

Manual for backing up hard disk contents

This manual is valid for A&V Measuring Computers. It explains how you may backup the contents of the hard disk of an A&V Measuring Computer. This hard disk copy serves as data backup. In case of problems with the operating system, the operating system may be restored using the hard disk copy. This manual explains the process of creating a hard disk copy using the program "Clonezilla" as an example.

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1. Requirements

In order to create a hard disk image you need:

- a bootable USB stick containing the program "Clonezilla". For information on how to create such a USB stick, please see the manual "Manual for creating a bootable USB stick".
- an A&V Measuring Computer
- a storage device (USB stick or USB hard disk) with a storage capacity of at least 32 GB
- a USB hub with its own power supply

2. Remove interface module

Before starting to create a hard disk copy, the interface module 5326 has to be removed from the Measuring Computer.

IMPORTANT: This may only be done when the Measuring Computer is switched off!

Loosen the two screws (see red marks in Fig. 1), grab the black holder and slowly and carefully pull the module out of the Measuring Computer.

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Fig. 1

Carefully pull the cable off the multi-pin connector on the module (see red marks in Fig. 2).



Fig. 2

3. Change SETUP settings

Connect a keyboard to the measuring unit. After switching on the unit, repeatedly press the DEL key (approximately once every second) to enter into the SETUP mode of the measuring unit.

Change the boot order in the SETUP mode of the Measuring Computer. Depending on the configuration of the Measuring Computer, please set "First Boot Device" to "USB-HDD" or "Boot Priority Order" 1. to "USB HDD" and 2. to "ATA HDD0".

4. Copy hard disk

Connect the bootable USB stick containing the program "Clonezilla" to the Measuring Computer and switch it on. The Computer boots from the USB stick. "Clonezilla" is opened (see Fig. 3). Select "Clonezilla live (Default settings, VGA 800x600)" and press ENTER to continue or wait until the program is started automatically after 30 sec.

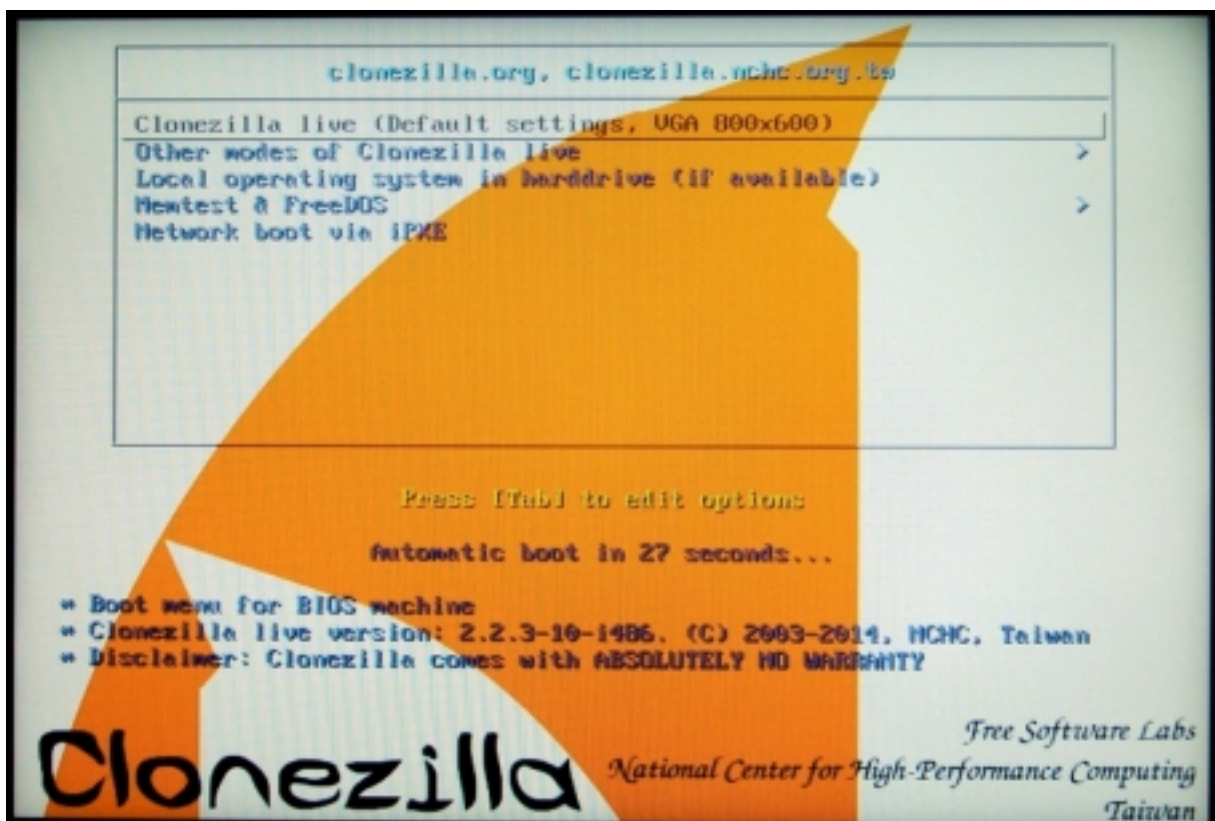


Fig. 3

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Please proceed slowly and carefully with the following steps. "Clonezilla" does not allow to go back to the previous step. In case of a wrong selection, you need to stop the program with "Cancel" and "Poweroff" and then start again.

Select the program language "English" (see Fig. 4) and confirm by pressing ENTER.

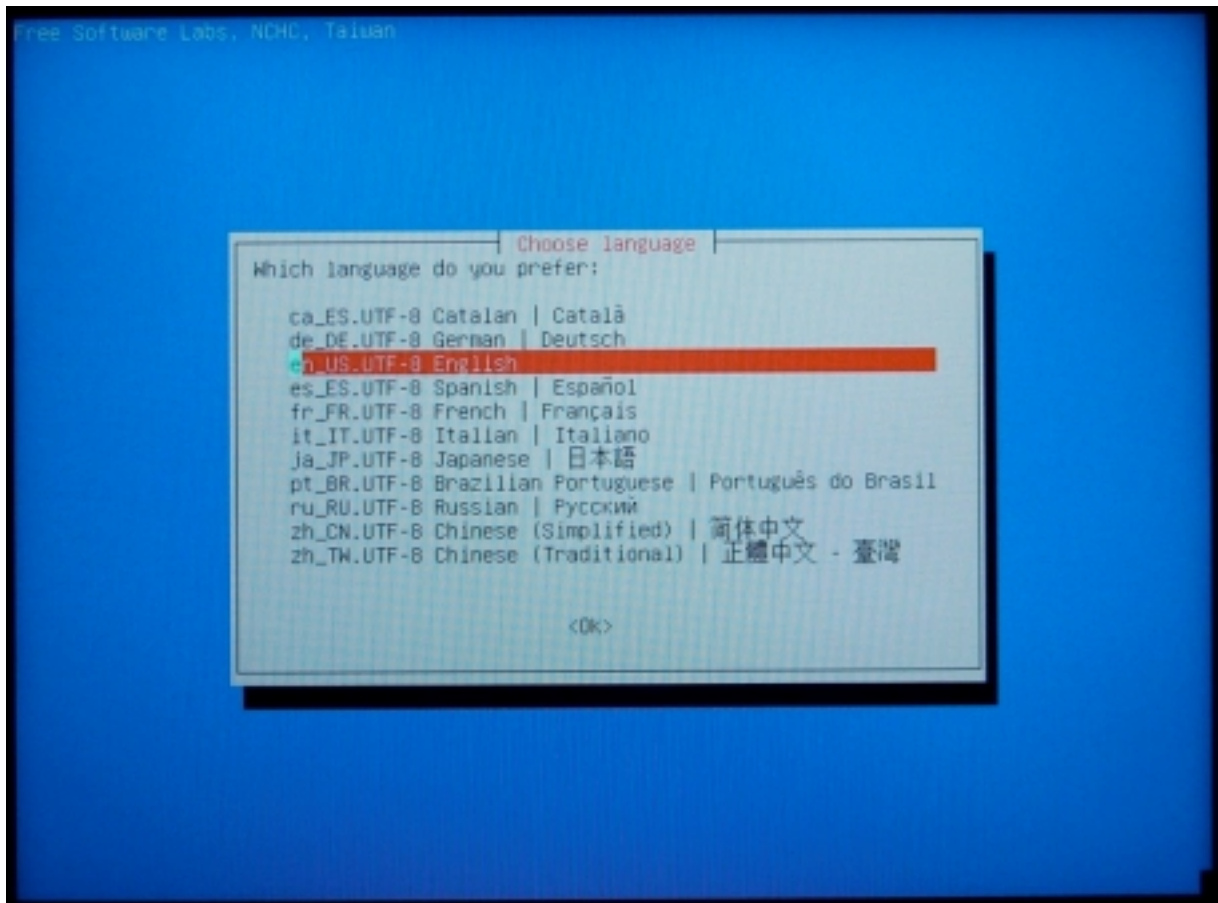


Fig. 4

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In the next step, please choose "Select keymap from arch list" and confirm by pressing ENTER (see Fig. 5).

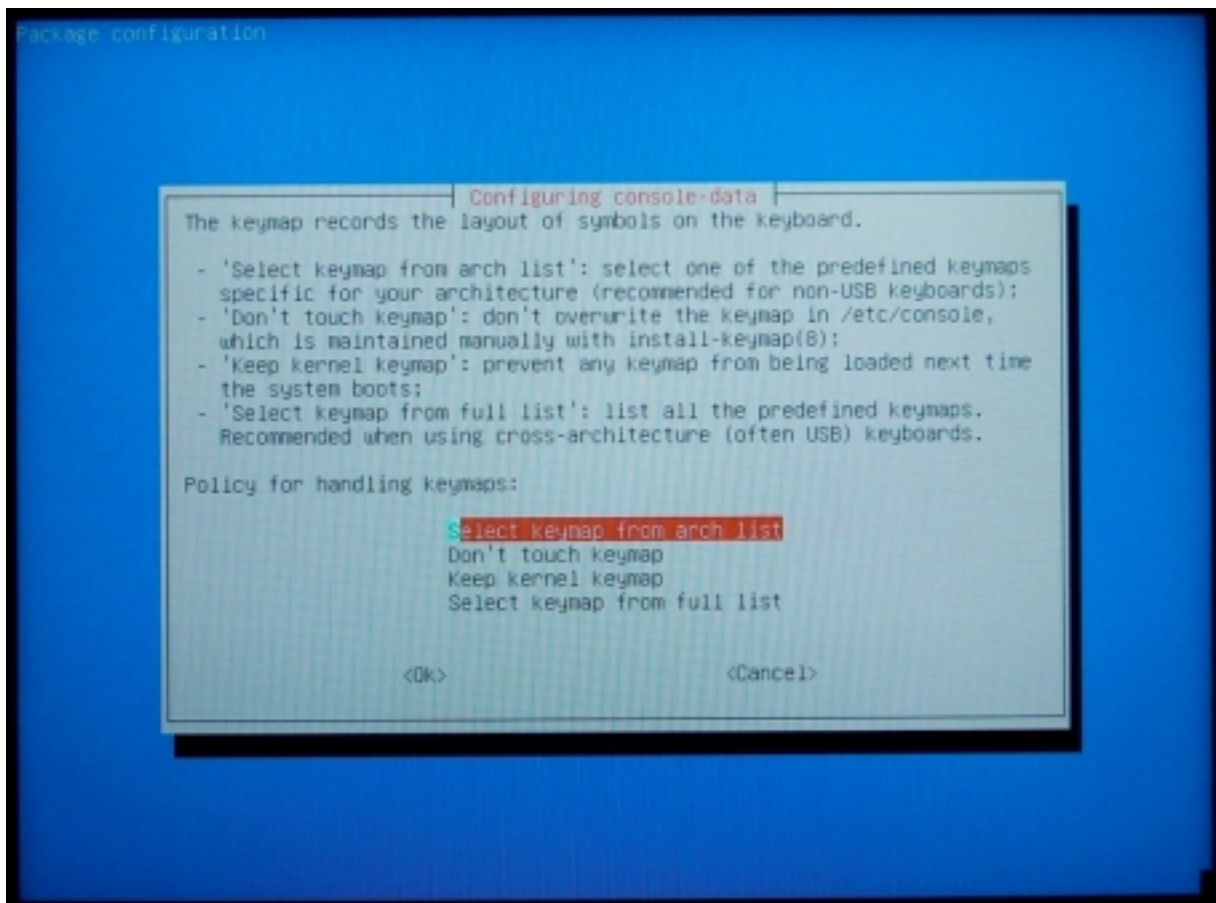


Fig. 5

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Select the generic family name corresponding to your keyboard. If you have an English keyboard, you might need to choose "QWERTY" (see Fig. 6). Check your keyboard configuration as shown in Fig. 5 in order to choose the right name. For the keyboard in this example (Fig. 7), you would need to select "QWERTZ". Continue by pressing ENTER.

