

# คู่มือการติดตั้งและใช้งานโปรแกรม **Clone Zilla**

บน **Ubuntu Multiwan 8.10**

by **Hadyai Internet**



## บทนำ



บทความฉบับนี้ ได้เขียนขึ้นมาเพื่อเพิ่มประสิทธิภาพให้กับระบบ Ubuntu MultiWAN 8.10 ของทาง หาดใหญ่อินเทอร์เน็ต และเป็นการตอบแทนผู้ที่ให้การสนับสนุนเป็นอย่างดีกับทางทีมงาน

เนื่องจากว่าบทความฉบับนี้ จะมีผลต่อระบบข้อมูลใน HDD ดังนั้นก่อนจะลงมือปฏิบัติตามบทความนี้ จะต้องใช้ความระมัดระวัง อาจจะทำให้ข้อมูลในเครื่องที่ถูก clone สูญหายได้จากการ clone ข้อมูลใหม่ทับลงไป ทางทีมงาน ไม่สามารถรับผิดชอบความเสียหายที่อาจจะเกิดขึ้นได้

และถ้าหากท่านผู้อ่าน สนใจในระบบ Ubuntu MultiWAN 8.10 จากทางทีมงาน หาดใหญ่อินเทอร์เน็ต ก็สามารถศึกษาเพิ่มเติมได้จากเว็บ <http://www.hadyaiinternet.com> และขอขอบคุณทุกท่านที่ติดตามผลงานด้วยดีตลอดมา

ทีมงาน หาดใหญ่ อินเทอร์เน็ต

## ตอนที่ 1

# การติดตั้งโปรแกรม Clone Zilla

ก่อนอื่นจะต้องทำการติดตั้ง Key สำหรับ ทำการ Update

โดยใช้คำสั่ง

```
wget -q http://drbl.sourceforge.net/GPG-KEY-DRBL -O- | sudo apt-key add -  
gpg --keyserver subkeys.pgp.net --recv-key D7E8DF3A  
gpg -a --export D7E8DF3A | apt-key add -
```

จะได้ผลลัพธ์ดังต่อไปนี้

```
root@CloneZilla:~# wget -q http://drbl.sourceforge.net/GPG-KEY-DRBL -O- | sudo apt-key add -  
OK  
root@CloneZilla:~# gpg --keyserver subkeys.pgp.net --recv-key D7E8DF3A  
gpg: directory `/home/xxxkung/.gnupg' created  
gpg: new configuration file `/home/xxxkung/.gnupg/gpg.conf' created  
gpg: WARNING: options in `/home/xxxkung/.gnupg/gpg.conf' are not yet active during this run  
gpg: keyring `/home/xxxkung/.gnupg/secring.gpg' created  
gpg: keyring `/home/xxxkung/.gnupg/pubring.gpg' created  
gpg: requesting key D7E8DF3A from hkp server subkeys.pgp.net  
gpg: /home/xxxkung/.gnupg/trustdb.gpg: trustdb created  
gpg: key D7E8DF3A: public key "DRBL Project (Diskless Remote Boot in Linux) <drbl@nchc.org.tw>"  
imported  
gpg: no ultimately trusted keys found  
gpg: Total number processed: 1  
gpg: imported: 1  
root@CloneZilla:~# gpg -a --export D7E8DF3A | apt-key add -  
OK  
root@CloneZilla:~#
```

เมื่อทำการติดตั้ง Key เรียบร้อยแล้ว ขั้นตอนต่อไปจะเป็นการ เพิ่ม apt source

โดยเพิ่ม บรรทัด

```
deb http://drbl.sourceforge.net/drbl-core drbl stable
```

เข้าไปต่อท้ายในไฟล์ /etc/apt/sources.list

ซึ่งจะได้

```
#####KU apt <> Main,Restricted Update#####
deb http://mirror1.ku.ac.th/ubuntu/ intrepid main restricted
deb http://mirror1.ku.ac.th/ubuntu/ intrepid-updates main restricted
deb http://mirror1.ku.ac.th/ubuntu-security/ intrepid-security main restricted

#####KU apt <> Multiverse,Universe Update(Optional)#####
deb http://mirror1.ku.ac.th/ubuntu/ intrepid multiverse universe
deb http://mirror1.ku.ac.th/ubuntu/ intrepid-updates multiverse universe
deb http://mirror1.ku.ac.th/ubuntu-security/ intrepid-security multiverse universe

#####KU apt <> Source File Main, Restricted (Optional)#####
deb-src http://mirror1.ku.ac.th/ubuntu/ intrepid main restricted
deb-src http://mirror1.ku.ac.th/ubuntu/ intrepid-updates main restricted
deb-src http://mirror1.ku.ac.th/ubuntu-security/ intrepid-security main restricted

#####KU apt <> Source File Multiverse,Universe (Optional)#####
deb-src http://mirror1.ku.ac.th/ubuntu/ intrepid multiverse universe
deb-src http://mirror1.ku.ac.th/ubuntu/ intrepid-updates multiverse universe
deb-src http://mirror1.ku.ac.th/ubuntu-security/ intrepid-security multiverse universe

deb http://drbl.sourceforge.net/drbl-core drbl stable
```

เมื่อเพิ่มแล้วให้ทำการ **Save** และทำการ **Update** โดยใช้คำสั่ง

## apt-get update

จะได้ผลลัพธ์ออกมาดังนี้

```
root@CloneZilla:~# apt-get update
Get:1 http://drbl.sourceforge.net drbl Release.gpg [189B]
Ign http://drbl.sourceforge.net drbl/stable Translation-en_US
Get:2 http://drbl.sourceforge.net drbl Release [106kB]
Get:3 http://drbl.sourceforge.net drbl/stable Packages [9489B]
...<ย่อผลลัพธ์ไว้>
Get:20 http://mirror1.ku.ac.th intrepid-security/main Sources [17.5kB]
Get:21 http://mirror1.ku.ac.th intrepid-security/restricted Sources [571B]
Get:22 http://mirror1.ku.ac.th intrepid-security/multiverse Sources [584B]
Get:23 http://mirror1.ku.ac.th intrepid-security/universe Sources [4473B]
Fetched 751kB in 7s (101kB/s)
Reading package lists... Done
root@CloneZilla:~#
```

