1. Introduction

This guide covers all the steps taken in cloning the D-Lab desktops. It firstly shows how make images using Clonezilla live disc. This is followed by steps on how to create a Clonezilla server then use it to deploy images to clients.

2. Creating an image

Requirements: Clonezilla live disc and an external hard disc.

Note: Clonezilla will compress the device with the ratio 2.4:1 (approximated!). So to create an image of a device with 24GB of data, ensure that the external disc has at least 10GB of free space.

1. Load the Clonezilla live disc onto the DVD-ROM drive. Plug in the external disc at this point.
2. Reboot the system and press F12 before the BIOS loads.
3. On the Boot Device Menu, select the 'Onboard or USB CD-ROM Drive' option. If the latter is not listed, go to 'System Setup > General > Boot Sequence' and check the box for the required option. Apply the changes, exit System Setup and repeat step 2.
4. Select each of the following options on the menus that appear:
   (i) Clonezilla live (default option)
   (ii) en_US
   (iii) don't touch keymap
   (iv) Start_Clonezilla
   (v) device-image (since we want to create an image)
   (vi) local_dev (we will be storing the image on the external disc. Ensure that the device is plugged in and connected to the system, then press 'Enter' to proceed)
   (vii) **Note:** the system drive containing the OS (sda – system device a?) will be listed first with all its partitions (a1, a5, a6 etc.). All other drives will come afterwards taking up the letters b, c, etc. If the system has only one drive (a), then the external disk will be sdb (sdb1 if it is not partitioned). An easier way is to use partition sizes.
   (viii) / Top_directory_in_the_local_device (the image can be moved afterwards) Press 'Enter' to continue.
   (ix) Beginner (simplest mode – sets best options as default on subsequent menus)
   (x) **Note:** can either
   (xi) create an image of an entire disc as well as one or more partitions of a disc.
   For a disc:
   - select 'savedisk'
   - name the image being created. Use the convention shown as it will make identifying the image simpler.
   - select the disc to be cloned. Remember from point (vii) that our OSes are on sda. Press 'Enter' to proceed
   - confirm the procedure with 'y' followed by 'Enter'
   - once complete, press '0' (to shut the system down) or '1' (to reboot) followed by 'Enter'

   For partition imaging:
   - select 'saveparts'
   - name the image being created. Use the convention shown as it will make identifying the image simpler.

- mark the partitions to be imaged using the spacebar to check the boxes. Press 'Enter' twice to continue
- confirm the procedure with 'y' followed by 'Enter'
- once complete, press '0' (to shut the system down) or '1' (to reboot) followed by 'Enter'

(xi) remove the disc, close the tray and press 'Enter'

3. Clonezilla setup [1]

Requirements: Ubuntu desktop with internet access.

Note: the system must have enough free disc space to store the image that is to be deployed. Also, the user must have administrator privileges.

All terminal entries are written in bold with a bigger font size.

The first step is to install the key for the Clonezilla repository. Enter the following in the terminal to download the key:

wget http://drbl.nchc.org.tw/GPG-KEY-DRBL

Second, add the key:

sudo apt-key add GPG-KEY-DRBL

Third, we need to add the Clonezilla repository to the apt source.list file. Enter the following to open /etc/apt/source.list in the nano text editor:

sudo nano /etc/apt/sources.list

Add the following two lines to the bottom of the file. Make sure to replace "lucid" with the name of the Ubuntu distribution you are using. I.E. gutsy, feisty, edgy, hardy, maverick, etc. (reference [2] has a list of all Ubuntu distributions to date as well as their code names):

deb http://free.nchc.org.tw/ubuntu lucid main restricted universe multiverse
deb http://free.nchc.org.tw/drbl-core drbl stable

Once you have added the Clonezilla repository to your source list, you can run the following two commands to update your list and install drbl:

sudo apt-get update
sudo apt-get install drbl

Once drbl is installed we can go ahead and install all the dependencies for Clonezilla. NIS will fail to launch at this point. Just ignore it. We will configure it later.

