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Core Technologies



CAE
Clonezilla Live Manual

Revision History

| Date | Section | Comment | Name | Revision |
|------------|---------|----------------------------|--------------|----------|
| 06/05/2016 | | Initial release | Emil Hristov | 1.0 |
| 05/10/2016 | | Added Requirements section | Emil Hristov | 1.1 |
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Requirements

This document describes how to create Clonezilla Live bootable USB drive which can be used to do Disk-to-Disk (clone), Disk-to-Image (backup) and Image-to-Disk (restore) backup/restore operations.

1. Clonezilla SPL asset

Download the Clonezilla asset from SPL to your PC:

<https://spl.cae.com/buildfarm/assets/details/clonezilla>

2. USB drive

The USB key MUST be at least 1 GB or more.

The content of the USB drive will be overwritten.

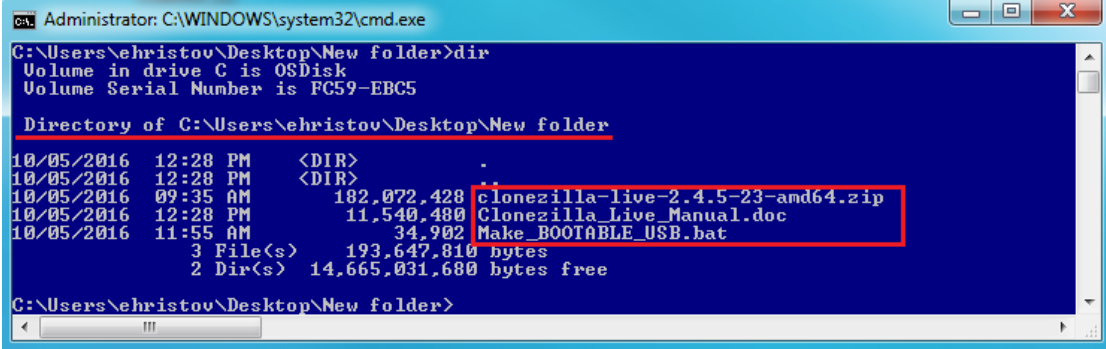
3. Backup (repository) disk

For Disk-to-Disk (clone) operation the backup disk MUST be strictly the same size as the disk intended to be cloned (Disk-to-Disk). The content of the backup disk will be overwritten.

Part I Create Clonezilla Live bootable USB

Remove all USB devices that are connected to your PC except the one you want to use as Clonezilla Live boot USB.

Make sure **clonezilla-live-2.4.5-23-amd64.zip** and **Make_BOOTABLE_USB.bat** are in the same folder:



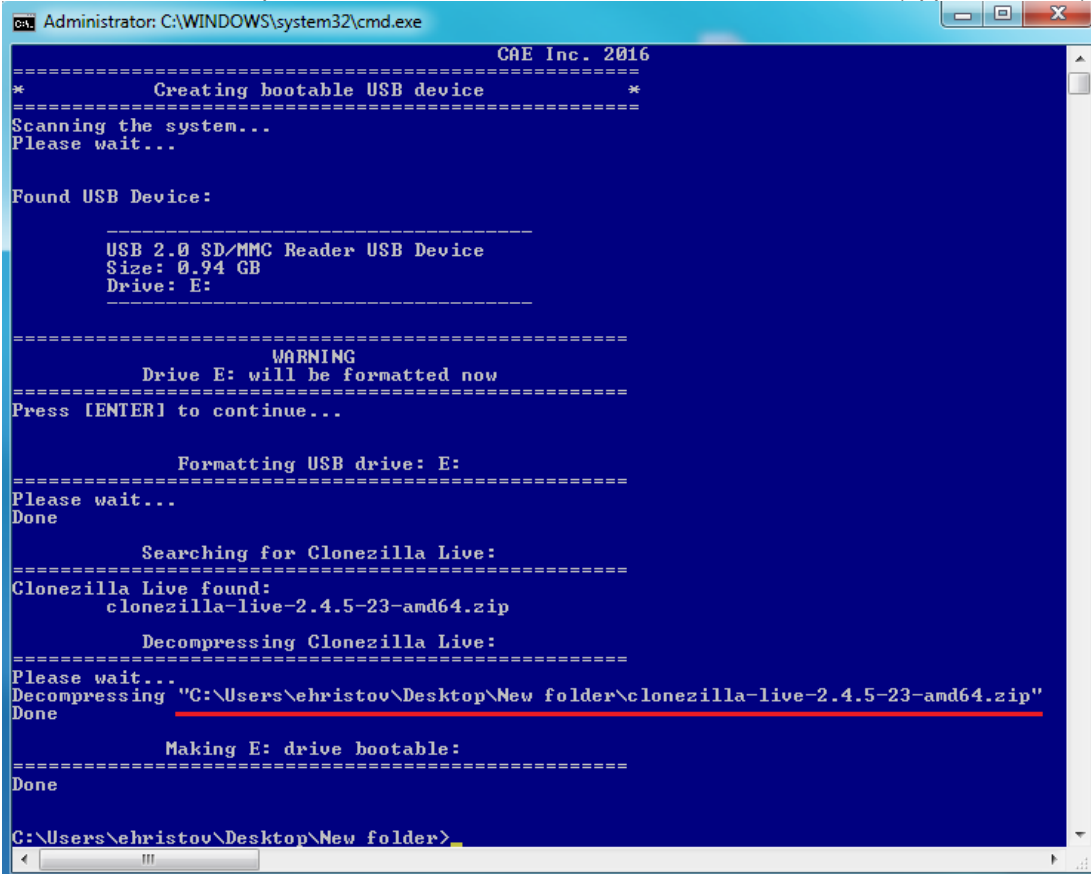
```
Administrator: C:\WINDOWS\system32\cmd.exe
C:\Users\ehristov\Desktop\New folder>dir
Volume in drive C is OSDisk
Volume Serial Number is FC59-EBC5

Directory of C:\Users\ehristov\Desktop\New folder

10/05/2016  12:28 PM    <DIR>          .
10/05/2016  12:28 PM    <DIR>          ..
10/05/2016  09:35 AM       182,072,428  clonezilla-live-2.4.5-23-amd64.zip
10/05/2016  12:28 PM       11,540,480  Clonezilla_Live_Manual.doc
10/05/2016  11:55 AM         34,902    Make_BOOTABLE_USB.bat
               3 File(s)       193,647,810 bytes
               2 Dir(s)      14,665,031,680 bytes free

C:\Users\ehristov\Desktop\New folder>
```

Run the script **Make_BOOTABLE_USB.bat** and wait until it exits (approx. 10 min):



```
Administrator: C:\WINDOWS\system32\cmd.exe
CAE Inc. 2016
=====
*      Creating bootable USB device      *
=====
Scanning the system...
Please wait...

Found USB Device:
=====
USB 2.0 SD/MMC Reader USB Device
Size: 0.94 GB
Drive: E:
=====

WARNING
Drive E: will be formatted now
Press [ENTER] to continue...

Formatting USB drive: E:
=====
Please wait...
Done

Searching for Clonezilla Live:
=====
Clonezilla Live found:
clonezilla-live-2.4.5-23-amd64.zip

Decompressing Clonezilla Live:
=====
Please wait...
Decompressing "C:\Users\ehristov\Desktop\New folder\clonezilla-live-2.4.5-23-amd64.zip"
Done

Making E: drive bootable:
=====
Done

C:\Users\ehristov\Desktop\New folder>
```

Clonezilla Live bootable USB flash drive is ready.

Part II Get the original disk serial number

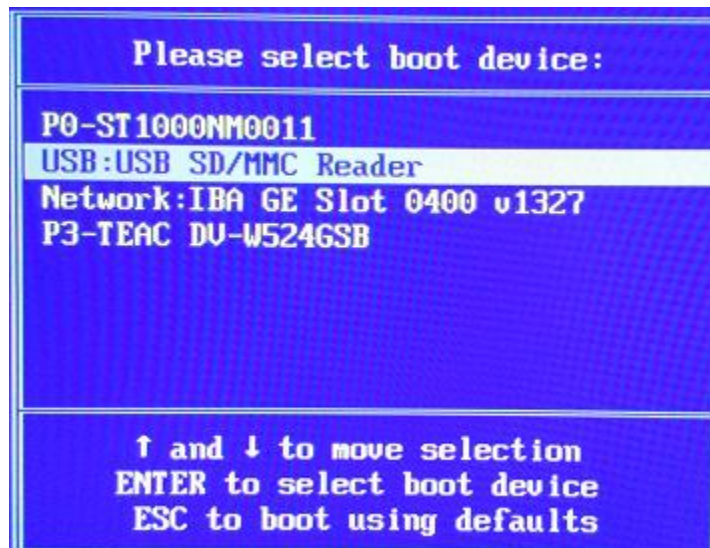
IMPORTANT:

Common fatal mistake when performing backup/restore operations is to select the wrong disk to be cloned/backed-up/restored. To avoid such a catastrophic mistake, you need to be able to recognize which disk is to be cloned/backed-up/restored and which disk is the backup disk. Knowing the unique serial number of the original disk is the key point for distinguishing the disks during the clone/backup/restore process.

1. Power off the PC
2. Unplug all internal and external disks (including USB disks) EXCEPT the disk you want to clone/backup/restore.
3. Power on the PC
4. Boot the PC from Clonezilla Live bootable USB

Pressing a hotkey (**F11** for CK2, **F6** for CK3) right after power on the PC will bring up the BIOS boot menu.

