



Clonezilla, the opensource clone system

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3. What is Clonezilla and how does it work ?

You're probably familiar with the popular proprietary commercial package [Norton Ghost®](#) and its OpenSource counterpart, [Partition Image](#). The problem with these software packages is that it takes a lot of time to massively clone systems to many computers. You've probably also heard of Symantec's solution to this problem, [Symantec Ghost Corporate Edition®](#) with multicasting. Well, now there is an OpenSource clone system (OCS) solution called Clonezilla with unicasting and multicasting! With [DRBL](#) and network boot enabled client computers, the only thing you have to prepare is a Clonezilla server. You do not even have to prepare a bootable CD or floppy with Partition Image for every client computer.

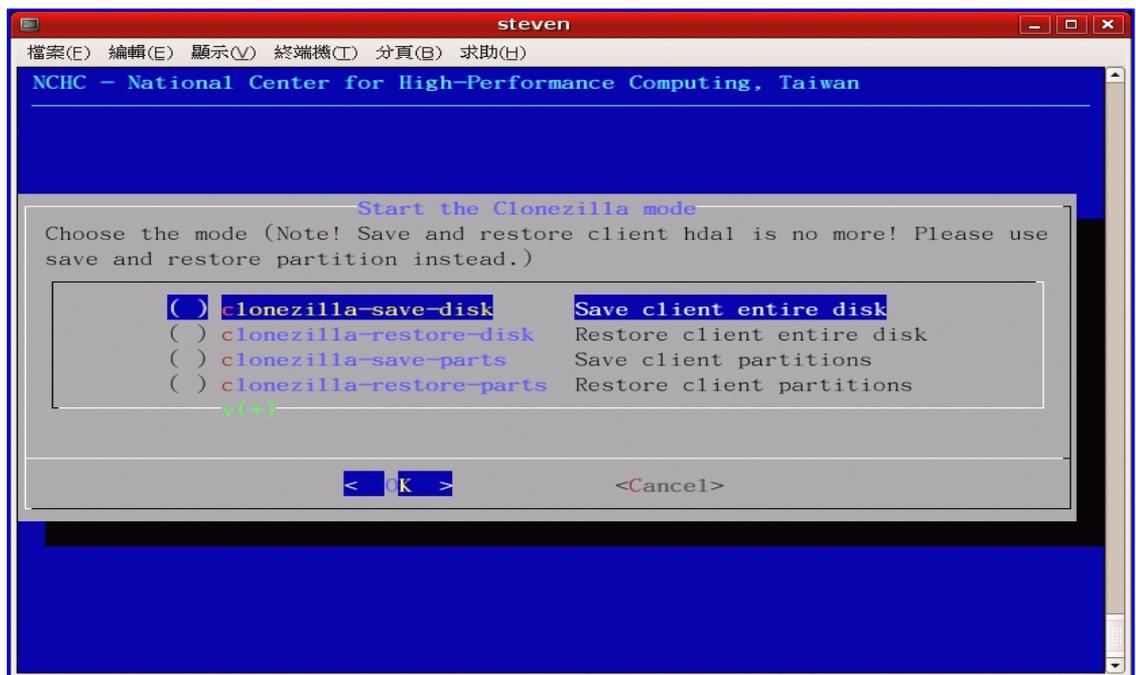
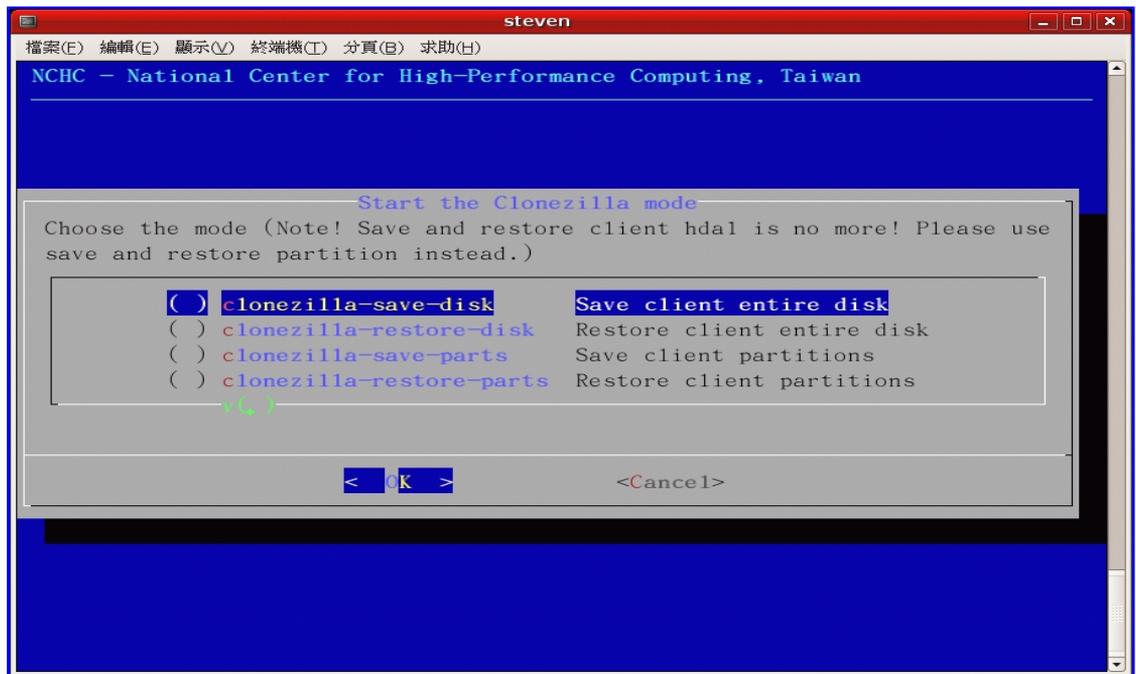
Clonezilla, based on [DRBL](#), [Partition Image](#), [ntfsclone](#), and [udpcast](#), allows you can massively clone many (40 plus!) computers simultaneously. At the NCHC's Classroom C, Clonezilla was used to clone 41 computers simultaneously. It took about 50 minutes to clone a 5.6 GBytes system image to all 41 computers via unicasting and only about 10 minutes via multicasting!