sudo apt-get install util-linux tar gzip bzip2 procps dialog rsync parted pciutils tcpdump bc grub gawk hdparm sdparm netcat file ethtool etherwake ssh syslinux mtools mkisofs reiserfsprogs e2fsprogs psmisc locales wget disktype zip unzip initscripts dhcp3-server tftpd-hpa nfs-kernel-server nis ntp curl lftp iptables sysutils libdigest-sha1-perl

sudo apt-get install partclone mkpxeinitrd-net clonezilla mkswap-uuid drbl-partimage drbl-ntfsprogs drbl-chntpw drbl-lzop udpcast drbl-etherboot freedos

sudo apt-get install lvm2 ntfs-3g lshw

Once drbl is installed we need to create a file with the MAC address of each system we wish to image. The addresses should be in the following format with one address per line.

sudo nano /etc/drbl/macadr-eth0:0.txt

00:00:00:00:00:00

4. Cloning: start to finish

1. Edit the **macadr-eth0:0.txt** file to include only addresses of clients to be cloned. The simplest way is to use Midnight Commander (MC) which can be installed using
   Code:

```
sudo apt-get install mc
```

2. Copy the image to be installed in the directory ***/home/partimag***. Again, MC can be used to easily create this directory and transfer the image.

3. Configure the boot image that each PXE client will use:
   Code:

```
sudo /opt/drbl/sbin/drblsrv-offline -s 'uname -r'
```

4. Launch drblpush to configure the environment.
   Code:

```
sudo /opt/drbl/sbin/drblpush -i
```

5. The drblpush script will ask a series of questions and then setup the environment. Two network cards were used in the following extract – setup to clone the whole disc of one client. The last block shows a report of the procedure;
   - client address
   - mode used
   - partition
   - cloning result
   - partition size
   - time taken to deploy

   All terminal entries are written in bold with a bigger font size (first two are covered in 3 and 4 above).

   Note: any mistakes – typos, wrong options – may result in the user having to restart the whole procedure.

root@hotseat002:/home/support# **sudo /opt/drbl/sbin/drblsrv-offline -s `uname -r`**