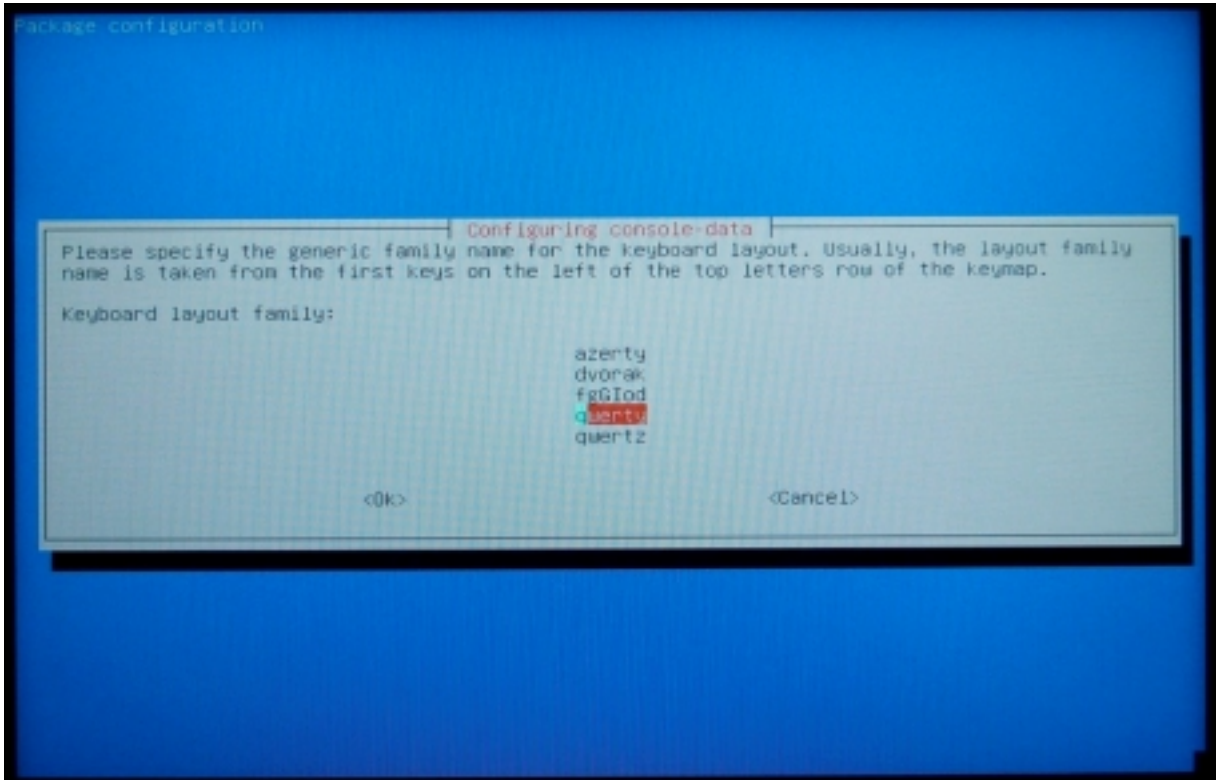


Fig. 6



Fig. 7

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Select "British" as keyboard layout and confirm by pressing ENTER (see Fig. 8).

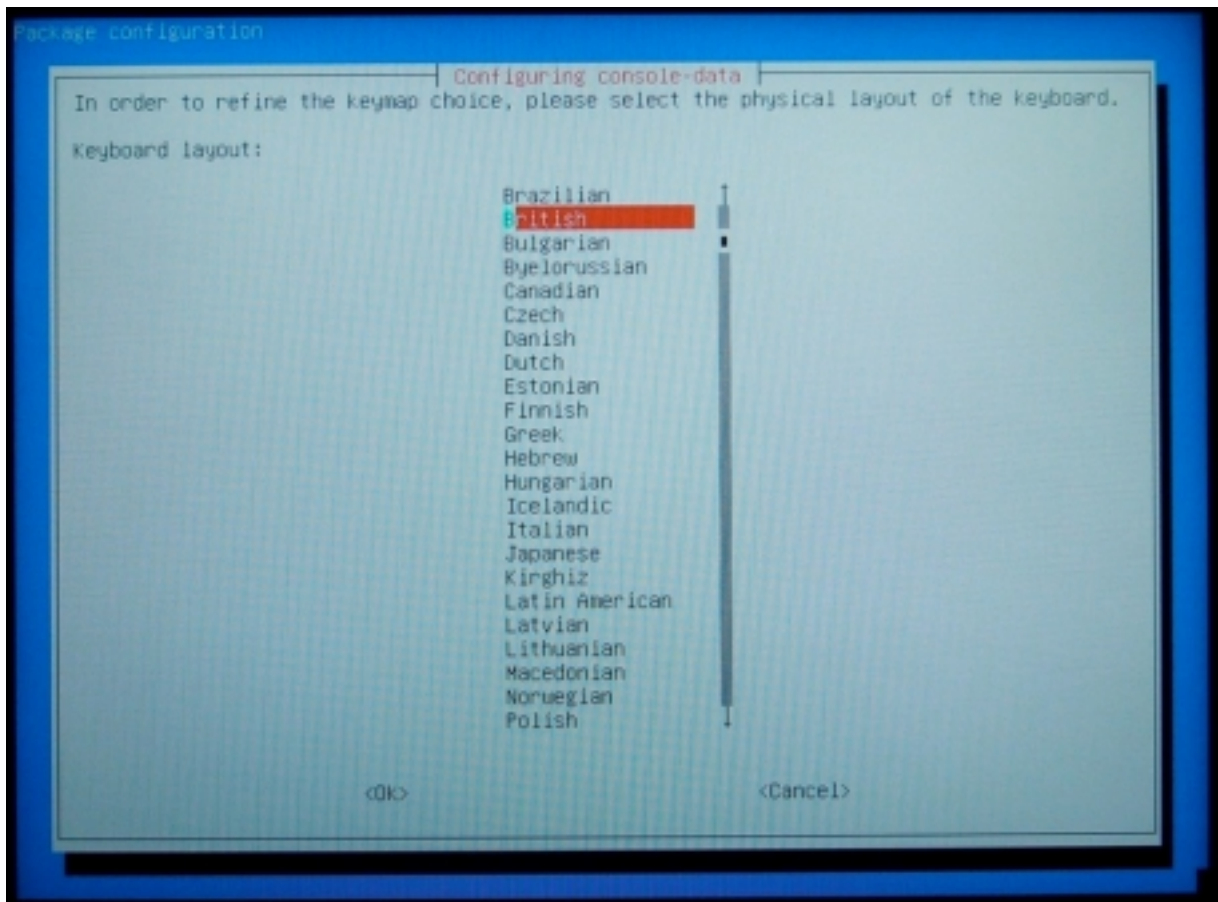


Fig. 8

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Select "Standard" as keyboard variant and confirm by pressing ENTER (see Fig. 9).

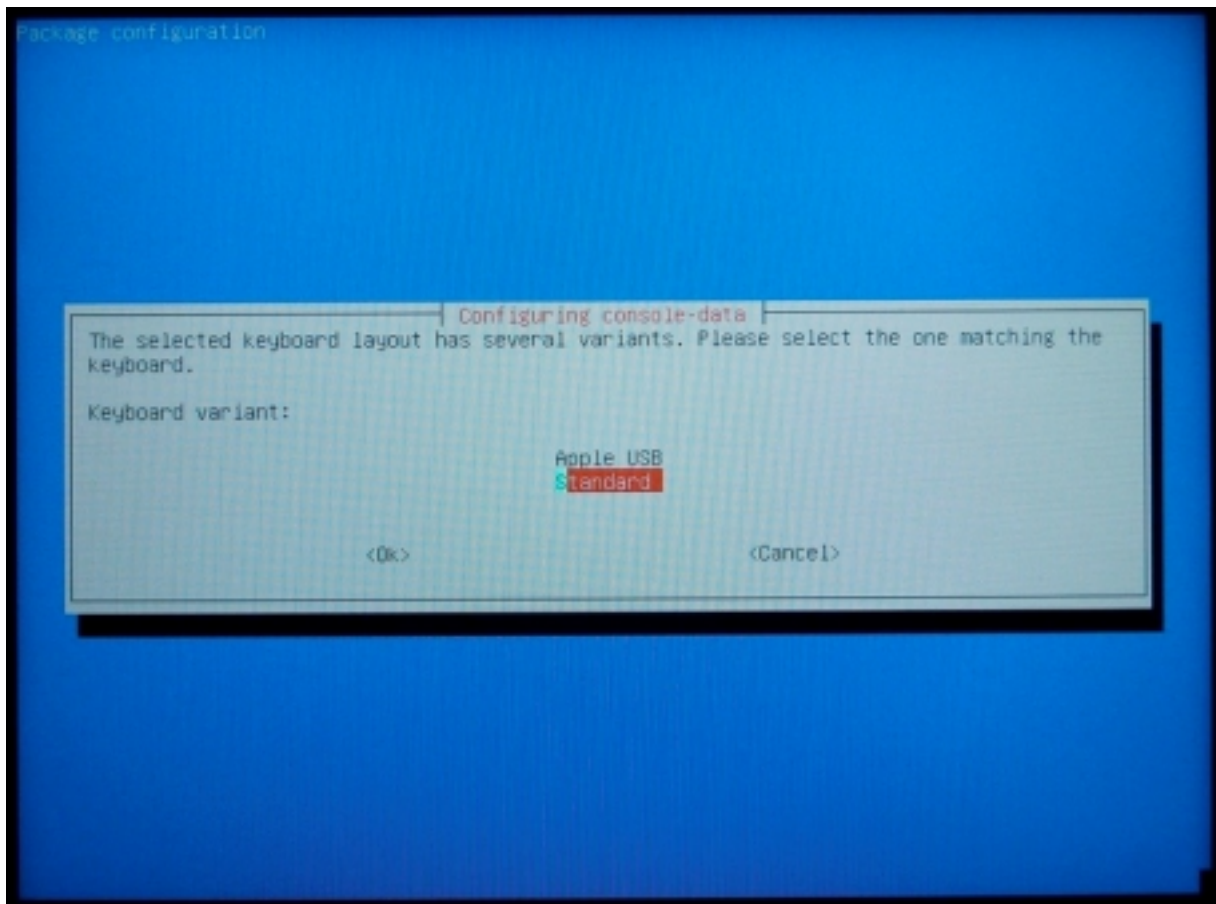


Fig. 9

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Please select "Programmer" as keymap and confirm by pressing ENTER (see Fig. 10).

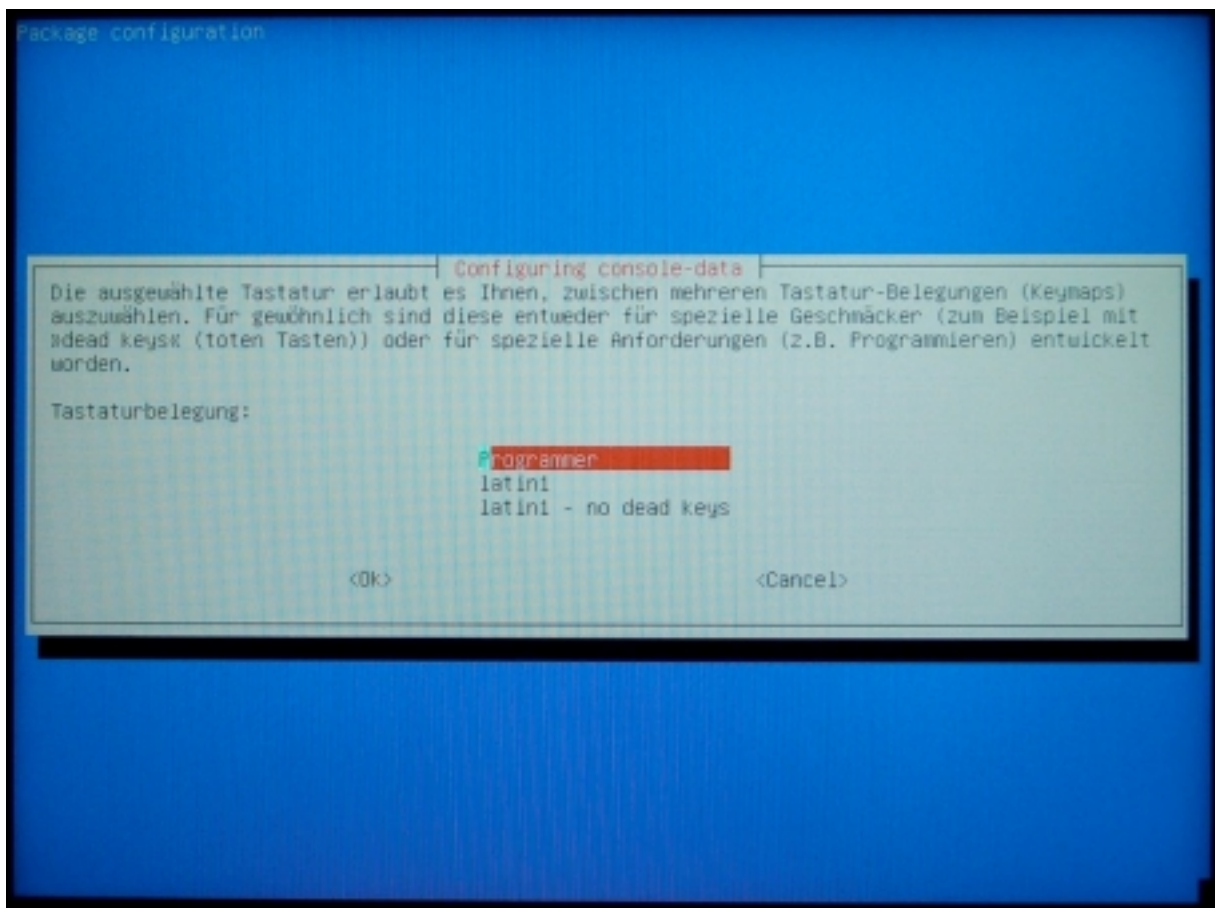


Fig. 10

Select "Start Clonezilla" and confirm by pressing ENTER (see Fig. 11).