Select the USB drive media and press **Enter**:



Note:

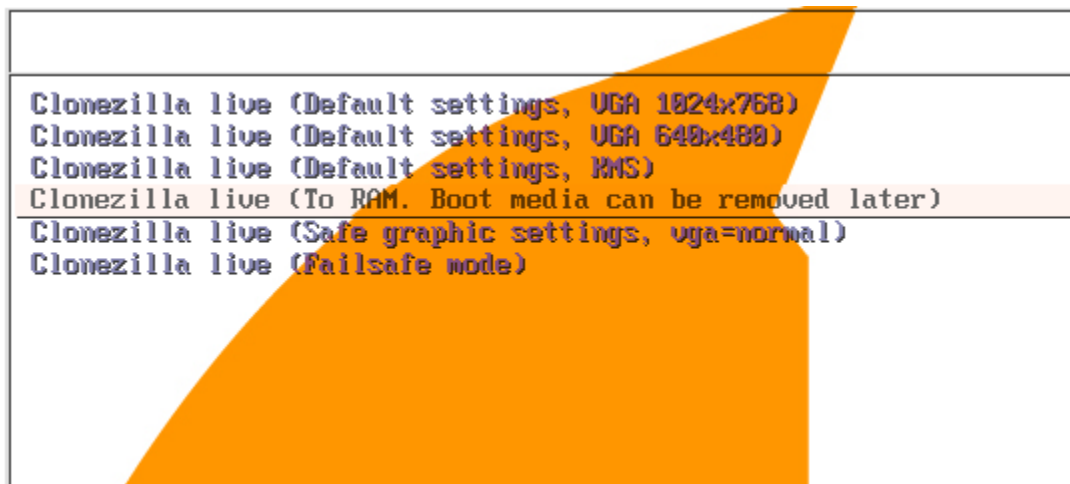
Hotkey may differ on different machines. Refer to the BIOS option for appropriate hotkey

5. Clonezilla Live boot menu

Select **Other modes of Clonezilla live** and press **Enter**:



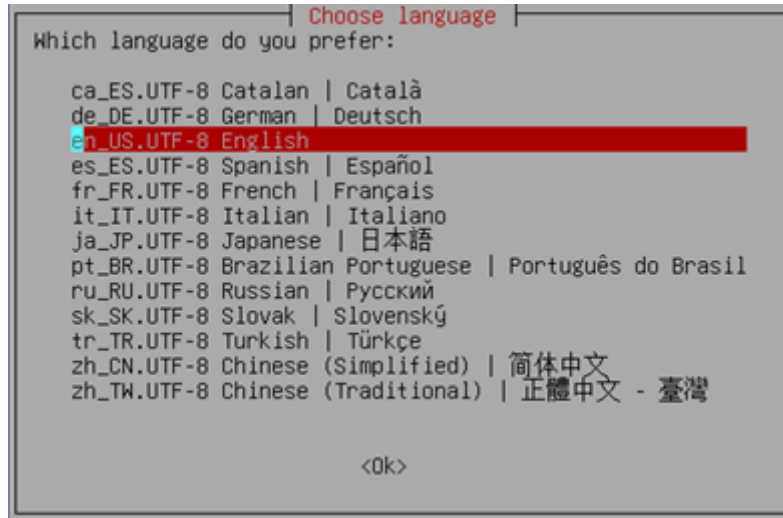
Select **Clonezilla live (To RAM. Boot media can be removed later)** and press **Enter**:



This mode will boot Clonezilla with framebuffer set to 800x600 and run all the necessary files from RAM. Therefore, you can remove the boot media (USB flash drive) when loaded.

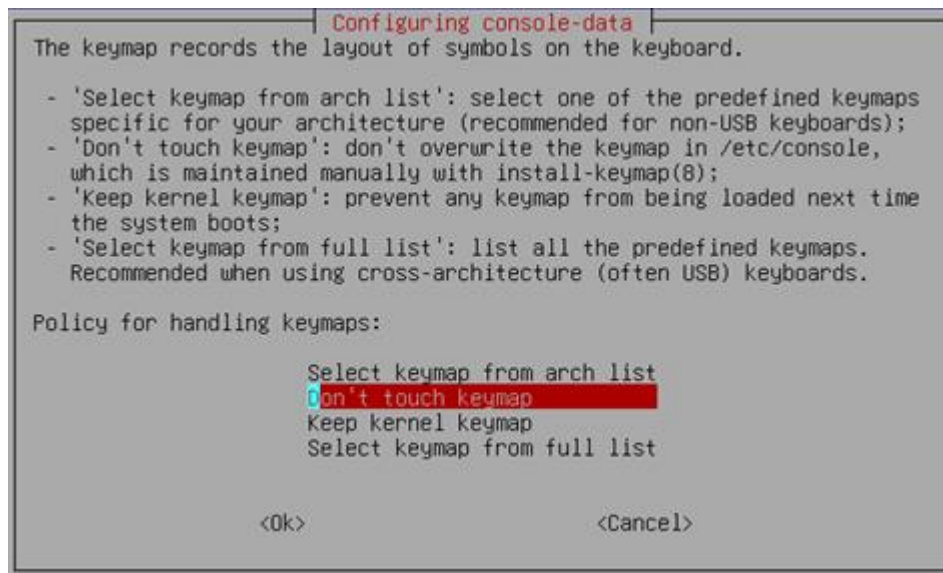
6. Language

Remove Clonezilla Live USB (USB flash drive) – Clonezilla is running from RAM.
Press **Enter** to use the default language (**English**):



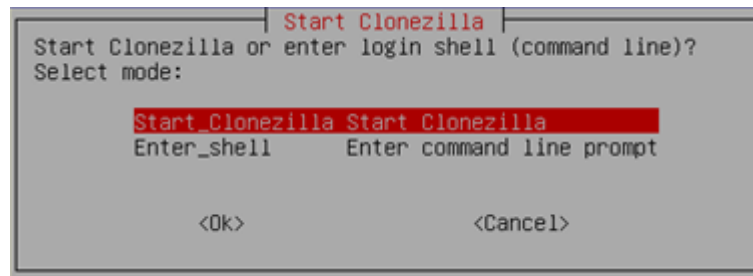
7. Keyboard layout

Press **Enter** to use the default keyboard layout - option **Don't touch keymap**:

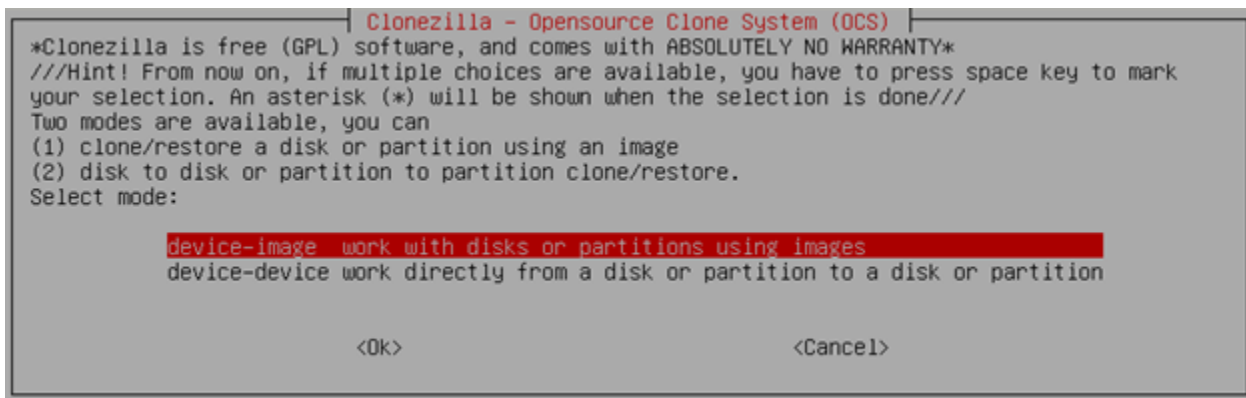


8. Start Clonezilla

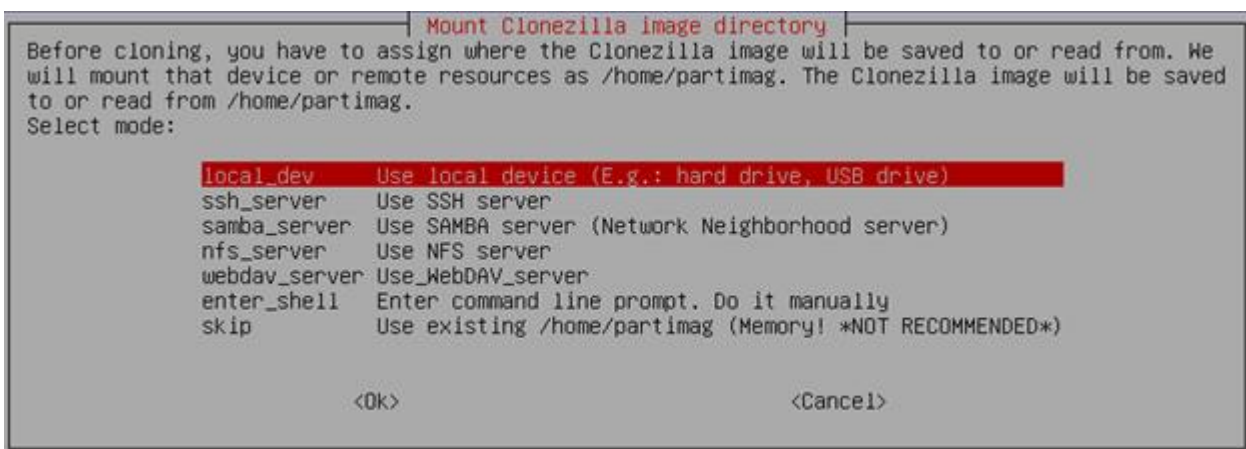
Select **Start Clonezilla** and press **Enter**:



9. Select *device-image* option



10. Select *local_dev* option



When prompted press **Enter** to continue:

```
ocsroot device is local_dev
Preparing the mount point /home/partimag...
If you want to use USB device as a Clonezilla image repository, please
* Insert USB device into this machine *now*
* Wait for about 5 secs
* Press Enter key
so that the OS can detect the USB device and later we can mount it as /home/partimag.
Press "Enter" to continue.....
```

11. Get the original disk serial number

From the new window write down the serial number of the original disk;

Then press **Cancel**:

```
Clonezilla - Opensource Clone System (OCS) | Mode: |
Now we need to mount a device as /home/partimag (Clonezilla image(s) repository) so that we
read or save the image in /home/partimag.
///NOTE/// You should NOT mount the partition you want to backup as /home/partimag
The partition name is the device name in GNU/Linux. The first partition in the first disk is
"hdal" or "sda1", the 2nd partition in the first disk is "hda2" or "sda2", the first partiti
in the second disk is "hdb1" or "sdb1"... If the system you want to save is MS windows, norm
C: is hda1 (for PATA) or sda1 (for PATA, SATA or SCSI), and D: could be hda2 (or sda2), hda5
sda5)...
sda1 2.3G_ntfs_System(In_ST1000NM0011_)_ST1000NM0011_ Z1N20235
sda2 170.7G_ntfs_OSDisk(In_ST1000NM0011_)_ST1000NM0011_ 1_Z1N20235
sda3 758.6G_ntfs_DATA(In_ST1000NM0011_)_ST1000NM0011_ Z1N20235
<Ok> <Cancel>
```

Z1N20235
1_Z1N20235
Z1N20235

When prompted select **No**:

```
Clonezilla - Opensource Clone System (OCS) | Mode: |
You have to choose a device! Do you want to do it again?
<Yes> <No>
```

When prompted type **N** and press **Enter** to continue:

```
Program terminated!!
Unable to mount resource as /home/partimag.
Are you sure you want to continue?
[y/N] n
```

When prompted again press **Enter** to continue:

```
Program terminated!
*****
If you want to use Clonezilla again:
(1) Stay in this console (console 1), enter command line p
(2) Run command "exit" or "logout"
*****
When everything is done, remember to use 'poweroff', 'rebo
roff/reboot procedure. Otherwise if the boot media you are
lash drive), and it's mounted, poweroff/reboot in abnormal
time!
*****
Press "Enter" to continue...
```

12. Select **Poweroff**:

```
Now you can choose to:          Choose mode
poweroff Poweroff
reboot   Reboot
cmd      Enter command line prompt
rerun1   Start over (image repository /home/partimag, if mounted, will be umounted)

                                <Ok>
```

13. Attach the backup disk

When the PC is powered off attach the backup disk and continue with the desired clone/backup/restore operation.