A [DRBL](#) server must first be set up in order to use Clonezilla. The DRBL installation documentation is [here](#). Once DRBL is installed on the server, Clonezilla will be ready. Before downloading or installing clonezilla, it is recommended to read the "Change log" for different branches: [stable](#), [testing](#), [unstable](#)

When setting up the DRBL server, collect the MAC addresses of the client computers and let the DRBL server offer the same IP address for the clients every time it boots. This will keep you from cloning the system to incorrect or unknown clients. If you are 100% certain that no other computer will be involved in the DRBL environment, you can use the ["impatient method"](#) to setup the DRBL environment.

Clonezilla commands:

- User interface (less options):
 - use `"/opt/drbl/sbin/dcs"` to switch clients' mode. You will see two menus: clonezilla-start and clonezilla-stop. The various modes available in the clonezilla-start menu are:
 - clonezilla-save-disk: clonezilla save disk mode
 - clonezilla-restore-disk: clonezilla restore disk mode
 - clonezilla-save-parts: clonezilla save partitions mode
 - clonezilla-restore-parts: clonezilla restore partitions mode
 - clonezilla mode
 - This is what the graphic mode looks like:



- Command line (more options):
 - /opt/drbl/sbin/drbl-ocs. Available options are:

Usage:
 To start Clonezilla:
 Usage:
 To start clonezilla:
 /opt/drbl/sbin/drbl-ocs [OPTION] {startdisk|startparts} {save|restore|multicast_restore}
 startdisk operate on all partitions of the disk
 startparts operate on the chosen partitions
 Options for restoring:
 -g, --grub-install GRUB_PARTITION Install grub in hda with root grub directory in GRUB_PARTITION when restoration finishes, GRUB_PARTITION can be one of "/dev/hda1", "/dev/hda2"... or "auto" ("auto" will clonezilla detects the grub root partition automatically)
 -r, --resize-partition Resize the partition when restoration finishes, this will try to fix the problem when small partition image is restored to larger partition. Now support partition with filesystem reiserfs, fat, ext2 and ext3.
 Warning!!! Use this carefully... Backup your data first
 -k, --no-fdisk, --no-create-partition Do NOT create partition in target harddisk. If this option is set, you must make sure there is an existing partition table in the current restored harddisk. Default is Yes
 -t, --no-restore-mbr Do NOT restore the MBR (Master Boot Record) when restoring image. If this option is set, you must make sure there is an existing MBR in the current restored harddisk. Default is Yes
 -u, --select-img-in-client Input the image name in clients
 -e, --load-geometry Force to use the saved CHS (cylinders, heads, sectors) when using sfdisk

-y, -y0, --always-restore, --always-restore-default-local Let DRBL server as restore server, i.e. client will always has restore mode to choose (However default mode in PXE menu is local boot)
-y1, --always-restore-default-clone Let DRBL server as restore server, i.e. client will always has restore mode to choose (The default mode in PXE menu is clone, so if client boots, it will enter clone always, i.e. clone forever)
--time-to-wait TIME Even when the necessary amount of clients do have connected, still wait until TIME seconds since first client connection have passed
--clients-to-wait NUMBER Automatically start as soon as a minimal number of clients NUMBER have connected
--max-time-to-wait TIME When not enough clients have connected (but at least one), start anyways when TIME seconds since first client connection have passed. This option is used with --clients-to-wait
-x, --full-duplex Use full-duplex network with udpcast in multicast mode (faster, but does not work with network hub, only works in switch).
-j, --create-part-by-sfdisk Use sfdisk to create partition table instead of using dd to dump the partition table from saved image (This is default)
-j0, --create-part-by-dd Use dd to dump the partition table from saved image instead of sfdisk
-hn0 PREFIX Change the hostname of M\$ Windows based on the combination of hostname prefix and IP address, i.e. PREFIX-IP
-hn1 PREFIX Change the hostname of M\$ Windows based on the combination of hostname prefix and NIC MAC address, i.e. PREFIX-MAC