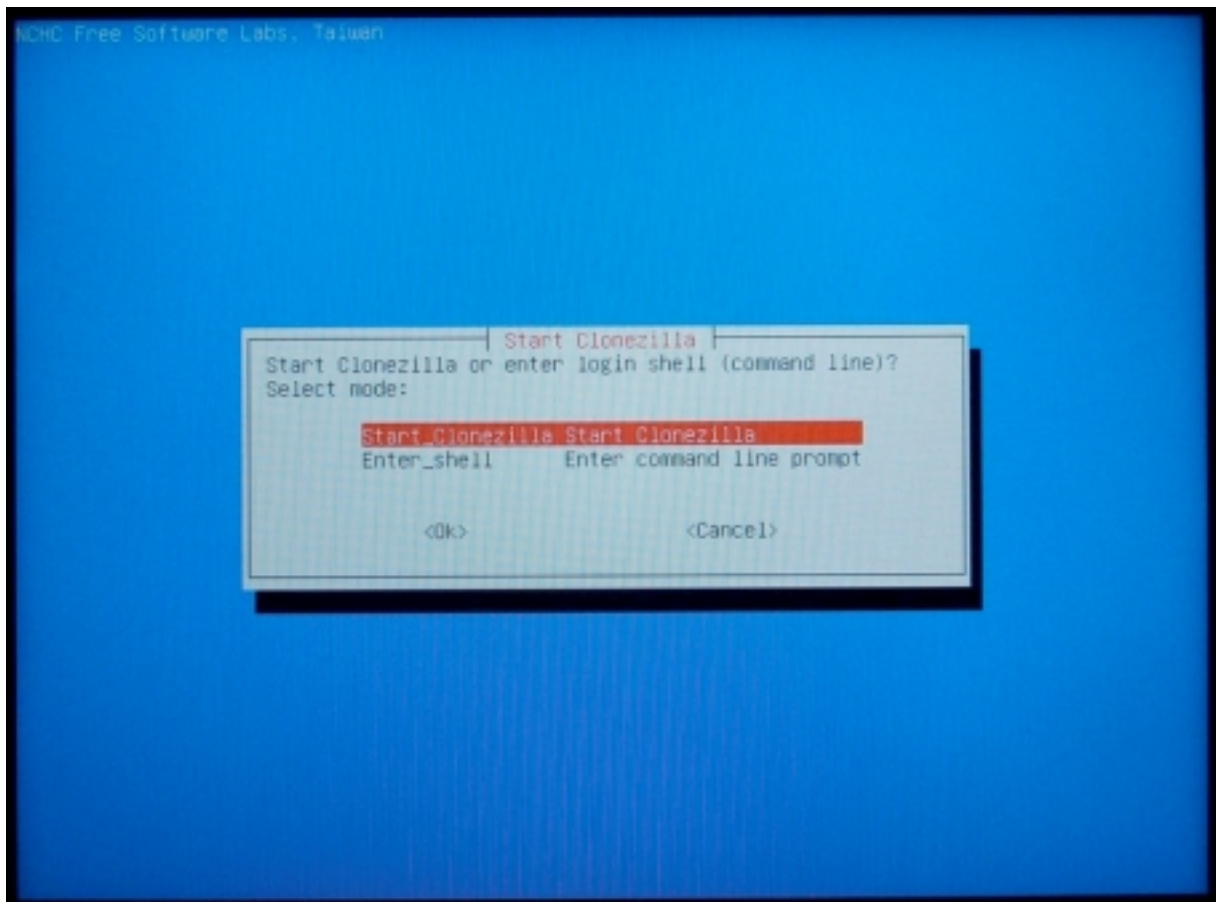


Fig. 11

In the next step select "device-image" and confirm by pressing ENTER (see Fig. 12).

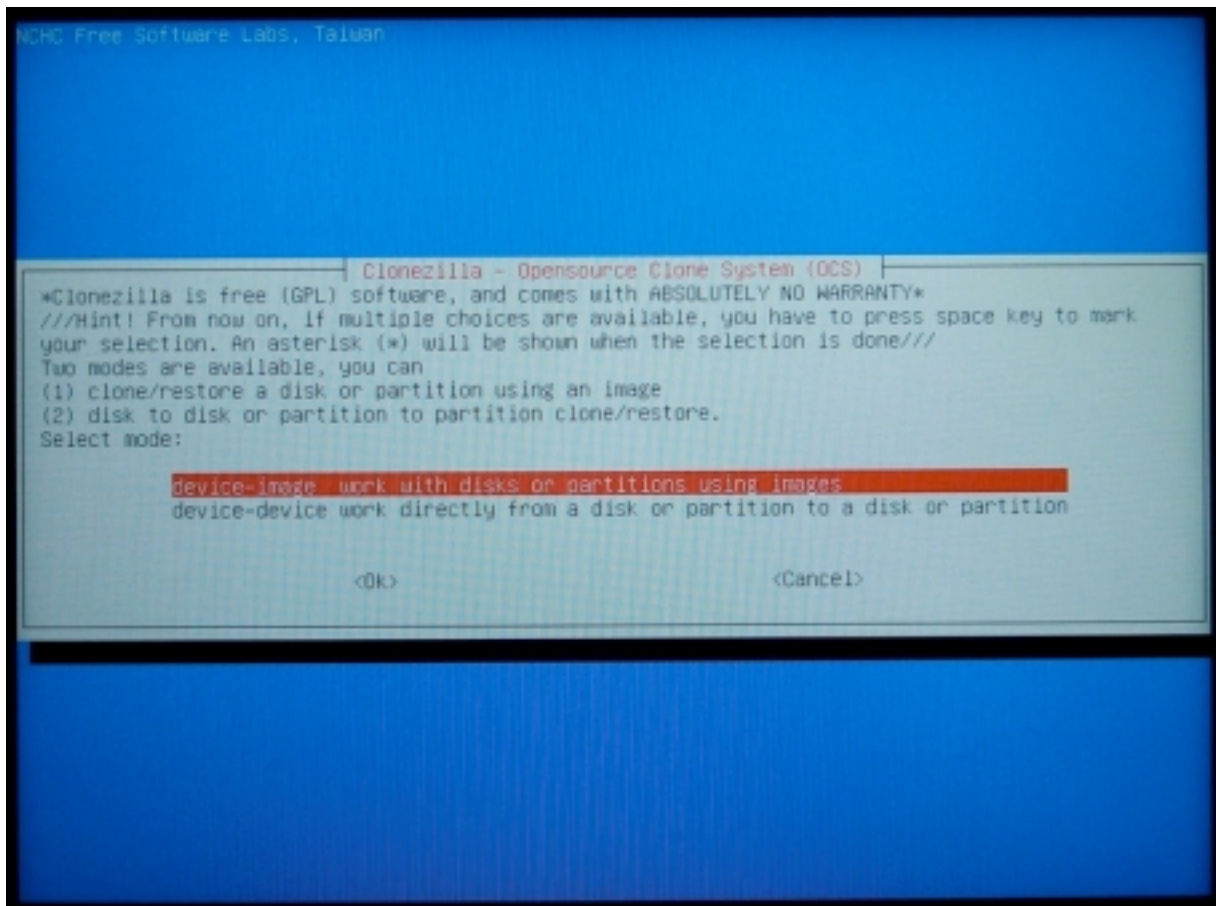


Fig. 12

Select "local_dev Use local device" and confirm by pressing ENTER (see Fig. 13).

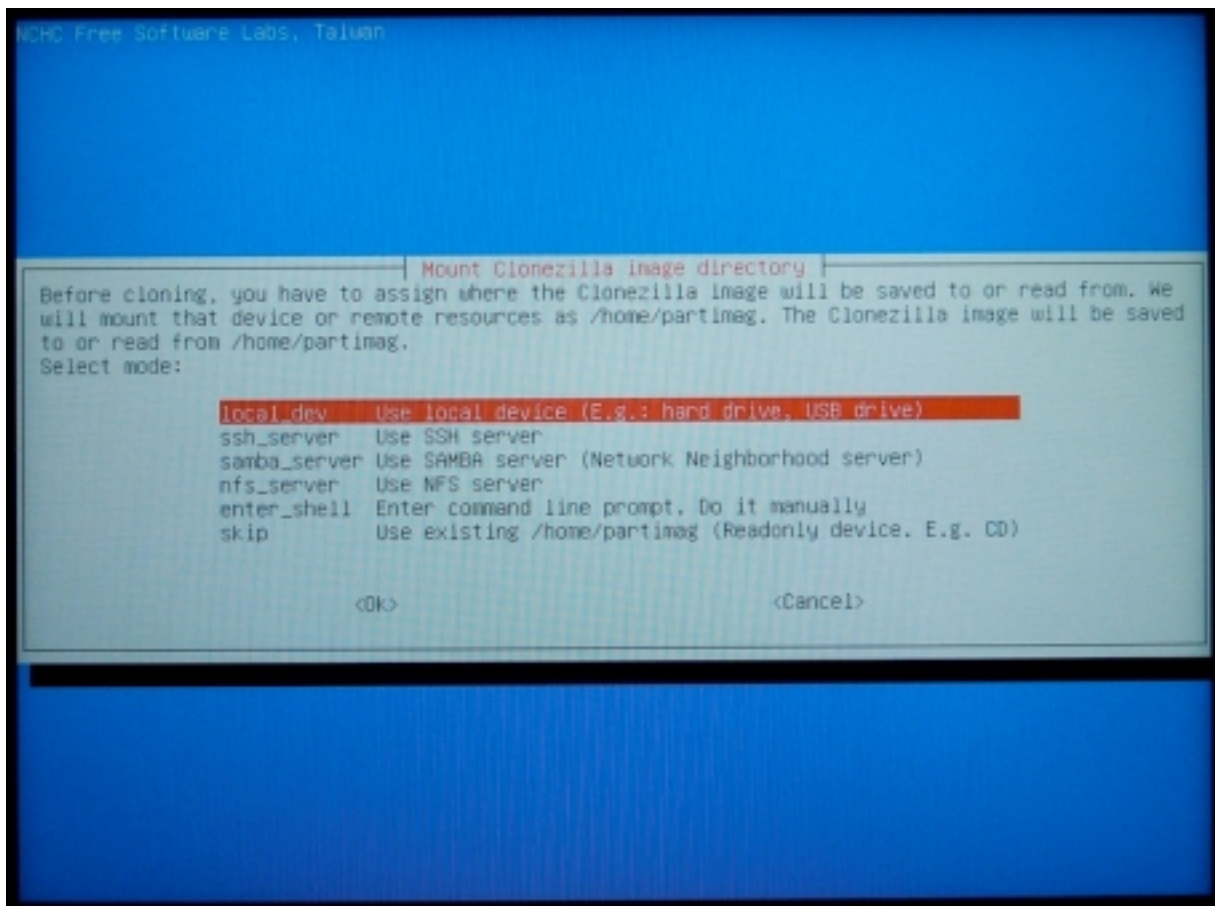


Fig. 13

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Underneath the field for selecting the local device, a process panel is opened (see Fig. 14). Now connect the storage device on which the hard disk image is to be stored (i.e. USB stick or USB hard disk with a storage capacity of at least 32 GB).

NOTE: In some cases, creating a hard disk image will only be successful, if the USB storage device is connected to the measuring unit via a USB hub with its own power supply. We therefore recommend using a corresponding USB hub.

IMPORTANT: After connecting the storage device, please wait for approximately 5 - 10 seconds. Then continue by pressing ENTER!