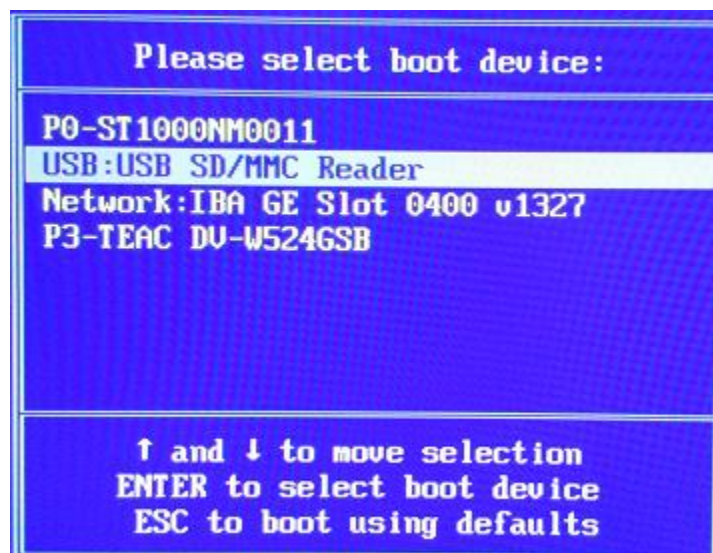
Part III Disk-to-Disk (Clone)

When you do Disk-to-Disk (clone) both disks should be the same size and attached internally. Do not use Disk-to-Disk clone with external devices.

1. Power on the PC
2. Boot the PC from Clonezilla Live bootable USB

Pressing a hotkey (**F11** for CK2, **F6** for CK3) right after power on the PC will bring up the BIOS boot menu.

Select the USB drive media and press **Enter**:



Note:

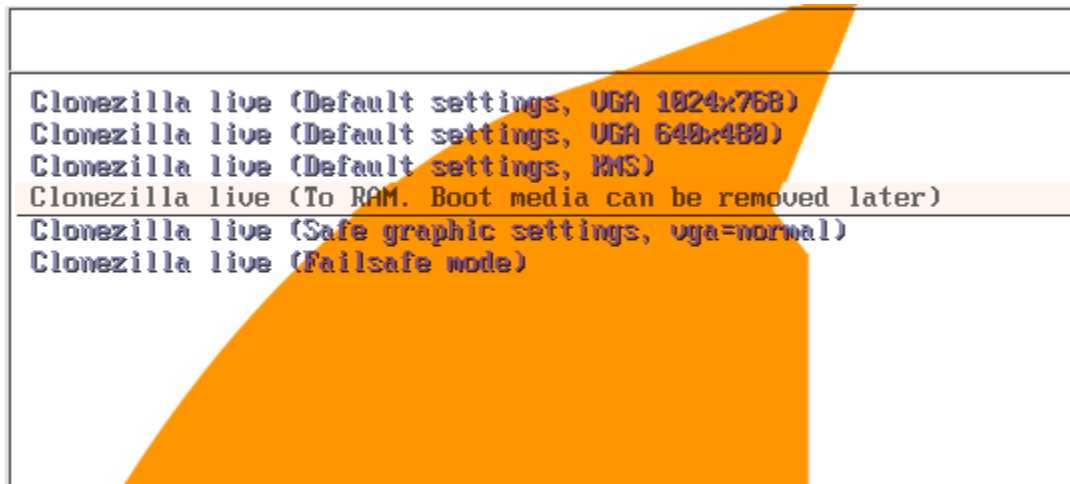
Hotkey may differ on different machines. Refer to the BIOS option for appropriate hotkey

3. Clonezilla Live boot menu

Select **Other modes of Clonezilla live** and press **Enter**:

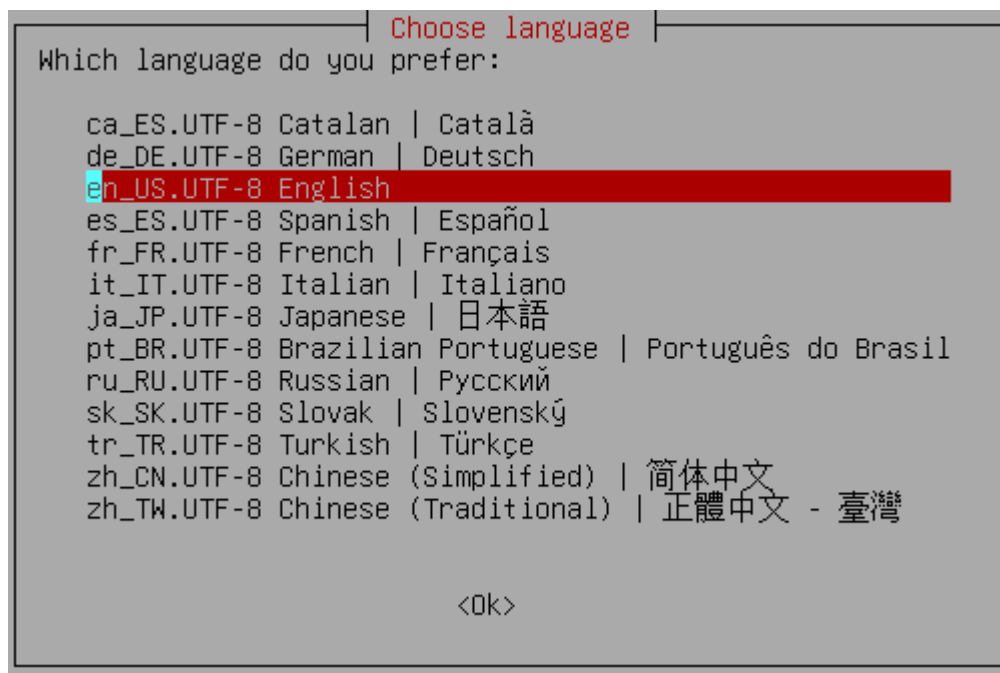


Select **Clonezilla live (To RAM. Boot media can be removed later)** and press **Enter**:



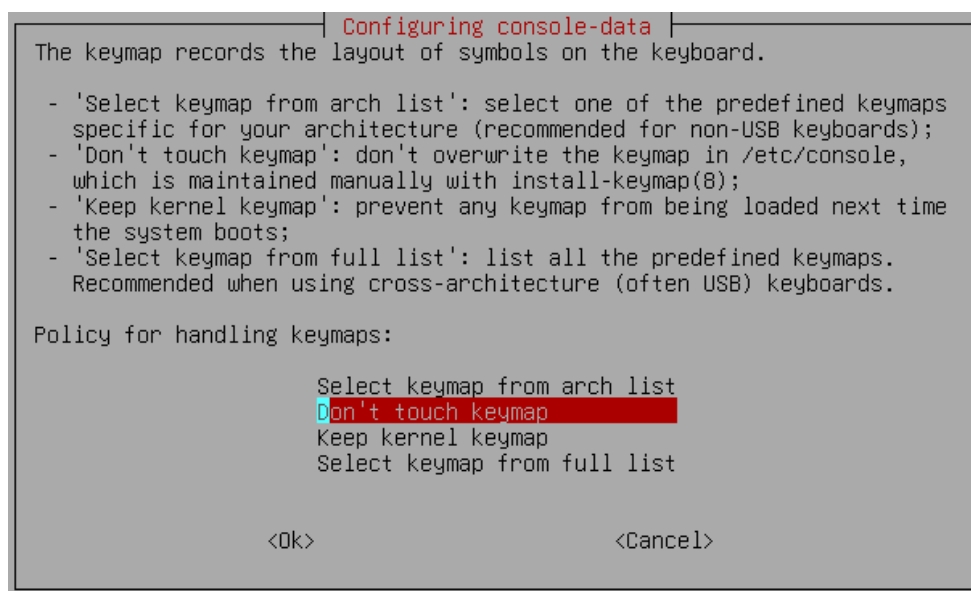
4. Language

Remove Clonezilla Live USB (USB flash drive) – Clonezilla is running from RAM.
Press **Enter** to use the default language (**English**):



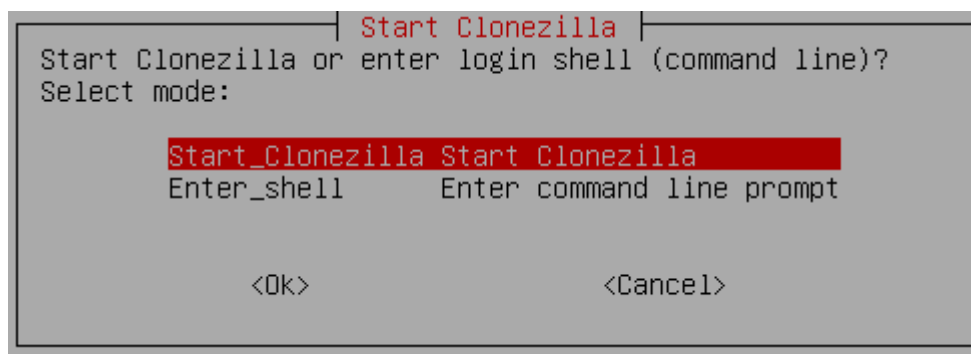
5. Keyboard layout

Press **Enter** to use the default keyboard layout - **Don't touch keymap**:



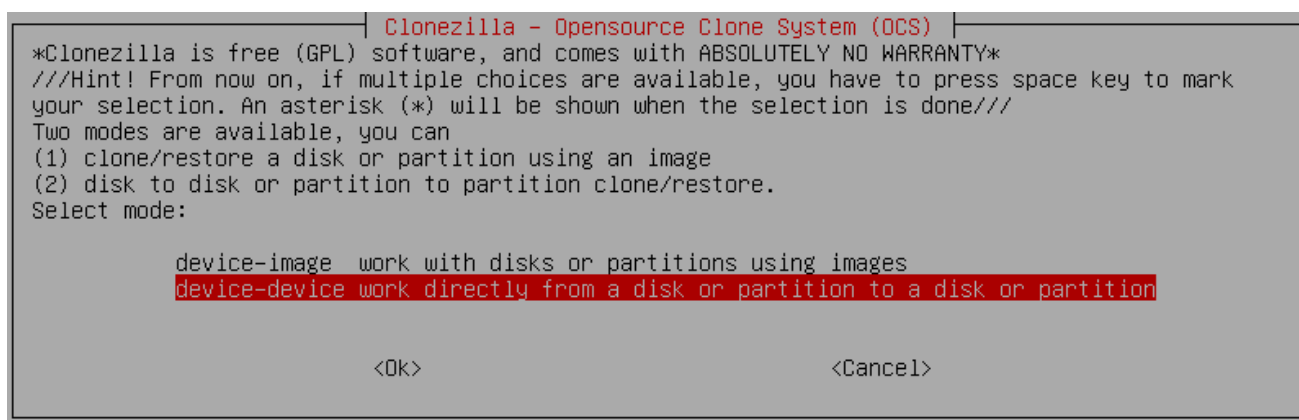
6. Start Clonezilla

Select **Start Clonezilla** and press **Enter**:

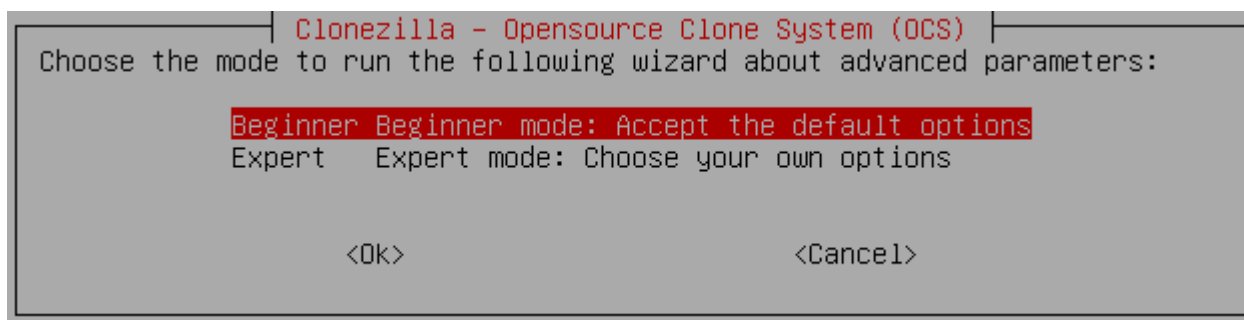


7. Select Clonezilla mode

Select **device-device** option and press **Enter**:



Select **Beginner mode** and press **Enter**:



Select **disk-to-local-disk** and press **Enter**:

```
Clonezilla - Opensource Clone System (OCS)
*Clonezilla is free (GPL) software, and comes with ABSOLUTELY NO WARRANTY*
This software will overwrite the data on your hard drive when cloning! It is recommended to
backup important files on the target disk before you cloning!***

disk_to_local_disk  local_disk_to_local_disk_clone
disk_to_remote_disk local_disk_to_remote_disk_clone
part_to_local_part  local_partition_to_local_partition_clone
part_to_remote_part local_partition_to_remote_partition_clone
exit                Exit. Enter command line prompt

<Ok>                                <Cancel>
```

8. Select source disk

It is very important which disk to select as a source as the operation is non-reversible and it will overwrite completely the target disk!

IMPORTANT:

If you want to clone the original disk, select the original disk as a source disk. As you already have the original disk serial number, select the source disk to be the one with the matching serial number:

```
Clonezilla - Opensource Clone System (OCS) | Mode: disk_to_local_disk |
Choose local disk as source.
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"...

sda 1000GB_ST1000NM0011_ST1000NM0011_Z1N20235
sdb 1000GB_ST1000NM0033-92M_ST1000NM0033-92M173_Z1W12HZF

<Ok>                                <Cancel>
```

Select the source disk to be the one that match the original disk serial number

Original disk serial number:
Z1N20235

IMPORTANT:

If you want to do disk-to-disk restore, select the other disk (non-matching the original disk serial number) to be the source disk.

This will overwrite the original disk completely!

9. Select target disk

Obviously, the disk not selected as a source disk will be used as a target disk:

```
Clonezilla - Opensource Clone System (OCS) | Mode: disk_to_local_disk |
Choose local disk as target (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"...

sdb 1000GB_ST1000NM0033-9ZM-ST1000NM0033-9ZM173_Z1W1ZH2F

<Ok> <Cancel>
```

10. Set advanced extra parameters

Select **Skip checking/repairing source file system** and press Enter:

```
Clonezilla on-the-fly advanced extra parameters | Mode: disk_to_local_disk |
Set the advanced parameters (multiple choices available). If you have no idea, keep the default
value and do NOT change anything.:

Skip checking/repairing source file system
-fsck-src-part Interactively check and repair source file system before cloning
-fsck-src-part-y Auto (Caution!) check and repair source file system before cloning

<Ok> <Cancel>
```

Clonezilla will show you the complete command for this task and will prompt you to continue.
Press **Enter** to continue:

```
PS. Next time you can run this command directly:
/usr/sbin/ocs-onthefly -g auto -e1 auto -e2 -r -j2 -f sda -t sdb
This command is also saved as this file name for later use if necessary: /tmp/ocs-onthefly-2015-02-1
8-07-52
*****
Press "Enter" to continue...
```

11. Start cloning

Before starting the real cloning, Clonezilla will ask couple of times for confirmation.
Type **Y** and press **Enter** to continue:

```
erful for some recovery tool, by:
dd if=/dev/sda of=/tmp/ocs_onthefly_local.kpz7I1/src-hidden-data.img skip=1 bs=5
62+0 records in
62+0 records out
31744 bytes (32 kB, 31 KiB) copied, 0.000157669 s, 201 MB/s
*****
Collecting partition /dev/sda1 info...
Collecting partition /dev/sda2 info...
Collecting partition /dev/sda3 info...
Non-grub boot loader found on /tmp/ocs_onthefly_local.kpz7I1/sdb-mbr...
The CHS value of hard drive from EDD will be used for sfdisk.
Sfdisk >= 2.26 does not support C/H/S option. Skip using C/H/S option.
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
BE LOST: sdb
*****
Machine: X8DA6
sdb (1000GB_ST1000NM0033-92M_ST1000NM0033-92M173_Z1W1ZH2F)
sdb1 (931.5G_ntfs_New_Volume(In_ST1000NM0033-92M)_ST1000NM0033-92M173_Z1W1ZH2F)
*****
Are you sure you want to continue? (y/n) y
```

Type **Y** again and press **Enter** to continue:

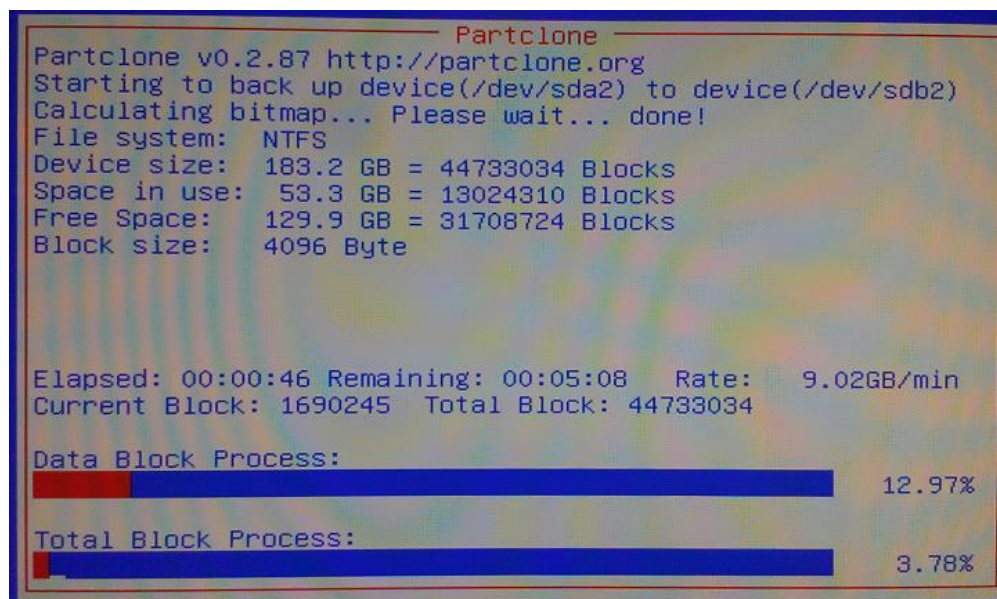
```
Non-grub boot loader found on /tmp/ocs_onthefly_1000NM0033-92M173_Z1W1ZH2F
The CHS value of hard drive from EDD will be used for sfdisk.
Sfdisk >= 2.26 does not support C/H/S option. Skip using C/H/S option.
Searching for data partition(s)...
Excluding busy partition or disk...
Unmounted partitions (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 OVERWRIT
BE LOST: sdb
*****
Machine: X8DA6
sdb (1000GB_ST1000NM0033-92M_ST1000NM0033-92M173_Z1W1ZH2F)
sdb1 (931.5G_ntfs_New_Volume(In_ST1000NM0033-92M)_ST1000NM0033-92M173_Z1W
*****
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 OVERWRIT
BE LOST: sdb
*****
Are you sure you want to continue? (y/n) y
```


Clonezilla will create partition table on the target disk first and then ask for confirmation about cloning the boot loader to target disk. Type **Y** and press **Enter** to continue:

```
*****
*****
Do you want to clone the boot loader (executable code area, the first 446 bytes) to: sdb ?
[Y/n] y_
```

12. Cloning

Clonezilla is cloning the source disk to target disk:



```
----- Partclone -----
Partclone v0.2.87 http://partclone.org
Starting to back up device(/dev/sda2) to device(/dev/sdb2)
Calculating bitmap... Please wait... done!
File system: NTFS
Device size: 183.2 GB = 44733034 Blocks
Space in use: 53.3 GB = 13024310 Blocks
Free Space: 129.9 GB = 31708724 Blocks
Block size: 4096 Byte

Elapsed: 00:00:46 Remaining: 00:05:08 Rate: 9.02GB/min
Current Block: 1690245 Total Block: 44733034

Data Block Process:
[Progress Bar] 12.97%

Total Block Process:
[Progress Bar] 3.78%
```

