
First ask confirmation about cloning boot loader to target disk:

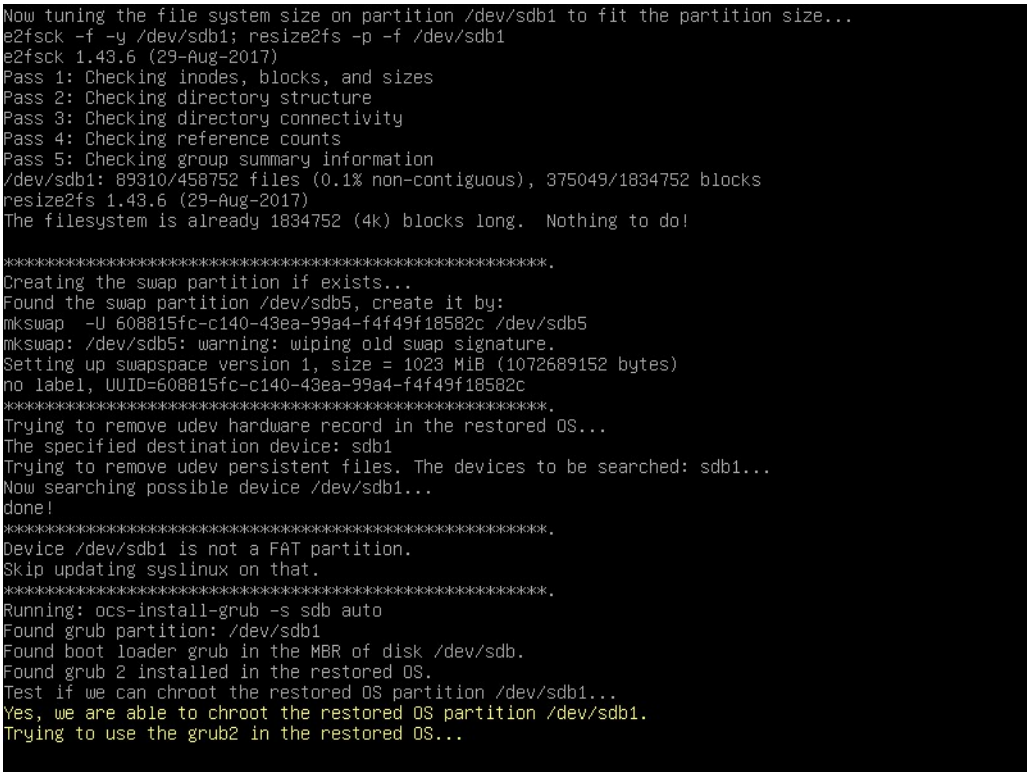
```
PS. Next time you can run this command directly:
/usr/sbin/ocs-onthefly -g auto -e1 auto -e2 -r -j2 -sfsck -pa choose  -f sda -t sdb
This command is also saved as this file name for later use if necessary: /tmp/ocs-onthefly-2017-09-2
4-07-13
**********************************************************.
Press "Enter" to continue...
**********************************************************.
**********************************************************.
**********************************************************.
Searching for data partition(s)...
Excluding busy partition or disk...
Unmounted partitions (including extended or swap): sdb1
Collecting info.. done!
Getting /dev/sdb1 info...
WARNING!!! WARNING!!! WARNING!!!
WARNING! THE EXISTING DATA IN THIS HARDDISK/PARTITION(S) WILL BE OVERWRITTEN! ALL EXISTING DATA WILL
 BE LOST: sdb
**********************************************************.
Machine: VMware Virtual Platform
sdb (21.5GB_VMware_Virtual_S_No_disk_serial_no)
sdb1 (20G_ext4(In_VMware_Virtual_S)_No_disk_serial_no)
**********************************************************.
Are you sure you want to continue? (y/n) y
OK, let's do it!!
**********************************************************.
Let me ask you again.
WARNING!!! WARNING!!! WARNING!!!
WARNING! THE EXISTING DATA IN THIS HARDDISK/PARTITION(S) WILL BE OVERWRITTEN! ALL EXISTING DATA WILL
 BE LOST: sdb
Are you sure you want to continue? (y/n) y
OK, let's do it!!
**********************************************************.
Do you want to clone the boot loader (executable code area, the first 446 bytes) to: sdb ?
[Y/n]
```