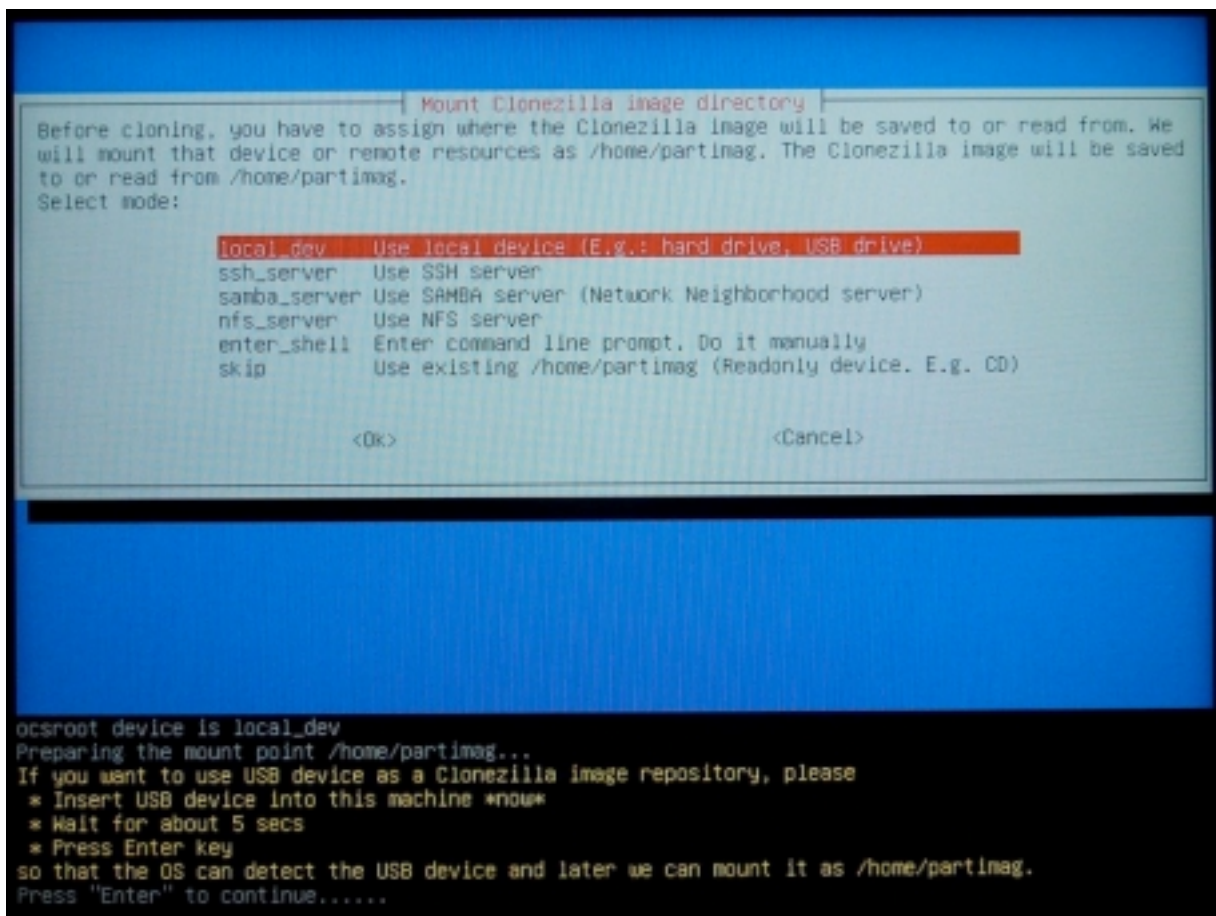


Fig. 14

The process panel at the bottom of the screen is continued (see Fig. 15).

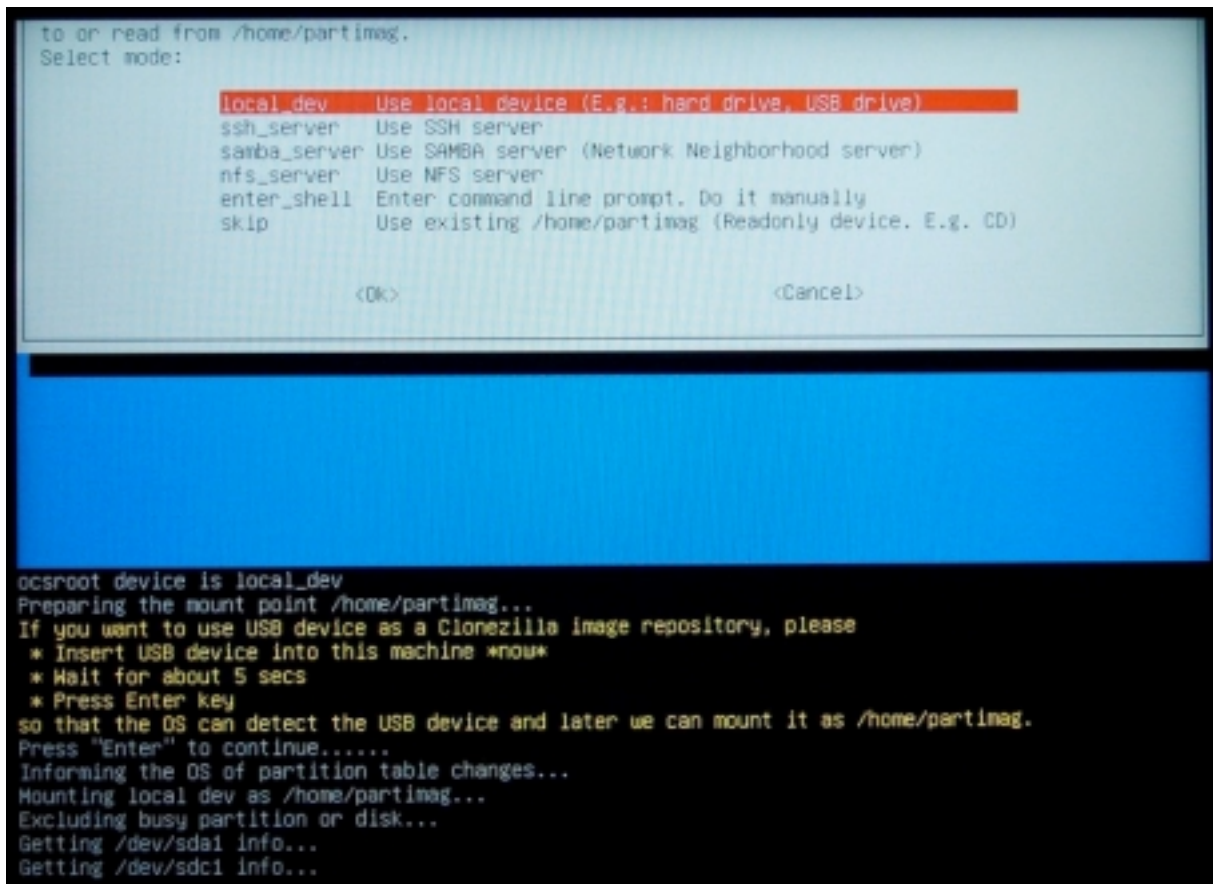


Fig. 15

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A new window opens. Here, you need to select the storage device on which the hard disk copy is to be stored. The local hard disk of the Measuring Computer is pre-selected and marked in red (in this example "sda1 19.5G", see Fig. 16).

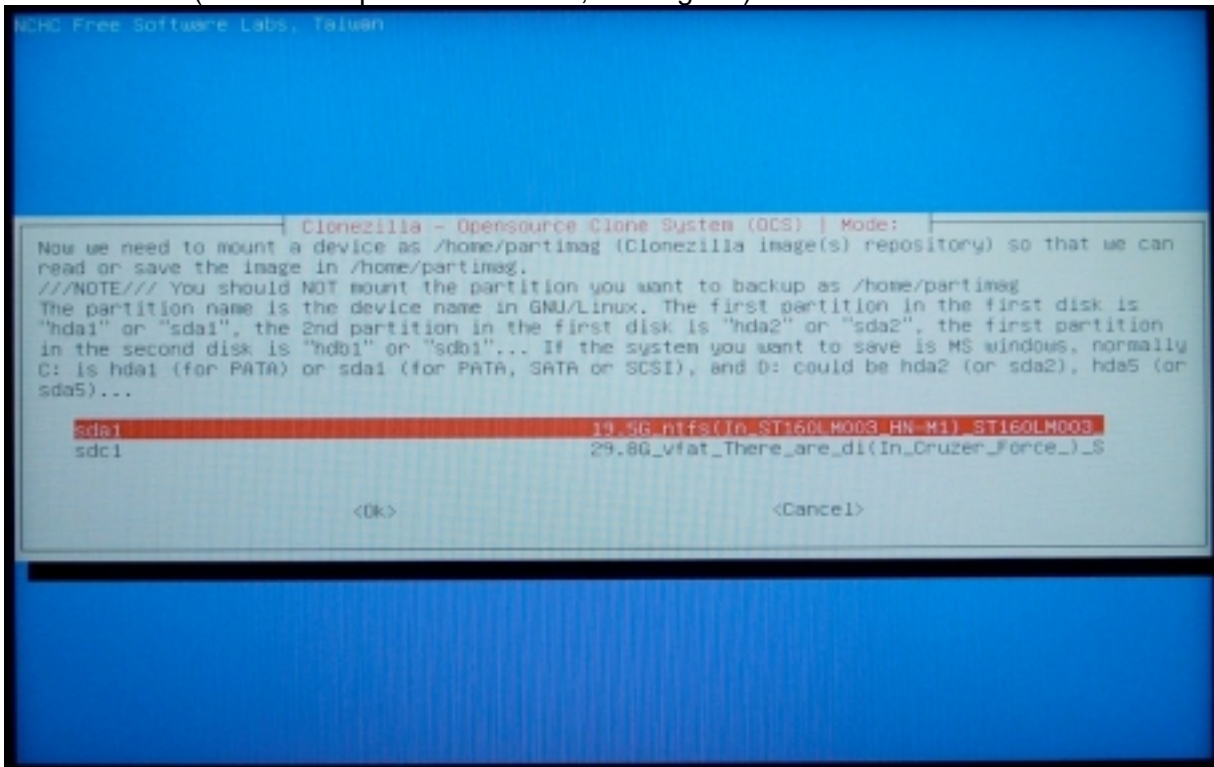


Fig. 16

IMPORTANT: Select the external storage device as target storage device for the hard disk copy (i.e. the USB stick or USB hard disk; in this example "sdc1 465.8G", see Fig. 17).

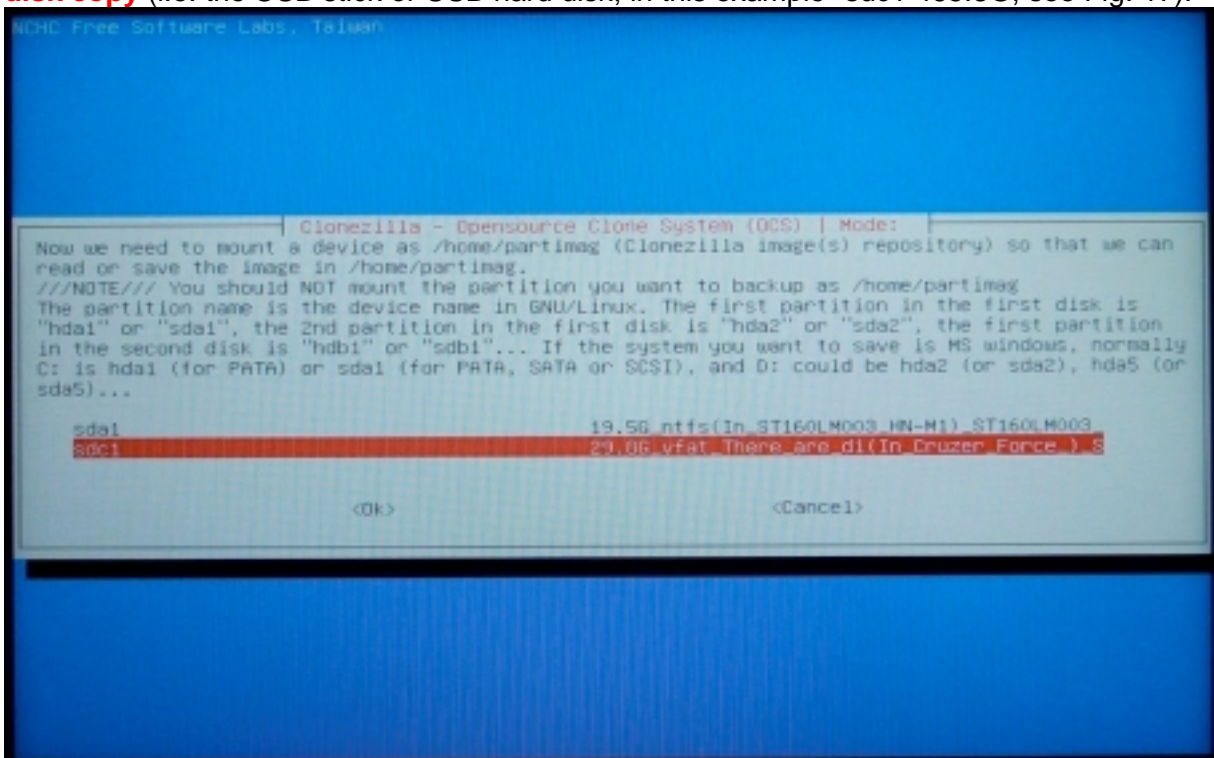


Fig. 17

Confirm by pressing ENTER.