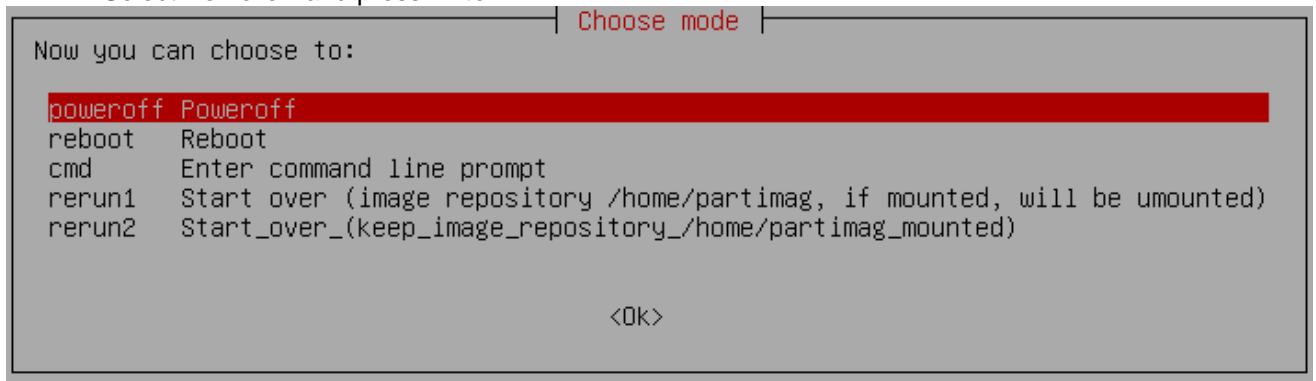
13. Disk is cloned

When everything is done, Clonezilla will report and prompt you to continue.
Press **Enter** to continue:

```
*****
*****
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..._
```

14. Poweroff

Select **Poweroff** and press **Enter**:



15. Remove the backup disk

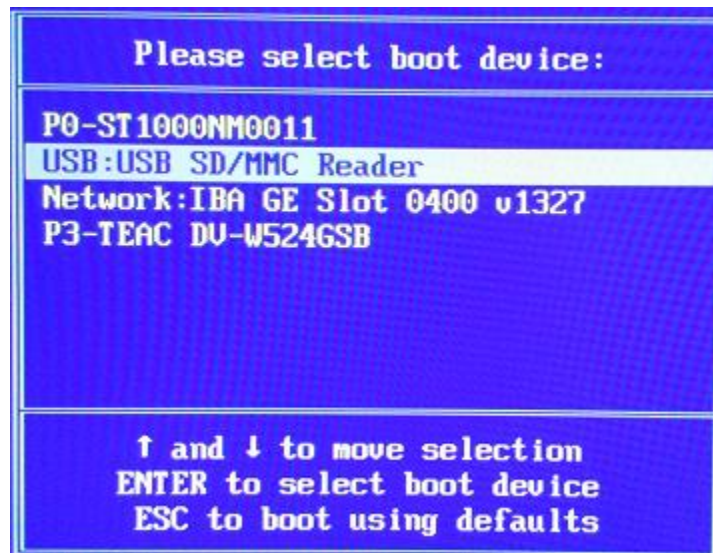
When the PC is powered off remove the backup disk.

Part IV Disk-to-Image (Backup)

1. Power on the PC
2. Boot the PC from Clonezilla Live bootable USB

Pressing a hotkey (**F11** for CK2, **F6** for CK3) right after power on the PC will bring up the BIOS boot menu.

Select the USB drive media and press **Enter**:



Note:

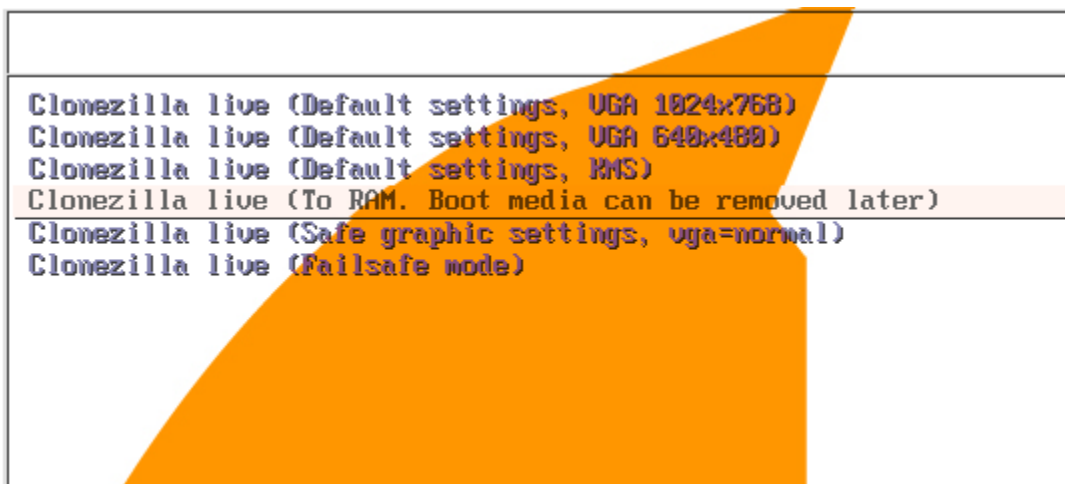
Hotkey may differ on different machines. Refer to the BIOS option for appropriate hotkey

3. Clonezilla Live boot menu

Select **Other modes of Clonezilla live** and press **Enter**:

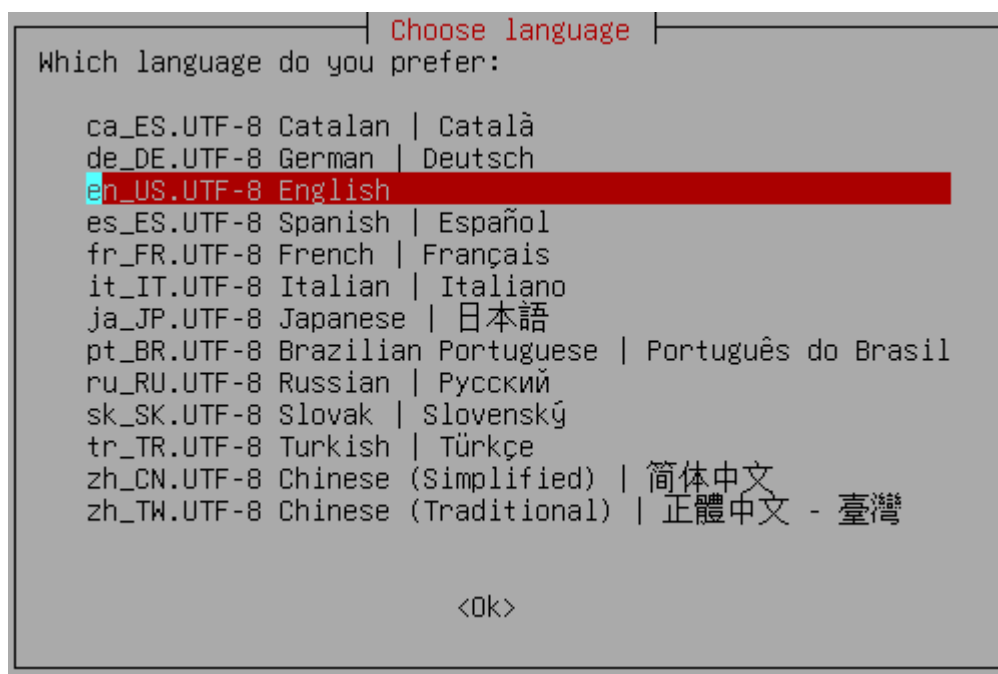


Select **Clonezilla live (To RAM. Boot media can be removed later)** and press **Enter**:



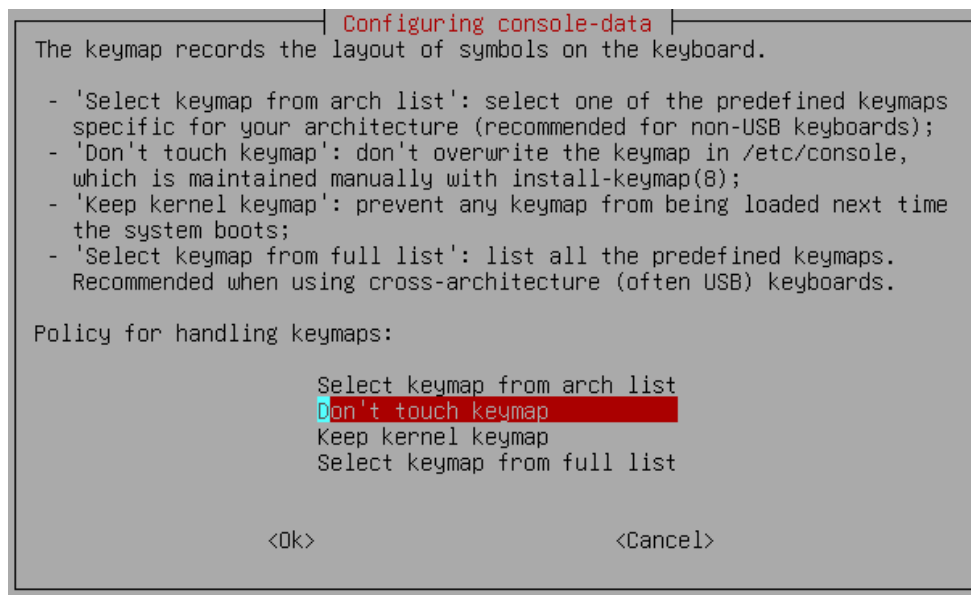
4. Language

Remove Clonezilla Live USB (USB flash drive) – Clonezilla is running from RAM.
Press **Enter** to use the default language (**English**):



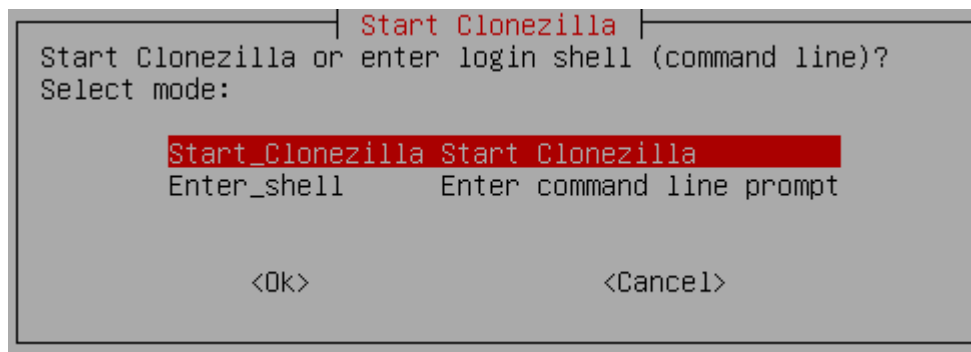
5. Keyboard layout

Press **Enter** to use the default keyboard layout - ***Don't touch keymap***:



6. Start Clonezilla

Select **Start Clonezilla** and press **Enter**:



7. Select Clonezilla mode

Select **device-image** option and press **Enter**:

```
Clonezilla - Opensource Clone System (OCS)
*Clonezilla is free (GPL) software, and comes with ABSOLUTELY NO WARRANTY*
///Hint! From now on, if multiple choices are available, you have to press space key to mark
your selection. An asterisk (*) will be shown when the selection is done///
Two modes are available, you can
(1) clone/restore a disk or partition using an image
(2) disk to disk or partition to partition clone/restore.
Select mode:

device-image work with disks or partitions using images
device-device work directly from a disk or partition to a disk or partition

<Ok>                                <Cancel>
```

Select **local_dev** and press **Enter**:

```
Mount Clonezilla image directory
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_dev      Use local device (E.g.: 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
s3_server      Use AWS S3 server
swift_server   Use OpenStack swift server
enter_shell    Enter command line prompt. Do it manually
skip           Use existing /home/partimag (Memory! *NOT RECOMMENDED*)

<Ok>                                <Cancel>
```

When prompted press **Enter** to continue:

```
If you want to use USB device as a Clonezilla image repository, please
* Insert USB device into this machine *now*
* Wait for about 5 secs
* Press Enter key
so that the OS can detect the USB device and later we can mount it as /home/partimag.
Press "Enter" to continue.....
```

8. Select repository disk where the image will be saved

IMPORTANT:

As you are saving original disk as an image, select the repository disk to be the non-original disk. As you already have the original disk serial number, select the repository disk to be the one which doesn't match the original disk serial number.

Select the image repository disk and press **Enter**:

```

Clonezilla - Opensource Clone System (OCS) | Mode:
Now we need to mount a device as /home/partimag (Clonezilla image(s) repository) so that we can
read or save the image in /home/partimag.
///NOTE/// You should NOT mount the partition you want to backup as /home/partimag
The partition name is the device name in GNU/Linux. The first partition in the first disk is
"hda1" or "sda1", the 2nd partition in the first disk is "hda2" or "sda2", the first partition
in the second disk is "hdb1" or "sdb1"... If the system you want to save is MS windows, normally
C: is hda1 (for PATA) or sda1 (for PATA, SATA or SCSI), and D: could be hda2 (or sda2), hda5 (or
sda5)...

sda1 2.3G_ntfs_System(In_ST1000NM0011_)_ST1000NM0011_Z1N20235
sda2 170.7G_ntfs_DSDisk(In_ST1000NM0011_)_ST1000NM0011_Z1N20235
sda3 758.6G_ntfs_DATA(In_ST1000NM0011_)_ST1000NM0011_Z1N20235
sdb1 931.5G_ntfs_New_Volume(In_ST1000NM0033-92M)_ST1000NM0033-92M173_Z1W12H2F

<Ok> <Cancel>

```

Select the repository disk to be the one which doesn't match the original disk serial number

Original disk serial number:

Z1N20235

Select **/ Top_directory_in_the_local_drive** and press **Enter**:

```

Clonezilla - Opensource Clone System (OCS) |
Which directory is for the Clonezilla image (only the first level of directories are shown, and
the Clonezilla image (i.e. directory) itself will be excluded. If there is a space in the
directory name, it will _NOT_ be shown)?:

/ Top_directory_in_the_local_device

<Ok> <Cancel>

```

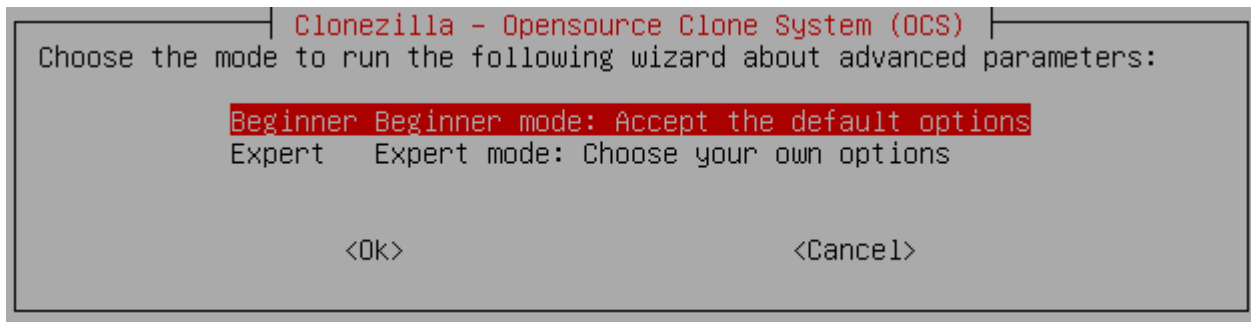
Clonezilla will show you disk usage report and prompt you to continue. Press **Enter** to continue:

```

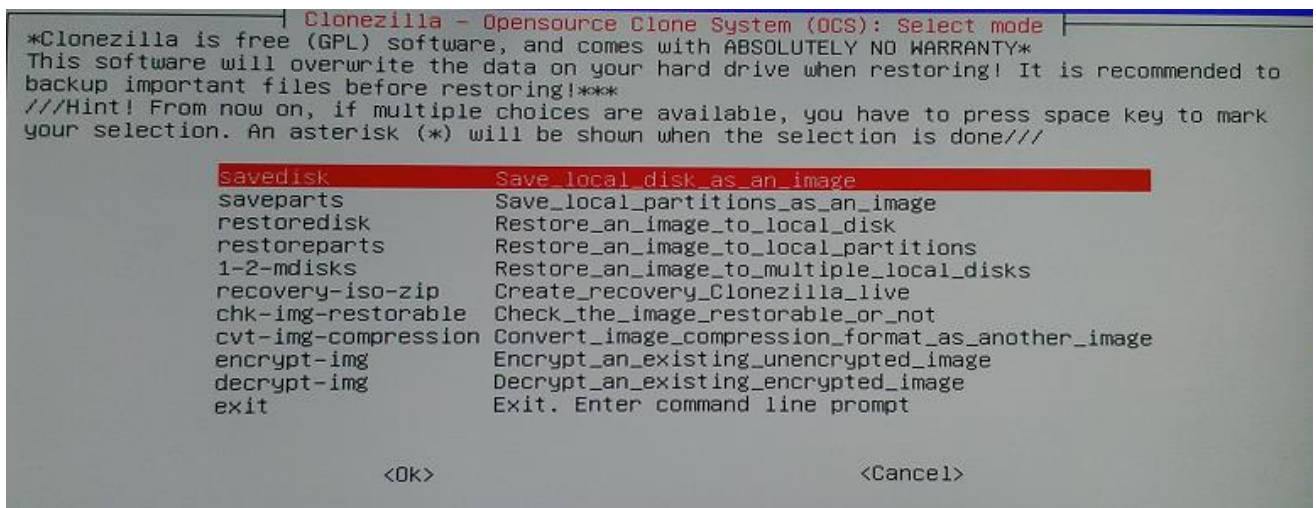
/dev/sdb1      932G   115M   932G    1% /tmp/local-dev
/dev/sdb1      932G   115M   932G    1% /home/partimag
*****
Press "Enter" to continue.....

```

Select **Beginner mode** and press **Enter**:

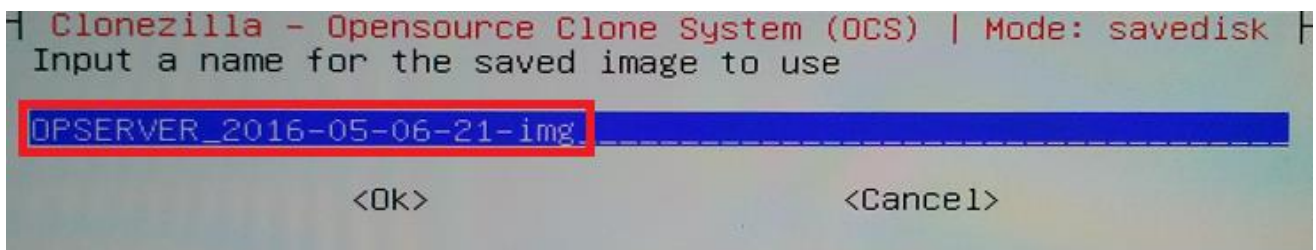


Select **savedisk** option and press **Enter**:



9. Image name

Clonezilla will suggest an image name based on the current date and time. Append the node name before the date/time stamp to distinguish saved images. Type in the image name and press **Enter**:



10. Select source disk

As you already selected the Clonezilla repository disk the only available choice for the source disk is the other disk. Press **Enter**:

```
Clonezilla - Opensource Clone System (OCS) | Mode: savedisk |
Choose local disk as source.
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 1000GB_ST1000NM0011_ST1000NM0011_Z1N20235

<Ok> <Cancel>
```

11. Set advanced extra parameters

Select **Skip checking/repairing source file system** and press **Enter**:

```
Clonezilla on-the-fly advanced extra parameters | Mode: disk_to_local_disk |
Set the advanced parameters (multiple choices available). If you have no idea, keep the default
value and do NOT change anything.:

Skip checking/repairing source file system
-fsck-src-part Interactively check and repair source file system before cloning
-fsck-src-part-y Auto (Caution!) check and repair source file system before cloning

<Ok> <Cancel>
```

Select **Yes, check the saved image** and press **Enter**:

```
Clonezilla advanced extra parameters | Mode: savedisk |
After the image is saved, do you want to check if the image is restorable? ///NOTE/// This
action will only check the image is restorable, and it will not write any data to the harddrive.

Yes, check the saved image
-sc No, skip checking the saved image

<Ok> <Cancel>
```

Select **Not to encrypt the image** and press **Enter**:

```
Clonezilla advanced extra parameters | Mode: savedisk |
Do you want to encrypt the image?
If yes, eCryptfs program will be used to encrypt the image. It uses industry-standard
cryptographic ciphers, key generation, and passphrase protection mechanisms. Without your
salt/passphrase or private key, nobody will be able to retrieve your data.
//NOTE// You have to remember the passphrase, otherwise the image will _NOT_ be usable in the
future.

Not to encrypt the image
-enc Encrypt the image

<Ok> <Cancel>
```


Clonezilla will show you the complete command for this task and prompt you to continue.