เมื่อทำการ **Update** เรียบร้อยแล้ว จะทำให้สามารถติดตั้ง **drbl** ได้

ให้ทำการติดตั้ง **drbl** โดยใช้คำสั่ง

## apt-get install drbl

```
root@CloneZilla:~# apt-get install drbl
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  drbl
0 upgraded, 1 newly installed, 0 to remove and 52 not upgraded.
Need to get 2413kB of archives.
After this operation, 8298kB of additional disk space will be used.
Get:1 http://drbl.sourceforge.net drbl/stable drbl 1.9.2-19 [2413kB]
Fetched 2413kB in 1min43s (23.3kB/s)
Selecting previously deselected package drbl.
(Reading database ... 56246 files and directories currently installed.)
Unpacking drbl (from .../drbl_1.9.2-19_i386.deb) ...
Setting up drbl (1.9.2-19) ...
root@CloneZilla:~#
```

ขั้นตอนต่อไป จะเป็นการติดตั้งเครื่องมือที่เกี่ยวข้องกับการ Clone ทั้งหมด โดยใช้คำสั่ง

```
/opt/drbl/sbin/drblsrv -i
```

และให้ตอบคำถามดังต่อไปนี้ (โปรดตอบคำถามด้วยความระมัดระวังอย่าให้ผิด)

```
*****
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.
*****
*****
Installing DRBL for Debian Linux...
*****
Do you want to install those network installation boot images so that you can let client to install some
GNU/Linux distributions (Debian, Ubuntu, RedHat Linux, Fedora Core, Mandriva, CentOS and
OpenSuSE...) via network ? ///NOTE/// This action will download a lot of files (> 100 MB totally)
from Internet, so it might take a few minutes. If your client machine has harddisk and it is possible
you will install GNU/Linux into that, say Y here. If you say "no" here, feel free to run drbl-netinstall to
install them later.
[y/N] ให้กด <Enter>
*****
This GNU/Linux distribution uses one kernel to support SMP and non-SMP arch.
*****
Do you want to use the serial console output for clients ?
If you do NOT know anything about this, say "N" here, otherwise clients might show NOTHING on
the screen !
[y/N] ให้กด <Enter>
*****
It's Ubuntu as server, so generic kernel is available.
*****
Which CPU architecture kernel do you want to assign for DRBL clients ?
0 -> i386 level CPU
1 -> i586 level CPU
```

```

2 -> Use the same CPU level with that of this DRBL server
Note! Note Note! Note! Note! Note! Note!
NOTE!!! If your client machine(s) is not the same level with server, please answer "0" or "1",
otherwise your client machine(s) will NOT be able to boot.
If you use wrong CPU level kernel, the glibc and openssl package might use i686 or i386, the kernel
might use i686, i586 or i386, which might be not suitable to all your machines.
If you are not sure, "1" is recommended, this will still have good performance and compatibility.
[2] ให้กด <Enter>
*****
The CPU arch you specify: 2
The optimization for your system is on, the level is same as server.
*****
Cleaning the cache of apt to make some settings effect...
Hit http://mirror1.ku.ac.th intrepid Release.gpg
Ign http://mirror1.ku.ac.th intrepid/main Translation-en_US
Ign http://mirror1.ku.ac.th intrepid/restricted Translation-en_US
Ign http://mirror1.ku.ac.th intrepid/multiverse Translation-en_US
Ign http://mirror1.ku.ac.th intrepid/universe Translation-en_US
...<ย่อผลลัพธ์ไว้>...
Hit http://mirror1.ku.ac.th intrepid-security/multiverse Sources
Hit http://mirror1.ku.ac.th intrepid-security/universe Sources
Reading package lists... Done
*****
Do you want to upgrade operating system ?
[y/N] ให้กด <Enter>

```

หลังจากนี้โปรแกรมก็จะทำการโหลด Tools ต่าง ๆ ที่เกี่ยวข้องมาติดตั้งเองโดยอัตโนมัติจนเสร็จ  
จะใช้เวลาานหรือเร็วขึ้นอยู่กับความเร็วของ Internet

```

The following extra packages will be installed:
  discover-data genisoimage libcurl3 libdiscover2 libevent1 libgssglue1 libnfsidmap2 librpcsecgss3
  libslp1 mknbi nfs-common
  openbsd-inetd portmap wakeonlan
Suggested packages:
  wodim cdrkit-doc openslp-doc slpd floppyd vblade-persist
Recommended packages:
  ca-certificate inet-superserver
The following NEW packages will be installed:
  aoetools clonezilla curl dialog discover discover-data disktype drbl-chntpw drbl-etherboot drbl-lzop
  drbl-ntfsprogs
  drbl-partimage etherwake ethtool freedos gawk genisoimage gpxe lftp libcurl3 libdigest-sha1-perl
  libdiscover2 libevent1
  libgssglue1 libnfsidmap2 librpcsecgss3 libslp1 lvm2 mknbi mkpxeintrd-net mkswap-uuid mtools nfs-
  common nfs-kernel-server nis
  openbsd-inetd partclone pigz portmap sdparm ssh syslinux tftpd-hpa udpcast unzip vblade
  wakeonlan zip
The following packages will be upgraded:
  procps
1 upgraded, 48 newly installed, 0 to remove and 51 not upgraded.
Need to get 26.8MB of archives.
After this operation, 59.5MB of additional disk space will be used.
Get:1 http://mirror1.ku.ac.th intrepid/main gawk 1:3.1.6.dfsg-0ubuntu1 [500kB]
Get:2 http://drbl.sourceforge.net drbl/stable gpxe 0.9.6-1~drbl [1040kB]
Get:3 http://mirror1.ku.ac.th intrepid/main libslp1 1.2.1-7.3 [50.0kB]
Get:4 http://mirror1.ku.ac.th intrepid/main portmap 6.0-6ubuntu1 [36.2kB]
Get:5 http://mirror1.ku.ac.th intrepid/main nis 3.17-14ubuntu2 [199kB]
Get:6 http://mirror1.ku.ac.th intrepid-updates/main procps 1:3.2.7-9ubuntu2.1 [226kB]