Using kernel from this server for client...
**********.
Your OS version is:: Ubuntu 10.04
**********.
These packages from your GNU/Linux distribution are necessary (Check your distribution package repository for more details):
util-linux tar gzip bzip2 procps dialog rsync parted pciutils tcpdump bc gawk hdparm sdparm netcat file ethtool etherwake ssh syslinux mtools reiserfsprogs e2fsprogs psmisc locales wget disktype zip unzip patch iproute traceroute iputils-ping binutils initscripts tftpd-hpa nfs-kernel-server nis curl lftp iptables libdigest-sha1-perl udev
**********.
These packages from DRBL project are necessary [Check http://drbl.sf.net (English) or http://drbl.nchc.org.tw (Chinese) for more details]. rpm or deb packages can be found in http://free.nchc.org.tw/drbl-core or http://drbl.sf.net/drbl-core:
clonezilla mkswap-uuid drbl-partimage partclone drbl-chntpw drbl-lzop pigz pbzip2 mkpxeinitrd-net udpcast gpxe freedos drbl-ntfsprogs
**********.
These packages are recommended to install if they exist in the distribution repository:
lvm2 ntfs-3g genisoimage mkisofs lshw hwinfo aoetools vblade dmidecode lzma xz xz-utils pxz lzip plzip hfsutils hfsprogs dmsetup dmraid kpartx device-mapper tofrodos dos2unix unix2dos dhcp3-server isc-dhcp-server
**********.
Press Ctrl-C to stop the program! Or Press "Enter" to continue...
Check if they are installed...
Checking util-linux... installed.
Checking tar... installed.
Checking gzip... installed.
Checking bzip2... installed.
Checking procps... installed.
Checking dialog... installed.
Checking rsync... installed.
Checking parted... installed.
Checking pciutils... installed.
Checking tcpdump... installed.
Checking bc... installed.
Checking gawk... installed.
Checking hdparm... installed.
Checking sdparm... installed.
Checking netcat... installed.
Checking file... installed.
Checking ethtool... installed.
Checking etherwake... installed.
Checking ssh... installed.
Checking syslinux... installed.
Checking mtools... installed.
Checking reiserfsprogs... installed.
Checking e2fsprogs... installed.
Checking psmisc... installed.
Checking locales... installed.

```
Checking wget... installed.
Checking disktype... installed.
Checking zip... installed.
Checking unzip... installed.
Checking patch... installed.
Checking iproute... installed.
Checking traceroute... installed.
Checking iputils-ping... installed.
Checking binutils... installed.
Checking initscripts... installed.
Checking tftpd-hpa... installed.
Checking nfs-kernel-server... installed.
Checking nis... installed.
Checking curl... installed.
Checking lftp... installed.
Checking iptables... installed.
Checking libdigest-sha1-perl... installed.
Checking clonezilla... installed.
Checking mkswap-uuid... installed.
Checking drbl-partimage... installed.
Checking partclone... installed.
Checking drbl-chntpw... installed.
Checking drbl-lzop... installed.
Checking pigz... installed.
Checking pbzip2... installed.
Checking mkpxeinitrd-net... installed.
Checking udpcast... installed.
Checking gpxe... installed.
Checking freedos... installed.
Checking drbl-ntfsprogs... installed.
Checking udev... installed.
**************************************************.
**************************************************.
**************************************************.
Installing kernel for clients... ...
The kernel for client is copied from server.
Installing kernel 2.6.32-25-generic-pae for clients...
It might take several minutes to install this kernel, please be patient... ...done!
Generating modules.dep and map files for clients... done!
Preparing the kernel firmware for clients...
**************************************************.
Creating config file for PXE clients...
Copying pxelinux.0, gpxelinux.0, menu.c32, vesamenu.c32, chain.c32, mboot.c32,
sanboot.c32 and memdisk to /tftpboot/nbi_img...
Copying memtest86+ to /tftpboot/nbi_img...
Copying FreeDOS files to /tftpboot/nbi_img/...
Generating default pxelinux config (/tftpboot/nbi_img/pxelinux.cfg/default)...
Use com32 module: vesamenu.c32
Adding menus for DRBL, local boot, memtest86+, FreeDOS...
done!
**************************************************.
**************************************************.
```

Creating the image files for PXE and Etherboot client computer(s), this will take a few minutes ...
The latest kernel for the DRBL clients is 2.6.32-25-generic-pae
Running mknic-nbi --kernel 2.6.32-25-generic-pae --all --no-modules
Will client check DHCP server name is "drbl" or not: yes
The maximum times to try to get IP address for a client: 5
The pause time after network card is up: 0
The timeout to wait for network card linked (Unit: 0.1 secs): 70
Setting port for udhcpc request to default...
Using the kernel modules from /tftpboot/node_root//lib/modules...
The selected kernel for DRBL clients is: 2.6.32-25-generic-pae
Kernel 2.6 was found, so default to use initramfs.
Creating the network boot initrd for PXE clients by: mkpxeinitrd-net -k 2.6.32-25-generic-pae -t initramfs
Use kernel modules from /tftpboot/node_root//lib/modules/2.6.32-25-generic-pae.
Calling hook udev...
Creating the initRAMFS image...
Initramfs, remove ramdisk_size/ramdisk_block in /tftpboot/nbi_img/pxelinux.cfg/default if exists...
Finished!
Done!
**********.
Done!
root@hotseat002:/home/support# **sudo /opt/drbl/sbin/drblpush -i**
****
Hint! When a yes/no option is available, the default value is uppercase, Ex. (y/N), the default is "N", when you press "Enter", it will use "N". If you are not sure which one to choose, you can just press "Enter" key.
****
Searching the installed packages for DRBL server...This might take several minutes...
Finished searching the installed packages for DRBL server.
****

The interactive mode let you supply the information of your DRBL environment.

