Manual for restoring hard disk contents

This manual is valid for A&V Measuring Computers. It explains how to restore hard disk contents or a faulty operating system on an A&V Measuring Computer. The restoring process is described using the program "Clonezilla" as an example.

"Clonezilla" ist open source software and thus publicly available. "Clonezilla" is licensed under GNU General Public License (GPL) Version 2. The figurative trademark "Clonezilla" is registered in the European Community under No. EM08584625 for National Applied Research Laboratories National Center for High-performance Computing, Taiwan. For further information please see <u>www.clonezilla.org</u>. Arndt & Voß GmbH is not connected to National Applied Research Laboratories National Center for High-performance Computing and/or "Clonezilla" in any way. "Clonezilla" solely serves as an example for a hard disk imaging program due to its public availability.

1. Requirements

In order to restore the operating system 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".
- the hard disk copy of the Measuring Computer with the faulty operating system from your data backup or
- the hard disk copy of a similar Measuring Computer model. Please contact Arndt & Voß GmbH stating the model No. and serial No. (please see black label on the Measuring Computer), to obtain the appropriate hard disk image.

<u>IMPORTANT:</u> The hard disk copy needs to be stored in the top directory of a USB stick or a USB hard drive.

– a USB hub with its own power supply.

2. Remove interface module

Before starting to restore the operating system, the interface module 5326 has to be removed from the Measuring Computer.

<u>IMPORTANT:</u> 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.

Page 1 of 30





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





Page 2 of 30

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. Restore operating system

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

Page 3 of 30

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

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



Fig. 5

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





Manual for restoring hard disk contents 08/2018 Page 6 of 30 Arndt & Voß GmbH - Eichhofstr. 7 - D-21255 Tostedt/Germany Phone: +49 4182-289 760 Fax -289 761 email: info@arndtundvoss.de http://www.arndtundvoss.de

If you have a English keyboard, select "British" as keyboard layout and confirm by pressing ENTER (see Fig. 8).



Fig. 8

Page 7 of 30

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





Page 8 of 30

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).





Page 10 of 30

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



Fig. 12

Page 11 of 30

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



Fig. 13

Page 12 of 30

Underneath the field for selecting the local device, a process panel is opened (see Fig. 14). Now connect the storage device which contains the hard disk image (i.e. USB stick or USB hard disk).

NOTE: In some cases, restoring the operating system 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!

Before cloning will mount tha to or read fro Select mode:	Mount Clo , you have to assign where t device or remote resource m /home/partimag.	nezilla image directory the Clonezilla image will be saved to or read from. We s as /home/partimag. The Clonezilla image will be saved
	local.dev Use local dev ssh_server Use SSH serve samba_server Use SAMBA ser nfs_server Use NFS serve enter_shell Enter command skip Use existing	ice (E.g.: hand drive, USB drive) r ver (Network Neighborhood server) r line prompt. Do it manually /home/partimag (Readonly device. E.g. CD)
	<0k>	<cancel></cancel>
ocsroot device i Preparing the mo If you want to u * Insert USB de * Wait for abou * Press Enter k so that the OS o Press "Enter" to	s local_dev unt point /home/partimag se USB device as a Clonezil vice into this machine *now t 5 secs ey an detect the USB device ar o continue	la image repository, please ⊯ ad later we can mount it as ∕home/partimag.



Page 13 of 30

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

to or read from /home/pa Select mode:	∿timag.		
local_dew ssh_serve samba_ser nfs_serve enter_she skip	Use local device (E Use SSH server Ver Use SAMBA server (N Use NFS server 11 Enter command line Use existing /home/	.g.: hard drive, USB drive) etwork Neighborhood server) prompt. Do it manually partimag (Readonly device. E.g. CD)	
		(Cancel)	
ocsroot device is local_de Preparing the mount point If you want to use USB dev * Insert USB device into * Wait for about 5 secs	V /home/partimag ice as a Clonezilla ima this machine *no⊍*	ge repository, please	
* Press Enter key so that the OS can detect Press "Enter" to continue. Informing the OS of partit Mounting local dev as /hoi Excluding busy partition of	the USB device and late ion table changes e/partimag r disk	r we can mount it as ∕home/partimag.	
Getting /dev/sda1 info Getting /dev/sdc1 info			