```

---

```
Get:7 http://mirror1.ku.ac.th intrepid/main libevent1 1.3e-3 [44.7kB]
Get:8 http://mirror1.ku.ac.th intrepid/main libgssglue1 0.1-2 [22.3kB]
Get:9 http://mirror1.ku.ac.th intrepid/main libnfsidmap2 0.20-1 [23.2kB]
Get:10 http://mirror1.ku.ac.th intrepid/main librpcsecgss3 0.18-1 [32.4kB]
Get:11 http://mirror1.ku.ac.th intrepid-updates/main nfs-common 1:1.1.2-4ubuntu1.1 [192kB]
Get:12 http://mirror1.ku.ac.th intrepid/main aoetools 26-1ubuntu1 [33.2kB]
Get:13 http://mirror1.ku.ac.th intrepid/main libcurl3 7.18.2-1ubuntu4 [219kB]
Get:14 http://mirror1.ku.ac.th intrepid/main curl 7.18.2-1ubuntu4 [209kB]
Get:15 http://mirror1.ku.ac.th intrepid/universe dialog 1.1-20080316-1 [264kB]
Get:16 http://mirror1.ku.ac.th intrepid/universe discover-data 2.2008.06.25ubuntu1 [260kB]
Get:17 http://mirror1.ku.ac.th intrepid/universe libdiscover2 2.1.2-2 [98.9kB]
Get:18 http://mirror1.ku.ac.th intrepid/universe libdiscover2 2.1.2-2 [98.9kB]
Get:19 http://mirror1.ku.ac.th intrepid/universe discover 2.1.2-2 [327kB]
Get:20 http://mirror1.ku.ac.th intrepid/universe disktype 9-1 [38.3kB]
Get:21 http://mirror1.ku.ac.th intrepid/universe etherwake 1.09-2 [9916B]
Get:22 http://mirror1.ku.ac.th intrepid/main ethtool 6+20080227-1 [66.6kB]
Get:23 http://mirror1.ku.ac.th intrepid/main genisoimage 9:1.1.8-1ubuntu1 [587kB]
Get:24 http://mirror1.ku.ac.th intrepid/main lftp 3.7.3-1build1 [396kB]
Get:25 http://mirror1.ku.ac.th intrepid/main libdigest-sha1-perl 2.11-2build2 [25.4kB]
Get:26 http://mirror1.ku.ac.th intrepid/main lvm2 2.02.39-0ubuntu2 [359kB]
Get:27 http://mirror1.ku.ac.th intrepid/main mknbi 1.4.4-1.1ubuntu1 [76.8kB]
Get:28 http://mirror1.ku.ac.th intrepid/main mtools 3.9.11-1 [199kB]
Get:29 http://mirror1.ku.ac.th intrepid-updates/main nfs-kernel-server 1:1.1.2-4ubuntu1.1 [152kB]
Get:30 http://mirror1.ku.ac.th intrepid/universe sdparm 1.02-1 [116kB]
Get:31 http://mirror1.ku.ac.th intrepid/main ssh 1:5.1p1-3ubuntu1 [1246B]
Get:32 http://mirror1.ku.ac.th intrepid/main syslinux 2:3.63+dfsg-2ubuntu3 [404kB]
Get:33 http://mirror1.ku.ac.th intrepid/main unzip 5.52-11ubuntu1 [156kB]
Get:34 http://mirror1.ku.ac.th intrepid/main vblade 16-1ubuntu2 [15.8kB]
Get:35 http://mirror1.ku.ac.th intrepid/universe wakeonlan 0.41-10 [11.4kB]
Get:36 http://mirror1.ku.ac.th intrepid/main zip 2.32-1 [106kB]
Get:37 http://mirror1.ku.ac.th intrepid/main openbsd-inetd 0.20080125-1 [34.1kB]
Get:38 http://mirror1.ku.ac.th intrepid/main tftpd-hpa 0.48-2.2ubuntu1 [35.2kB]
Get:39 http://drbl.sourceforge.net drbl/stable udpcast 20071228 [529kB]
Get:40 http://drbl.sourceforge.net drbl/stable clonezilla 2.3.2-23 [269kB]
Get:41 http://drbl.sourceforge.net drbl/stable drbl-chntpw 0.0.20040818-7 [48.7kB]
Get:42 http://drbl.sourceforge.net drbl/stable drbl-etherboot 5.4.3-2 [12.9MB]
Get:43 http://drbl.sourceforge.net drbl/stable drbl-lzop 1.02-0.8drbl [260kB]
Get:44 http://drbl.sourceforge.net drbl/stable drbl-ntfsprogs 2.0.0-4 [1038kB]
Get:45 http://drbl.sourceforge.net drbl/stable drbl-partimage 0.6.7-1drbl [1198kB]
Get:46 http://drbl.sourceforge.net drbl/stable freedos 1.0-11drbl [176kB]
Get:47 http://drbl.sourceforge.net drbl/stable mkpxeinitrd-net 1.2-35 [823kB]
Get:48 http://drbl.sourceforge.net drbl/stable mkswap-uuid 0.1.1-1 [215kB]
Get:49 http://drbl.sourceforge.net drbl/stable partclone 0.0.8-8 [2475kB]
Get:50 http://drbl.sourceforge.net drbl/stable pigz 1.7-1drbl [266kB]
Fetched 26.7MB in 15min31s (28.7kB/s)
Extracting templates from packages: 100%
Preconfiguring packages ...
Selecting previously deselected package gawk.
(Reading database ... 56811 files and directories currently installed.)
Unpacking gawk (from .../gawk_1%3a3.1.6.dfsg-0ubuntu1_i386.deb) ...
Selecting previously deselected package libslp1.
Unpacking libslp1 (from .../libslp1_1.2.1-7.3_i386.deb) ...
Selecting previously deselected package portmap.
Unpacking portmap (from .../portmap_6.0-6ubuntu1_i386.deb) ...
Selecting previously deselected package nis.
Unpacking nis (from .../nis_3.17-14ubuntu2_i386.deb) ...
Preparing to replace procs 1:3.2.7-9ubuntu2 (using .../procs_1%3a3.2.7-9ubuntu2.1_i386.deb) ...
```

---

```

Unpacking replacement procps ...
Selecting previously deselected package libevent1.
Unpacking libevent1 (from .../libevent1_1.3e-3_i386.deb) ...
Selecting previously deselected package libgssglue1.
Unpacking libgssglue1 (from .../libgssglue1_0.1-2_i386.deb) ...
Selecting previously deselected package libnfsidmap2.
Unpacking libnfsidmap2 (from .../libnfsidmap2_0.20-1_i386.deb) ...
Selecting previously deselected package librpcsecgss3.
Unpacking librpcsecgss3 (from .../librpcsecgss3_0.18-1_i386.deb) ...
Selecting previously deselected package nfs-common.
Unpacking nfs-common (from .../nfs-common_1%3a1.1.2-4ubuntu1.1_i386.deb) ...
Selecting previously deselected package aoetools.
Unpacking aoetools (from .../aoetools_26-1ubuntu1_i386.deb) ...
Selecting previously deselected package libcurl3.
Unpacking libcurl3 (from .../libcurl3_7.18.2-1ubuntu4_i386.deb) ...
Selecting previously deselected package curl.
Unpacking curl (from .../curl_7.18.2-1ubuntu4_i386.deb) ...
Selecting previously deselected package dialog.
Unpacking dialog (from .../dialog_1.1-20080316-1_i386.deb) ...
Selecting previously deselected package discover-data.
Unpacking discover-data (from .../discover-data_2.2008.06.25ubuntu1_all.deb) ...