Press **Enter** to continue:

```
PS. Next time you can run this command directly:
/usr/sbin/ocs-sr -q2 -c -j2 -zip -i 4096 -p true savedisk OPSEVER_2016-05-06-21-im
This command is also saved as this file name for later use if necessary: /tmp/ocs-0
6-21-img-2016-05-06-21-10
*****
Press "Enter" to continue... _
```

12. Saving disk to image

Before starting the image saving, Clonezilla will ask you for confirmation. Type **Y** and press **Enter**:

```
*****
The following step is to save the hard disk/partition(s) on this machine as
*****
Machine: X8DA6
sda (1000GB_ST1000NM0011__ST1000NM0011_Z1N20235)
sda1 (2.3G_ntfs_System(In_ST1000NM0011_)_ST1000NM0011_Z1N20235)
sda2 (170.7G_ntfs_OSDisk(In_ST1000NM0011_)_ST1000NM0011_Z1N20235)
sda3 (758.6G_ntfs_DATA(In_ST1000NM0011_)_ST1000NM0011_Z1N20235)
*****
-> "/home/partimag/OPSEVER_2016-05-06-21-img".
Are you sure you want to continue? (y/n) y_
```

Clonezilla is saving disk image (sda) to 2nd disk (sdb):

```
Partclone v0.2.87 http://partclone.org
Starting to clone device (/dev/sda2) to image (-)
Reading Super Block
Calculating bitmap... Please wait... done!
File system: NTFS
Device size: 183.2 GB = 44733034 Blocks
Space in use: 53.3 GB = 13024310 Blocks
Free Space: 129.9 GB = 31708724 Blocks
Block size: 4096 Byte

Elapsed: 00:00:08 Remaining: 00:13:36 Rate: 3.88GB/min
Current Block: 126826 Total Block: 44733034

Data Block Process:
████████████████████████████████████████████████████████████████████████████████ 0.97%

Total Block Process:
████████████████████████████████████████████████████████████████████████████████ 0.28%
```

When Clonezilla completes saving the image it will check the saved image.

13. Disk image completed

When everything is done, Clonezilla will report and prompt you to continue.
Press **Enter** to continue:

```
*****.
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..._
```

14. Poweroff

Select **Poweroff** and press **Enter**:

| | Choose mode |
|------------------------|--|
| Now you can choose to: | |
| poweroff | Poweroff |
| reboot | Reboot |
| cmd | Enter command line prompt |
| rerun1 | Start over (image repository /home/partimag, if mounted, will be umounted) |
| rerun2 | Start_over_(keep_image_repository_/home/partimag_mounted) |
| <Ok> | |

15. Remove the backup disk (image repository disk)

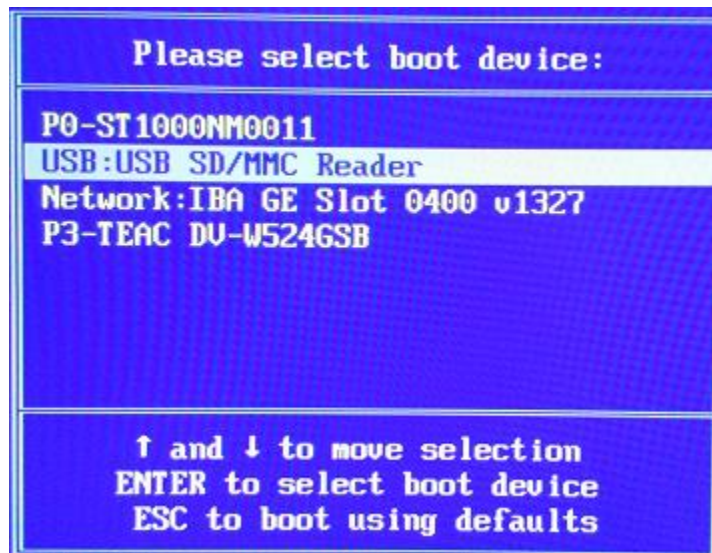
When the PC is powered off remove the backup disk.

Part V Image-to-Disk (Restore)

1. Power on the PC
2. Boot the PC from Clonezilla Live bootable USB

Pressing a hotkey (**F11** for CK2, **F6** for CK3) right after power on the PC will bring up the BIOS boot menu.

Select the USB drive media and press **Enter**:



Note:

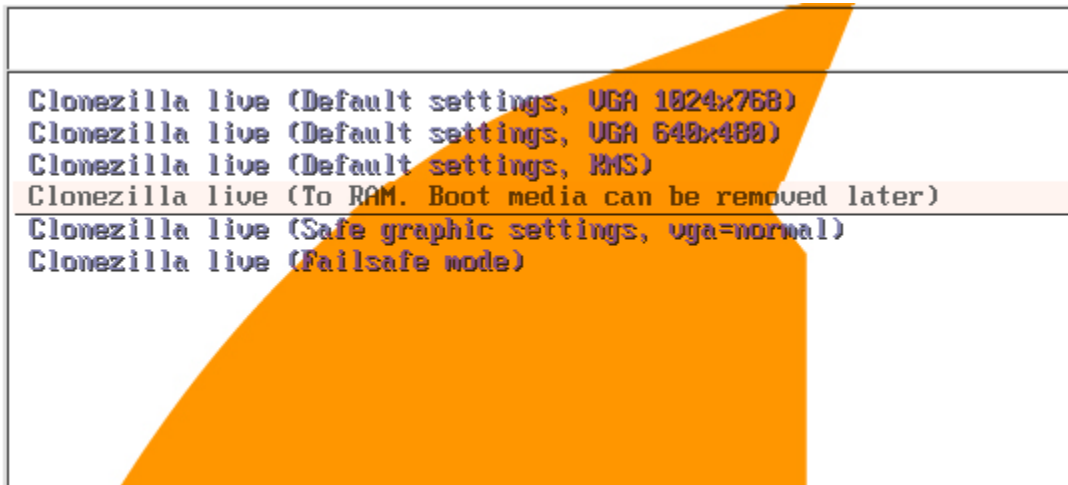
Hotkey may differ on different machines. Refer to the BIOS option for appropriate hotkey.

3. Clonezilla Live boot menu

Select **Other modes of Clonezilla live** and press **Enter**:

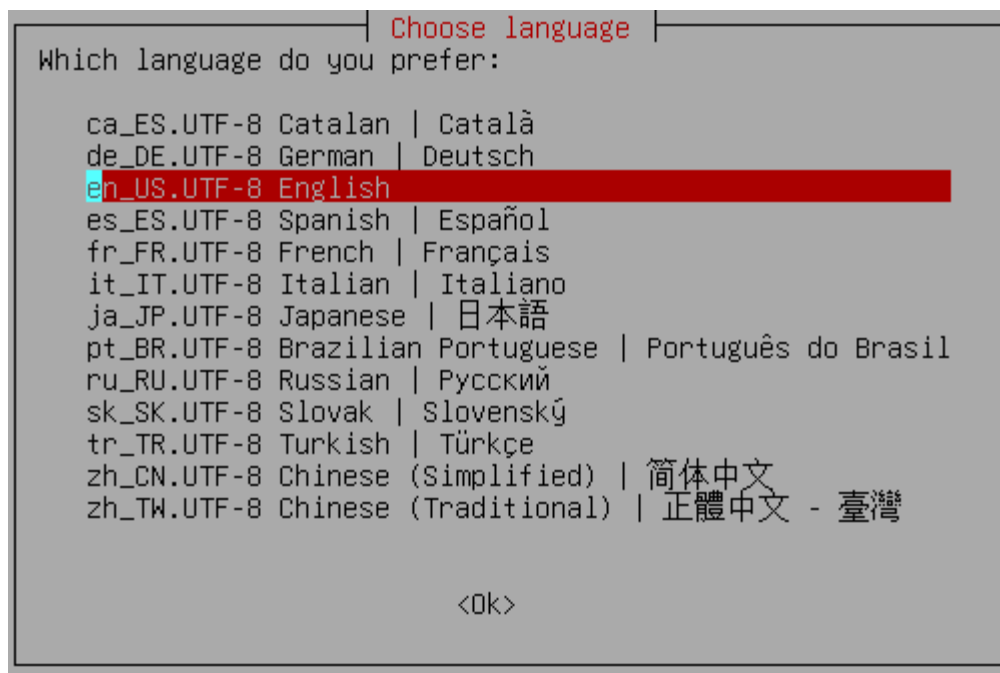


Select **Clonezilla live (To RAM. Boot media can be removed later)** and press **Enter**:



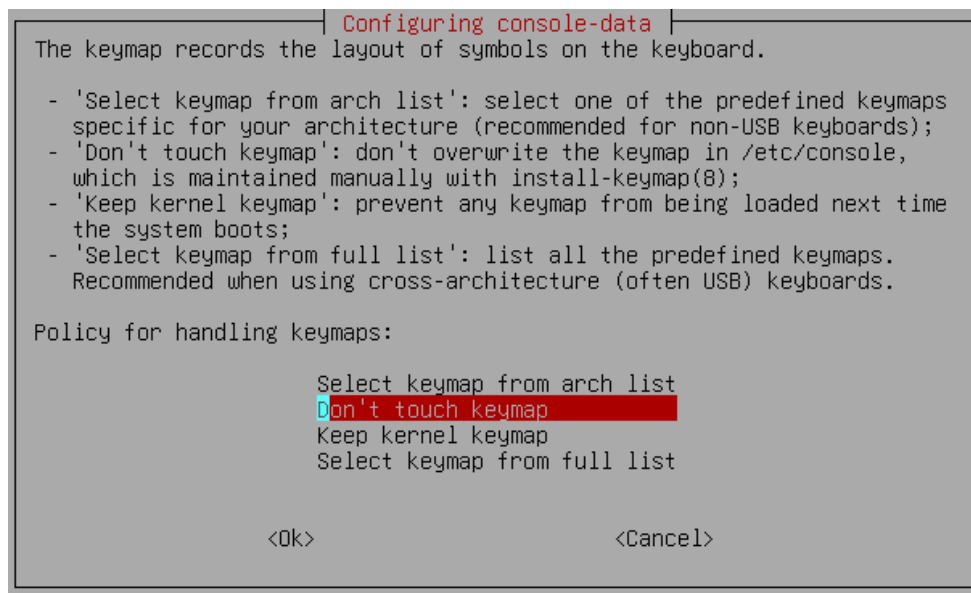
4. Language

Remove Clonezilla Live USB (USB flash drive) – Clonezilla is running from RAM.
Press **Enter** to use the default language (**English**):