Then it will create partition table on the destination disk:

```
sfdisk --force /dev/sdb < /tmp/ocs_onthefly_local.jfwjTc/tgt-pt.sf
Partition #1 contains a ext4 signature.Checking that no-one is using this disk right now ... OK

Disk /dev/sdb: 20 GiB, 21474836480 bytes, 41943040 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x51d46f0d

Old situation:

>>> Script header accepted.
>>> Script header accepted.
>>> Script header accepted.
>>> Script header accepted.
>>> Created a new DOS disklabel with disk identifier 0x4f12182e.
/dev/sdb1: Created a new partition 1 of type 'Linux' and of size 7 GiB.

Partition #5 contains a swap signature./dev/sdb2: Created a new partition 2 of type 'Extended' and o
f size 1 GiB.
/dev/sdb3: Created a new partition 5 of type 'Linux swap / Solaris' and of size 1023 MiB.

/dev/sdb6: Done.

New situation:

Device     Boot    Start      End  Sectors  Size Id Type
/dev/sdb1  *        2048 14680063 14678016    7G 83 Linux
/dev/sdb2       14680064 16777215  2097152    1G  5 Extended
/dev/sdb5       14682112 16777215  2095104 1023M 82 Linux swap / Solaris

The partition table has been altered.
Calling ioctl() to re-read partition table.
Syncing disks.
This was done by "sfdisk --force /dev/sdb < /tmp/ocs_onthefly_local.jfwjTc/tgt-pt.sf"
Informing the OS of partition table changes..._
```

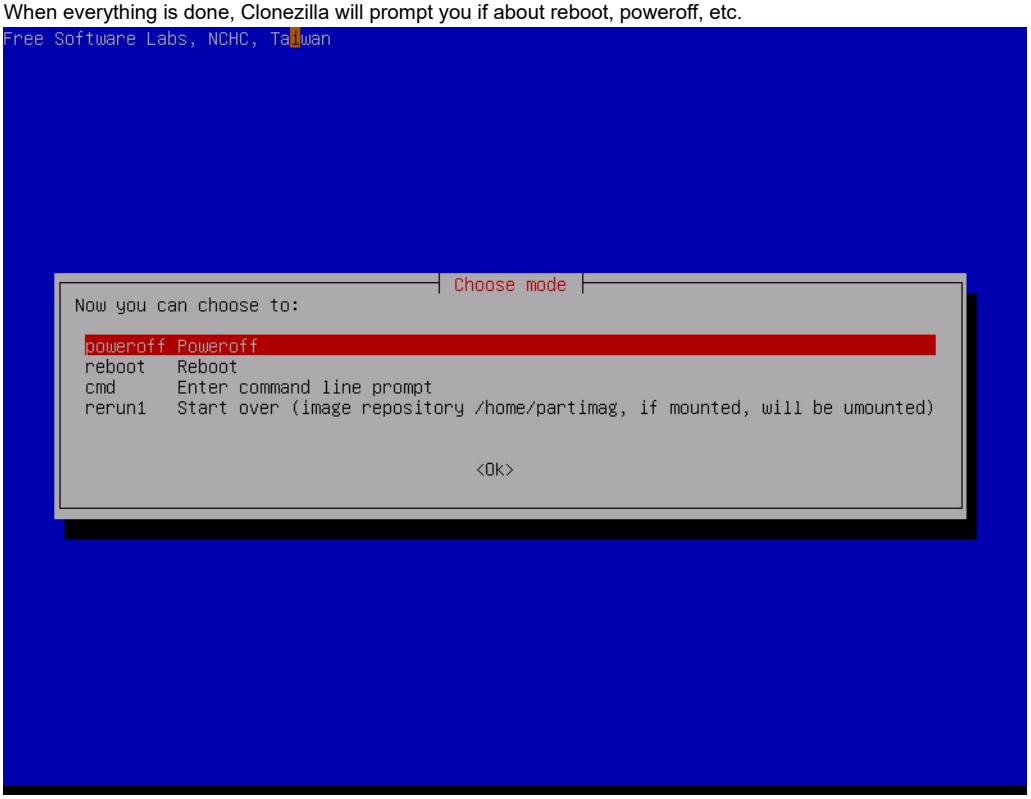
Clonezilla is cloning the data from source disk to target disk:



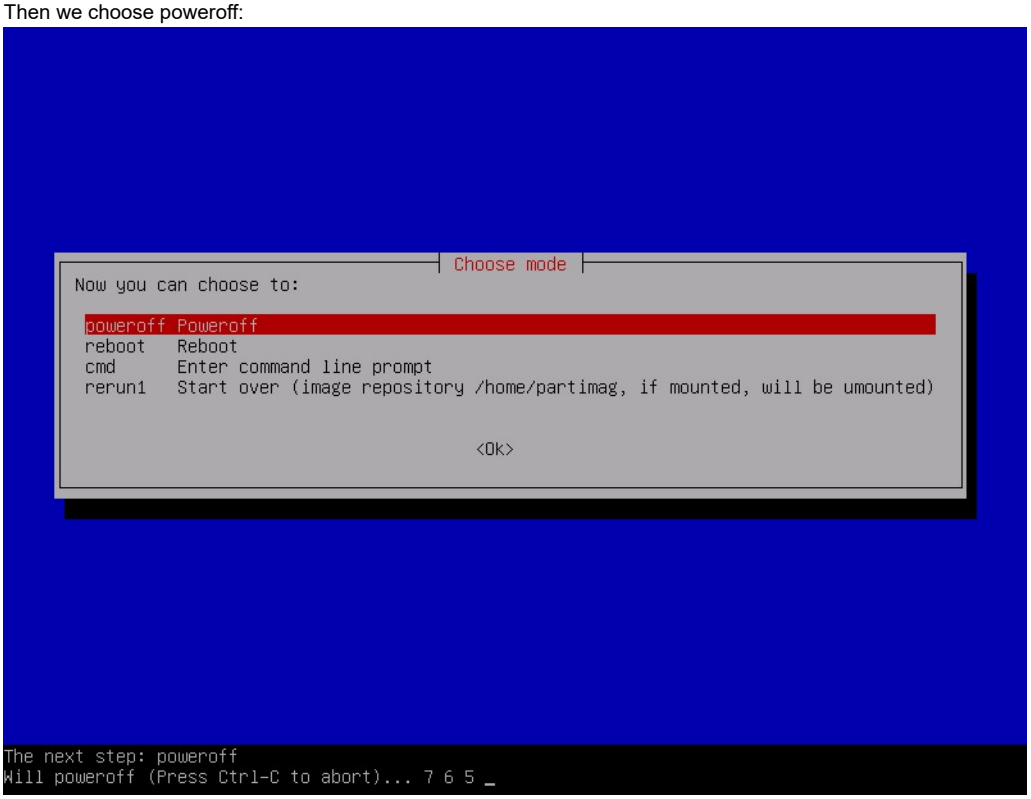


- Disk is cloned ^TOP^

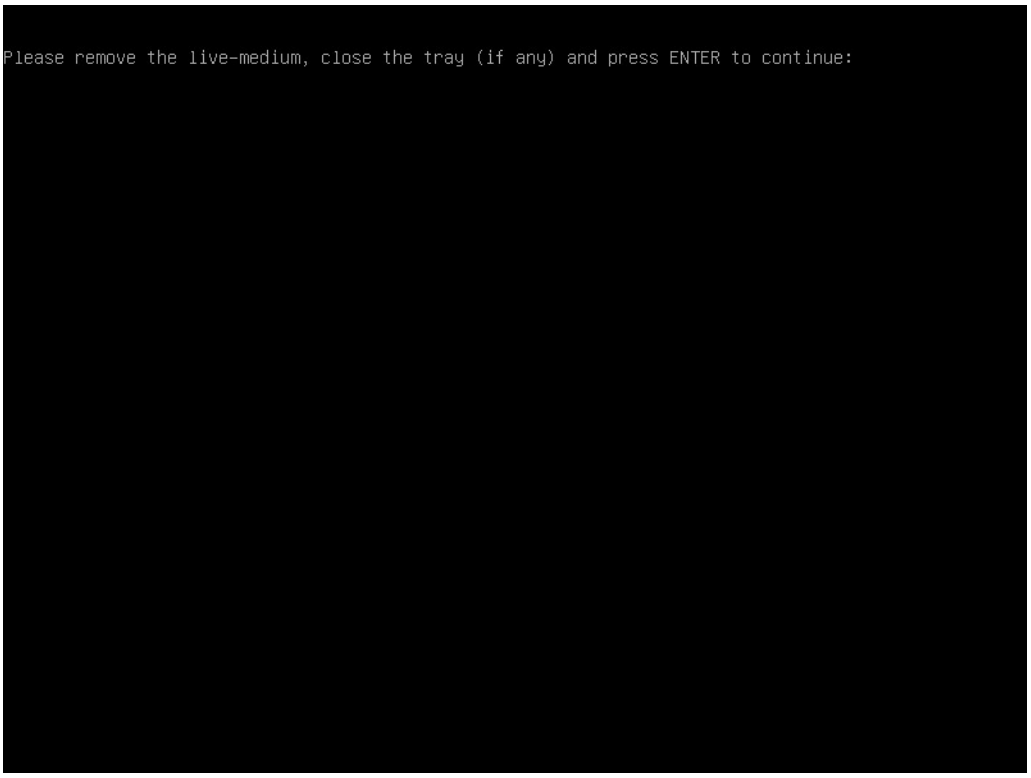
When everything is done, Clonezilla will prompt you if about reboot, poweroff, etc.



Then we choose poweroff:



and the machine will be halted:



That's all. The new hard drive is ready to be used. You can remove the old (8 GB) disk from your machine, and put the new one (20 GB) in your machine. Boot it, you can enjoy the new disk.
//NOTE// You can only keep one of the disks in the same machine before you boot it. If you boot the machine with the source disk and the cloned destination disk on the same machine, the booting OS will be confused since there are two identical file systems on the same machine. They have same UUID so the booting OS might mount the wrong file system.

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