```

.....<ย่อผลลัพธ์ไว้>.....

```

Processing triggers for libc6 ...
ldconfig deferred processing now taking place
Processing triggers for initramfs-tools ...
update-initramfs: Generating /boot/initrd.img-2.6.27.7-multiwan810
*****
*****
Trying to upgrade some necessary packages if available...
*****
In ayo repository, searching the latest kernel ...
The kernel image in Ubuntu 8.10 "uses generic" for i686/amd64 CPU.
The latest kernel in the ayo repository is linux-image-2.6.27-9-generic
Use the kernel linux-image-2.6.27-9-generic from apt repository!
Reading package lists... Done
Building dependency tree
Reading state information... Done
Suggested packages:
  fdutils linux-doc-2.6.27 linux-source-2.6.27
The following NEW packages will be installed:
  linux-image-2.6.27-9-generic
0 upgraded, 1 newly installed, 0 to remove and 51 not upgraded.
Need to get 23.4MB of archives.
After this operation, 94.3MB of additional disk space will be used.
Get:1 http://mirror1.ku.ac.th/intrepid-updates/main linux-image-2.6.27-9-generic 2.6.27-9.19
[23.4MB]
Fetched 23.4MB in 54s (426kB/s)
Download complete and in download only mode
*****
Install kernel for clients... ...
In ayo repository, searching the latest kernel ...
*****
Now run: drblsrv-offline -c -d -a -l en_US -k /var/cache/apt/archives/linux-image-2.6.27-9-
generic_2.6.27-9.19_i386.deb "" ""

```



Kernel package /var/cache/apt/archives/linux-image-2.6.27-9-generic\_2.6.27-9.19\_i386.deb is used for client...

\*\*\*\*\*

The version number for your OS: Ubuntu 8.10

\*\*\*\*\*

\*\*\*\*\*

Install kernel for clients... ..

The kernel for client is from specific package /var/cache/apt/archives/linux-image-2.6.27-9-generic\_2.6.27-9.19\_i386.deb.

Installing /var/cache/apt/archives/linux-image-2.6.27-9-generic\_2.6.27-9.19\_i386.deb for clients...

It might take several minutes to install this kernel, please be patient...

done!

Generating modules.dep and map files for clients... done!

\*\*\*\*\*

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, this will take a few minutes ...

The latest kernel for DRBL clients is 2.6.27-9-generic

Running mknic-nbi --kernel 2.6.27-9-generic --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: 3

The pause time after network card is up: 0

Setting port for udhcpc request to default...

Using the kernel modules from /tftpboot/node\_root//lib/modules...

The selected kernel for DRBL clients is: 2.6.27-9-generic

Kernel 2.6 was found, so default to use initramfs.

Creating the network boot initrd for PXE clients by: mkpxeinitrd-net -k 2.6.27-9-generic -t initramfs

Use kernel modules from /tftpboot/node\_root//lib/modules/2.6.27-9-generic.

Creating the initRAMFS image...

Initramfs, remove ramdisk\_size/ramdisk\_block in /tftpboot/nbi\_img/pxelinux.cfg/default if exists...

Finished!

Done!

\*\*\*\*\*

Done!

root@CloneZilla:~# <เป็นอันเรียบร้อย>

## ตอนที่ 2

# การคอนฟิกโปรแกรม Clone Zilla

เมื่อทำการติดตั้ง DRBL เสร็จเรียบร้อยแล้ว ต่อไปก็จะเป็นการ Config

ให้ใช้คำสั่ง

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

และให้ตอบคำถามดังต่อไปนี้ (โปรดตอบคำถามด้วยความระมัดระวังอย่าให้ผิด)

หมายเหตุ : การคอนฟิกอาจจะทำให้ **Internet** หลุด ดังนั้นควรคอนฟิกช่วงที่ไม่มีการใช้งานอินเทอร์เน็ต

```
*****
```

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):
```

```
[hadyaiinternet.com] ให้กด <Enter>
```

```
Set DOMAIN as hadyaiinternet.com  
-----
```

```
Please enter NIS/YP domain name:
```

```
[penguinzilla] ให้กด <Enter>
```

```
Set DOMAIN as penguinzilla  
-----
```

```
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.

```
[CloneZilla] ให้กด <Enter>
```

```
Set the client hostname prefix as CloneZilla  
-----
```

```
eth0: IP address 192.168.200.1, netmask 255.255.255.0
```

```
Configured ethernet card(s) found in your system: eth0  
-----
```

```
The public IP address of this server is NOT found.
```

```
Which ethernet port in this server is for public Internet access, not for DRBL connection ?
```

```
Available ethernet ports in this server:  
-----
```

```

eth0 (192.168.200.1),
[ppp102] eth0 ให้ใส่ eth0 แล้วกด <Enter>
The ethernet port you choose for the WAN connection: eth0
///WARNING/// Only one configured network card was found in this system, this is not recommended
since this DRBL server will provide a DHCP service which might mess up your network environment if
there is an existing DHCP service in the network environment where this network card is connected!!!
It is recommended to use at least 2 network cards in this server to avoid this problem.
Are you sure you want to continue ?
[y/N] y ให้ตอบ y แล้วกด <Enter>
*****
*****
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] ให้กด <Enter>
*****
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] ให้กด <Enter>
*****
OK! Let's continue, we will set the IP address of clients by "first boot gets IP first" instead of fixed
one!
Hostmin: 192.168.200.1
*****
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] 200 ให้ใส่หมายเลข IP เริ่มต้นแล้วกด <Enter>
*****
How many DRBL clients (PC for students) connected to DRBL server's ethernet network interface
eth0 ?
Please enter the number:
[12] 50 ให้ใส่จำนวนเครื่อง แล้วกด <Enter>
*****
The final number in the last set of digits in the clients' IP is "249".
We will set the IP address for the clients connected to DRBL server's ethernet network interface eth0
as: 192.168.200.200 - 192.168.200.249
Accept ? [Y/n] ให้กด <Enter>
*****
OK! Let's continue...
*****
The Layout for your DRBL environment:
*****
NIC      NIC IP      Clients

```

```

+-----+
|      DRBL SERVER      |
|      |                |
|  +-- [eth0] 192.168.200.1 +- to WAN      |
|      |                |
|  +-- [eth0] 192.168.200.1 +- to clients group 0 [ 50 clients, their IP  |
|      |                |                from 192.168.200.200 - 192.168.200.249] |
+-----+

```

```
*****
```

Total clients: 50

```
*****
```

Press Enter to continue... ให้กด <Enter>

```
*****
```

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] ให้กด <Enter>

Full DRBL mode is chosen!

```
*****
```

```
*****
```

In the system, there are 3 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.