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Select "Top_directory_in_the_local_device" as storage directory for the hard disk copy and confirm by pressing ENTER (see Fig. 18).

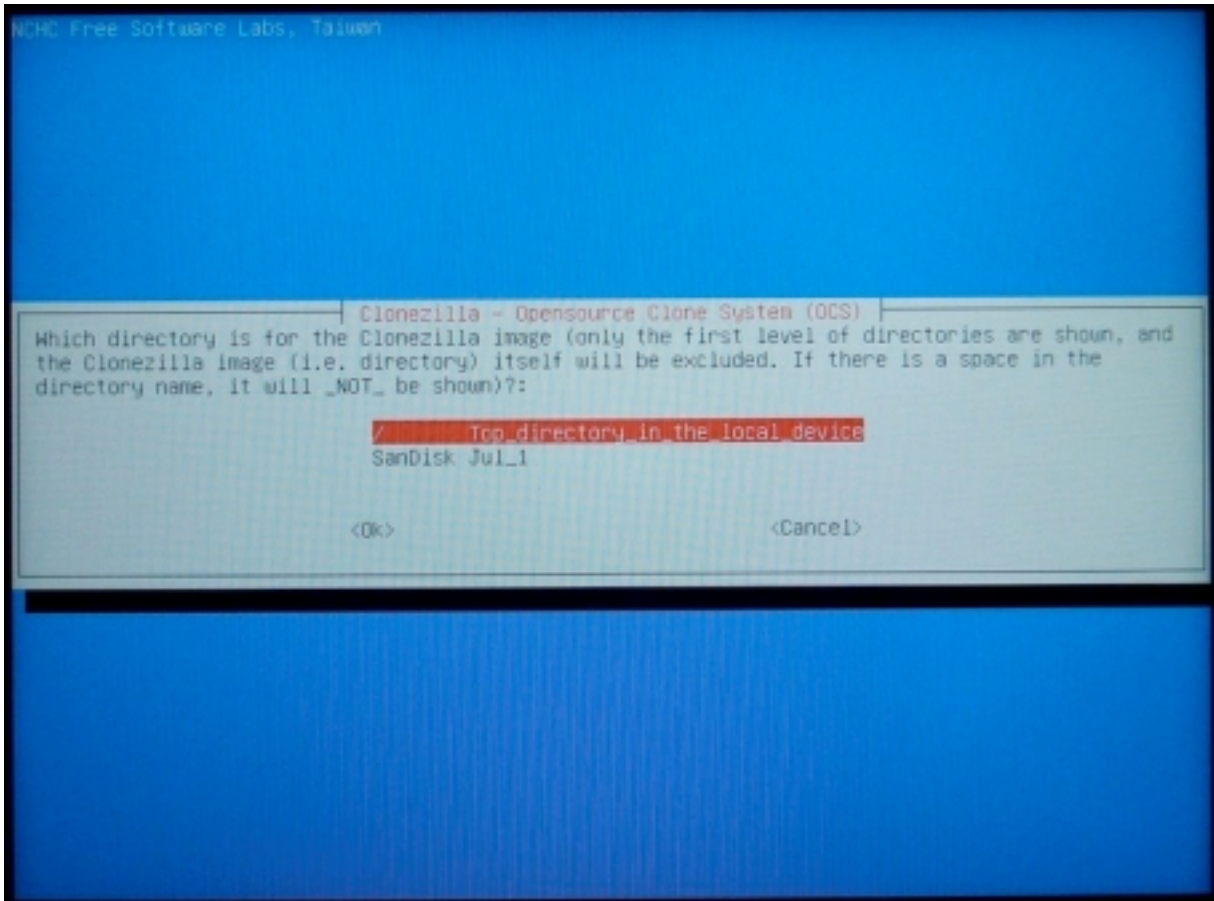
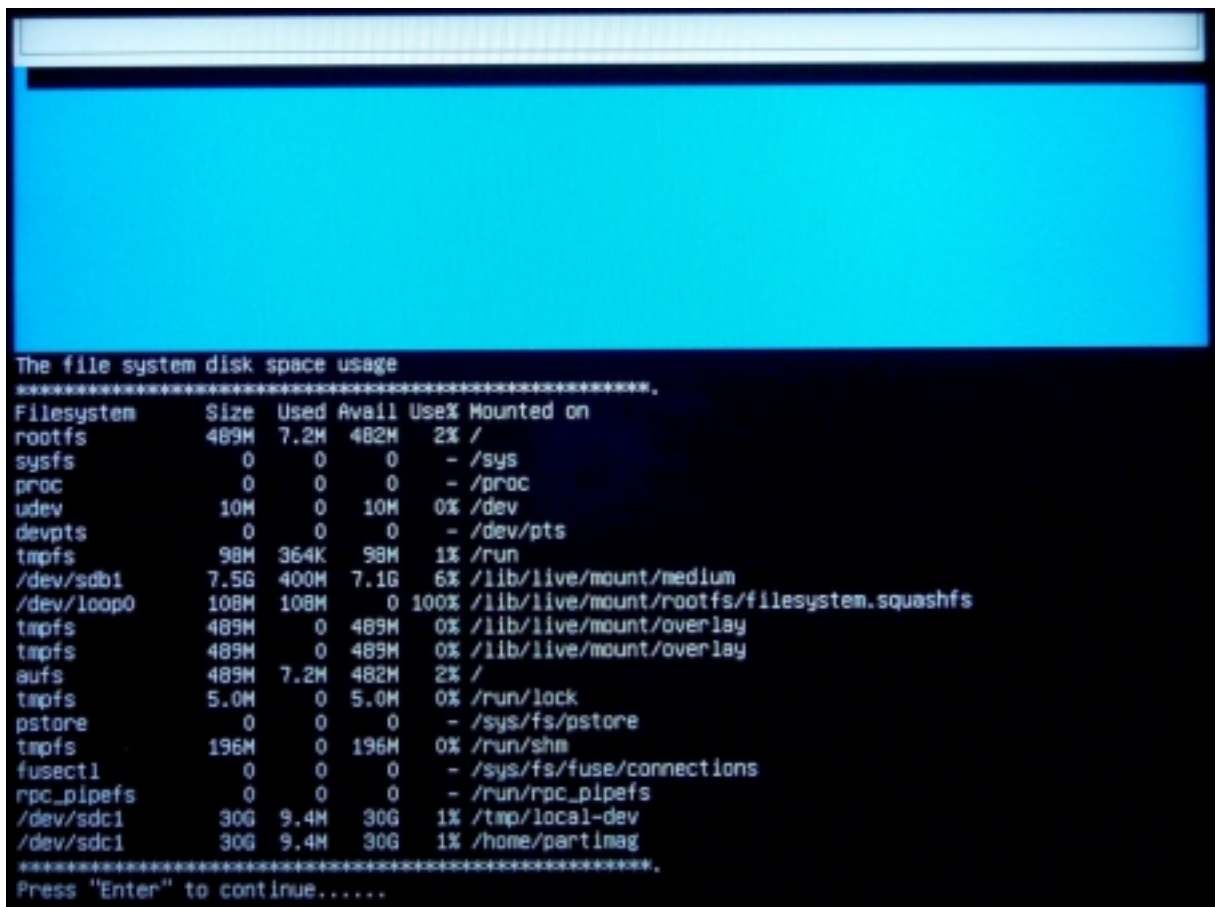


Fig. 18

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A process panel is opened showing the disk space usage (see Fig. 19). Confirm by pressing ENTER.



```
The file system disk space usage
*****
Filesystem      Size  Used Avail Use% Mounted on
rootfs          489M  7.2M  482M   2% /
sysfs           0      0      0    - /sys
proc            0      0      0    - /proc
udev            10M     0    10M   0% /dev
devpts          0      0      0    - /dev/pts
tmpfs           98M   364K   98M   1% /run
/dev/sdb1       7.5G  400M   7.1G   6% /lib/live/mount/medium
/dev/loop0     108M  108M     0 100% /lib/live/mount/rootfs/filesystem.squashfs
tmpfs           489M     0   489M   0% /lib/live/mount/overlay
tmpfs           489M     0   489M   0% /lib/live/mount/overlay
aufs           489M  7.2M  482M   2% /
tmpfs           5.0M     0   5.0M   0% /run/lock
pstore          0      0      0    - /sys/fs/pstore
tmpfs          196M     0   196M   0% /run/shm
fusectl         0      0      0    - /sys/fs/fuse/connections
rpc_pipefs     0      0      0    - /run/rpc_pipefs
/dev/sdc1       30G   9.4M   30G   1% /tmp/local-dev
/dev/sdc1       30G   9.4M   30G   1% /home/partimag
*****
Press "Enter" to continue.....
```

Fig. 19

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Then select "Beginner Beginner mode: Accept the default options" and confirm by pressing ENTER (see Fig. 20).

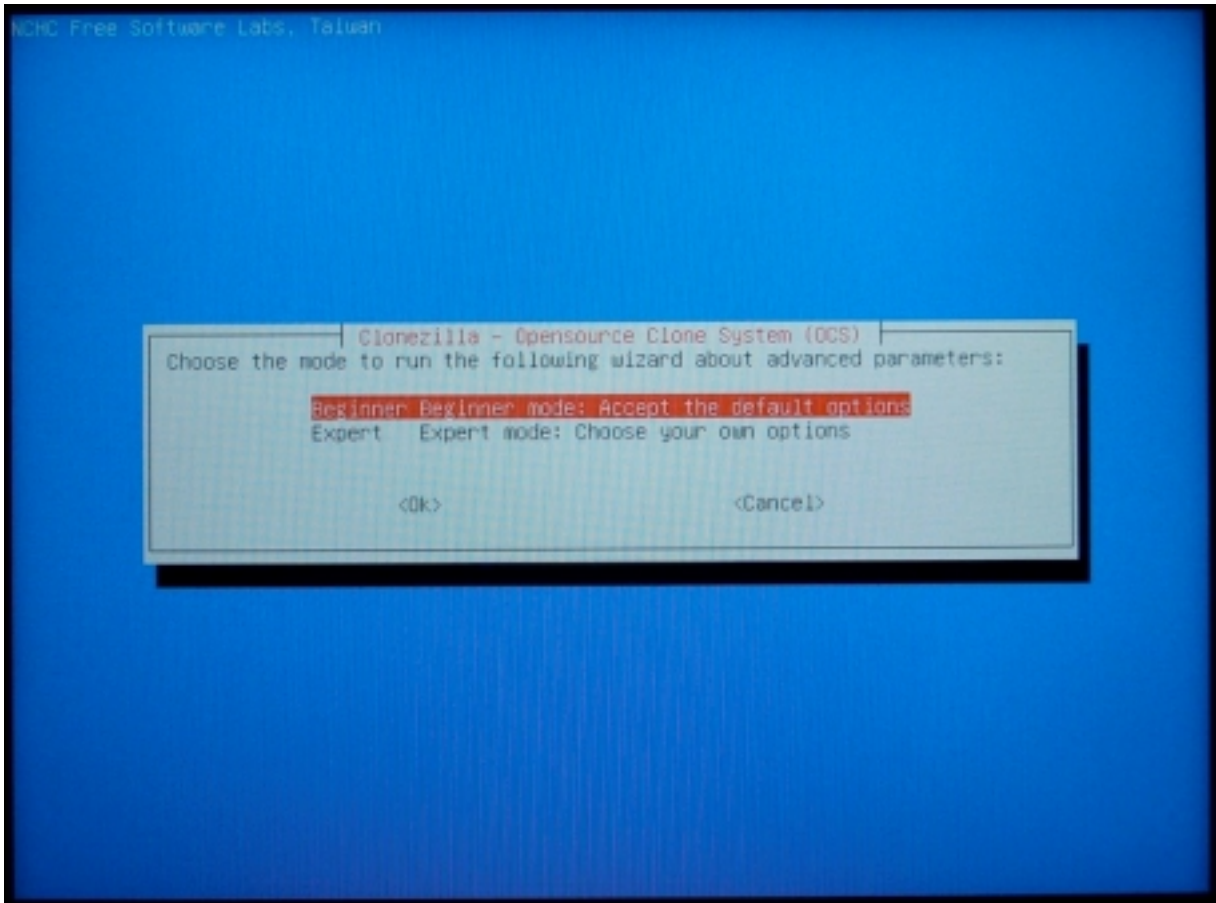


Fig. 20

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Choose the option "savedisk Save_local_disk_as_an_image" and confirm by pressing ENTER (see Fig. 21).