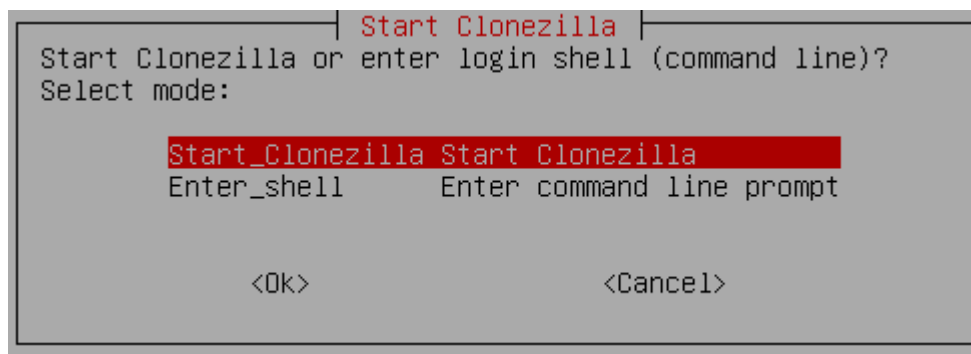
5. Keyboard layout

Press **Enter** to use the default keyboard layout - ***Don't touch keymap***:



6. Start Clonezilla

Select **Start Clonezilla** and press **Enter**:



7. Select Clonezilla mode

Select **device-image** option and press **Enter**:

```

Clonezilla - Opensource Clone System (OCS)
*Clonezilla is free (GPL) software, and comes with ABSOLUTELY NO WARRANTY*
///Hint! From now on, if multiple choices are available, you have to press space key to mark
your selection. An asterisk (*) will be shown when the selection is done///
Two modes are available, you can
(1) clone/restore a disk or partition using an image
(2) disk to disk or partition to partition clone/restore.
Select mode:

device-image work with disks or partitions using images
device-device work directly from a disk or partition to a disk or partition

<Ok>                                <Cancel>

```

Select **local_dev** and press **Enter**:

```

Mount Clonezilla image directory
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_dev      Use local device (E.g.: 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
s3_server      Use AWS_S3_server
swift_server   Use OpenStack_swift_server
enter_shell    Enter command line prompt. Do it manually
skip           Use existing /home/partimag (Memory! *NOT RECOMMENDED*)

<Ok>                                <Cancel>

```

When prompted press **Enter** to continue:

```

If you want to use USB device as a Clonezilla image repository, please
* Insert USB device into this machine *now*
* Wait for about 5 secs
* Press Enter key
so that the OS can detect the USB device and later we can mount it as /home/partimag.
Press "Enter" to continue.....

```

8. Select repository disk where the image will be read from

IMPORTANT:

As you are restoring an image to original disk, select the repository disk to be the non-original disk. As you already have the original disk serial number, select the repository disk to be the one which doesn't match the original disk serial number.

Select the image repository disk and press **Enter**:

```

Clonezilla - Opensource Clone System (OCS) | Mode:
Now we need to mount a device as /home/partimag (Clonezilla image(s) repository) so that we can
read or save the image in /home/partimag.
///NOTE/// You should NOT mount the partition you want to backup as /home/partimag
The partition name is the device name in GNU/Linux. The first partition in the first disk is
"hda1" or "sda1", the 2nd partition in the first disk is "hda2" or "sda2", the first partition
in the second disk is "hdb1" or "sdb1"... If the system you want to save is MS windows, normally
C: is hda1 (for PATA) or sda1 (for PATA, SATA or SCSI), and D: could be hda2 (or sda2), hda5 (or
sda5)...

sda1 2.3G_ntfs_System(In_ST1000NM0011)_ST1000NM0011_Z1N20235
sda2 170.7G_ntfs_OSDisk(In_ST1000NM0011)_ST1000NM0011_Z1N20235
sda3 758.6G_ntfs_DATA(In_ST1000NM0011)_ST1000NM0011_Z1N20235
sdb1 931.5G_ntfs_New_Volume(In_ST1000NM0033-92M)_ST1000NM0033-92M173_Z1W12H2F

<Ok> <Cancel>

```

Select the repository disk to be the one
which doesn't match the original disk
serial number

Original disk serial number:

Z1N20235

Select **/ Top_directory_in_the_local_drive** and press **Enter**:

```

Clonezilla - Opensource Clone System (OCS)
Which directory is for the Clonezilla image (only the first level of directories are shown, and
the Clonezilla image (i.e. directory) itself will be excluded. If there is a space in the
directory name, it will _NOT_ be shown)?

/ Top_directory_in_the_local_device

<Ok> <Cancel>

```

Clonezilla will show you the disk usage report and prompt you to continue. Press **Enter** to continue:

```

*****
Press "Enter" to continue.....

```

Select **Beginner** mode and press Enter:

```

Clonezilla - Opensource Clone System (OCS)
Choose the mode to run the following wizard about advanced parameters:

Beginner Beginner mode: Accept the default options
Expert Expert mode: Choose your own options

<Ok> <Cancel>

```

Select **restoredisk** option and press **Enter**:

```
Clonezilla - Opensource Clone System (OCS): Select mode
*Clonezilla is free (GPL) software, and comes with ABSOLUTELY NO WARRANTY*
This software will overwrite the data on your hard drive when restoring! It is recommended to
backup important files before restoring!***
///Hint! From now on, if multiple choices are available, you have to press space key to mark
your selection. An asterisk (*) will be shown when the selection is done///

savedisk          Save_local_disk_as_an_image
saveparts         Save_local_partitions_as_an_image
*restoredisk      Restore_an_image_to_local_disk
restoreparts      Restore_an_image_to_local_partitions
1-2-mdisks        Restore_an_image_to_multiple_local_disks
recovery-iso-zip   Create_recovery_Clonezilla_live
chk-img-restorable Check_the_image_restorable_or_not
cvt-img-compression Convert_image_compression_format_as_another_image
encrypt-img        Encrypt_an_existing_unencrypted_image
decrypt-img        Decrypt_an_existing_encrypted_image
exit              Exit. Enter command line prompt

<Ok>                                <Cancel>
```

9. Select the image to be restored to disk

Clonezilla will show you all available images previously saved to repository disk. Select the image you want to restore to disk and press **Enter**:

```
Clonezilla - Opensource Clone System (OCS) | Mode: restoredisk
Choose the image file to restore:

IOS_2016-05-06-23-img      2016-0506-2345_sda_1000GB
SIMNODE_2016-05-06-22-img 2016-0506-2314_sda_1000GB

<Ok>                                <Cancel>
```

10. Select the target disk (disk to be restored from image)

As you already selected the Clonezilla repository disk the only available choice for the source disk is the other disk. Press **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
REPLACED!!)
The disk name is the device name in GNU/Linux. The first disk in the system is "hda"
the 2nd disk is "hdb" or "sdb"... Press space key to mark your selection. An asterisk
be shown when the selection is done

sda 1000GB-ST1000NM0011-ST1000NM0011_21N20235

<Ok>                                <Cancel>
```


Clonezilla will show you the complete command to run this task and prompt you to continue.
Press **Enter** to continue:

```
*****.
PS. Next time you can run this command directly:
/usr/sbin/ocs-sr -g auto -e1 auto -e2 -c -r -j2 -scr -p true restoredisk 1
This command is also saved as this file name for later use if necessary: /
img-2016-05-07-00-12
*****.
Press "Enter" to continue... _
```

11. Set advanced extra parameters

Select **Yes, check the image before restoring** and press **Enter**:

```
Clonezilla advanced extra parameters | Mode: restoredisk |
Before restoring the image, do you want to check if the image is restorable or not? ///NOTE
This action will only check the image is restorable or not, and it will not write any data
the harddrive.

Yes, check the image before restoring
-scr No, skip checking the image before restoring

<Ok> <Cancel>
```

12. Restoring the image to disk

Before starting the image restore, Clonezilla will ask you for confirmation.
Type **Y** and press **Enter**:

```
*****.
Machine: X8DA6
sda (1000GB_ST1000NM0011_ST1000NM0011_Z1N20235)
sda1 (2.3G_ntfs_System(In_ST1000NM0011_)_ST1000NM0011_Z1N20235)
sda2 (170.7G_ntfs_OSDisk(In_ST1000NM0011_)_ST1000NM0011_Z1N20235)
sda3 (758.6G_ntfs_DATA(In_ST1000NM0011_)_ST1000NM0011_Z1N20235)
*****.
Are you sure you want to continue? (y/n) y_
```

```
Partclone v0.2.87 http://partclone.org  
Starting to clone device (/dev/sda2) to image (-)  
Reading Super Block  
Calculating bitmap... Please wait... done!  
File system: NTFS  
Device size: 183.2 GB = 44733034 Blocks  
Space in use: 53.3 GB = 13024310 Blocks  
Free Space: 129.9 GB = 31708724 Blocks  
Block size: 4096 Byte
```



```
Elapsed: 00:00:08 Remaining: 00:13:36 Rate: 3.88GB/min  
Current Block: 126826 Total Block: 44733034
```

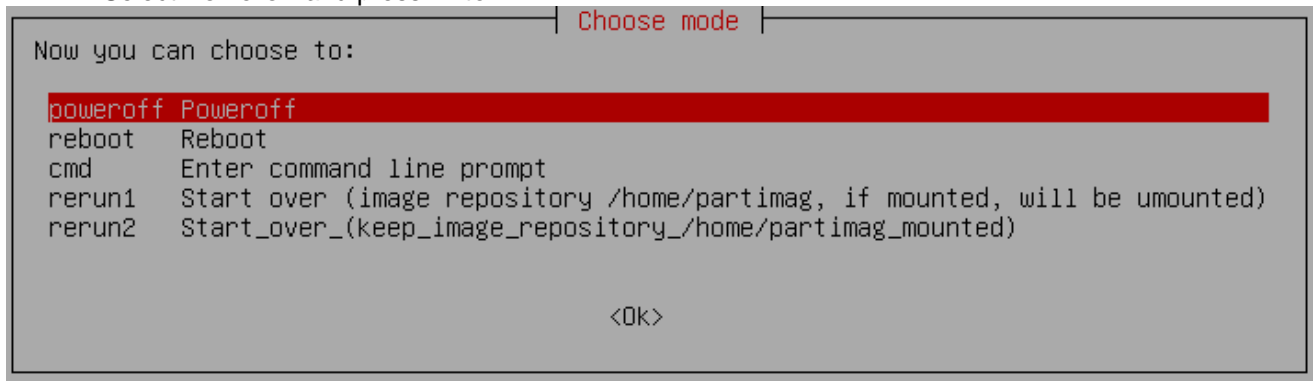

| | |
|---|-------|
| Data Block Process: | |
| <div style="background-color: blue; width: 100%; height: 1em;"></div> | 0.97% |
| Total Block Process: | |
| <div style="background-color: blue; width: 100%; height: 1em;"></div> | 0.28% |

When everything is done, Clonezilla will report and prompt you to continue.
Press **Enter** to continue:

```
*****.
If you want to use Clonozilla 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..._
```

14. Poweroff

Select **Poweroff** and press **Enter**:



15. Remove the backup disk (image repository disk)

When the PC is powered off remove the backup disk.