Please enter DNS domain (such as drbl.sf.net):
[drbl.name] **drbl.eie.wits.ac.za**
Set DOMAIN as drbl.eie.wits.ac.za

Please enter NIS/YP domain name:
[penguinzilla] **hotseat002**
Set DOMAIN as hotseat002

Please enter the client hostname prefix:
This prefix is used to automatically create hostname for clients. If you want to overwrite some or all automatically created hostnames, press Ctrl-C to quit this program now, edit /opt/drbl/conf/client-ip-hostname, then run this program again.
[hotseat002] **dlabClone#**
Set the client hostname prefix as dlabClone#
---

eth0: IP address 146.141.119.89, netmask 255.255.255.0
eth1: IP address 146.141.125.21, netmask 255.255.255.0
Configured ethernet card(s) found in your system: eth0 eth1

The ethernet port for Internet access is: eth0 eth1
The ethernet port(s) for DRBL environment: eth0 eth1
****
****
Now we can collect the MAC address of clients!
If you want to let the DHCP service in DRBL server offer same IP address to client every time when client boot, and you never did this procedure, you should do it now!
If you already have those MAC addresses of clients, you can put them into different group files (These files number is the same number of networks cards for DRBL service). In this case, you can skip this step.
This step helps you to record the MAC addresses of clients, then divide them into different groups. It will save your time and reduce the typos.
The MAC addresses will be recorded turn by turn according to the boot of clients,
and they will be put into different files according to the network card in server, file name will be like macadr-eth1.txt, macadr-eth2.txt... You can find them in directory /etc/drbl.
Please boot the clients by order, make sure they boot from etherboot or PXE!
Do you want to collect them?
[y/N] **n**
****
OK! Let's continue...
****
Do you want to let the DHCP service in DRBL server offer same IP address to the client every time when client boots (If you want this function, you have to collect the MAC addresses of clients, and save them in file(s) (as in the previous procedure)). This is for the clients connected to DRBL server's ethernet network interface eth0 ?
[y/N] **y**
****
OK! Please tell me the file name which contains the MAC address of clients line by line for eth0.
[macadr-eth0.txt] **macadr-eth0:0.txt**
Hostmin: 146.141.119.1
****
What is the initial number do you want to use in the last set of digits in the IP (i.e. the initial value of d in the IP address a.b.c.d) for DRBL clients connected to this ethernet port eth0.
[1] **1**
****
The file name you set is "macadr-eth0:0.txt".
The clients number in this file is 1.
We will set the IP address for the clients connected to DRBL server's ethernet network interface eth0 By the MAC address file you set, the IP addresses for the clients connected to DRBL server's ethernet network interface eth0 as: 146.141.119.1 - 146.141.119.1
Accept ? [Y/n] **y**
****
OK! Let's continue...
Do you want to let the DHCP service in DRBL server offer same IP address to the client every time when client boots (If you want this function, you have to collect the MAC addresses of clients, and save them in file(s) (as in the previous procedure)). This is for the

clients connected to DRBL server's ethernet network interface eth1 ?
[y/N] **y**
****
OK! Please tell me the file name which contains the MAC address of clients line by line for eth1.
[macadr-eth1.txt] **macadr-eth0:0.txt**
Hostmin: 146.141.125.1
****
What is the initial number do you want to use in the last set of digits in the IP (i.e. the initial value of d in the IP address a.b.c.d) for DRBL clients connected to this ethernet port eth1.
[1] **2**
****
The file name you set is "macadr-eth0:0.txt".
The clients number in this file is 1.
We will set the IP address for the clients connected to DRBL server's ethernet network interface eth1 By the MAC address file you set, the IP addresses for the clients connected to DRBL server's ethernet network interface eth1 as: 146.141.125.2 - 146.141.125.2
Accept ? [Y/n] **y**
****
OK! Let's continue...
****
The Layout for your DRBL environment:
****
```
        NIC    NIC IP                Clients
+----------------------------+
|       DRBL SERVER        |
|                          |
|   +-- [eth0 eth1] 146.141.119.89 146.141.125.21 +- to WAN
|                          |
|   +-- [eth0] 146.141.119.89 +- to clients group 0 [ 1 clients, their IP
|                          |          from 146.141.119.1 - 146.141.119.1]
|   +-- [eth1] 146.141.125.21 +- to clients group 1 [ 1 clients, their IP
|                          |          from 146.141.125.2 - 146.141.125.2]
+----------------------------+
```
****
Total clients: 2
****
Press Enter to continue...
****