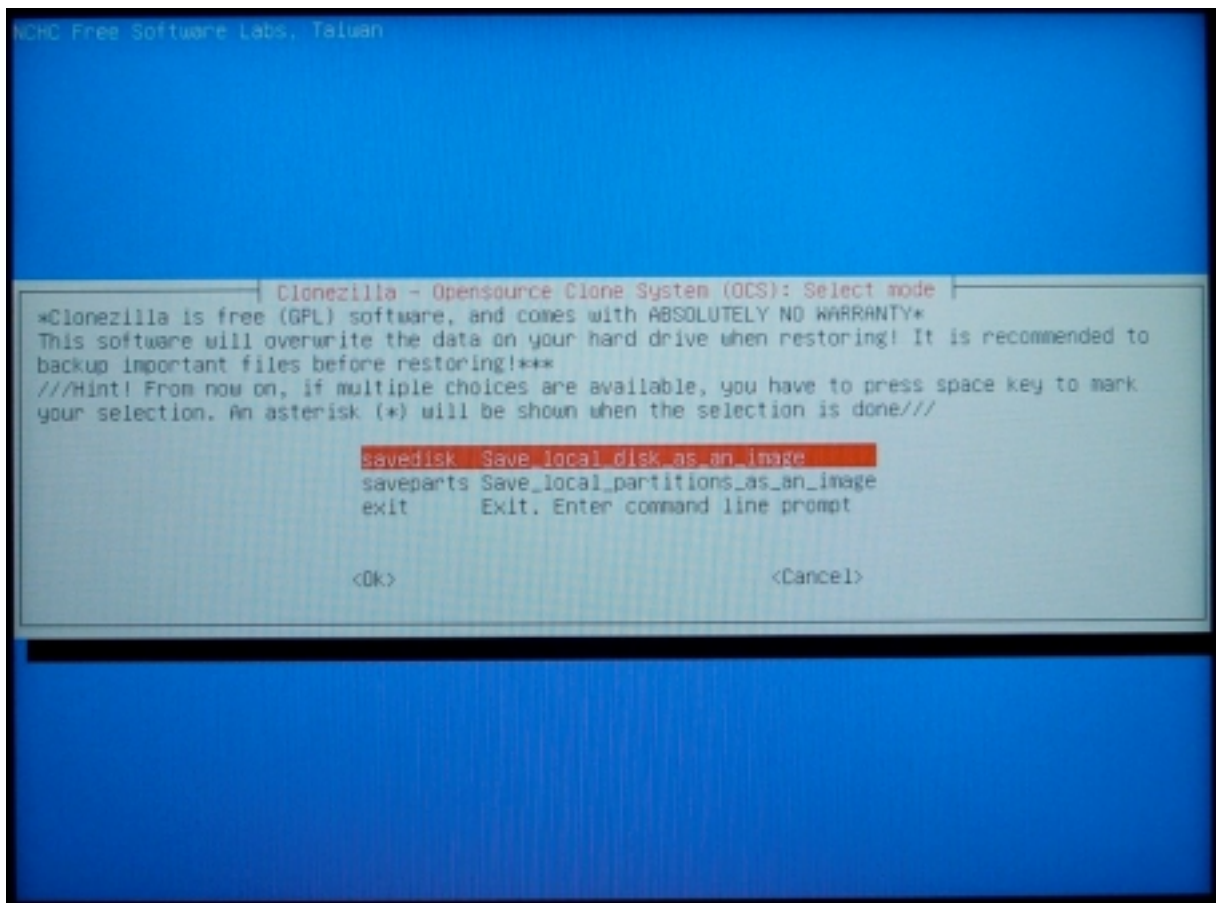


Fig. 21

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Choose a name for the hard disk image which is to be stored on the external storage device or keep the suggested name by pressing ENTER (see Fig. 22).

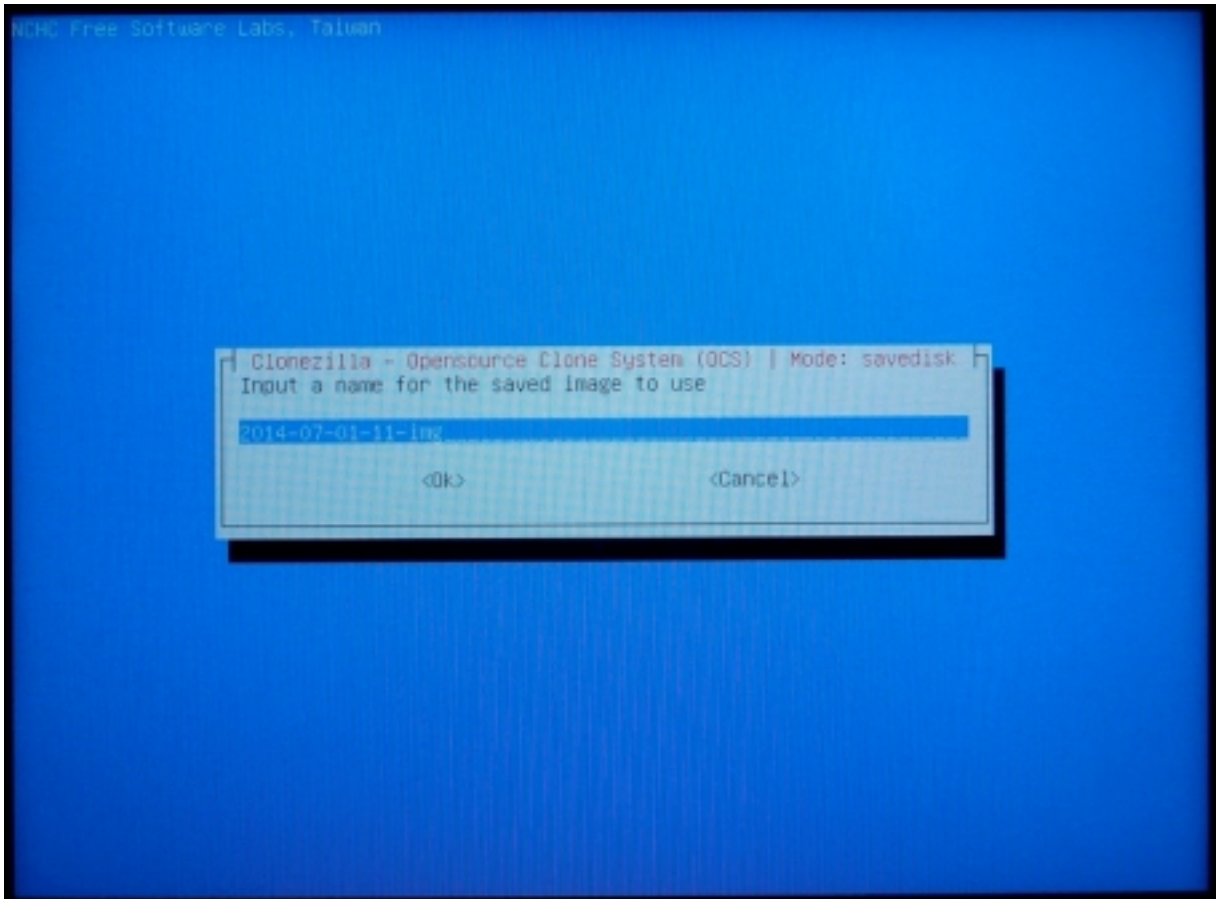


Fig. 22

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Choose the local original hard disk as source (i.e. the hard disk of the Measuring Computer of which you want to create a copy; in this example "sda 160GB") and confirm by pressing ENTER (see Fig. 23).

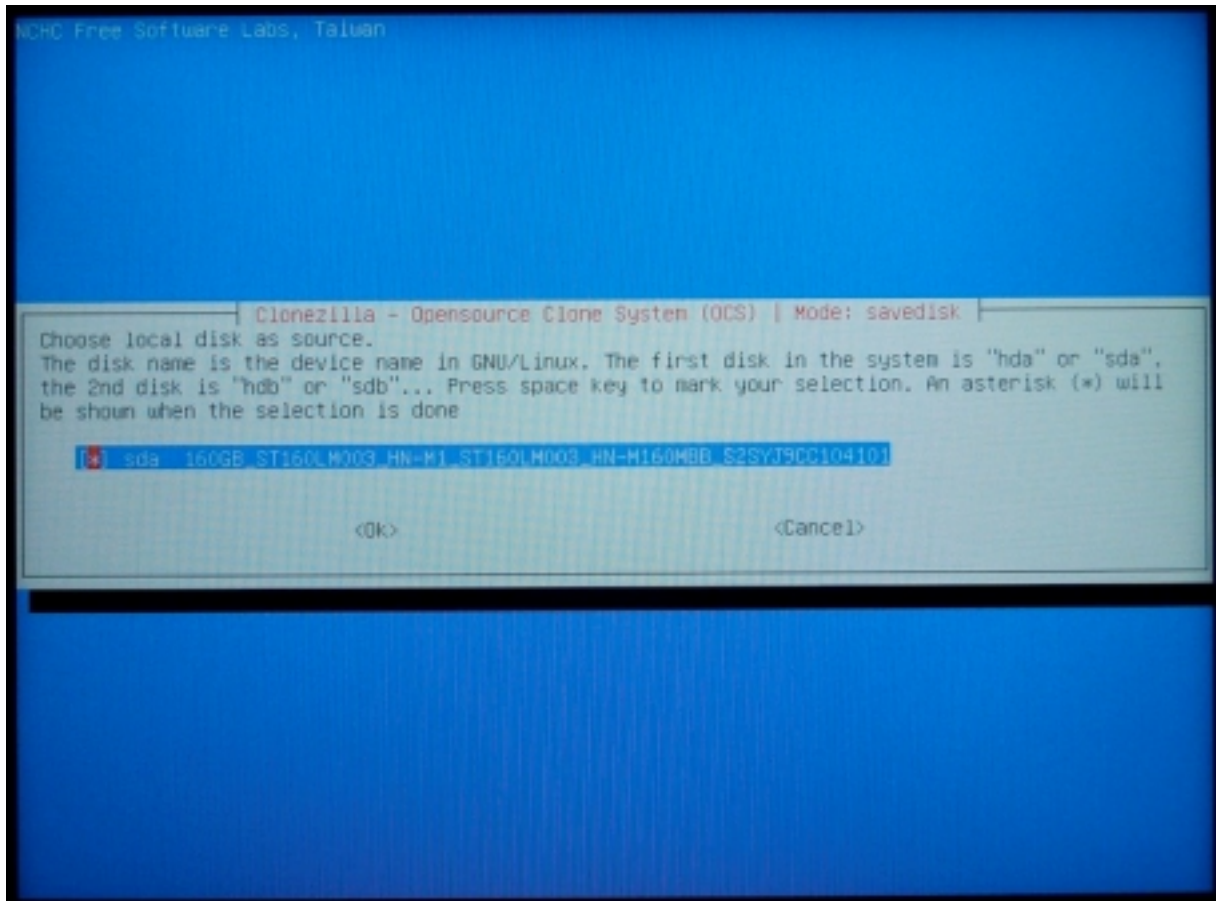


Fig. 23

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In the next step select "Skip checking/repairing source file system" and confirm by pressing ENTER (see Fig. 24).