Page 14 of 30

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



IMPORTANT: Select the external storage device as source of the hard disk copy

Cionezilla - Opensource Cione System Now we need to mount a device as /home/partimag (Cionezil) read or save the image in /home/partimag. ///NOTE/// You should NOT mount the partition you want to The partition name is the device name in GNU/Linux. The f "hda1" or "sda1", the 2nd partition in the first disk is ' in the second disk is "hdb1" or "sdb1" If the system y C: is hda1 (for PATA) or sda1 (for PATA, SATA or SCSI), an sda5)	m (OCS) Mode: la image(s) repository) so that we can backup as /home/partimag irst partition in the first disk is "hda2" or "sda2", the first partition ou want to save is MS windows, normally nd D: could be hda2 (or sda2), hda5 (or
sdal 19.56_ntfs() Social 20.06 vfat	In_STIGOLMOOS_HN-H1)_STIGOLMOO3 There_are_di(In_Cruzer_Force_)_S
<0k>	<cancel></cancel>

rig. 17 Confirm by pressing ENTER.

> Manual for restoring hard disk contents 08/2018 Page 15 of 30 Arndt & Voß GmbH - Eichhofstr. 7 - D-21255 Tostedt/Germanv Phone: +49 4182-289 760 Fax -289 761 email: info@arndtundvoss.de http://www.arndtundvoss.de

Select "Top_directory_in_the_local_device" as the hard disk image is stored in the top directory of your external storage device. Confirm by pressing ENTER (see Fig. 18).

NCHC Free Software Labs, Taa	uter)	
Which directory is for the the Clonezilla image (i.e. directory name, it will _N	Clonezilla - Opensource Clone S Clonezilla image (only the firs directory) itself will be exclu OT_ be shown)?: // Top_directory_in_the_ SanDisk_Jul_1	vystem (OCS) it level of directories are shown, and ided. If there is a space in the ideal device (Cancel)

Fig. 18

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

The file sust	em disk	snace	usage		
*************					ceeseseseses and the second
Filesystem	Size	Used	Avai1	Use%	Hounted 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	13	/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	28	
tmpfs	5.0M	0	5.0M	0%	/run/lock
pstore	0	0			/sys/ts/pstore
tmpts	196M	, o	1964	0%	/run/smil
fusecti	Š.	ž,	×.	-	/sys/ts/tuse/connections
rpc_pipers	200	0 48	300	1.	/tmp/lpcal_dev
/dev/soc1	300	9.40	300	1.0	/home/nectimed
/ USV/ SUCI	000	2.40	200	1.0	A LINE AN AND A LINE
Prace "Enter"	to cost	Inue			
LIG99 EILEI.	CO CONT	TIME .			

Fig. 19

Page 17 of 30

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



Fig. 20

Page 18 of 30

Select "restoredisk Restore_an_image_to_local_disk" and confirm pressing ENTER (see Fig. 21).



Fig. 21

Select the hard disk image which is to be restored to the local disk from the external storage device. Confirm by pressing ENTER (see Fig. 22).



Fig. 22

Select the target disk on which the disk image is to be restored (i.e. the local hard disk of the Measuring Computer; in this example "sda 160GB"). Confirm by pressing ENTER (see Fig. 23).



Fig. 23

Page 21 of 30

A process panel is opened at the bottom of the display (see Fig. 24). Confirm by pressing ENTER.

