Here is the step-wise tutorial on cloning a Centos OS using open source software: CLONEZILLA

In this example, the machine has 1 disk (8 GB), we want to clone it to an external disk (16 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 16 GB instead of modern disk size.

Steps:

- Prepare Clonezilla Live You can download the iso file from the internet(<u>http://clonezilla.org/downloads/stable/iso-zip-files.php</u>) and burn it in a CD/DVD.
- Boot your Clonezilla via CD/DVD Set CDROM in your first boot priority using the BIOS settings.
- 3. After booting Clonezilla Live from CD/DVD, you'll see a screen like this:



4. Now, you'll see a screen like this:



Choose "To RAM. Boot media can be removed later" option in the boot menu.

5. After taking few minutes to copy the files to RAM, you'll be given a language selection menu.



Choose your language in the language menu

6. Then, you'll see a menu for selecting the layout of your keyboard.

 'Don't touch keymap': don't overwrite the which is maintained manually with install 'Keep kernel keymap': prevent any keymap the system boots; 'Select keymap from full list': list all Recommended when using cross-architecture 	ed for non-USB keyboards); keymap in /etc/console, -keymap(8); from being loaded next time the predefined keymaps. (often USB) keyboards.
Policy for handling keymaps: Select keymap from arc O <mark>on't touch keymap</mark> Keep kernel keymap Select keymap from ful	h list 1 list

Choose Keyboard layout. Select default i.e; Don't touch keymap if you don't know.

7. Then, choose "Start Clonezilla" in the following menu as:



8. Choose "device-device......" Option in the following menu

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Clonez *Clonezilla is free (GPL) software, and comes wit ///Hint! From now on, if multiple choices are av your selection. An asterisk (*) will be shown whe Two modes are available, you can (1) clone/restore a disk or partition using an i (2) disk to disk or partition to partition clone Select mode: device-image work with disks or partition device-device work directly from a disk	illa h ABSOLUTELY NO WARRANTY* ailable, you have to press space key to mark n the selection is done/// mage /restore. tions using images k or partition to a disk or partition
<0k>	<cancel></cancel>

9. Then, choose "Beginner" option in the following menu.



10. Choose "Local to local disk" option

NCHC Free Software Labs,	Taiwan		
Clonezilla is free (GP This software will ove backup important files Select mode: disk_ part_ part_ ovit	Clonezilla – Op) software, and co rwrite the data on on the target disk to_local_disk loca to_remote_disk loca to_local_part loca to_remote_part loca	Densource Clone System (OCS) Dense with ABSOLUTELY NO WARRANTY your hard drive when cloning! It is recommended to before you cloning!*** 11 disk to local disk clone 11 disk to remote disk clone 11 partition to local partition clone 11 partition to remote partition clone 12 Seter commend	
	<0k>	<cancel></cancel>	

11. Choose source disk. It is the disk that you are going to clone on other disk.

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Clonezilla – Opensource Clone System (OCS) Choose local disk as source. The disk name is the device name in GNU/Linux. The first the 2nd disk is "hdb" or "sdb" Press space key to mark be shown when the selection is done:	Mode: disk_to_local_disk disk in the system is "hda" or "sda", your selection. An asterisk (*) will
<mark>sda 8590MB_VMware_Virtual_I_ata-VMware_Virtual_IDE</mark> sdb 17.1GB_VMware_Virtual_I_ata-VMware_Virtual_IDE	_Hard_Drive_0000000000000000000001 _Hard_Drive_010000000000000000000
<0K>	<cancel></cancel>

12. Choose target disk. While choosing this disk, you must be aware that all the data in this disk will be lost and replaced by the data in the source disk.

NCHC Free Software Labs,	Taiwan		
Clonezill Choose local disk as t The disk name is the the 2nd disk is "hdb" be shown when the sele sdb 17.1GB_VMwa	a – Opensource Clone S arget (ALL DATA ON THE device name in GNU/Lin or "sdb" Press spac ction is done: re_Virtual_I_ata-VMwar	<pre>system (OCS) Mode: disk_to_local_disk ENTIRE DISK WILL BE LOST AND REPLACED!!) ux. The first disk in the system is "hda" or "sda", we key to mark your selection. An asterisk (*) will e_Virtual_IDE_Hard_Drive_0100000000000000000000000000000000000</pre>	
	<0k>	<cancel></cancel>	

13. If you get any other selection options, leave the default option and continue.

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Clopezille on_the_f	lu advanced extra narameters	Mode: disk to local disk
Set the advanced parameters (m	nultiple choices available). If	you have no idea, keep the default
value and do NOT change anythi	ing.:	
	Skip checking/repairing source	e file system
-fsck-src-part	Check and repair source file :	system before cloning
<uk></uk>	•	<uancel></uancel>

 You'll see many confirmation questions as: Ask confirmation about creating partition on the target disk.