In the system, there are 3 modes for diskless linux services:
[0] Full DRBL mode, every client has its own NFS based /etc and /var.
[1] DRBL SSI (Single system image) mode, every client uses tmpfs based /etc and /var. In this mode, the loading and necessary disk space of server will be lighter. NOTE! (a) The client machine memory is recommended at least 256 MB. (b) The setting and config files of client will not be saved to the DRBL server! They are just used once and will vanish after the machine shutdowns! Besides, if you modify any file in the template client (located in /tftpboot/nodes), you have to run /opt/drbl/sbin/drbl-gen-ssi-files to create the template tarball in /tftpboot/node_root/drbl_ssi/. (c) If you want to provide some file to overwrite the setting in the template tarball when client boots, check /tftpboot/node_root/drbl_ssi/clients/00_README for more details.

[2] I do NOT want to provide diskless Linux service to client.
Which mode do you prefer?
[0] **2**
No diskless Linux for client is the system.
****

In the system, there are 4 modes available for clonezilla:
[0] Full Clonezilla mode, every client has its own NFS based /etc and /var.
[1] Clonezilla box mode, every client uses tmpfs based /etc and /var. In this mode, the loading and necessary disk space of server will be lighter than that in Full Clonezilla mode. Note! In Clonezilla box mode, the setting and config files of client will not be saved to the DRBL server! They just use once and will vanish after the machine shutdowns!
[2] I do NOT want clonezilla.
[3] Use Clonezilla live as the OS (Operating System) of clients (Testing).
Which mode do you prefer?
[0] **1**
Clonezilla box mode is set, an elegant mode for clonezilla is on the way!
****
****
The CPU arch for clients when running Clonezilla job: i486

When using clonezilla, which directory in this server you want to store the saved image (Please use absolute path, and do NOT assign it under /mnt/, /media/ or /tmp/)?
[/home/partimag] /home/partimag
Directory for clonezilla saved images: /home/partimag
****
The clients will use text mode when they boot.
****
OK! Let's continue...

Do you want to set the pxelinux password for clients so that when client boots, a password must be entered to startup (For better security)
[y/N] **n**
OK! Let's continue...

Do you want to set the boot prompt for clients?
[Y/n] **n**

Do you want to use graphic background for PXE menu when client boots?
Note! If you use graphical PXELinux menu, however client fails to boot, you can switch to text mode by running "/opt/drbl/sbin/switch-pxe-bg-mode -m text".
[y/N] **y**
Use graphic PXE Linux menu for the client.

OK! Let's continue...

Do you want to let DRBL server as a NAT server? If not, your DRBL client will NOT be able to access Internat.
[Y/n] **n**
This DRBL server does NOT provide NAT service, so your DRBL client will NOT be able

to access Internat.

Do you want to keep the old setting of existing DRBL clients if they exist?
[Y/n] **n**
We will remove all the setting of the DRBL clients if they already exist.
****
****
The running kernel in the server supports NFS over TCP!
Note! If you change the running kernel in the server, and not sure whether the kernel supports NFS over udp or tcp, you'd better to re-run "drblpush -i" again to avoid the client boots in failure!
Press Enter to continue...

****
The calculated NETWORK for eth0 is 146.141.119.0.
The calculated NETWORK for eth1 is 146.141.125.0.
****
****
We are now ready to deploy the files to system!
Do you want to continue?
Warning! If you go on, your firewall rules will be overwritten during the setup!
The original rules will be backuped as iptables.drblsave in system config directory (/etc/sysconfig or /etc/default).
[Y/n] **y**
****
OK! Let's do it!