Which mode do you prefer ?

[0] ให้กด <Enter>

Full clonezilla mode is set!

```
*****
```

```
*****
```

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] ให้กด <Enter>

Directory for clonezilla saved images: /home/partimag

If there is a local harddrive with swap partition or writable file system in your client machine, do you want to use that swap partition or create a swap file in the writable filesystem so that client has more memory to use ? (This step will NOT destroy any data in that harddisk)

[Y/n] ให้กด <Enter>

```
*****
```

OK! We will try to create a swap space for your client if it has a local hard drive!

What's the maximum size (Megabytes) for the swap space ?

We will try to allocate the swap space for you, if it's not enough, 60% of the free space will be used.

[128] ให้กด <Enter>

maxswapspace=128

\*\*\*\*\*

Which mode do you want the clients to use after they boot ?

"1": Graphic mode (X window system) (default),

"2": Text mode.

[1] ให้กด <Enter>

The clients will enter graphic mode after booting.

\*\*\*\*\*

Which mode do you want when client boots in graphic mode ?

0: normal login, 1: auto login, 2: timed login

[0] ให้กด <Enter>

The clients will wait for user to login when they boot.

\*\*\*\*\*

Do you want to set the root's password for clients instead of using same root's password copied from server ? (For better security)

[y/N] ให้กด <Enter>

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] ให้กด <Enter>

OK! Let's continue...

Do you want to set the boot prompt for clients ?

[Y/n] ให้กด <Enter>

How many 1/10 sec is the boot prompt timeout for clients ?

[70] ให้กด <Enter>

OK! Let's continue...

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] ให้กด <Enter>

Use text PXE Linux menu for client.

Do you want to let audio, cdrom, floppy, video and plugdev (like USB device) open to all users in the DRBL client ? If yes, we will add all the users to those device groups in the server and client.

[Y/n] ให้กด <Enter>

OK! Let's continue...

By using alias interface, every client can have 2 IPs,

one of them is private IP for clients connected to DRBL server, and the other is public IP for clients directly connected to WAN from switch!

Do you want to setup public IP for clients ?

[y/N] ให้กด <Enter>

Do you want to let DRBL clients have an option to run terminal mode ? i.e. you want to let that client run remote display (which will mostly use resources of server), say "Y" here.

Note!

0. If you say yes to this option, this will be a very limited environment for client, i.e. NO local access for USB, CD, audio, printer, etc. in client.  
1. If your server is not powerful, say "no" here.  
2. By saying "yes" here, we will turn on xdmcp, It is never a safe thing to turn on that. Setting up /etc/hosts.allow and /etc/hosts.deny to only allow local access is another alternative but not the safest. Firewalling port 177 is the safest if you wish to have xdmcp on. Read the manual for more notes on the security of XDMCP. Please set it by yourself!  
3. If you say "yes" here, you might have to restart your desktop environment manager (gdm/kdm) later, remember to save your data before you close applications!  
Do you want to let client has an option to run terminal mode ?  
[y/N] ให้กด <Enter>  
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 Internet.

[Y/n] n ให้ตอบ n แล้วกด <Enter>

This DRBL server does NOT provide NAT service, so your DRBL client will NOT be able to access Internet.

\*\*\*\*\*

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... ให้กด <Enter>

Searching installed Etherboot files for dhcpd.conf... done!

\*\*\*\*\*

The calculated NETWORK for eth0 is 192.168.200.0.

\*\*\*\*\*

\*\*\*\*\*

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] ให้กด <Enter>

\*\*\*\*\*

OK! Let's do it!

หลังจากนี้โปรแกรมก็จะทำการโหลด Tools ต่าง ๆ ที่เกี่ยวข้องมาติดตั้งเองโดยอัตโนมัติจนเสร็จ จะใช้เวลาานหรือเร็วขึ้นอยู่กับความเร็วของ Internet

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... done!

Cleaning the stale files of the diskless nodes if they exist... done!

\*\*\*\*\*

\*\*\*\*\*

The version number for your GNU/Linux: DBN-TU

Keeping the old common root files if they exist...

Keeping old nodes if they exist...