Options for saving:

-z0, --no-compress Don't compress when saving: very fast but very big image file (NOT compatible with multicast restoring!!!)
-z1, --gzip-compress Compress using gzip when saving: fast and small image file (default)
-z2, --bz2-compress Compress using bzip2 when saving: slow but smallest image file
-z3, --lzo-compress Compress using lzop when saving: similar to the size by gzip, but faster than gzip.
-i, --image-size SIZE Set the split image file volume size SIZE (MB). Only works with partimage now
-q, --use-ntfsclose If the partition to be saved is NTFS, use program ntfsclose instead of partimage

General options:

-l, --language Set the language to be shown by index number
[0]: English, [1]: Chinese Traditional (Big5) - Taiwan, [2] Chinese Traditional (UTF-8, Unicode) - Taiwan
-b, --batch Run drbl-ocs in batch mode, i.e. without any prompt or wait to press enter
-c, --confirm Wait for confirmation before restoring
-d, --debug-mode Enter command mode to debug before saving/restoring
--debug=LEVEL Output the partimage debug log in directory /var/log/ with debug LEVEL (0,1,2... default=0)
-h, --hosts IP_LIST Instead of all DRBL clients, assign the clients by IP address, like: -h "192.168.0.1 192.168.0.2"
NOTE!!! You must put " " before and after the IP_LIST!
-s, --skip-hw-detect Skip the hardware detection (kudzu, harddrake or discover)
-m, --module MODULE Force to load kernel module MODULE, this is useful when some SCSI device is not detected.
-n, --no-nfs-restart Do not to restart nfs when start or stop drbl-ocs (This is default)
-f, --nfs-restart Restart nfs when start or stop drbl-ocs (Default is to restart nfs)
-p, --postaction [poweroff|reboot|command] When save/restoration finishes, poweroff, reboot (default) or enter command prompt
-o, --run-post-dir Run the script in the directoty /opt/drbl/share/ocs/posrun when clone is finished. The command will be run before that assigned in -p or --postaction.
-w, --wait-time TIME Wait for TIME secs before saving/restoring
-mp, --mount-point MOUNT_POINT specify the other ocsroot directory instead of /home/partimag
--nogui Do not show GUI of partimage, use text only
--mcast-iface PORT Specify the multicast seed ethernet port PORT (eth0, eth1, eth2...). Suppose clonezilla will try to find that for you, but in some case, you might want to specify that.
-a, --no-force-dma-on Do not force to turn on HD DMA
-v, --verbose Prints verbose information

To stop clonezilla:

/opt/drbl/sbin/drbl-ocs stop

• Examples:

- The following is an example of how to save an image from a single computer (called computer M) and then restore it to 39 computers in a 40-computer classroom:
 - Set the Clonezilla server to be clonezilla-save-disk mode: In the Clonezilla server,
 - run "/opt/drbl/sbin/dcs", then choose "clonezilla-start" (use the space key to mark it). Next, choose "clonezilla-save-disk" (use space key to mark it)
 - Turn on computer M, set it as network boot (PXE or etherboot) in the BIOS or by pressing the hotkey (refer to your motherboard manual) when it is booting.
 - When computer M finishes the network boot, a prompt will ask you to name the image. Enter the name (e.g. nomorems) and then choose the disk you want to save it to.
 - Once the image is saved, set the mode to be clonezilla-restore-disk in the Clonezilla server. As an example, in the Clonezilla server,
 - run "/opt/drbl/sbin/dcs". Next, choose "clonezilla-start" (use space key to mark it). Next, choose "clonezilla-restore-disk" (use space key to mark it).

The program will ask you which source image to restore. In this example, we chose the image "nomorems."

- Make sure the clients (i.e. the computers to be cloned) will boot from the network (PXE or etherboot) then turn on the clients to let them boot from network.

- The clients will begin to clone the system image "nomorems" to their harddisks.
- Once all clients finish cloning, you can stop clonezilla by /opt/drbl/sbin/dcs -> clonezilla-stop.
- More examples are available [here](http://clonezilla.sourceforge.net/related_article/) (http://clonezilla.sourceforge.net/related_article/).
- PS: You can refer to [DRBl-winroll](http://drbl-winroll.sourceforge.net/) (http://drbl-winroll.sourceforge.net/) to make the restored (cloned) M\$ Windows with a different hostname.