Checking the necessary disk space... done!
Copying the config file to /etc/drbl... done!
Backup the original /etc/hosts as /etc/hosts.drblsave... done!
Generate the /etc/hosts for clients connected to eth0... eth1... done!
Cleaning the stale files of the diskless nodes if they exist... done!
**********.
**********.
The version number for your GNU/Linux: DBN-TU
Completely cleaning old common root files if they exist... done !
Completely cleaning old nodes if they exist... done !
Creating common root files... This might take several minutes..... done!
Update the kernel for client if necessary...
The DRBL client uses i586 kernel with version 2.6.32-25-generic-pae...
Trying to update the /tftpboot/node_root/lib/modules/2.6.32-25-generic-pae from server's /lib/modules/... This might take several minutes...
Found kernel modules in /lib/modules/2.6.32-25-generic-pae and its arch "i586" matches client's "i586"...
Syncing /lib/modules/2.6.32-25-generic-pae to client's common root...
Syncing /boot/*-2.6.32-25-generic-pae* to client's common root...
Generating the /tftpboot/node_root/lib/modules/2.6.32-25-generic-pae/modules.dep
Syncing /lib/firmware/ to client's common root...
Copying the directory /etc/ to clients common root /tftpboot/node_root...
Cleaning the ssh key file ssh_host_dsa_key copied from server... done!
Cleaning the ssh key file ssh_host_dsa_key.pub copied from server... done!
Cleaning the ssh key file ssh_host_rsa_key copied from server... done!

```
Cleaning the ssh key file ssh_host_rsa_key.pub copied from server... done!
Commenting the TCPwrapper related file /tftpboot/node_root/etc/hosts.deny copied from
server... done!
Commenting the TCPwrapper related file /tftpboot/node_root/etc/hosts.allow copied from
server... done!
The startup services for DRBL client are:
firstboot portmap nis ssh dbus acpid acpi-support cups drblthincli arm-wol sendsigs
umountfs
Using udev for clients... Set text mode for Debian DRBL client...
Deleting the accounts (except root) in the clients common root template... done!
Enabling the NIS client in the common root template... done!
Creating some necessary files in the clients common root template..... done!
Creating DRBL client: dlabClone001 146.141.119.1... Generating SSH host keys for client
146.141.119.1 if they do not exist... done!
Display manager:"gdm"...
Setting node 146.141.119.1 as normal_login... done!
Creating DRBL client: dlabClone102 146.141.125.2... Pseudo client is created for DRBL
SSI or clonezilla box mode! done!
Template client for DRBL SSI, Clonezilla box mode or Clonezilla live client is
146.141.119.1
Using template host /tftpboot/nodes/146.141.119.1
Generating SSH host keys for client 146.141.119.1 if they do not exist... done!
Generating the files for DRBL single system image template... root... etc... var... opt/drbl...
Root's openssh public key... done!
Modifying option diskless_client_os in drbl-ocs.conf...
Disable the password in pxelinux simple menu for all clients...
Disabling PXE password in config file /tftpboot/nbi_img/pxelinux.cfg/default...
done!
Now add necessary services to this DRBL server: DHCP, TFTP, NFS, NIS...
Generating the NFS exports for DRBL clients...
Backup the original /etc/exports as /etc/exports.drblsave
Exporting to clients by IP address line-by-line...
The /etc/exports setting is ok now!
This DRBL server does NOT provide NAT service, so your DRBL client will NOT be able
to access the Internet.
Now stop the NAT service...
Now set the YP securenets...
Backup the original /etc/ypserv.securenets as /etc/ypserv.securenets.drblsave
The /etc/ypserv.securenets setting is done!
Update YP...
Now add the service:  portmap dhcp3-server nis nfs-kernel-server tftpd-hpa drbl-clients-nat
Force to add portmap service in this Debian DRBL server...
Force to add dhcp3-server service in this Debian DRBL server...
Force to add nis service in this Debian DRBL server...
Force to add nfs-kernel-server service in this Debian DRBL server...
Force to add tftpd-hpa service in this Debian DRBL server...
Force to add drbl-clients-nat service in this Debian DRBL server...
Now start the service:  portmap dhcp3-server nis nfs-kernel-server tftpd-hpa drbl-clients-nat
portmap start/running, process 702
 * Stopping DHCP server dhcpd3
[fail]
 * Starting DHCP server dhcpd3
```