Creating common root files... This might take several minutes...Generating locale en\_US.UTF-8 by: localedef -f UTF-8 -i en\_US en\_US.UTF-8... done!

```
..... done!
Update the kernel for client if necessary...
The DRBL client uses i586 kernel with version 2.6.27-9-generic...
Trying to update the /tftpboot/node_root/lib/modules/2.6.27-9-generic from server's /lib/modules/...
This might take several minutes...
"i586" 2.6.27-9-generic kernel in this DRBL server is not found, so skip this.
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 nfs-common ssh dbus drblthincli mkswapfile arm-wol sendsigs umountfs
Using udev for clients... The default display manager is NOT found! We can NOT set text or graphic
mode for Debian DRBL client.
Can't open /tftpboot/node_root/etc/init.d/waitnfs.sh: No such file or directory.
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: CloneZilla0200 192.168.200.200... Generating SSH host keys for client
192.168.200.200 if they do not exist... done!
Creating DRBL client: CloneZilla0201 192.168.200.201... Generating SSH host keys for client
192.168.200.201 if they do not exist... done!
Creating DRBL client: CloneZilla0202 192.168.200.202... Generating SSH host keys for client
192.168.200.202 if they do not exist... done!
Creating DRBL client: CloneZilla0203 192.168.200.203... Generating SSH host keys for client
192.168.200.203 if they do not exist... done!
Creating DRBL client: CloneZilla0204 192.168.200.204... Generating SSH host keys for client
192.168.200.204 if they do not exist... done!
Creating DRBL client: CloneZilla0205 192.168.200.205... Generating SSH host keys for client
192.168.200.205 if they do not exist... done!
Creating DRBL client: CloneZilla0206 192.168.200.206... Generating SSH host keys for client
192.168.200.206 if they do not exist... done!
Creating DRBL client: CloneZilla0207 192.168.200.207... Generating SSH host keys for client
192.168.200.207 if they do not exist... done!
Creating DRBL client: CloneZilla0208 192.168.200.208... Generating SSH host keys for client
192.168.200.208 if they do not exist... done!
Creating DRBL client: CloneZilla0209 192.168.200.209... Generating SSH host keys for client
192.168.200.209 if they do not exist... done!
Creating DRBL client: CloneZilla0210 192.168.200.210... Generating SSH host keys for client
192.168.200.210 if they do not exist... done!

.....<ย่อผลลัพธ์ไว้>.....

Creating DRBL client: CloneZilla0246 192.168.200.246... Generating SSH host keys for client
192.168.200.246 if they do not exist... done!
Creating DRBL client: CloneZilla0247 192.168.200.247... Generating SSH host keys for client
192.168.200.247 if they do not exist... done!
Creating DRBL client: CloneZilla0248 192.168.200.248... Generating SSH host keys for client
192.168.200.248 if they do not exist... done!
Creating DRBL client: CloneZilla0249 192.168.200.249... Generating SSH host keys for client
192.168.200.249 if they do not exist... done!
Template client for DRBL SSI is 192.168.200.200
```

```
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...
Full DRBL or Full Clonezilla mode, exporting client's directories etc, var, root...
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
Internet.
Now stop the NAT service...
Flushing firewall rules: success
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-common 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-common 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-common nfs-kernel-server tftpd-hpa drbl-
clients-nat
* Stopping portmap daemon...
...done.
* Starting portmap daemon...
...done.
* Stopping DHCP server dhcpd3
...done.
* Starting DHCP server dhcpd3
...done.
* Starting NIS services
...done.
* Stopping NFS common utilities
...done.
* Starting NFS common utilities
...done.
* Stopping NFS kernel daemon
...done.
* Unexporting directories for NFS kernel daemon...
...done.
* Exporting directories for NFS kernel daemon...
...done.
* Starting NFS kernel daemon
...done.
Restarting HPA's tftpd: in.tftpd.
Stopping the NAT services for DRBL clients... Now stop the NAT service...
Flushing firewall rules: success
done!
Starting the NAT services for DRBL clients... done!
ip_forward is already on.
```



```
The GDM or KDM config file is NOT found! Skip setting the DM! Maybe you will not be able to make
this DRBL server as thin client server!
Clean all the previous saved config file if they exist...done!
Turn on the boot prompt for PXE client...done!
Turn off the thin client option in PXE boot menu...done!
Modifying /tftpboot/nbi_img/pxelinux.cfg/default to let DRBL client use graphical PXE boot menu...
done!
Full DRBL mode. Remove clientdir opt for label drbl in pxelinux config...
Setting drbl_mode="full_drbl_mode" in /etc/drbl/drbl_deploy.conf and /etc/drbl/drblpush.conf...
done!
Full clonezilla mode. Remove clientdir opt for label clonezilla in pxelinux config...
Setting clonezilla_mode="full_clonezilla_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
*****
Adding normal users to group "audio cdrom plugdev floppy video"..... done!
*****
Updating the YP/NIS for group...
Note! If you add new or remove accounts in the DRBL server in the future, remember to run the
following command again, so that some group (EX:plugdev) will be updated:
tune-debian-dev-group-perm -g "audio cdrom plugdev floppy video" -e
*****
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.)
*****
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 in client machine, version 5.4.0 or newer is required!
PS. 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@CloneZilla:~#
```

หลังจากคอนฟิกเสร็จแล้ว ให้รัน

```
/etc/init.d/taclnat.sh
/etc/init.d/taclroute.sh
/etc/init.d/taclfirewall.sh
```

เนื่องจากว่า CloneZilla จะคอนฟิก iptables ทับของเดิมทำให้ออกเน็ตไม่ได้

เป็นอันเสร็จเรียบร้อยการ Config Clone Zilla

## ตอนที่ 3

# ขั้นตอนการสร้าง Image

หลังจากที่ทำการติดตั้ง และ คอนฟิก ทั้งสองตอนที่ผ่านมาแล้ว

ต่อไปก็เป็นขั้นตอนการปรับแต่งที่เครื่องลูกบ้าง

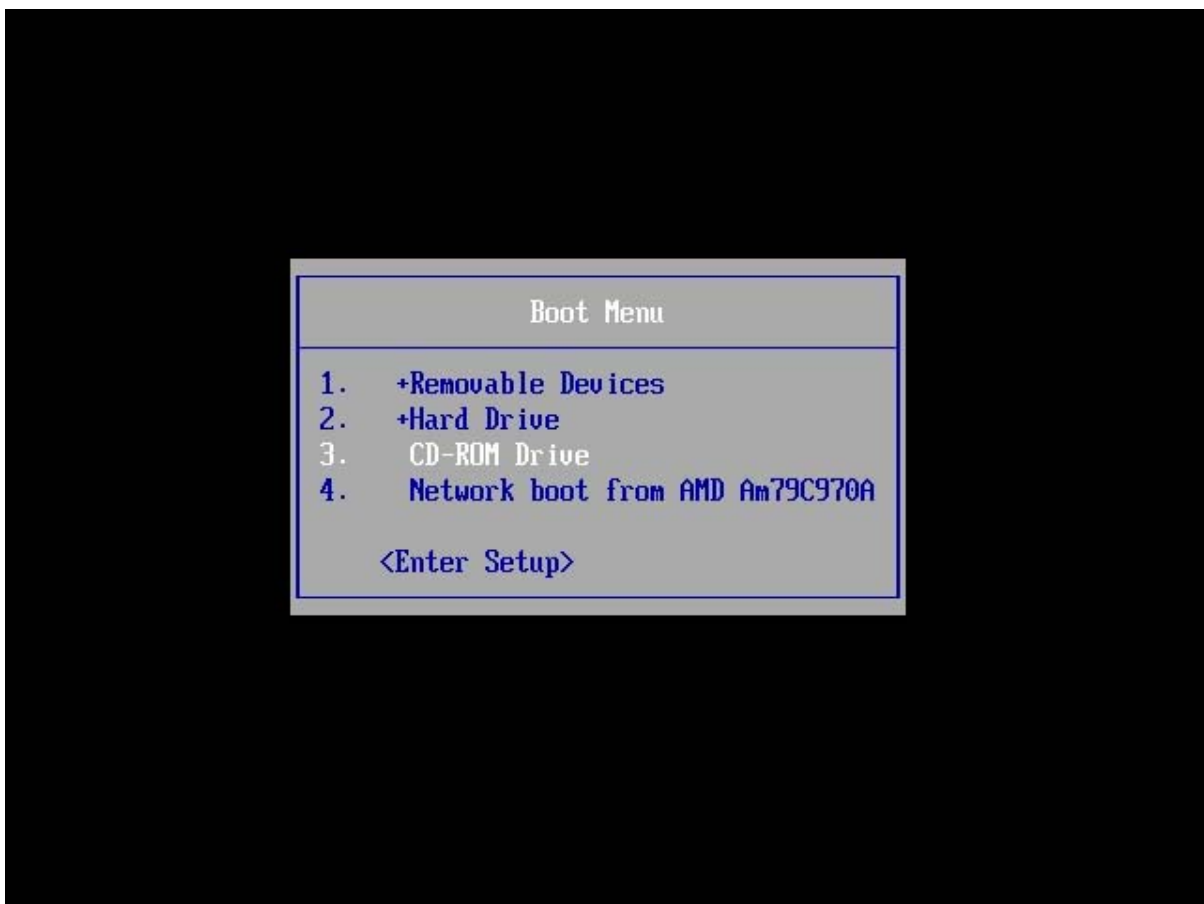
ก่อนอื่นจะต้องทำการ **Enable Function** สำหรับ **Boot** ผ่าน **LAN** ก่อน