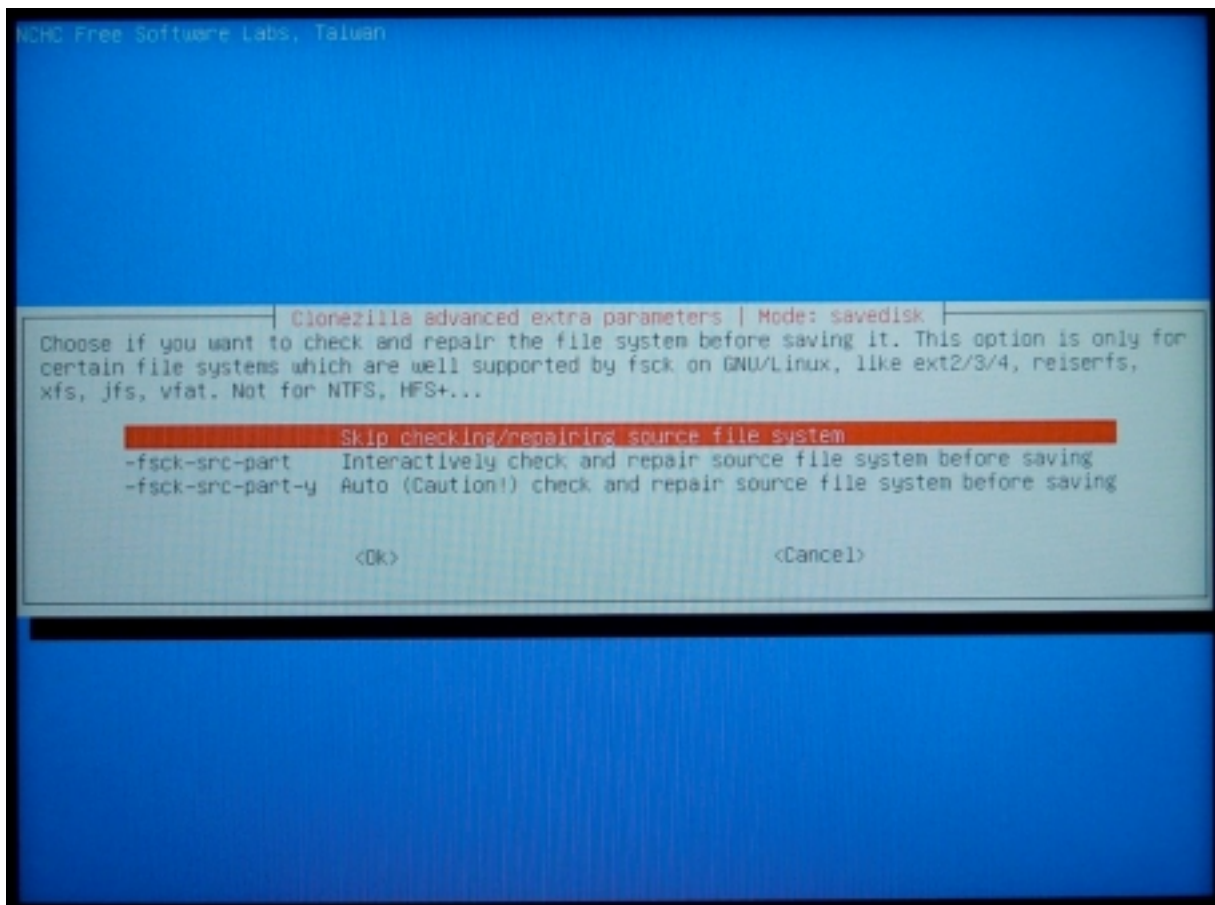


Fig. 24

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Then select "-sc No, skip checking the saved image" and confirm by pressing ENTER (see Fig. 25).

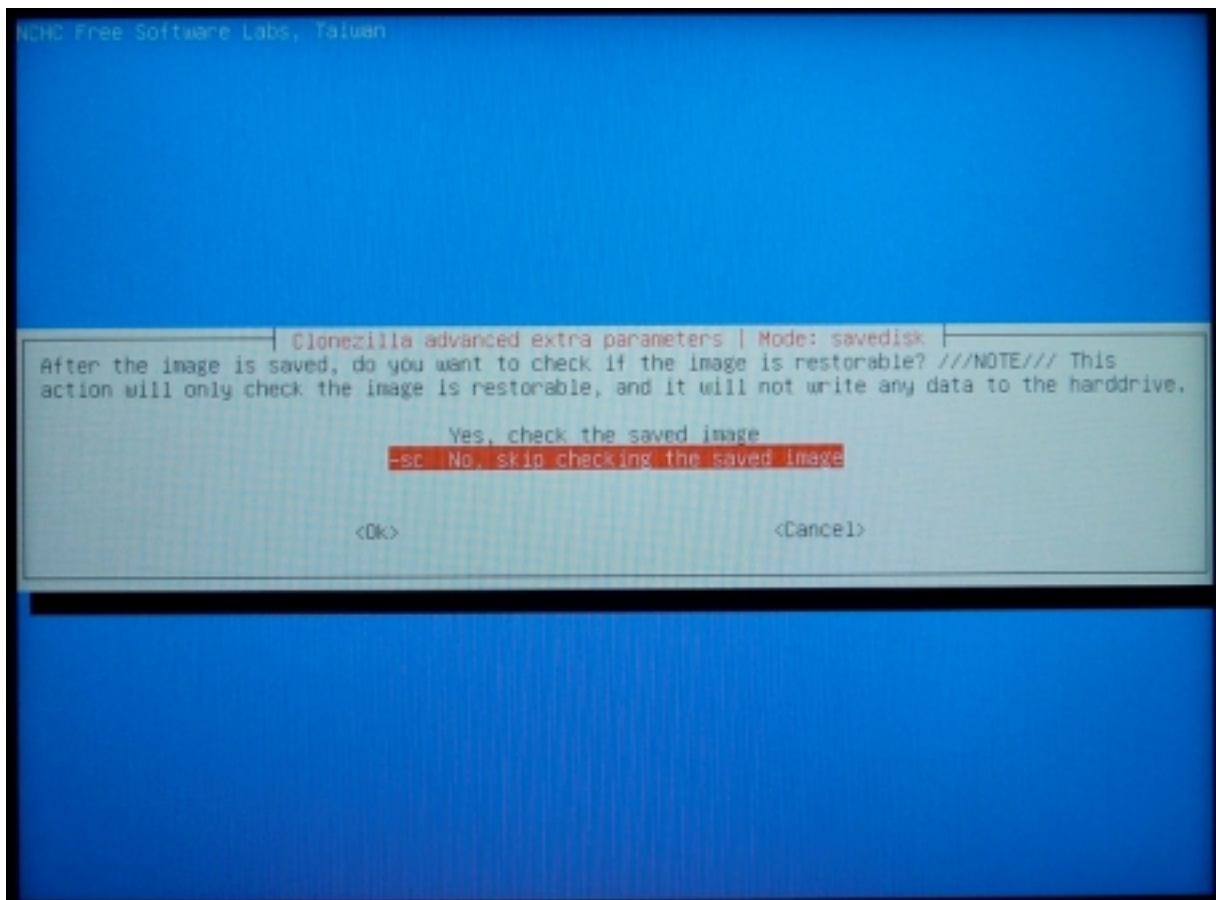


Fig. 25

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A process panel is opened at the bottom of the display (see Fig. 26). Continue by pressing ENTER.

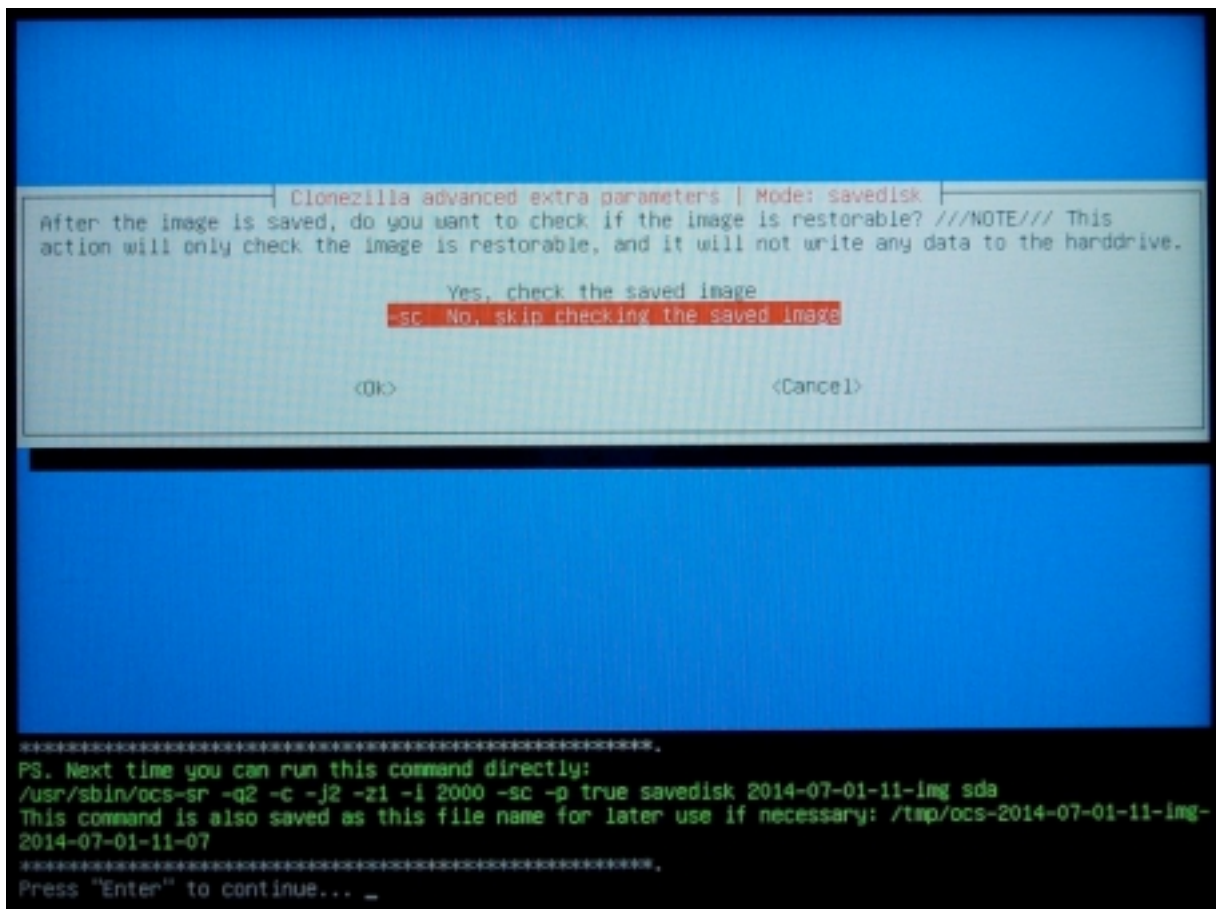
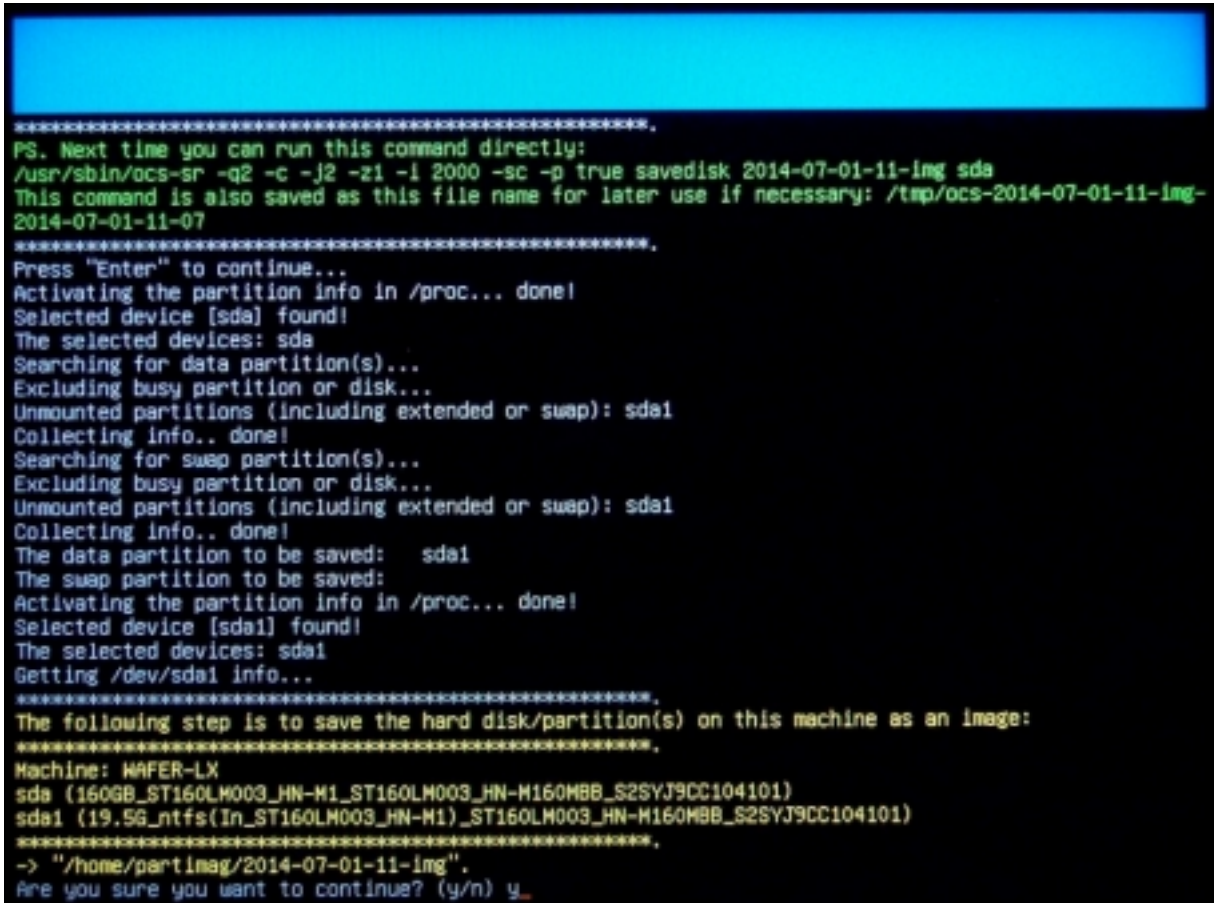