[OK]
 * Stopping NIS services
[OK]
 * Starting NIS services
[OK]
 * Stopping NFS kernel daemon
[OK]
 * Unexporting directories for NFS kernel daemon...
[OK]
 * Exporting directories for NFS kernel daemon...
[OK]
 * Starting NFS kernel daemon
[OK]
tftpd-hpa start/running, process 7483
Stopping the NAT services for DRBL clients... Now stop the NAT service...
done!
Starting the NAT services for DRBL clients... done!
ip_forward is already on.
Clean all the previous saved config file if they exist...done!
Turn off the boot prompt for PXE client...done!
Modifying /tftpboot/nbi_img/pxelinux.cfg/default to let DRBL client use graphical PXE boot menu... done!
Turn off all MENU DEFAULT in /tftpboot/nbi_img/pxelinux.cfg/default...
Make "local" as default label in /tftpboot/nbi_img/pxelinux.cfg/default.
DRBL service is set as unavailable. Set clientdir opt for label drbl in pxelinux config...
Setting drbl_mode="none" in /etc/drbl/drbl_deploy.conf and /etc/drbl/drblpush.conf... done!
Clonezilla box mode. Set clientdir opt for label clonezilla in pxelinux config...
Setting clonezilla_mode="clonezilla_box_mode" in /etc/drbl/drbl_deploy.conf and /etc/drbl/drblpush.conf... done!
You have to use "/opt/drbl/sbin/dcs" -> clonezilla-start to start Clonezilla service, so that there will be a Clonezilla menu when client boots
**.
Enjoy DRBL!!!
http://drbl.nchc.org.tw; http://drbl.name
NCHC Free Software Labs, Taiwan. http://free.nchc.org.tw
**.
If you like, you can reboot the DRBL server now to make sure everything is ready...(This is not necessary, just an option)
**.
The DRBL server is ready! Now set the client machines to boot from PXE or Etherboot.
(refer to http://drbl.sourceforge.net for more details)
NOTE! If Etherboot is used on client computers, version 5.4.0 or newer is required!
P.S. The config file is saved as /etc/drbl/drblpush.conf. Therefore if you want to run drblpush with the same config again, you may run it as: /opt/drbl/sbin/drblpush -c /etc/drbl/drblpush.conf
root@hotseat002:/home/support# sudo /opt/drbl/sbin/dcs
Now the clonezilla mode is: restore-disk
Setting client as clonezilla-restore-disk mode...Setting the TERM as xterm
**.
**.
Clean all the previous saved config file if they exist...done!
Client OS type when doing Clonezilla job is: nfsroot

start_ocs_service -t multicast_restoredisk -o 2010-11-19-12-img-sympodium-latest sda
clonezilla.lock dir: /var/lock/clonezilla
Finding the multicast seed ethernet port... done.
Will use ethernet port eth0 for multicast seed in this clonezilla server.
You are using multicast Clonezilla, please make sure:
1. This ethernet port in server is up and connected: eth0
2. If you have more than one (>=2) network switches for the DRBL environment, make sure all the switches are connected to each other, otherwise the multicast packets will not be sent to every clients from the ethernet port mentioned above via all the switches, so the multicast clone might NOT start.
Press "Enter" to continue.....
Starting the OCS service for node IP add. = 146.141.119.1
Starting the OCS service for node IP add. = 146.141.125.2
Set the single user password for client 146.141.119.1, this will be safer...
Setting the PXE clients to DRBL mode with label "Clonezilla: multicast restore 2010-11-19-12-img-sympodium-latest to disk sda"...
Turn off all MENU DEFAULT in /tftpboot/nbi_img/pxelinux.cfg/default...
Make "clonezilla" as default label in /tftpboot/nbi_img/pxelinux.cfg/default.
The MENU LABEL is "Clonezilla: multicast restore 2010-11-19-12-img-sympodium-latest to disk sda"
Client jobs are logged in '/var/log/clonezilla/clonezilla-jobs.log',
The sfdisk log when running clonezilla is in client /var/log/clonezilla-restore-sfdisk.log
**.
You are in clonezilla box mode!
**.
**.
Now set the client machines to boot from PXE or Etherboot (refer to http://drbl.sourceforge.net for more details). Then boot those clients, so that the template image can be cloned to them!
NOTE! (1) If Etherboot is used on client computers, version 5.4.0 or newer is required! (2) If the cloned OS is MS windows, and it fails to boot with an error message like "Missing Operating System" or "Invalid System Disk", then you can try to (1) change the IDE hard drive settings in the BIOS to use LBA mode instead of AUTO mode. (2) Or you can try to use parameter -t1 when restoring.
This is for all clients, so we remove other host-based PXE config files in /tftpboot/nbi_img/pxelinux.cfg/ and keep /tftpboot/nbi_img/pxelinux.cfg/default only.
Clean all the previous saved PXELINUX config file if they exist...done!
PS. Next time you can run this command directly:
/opt/drbl/sbin/drbl-ocs -b -g auto -e1 auto -e2 -r -x -j2 -p reboot --time-to-wait 60 -l en_US.UTF-8 startdisk multicast_restore 2010-11-19-12-img-sympodium-latest sda
This command is also saved as this file name for later use if necessary: /tmp/ocs-2010-11-19-12-img-sympodium-latest-2010-12-03-11-03
done!