ในขณะที่ทำการ **Boot** ให้ทำการกดปุ่ม **Function** เพื่อทำการเลือก **Boot Select Menu** เช่น

กดปุ่ม **F12** สำหรับ M/B Gigabyte

กดปุ่ม **F11** สำหรับ M/B Asrock

กดปุ่ม **F8** สำหรับ M/B Asus



เมื่อทำการบูตผ่าน Network จะได้

```
Intel UNDI, PXE-2.1
PXE Software Copyright (C) 1997-2000 Intel Corporation
Copyright (C) 2008 Sun Microsystems, Inc.

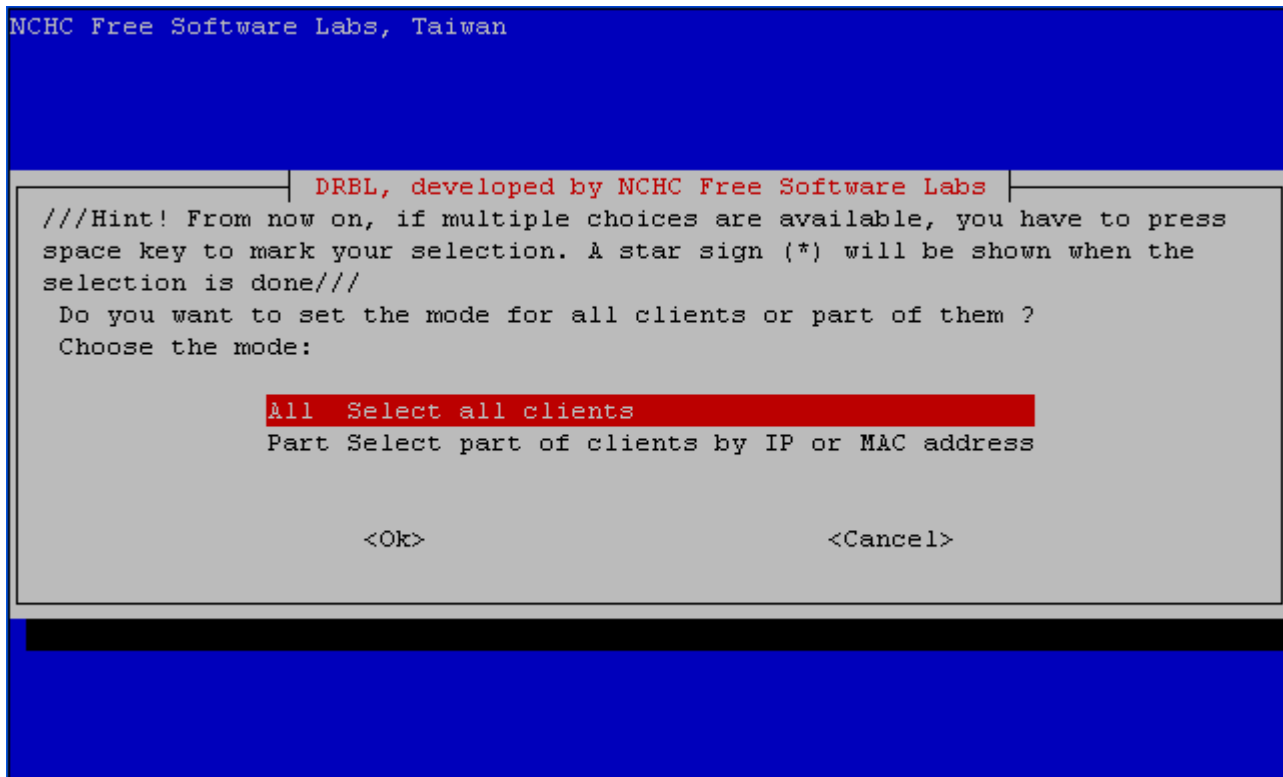
CLIENT MAC ADDR: 08 00 27 1F EE F5  GUID: 938F9CF9-E38B-4F83-A3B1-C7591CC660F8
DHCP..._
```