Fig. 26

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The process panel is continued. After a few seconds, a yellow notification appears: "The following step is to save the hard disk/partition(s) on this machine as an image." The original hard disk of the Measuring Computer is indicated followed by the question "Are you sure you want to continue? (y/n)". Make sure that it is really the local hard disk which is indicated. Then type "y" and confirm by pressing ENTER (see Fig. 27).



```
.....
PS. Next time you can run this command directly:
/usr/sbin/ocs-sr -q2 -c -J2 -z1 -l 2000 -sc -p true savedisk 2014-07-01-11-img sda
This command is also saved as this file name for later use if necessary: /tmp/ocs-2014-07-01-11-img-2014-07-01-11-07
.....
Press "Enter" to continue...
Activating the partition info in /proc... done!
Selected device [sda] found!
The selected devices: sda
Searching for data partition(s)...
Excluding busy partition or disk...
Unmounted partitions (including extended or swap): sda1
Collecting info.. done!
Searching for swap partition(s)...
Excluding busy partition or disk...
Unmounted partitions (including extended or swap): sda1
Collecting info.. done!
The data partition to be saved: sda1
The swap partition to be saved:
Activating the partition info in /proc... done!
Selected device [sda1] found!
The selected devices: sda1
Getting /dev/sda1 info...
.....
The following step is to save the hard disk/partition(s) on this machine as an image:
.....
Machine: HAFER-LX
sda (160GB_ST160LM003_HN-M1_ST160LM003_HN-M160MBB_S2SYJ9CC104101)
sda1 (19.5G_ntfs(In_ST160LM003_HN-M1)_ST160LM003_HN-M160MBB_S2SYJ9CC104101)
.....
-> "/home/partimag/2014-07-01-11-img".
Are you sure you want to continue? (y/n) y_
```

Fig. 27

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Once the copying process has been finished, a process panel starting with the notification "Cloned successfully" appears. It ends with "Press "Enter" to continue..." (see Fig. 30). Press ENTER.

```
Cloned successfully.
Checking the disk space...
>>> Time elapsed: 860.81 secs (~ 14.346 mins)
*****
Finished saving /dev/sda1 as /home/partimag/2014-07-01-11-img/sda1.ntfs-ptcl-img.gz
*****
Saving hardware info by lshw...
Saving DMI info...
Saving PCI info...
Saving package info...
End of saveparts job for image /home/partimag/2014-07-01-11-img.
*****
This image was saved successfully: 2014-07-01-11-img
End of savedisk job for image 2014-07-01-11-img.
*****
Checking if udevd rules have to be restored...
This program is not started by Clonezilla server, so skip notifying it the job is done.
Finished!
Now syncing - flush filesystem buffers...

Ending /usr/sbin/ocs-sr at 2014-07-01 11:24:11 UTC...
*****
If you want to use Clonezilla again:
(1) Stay in this console (console 1), enter command line prompt
(2) Run command "exit" or "logout"
*****
When everything is done, remember to use 'poweroff', 'reboot' or follow the menu to do a normal poweroff/reboot procedure. Otherwise if the boot media you are using is a writable device (such as USB flash drive), and it's mounted, poweroff/reboot in abnormal procedure might make it FAIL to boot next time!
*****
Press "Enter" to continue..._
```

Fig. 30

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In the next step, select "poweroff Poweroff" and confirm by pressing ENTER (see Fig. 31).

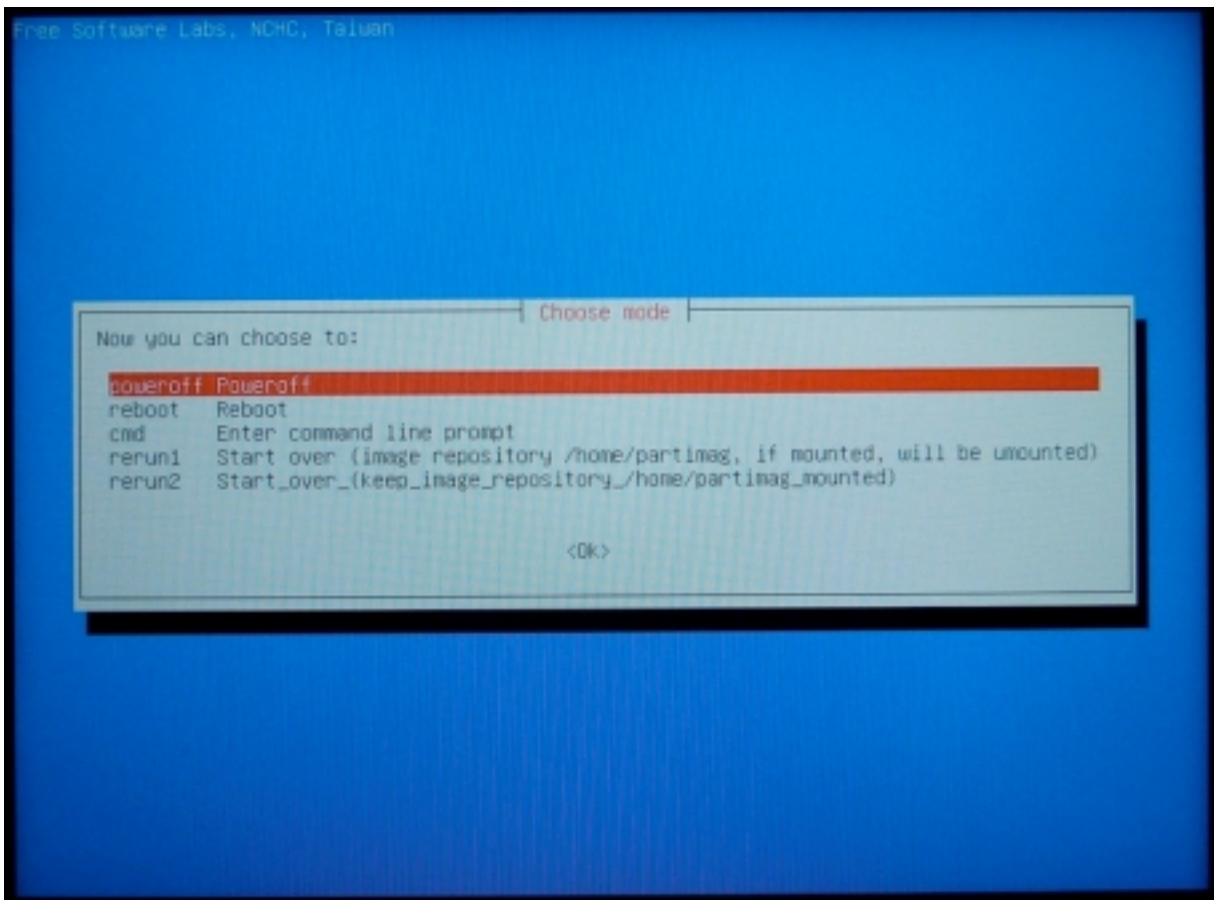
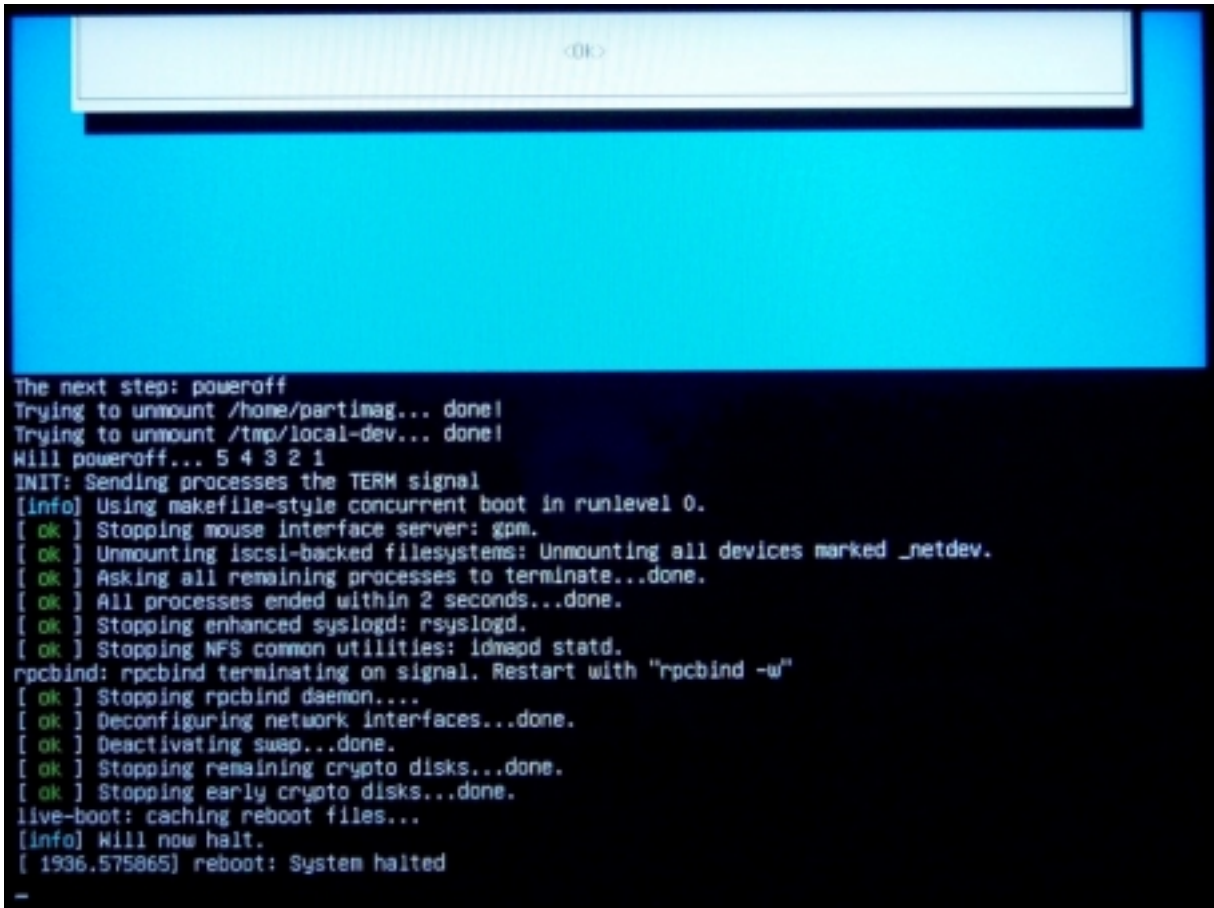


Fig. 31

Another process panel is opened. It ends with "reboot: System halted" (see Fig. 32). The copying process is terminated. You may now switch off the Measuring Computer.



```

The next step: poweroff
Trying to unmount /hone/partimg... done!
Trying to unmount /tmp/local-dev... done!
Will poweroff... 5 4 3 2 1
INIT: Sending processes the TERM signal
[info] Using makefile-style concurrent boot in runlevel 0.
[ ok ] Stopping mouse interface server: gpm.
[ ok ] Unmounting iscsi-backed filesystems: Unmounting all devices marked _netdev.
[ ok ] Asking all remaining processes to terminate...done.
[ ok ] All processes ended within 2 seconds...done.
[ ok ] Stopping enhanced syslogd: rsyslogd.
[ ok ] Stopping NFS common utilities: idmapd statd.
rpcbind: rpcbind terminating on signal. Restart with "rpcbind -w"
[ ok ] Stopping rpcbind daemon...
[ ok ] Deconfiguring network interfaces...done.
[ ok ] Deactivating swap...done.
[ ok ] Stopping remaining crypto disks...done.
[ ok ] Stopping early crypto disks...done.
live-boot: caching reboot files...
[info] Will now halt.
[ 1936.575865] reboot: System halted
_
```

Fig. 32

5. Change SETUP settings

Connect a keyboard to the measuring unit. After switching on the unit, repeatedly press the DEL key (approximately once every second) to enter into the SETUP mode of the measuring unit.

Change the boot order in the SETUP mode of the Measuring Computer. Depending on the configuration of the Measuring Computer, please set "First Boot Device" to "HDD-0" or "Boot Priority Order" 1. to "ATA HDD0" and 2. to "USB HDD".

6. Insert interface module

Insert the interface module 5326 into the Measuring Computer.

IMPORTANT: This may only be done when the Measuring Computer is switched off!

Connect the cable to the multi-pin connector on the module (see red marks in Fig. 33).

IMPORTANT: The red mark on the connector of the cable must be on the red pin of the multi-pin connector!



Fig. 33

Attach the module 5326 to the Measuring Computer with the two screws at the front (see red marks in Fig. 34).



Fig. 34

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