Ask confirmation about cloning boot loader to target disk

Device Boot Start End #sectors Id System /dev/sdb1 * 2048 7813119 7811072 83 Linux /dev/sdb2 7813120 8812543 999424 82 Linux swap / Solaris /dev/sdb3 8814590 16775167 7960578 5 Extended /dev/sdb4 0 – 0 0 Empty /dev/sdb5 8814592 16775167 7960576 83 Linux Warning: partition 1 does not end at a cylinder boundary Successfully wrote the new partition table
Re-reading the partition table [793.008986] sdb: sdb1 sdb2 sdb3 < sdb5 >
If you created or changed a DOS partition, /dev/foo7, say, then use dd(1) to zero the first 512 bytes: dd if=/dev/zero of=/dev/foo7 bs=512 count=1 (See fdisk(8))
This is done by "sfdisk —-force /dev/sdb < /tmp/ocs_onthefly_local.t884TQ/tgt_pt.sf" Informing the OS that partition table has changed [793.152761] sdb: sdb1 sdb2 sdb3 < sdb5 > Checking the integrity of partition table in the disk /dev/sdb done!

The first partition of disk /dev/sdb starts at 2048.
Restoring the hidden data between MBR (1st sector, i.e. 512 bytes) and 1st partition, which might b useful for some recovery tool, by:
dd if=/tmp/ocs_onthefly_local.t884TQ/tgt–hidden–data.img of=/dev/sdb seek=1 bs=512 count=2047 2047+0 records in
2047+0 records out
1048064 bytes (1.0 MB) copied, 0.0510845 s, 20.5 MB/s

axxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Cloning the boot loader (executable code area) from "sda" to "sdb"

Now we will start to clone data to the target machine Are you sure you want to continue? ? (y/n) y

Ask confirmation about cloning data from source disk to target disk

PS. Next time you can run this command directly:
/opt/drbl/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-2011–11–3
0-01-45
Press "Enter" to continue
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
\$\$\$X\$\$\$\$K\$K\$K\$K\$K\$K\$K\$K\$K\$K\$K\$K\$K\$K\$K\$K
The first partition of disk /dev/sda starts at 2048.
Saving the hidden data between MBR (1st sector, i.e. 512 bytes) and 1st partition, which might be us
eful for some recovery tool, by:
dd if=/dev/sda of=/tmp/ocs_onthefly_local.t884TQ/src-hidden-data.img skip=1 bs=512 count=2047
2047+0 records in
2047+0 records out
1048064 bytes (1.0 MB) copied, 0.0241663 s, 43.4 MB/s

Collecting partition /dev/sda1 info
Collecting partition /dev/sda2 info
Collecting partition /dev/sda3 info
Collecting partition /dev/sda5 info
Outputing swap UUID/LABEL of sda2
Saving swap /dev/sda2 info in /tmp/ocs_onthefly_local.t884TQ/swappt–sdb2.info

Searching for data partition(s)
Excluding busy partition or disk
Unmouted partitions (including extended or swap):
Collecting info. done!
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 (17.1GB_VMware_Virtual_I_ata-VMware_Virtual_IDE_Hard_Drive_010000000000000000000)
x0x0x0x0x0x0x0x0x0x0x0x0x0x0x0x0x0x0x0
Are you sure you want to continue? ? (y/n) y_

15. Now you'll see several windows like these on your screen. Wait until the whole cloning process is completed.

Partclone v Starting to Calculating	Partclone 0.2.38 http://partclone. back up device(/dev/sda bitmap Please wait	org 1) to device(/dev/sdb: •	.)
Elapsed: 00 Remaining:	:00:04 00:00:01		
Partclone Starting Calculati	Partclo v0.2.38 http://partclor to back up device(/dev/s ng bitmap Please wait em: EXTFS	one he.org sda1) to device(/dev/ t done!	sdb1)
File syst Device si Space in Free Spac Block siz Used bloc	ze: 4.0 GB ise: 781.4 MB e: 3.2 GB e: 4096 Byte k: 190779		

16. When everything is done, Clonezilla will prompt you if you want to run it again, 'Stay in this console (console 1), enter command line prompt' 'Run command "exit" or "logout"



17. Then, choose '0' to power-off and the machine will be halted. Now, you can remove your hard drive and keep it in some safe place as a backup.