Clonezilla - Opensource Clone System (OCS) Mode: restoredisk
Choose the target disk(s) to be overwritten (ALL DATA ON THE ENTIRE DISK WILL BE LOST AND REPLACED!!) The disk name is the device name in GNU/Linux. The first disk in the system is "hda" or "sda", the 2nd disk is "hdb" or "sdb" Press space key to mark your selection. An asterisk (*) will be shown when the selection is done
sda 16008_ST160LM003_HN-M1_ST160LM003_HN-M160MBB_S2SYJ9CC104101
<ok> <cancel></cancel></ok>
PS. Next time you can run this command directly: /usr/sbin/ocs-sr -g auto -e1 auto -e2 -c -r -j2 -p true restoredisk 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 2014-07-01-11-39 ************************************

Fig. 24

Page 22 of 30

The process panel is continued. After a few seconds, a yellow notification appears: "Warning. The existing data in this harddisk/partition(s) will be overwritten! All existing data will be lost:" 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. 25).





Another warning in yellow writing appears in the process panel. "Warning. The existing data in this harddisk/partition(s) will be overwritten! All existing data will be lost:" The original hard disk of the Measuring Computer is indicated again followed by the question "Are you sure you want to continue? (v/n)". Type "v" and confirm by pressing ENTER (see Fig. 26).



Fig. 26

Page 24 of 30

The copying process starts. Progress and remaining time are being displayed (see Fig. 27). The copying process may take several minutes, depending on the hard disk and the external storage device.



Fig. 27

Once the copying process has been finished, a process panel opens. It ends with "Press "Enter" to continue..." (see Fig. 28). Press ENTER.

done! Device /dev/sda1 is not a FAT partition. Skip updating syslinux on that.
The grub directory is NOT found. Maybe it does not exist (so other boot manager exists) or the file system is not supported in the kernel. Skip running grub-install.
Found NTFS boot partition among the restored partition(s): /dev/sda1 Head and sector no. of /dev/sda from EDO: 255, 63. The start sector of NTFS partition /dev/sda1: 63 Selvet filesures acceptor (ap. the NTFS partition): /dev/sda1
Running: partclone.ntfsfixboot -w -h 255 -t 63 -s 63 /dev/sda1 ntfsfixboot version 1.0
No Changes neccessory.
End of restoreparts job for image 2014-07-01-11-imm.
End of restoredisk 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 11:46:19 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"
these executions is done personant to use 'noneraff' 'reboot' or follow the seru to do a normal power
roff/reboot procedure. Otherwise if the boot media you are using is a writable device (such as USB f lash drive), and it's mounted, poweroff/reboot in abnormal procedure might make it FAIL to boot next
Press "Enter" to continue
1 COO STUDY TO OCTUDING



Page 26 of 30

In the next step, select "poweroff" Poweroff" and confirm by pressing ENTER (see Fig. 29).





Page 27 of 30

Another process panel is opened. It ends with "reboot: System halted" (see Fig. 30). The copying process is terminated. You may now switch off the Measuring Computer.

dik The next step: poweroff Trying to unmount /home/partimag... done! Trying to unmount /tmp/local-dev... done! Will poweroff... 5 4 3 2 1 rpcbind: rpcbind terminating on signal. Restart with "rpcbind -w" [ok] Stopping rpcbind daemon.... [ok] Deconfiguring network interfaces...done. [ok] Decotivating 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. 30

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. <u>IMPORTANT:</u> 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. 31). <u>IMPORTANT:</u> The red mark on the connector of the cable must be on the red pin of the multi-pin connector!





Attach the module 5326 to the Measuring Computer with the two screws at the front (see red marks in Fig. 32).





Disclaimer:

Arndt & Voß GmbH have used their best efforts in ensuring the correctness of the information contained in this manual. Arndt & Voß GmbH do not assume, and hereby disclaim, any liability for any party for damage caused by errors or omissions in this manual or for any errors, omissions, negligence or accident resulting from inappropriate use or functioning. Furthermore, Arndt & Voß GmbH do not assume, and hereby disclaim, any liability to any party for changes made on the part of "Clonezilla".

Page 30 of 30