root@hotseat002:/home/support# Client 146.141.119.1 (00:25:64:94:51:71) finished cloning. Stats: Multicast restored 2010-11-19-12-img-sympodium-latest, /dev/sda1, success, 16.4 GB, 4.653 mins; /dev/sda5, success, 30.4 GB, 7.959 mins; /dev/sda6, success, 3.9 GB, 1.983 mins;

6. Start the Clonezilla server
   Code:

```
sudo /opt/drbl/sbin/dcs
```

7. Select each of the following
   - All
   - clonezilla-start
   - Beginner
   - restore-disk **OR** restore-parts (depending on the type of image that is to be deployed)
   - -p reboot
   - confirm the image to be deployed with 'Enter'
   - select the disk/partition(s) on the clients then press 'Enter'
   - multicast
   - time-to-wait
   - set the time minimum time in seconds to wait: 60
8. Press 'Enter' to proceed
9. Reboot all clients and press F12 before the BIOS loads.
10. On the Boot Device Menu, select the 'Onboard Network Controller' option. If the latter is not listed, go to 'System Setup > System Configuration > Integrated NIC' and select the 'Enable with PXE' option. Then, go to 'System Setup > General > Boot Sequence' and check the box for the required option. Apply the changes, exit System Setup and repeat step 8.

5. Known problems

5.1. Cannot install key for the Clonezilla repository

This is most likely because wget requires authentication. To solve this;
1. System->Preferences->Network Proxy-> Set : Direct Internet Connection.
2. System->Administration->Synaptic Package Manager->Settings->Preferences->Network-> Set : Direct Internet Connection.
3. Then create a filename in /etc/apt/apt.conf
Code:

```
sudo gedit /etc/apt/apt.conf
```

add the following lines:
Code:

```
Acquire::http::Proxy "http://username:password@proxy:port";
Acquire::ftp::Proxy "ftp://username:password@proxy:port";
```

and save the file.
4. In the terminal run:
Code:

```
sudo apt-get update
```

Both apt and synaptic should work now. (You might need to restart your networking or your PC)

5.2. Some of the dependencies for Clonezilla are not installed (e.g. - pigz or gpxe)
Note each of the dependencies and install them manually using apt, for example;
Code:

```
sudo apt-get install pigz
```

5.3. One or more NIC not detected
Edit the ***/etc/network/interfaces*** file; comment all but the first two lines, save and close. Disconnect all LAN cables and reboot. Connect each of the cables and edit the file with the new IP addresses obtained.

5.4. Windows fails to boot on client after cloning
Reboot the client and press F12 before the BIOS loads. On the Boot Device Menu, select System Setup. Go to 'Drives > SATA Operation' and select the 'ATA' option. Apply the changes, exit System Setup and reboot.

References

[1] http://packratstudios.com/index.php/2008/04/20/how-to-setup-clonezilla-on-linux-ubuntu-quick-start-guide/ Last accessed 15-11-2010
[2] https://wiki.ubuntu.com/DevelopmentCodeNames Last accessed 23-11-2010.