ถ้ายังไม่มีกำหนดรูปแบบการ Clone จาก Server ก็จะได้เมนูดังรูป

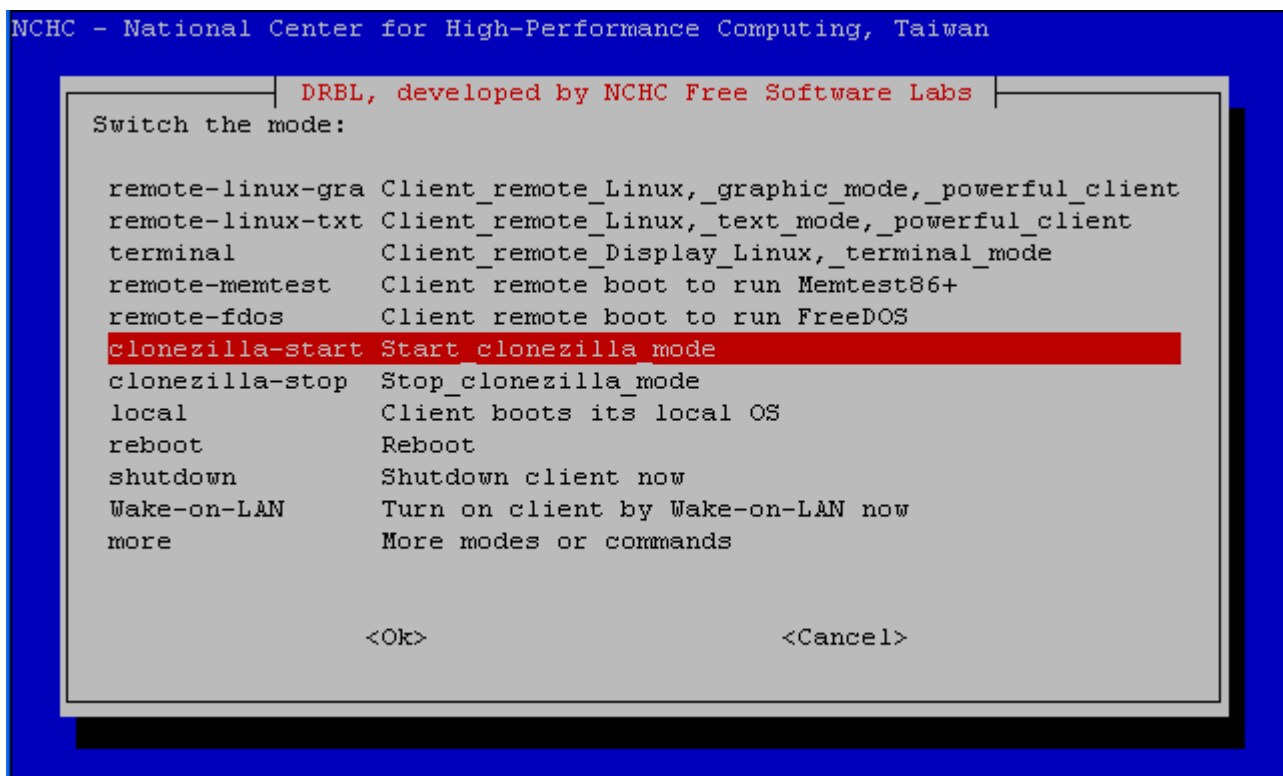


ถ้าขึ้นแบบนี้แสดงว่า ระบบ Boot ผ่าน Network ของเราทำงานแล้ว

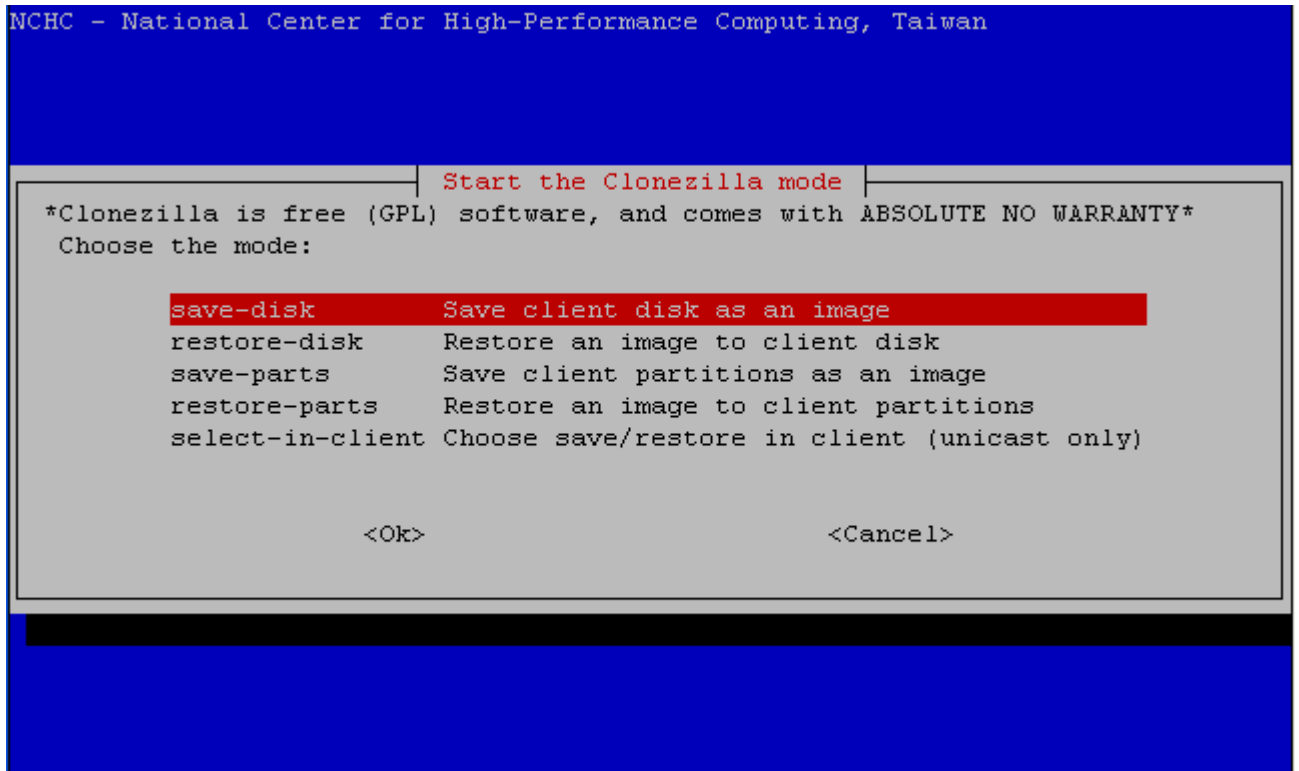
ต่อไปจะเป็นขั้นตอนการสร้าง Image  
ให้ทำการ Remote ไปยังเครื่อง Server แล้วใช้คำสั่ง /opt/drbl/sbin/dcs  
เพื่อทำการเรียกโปรแกรมขึ้นมา จะได้ดังรูป



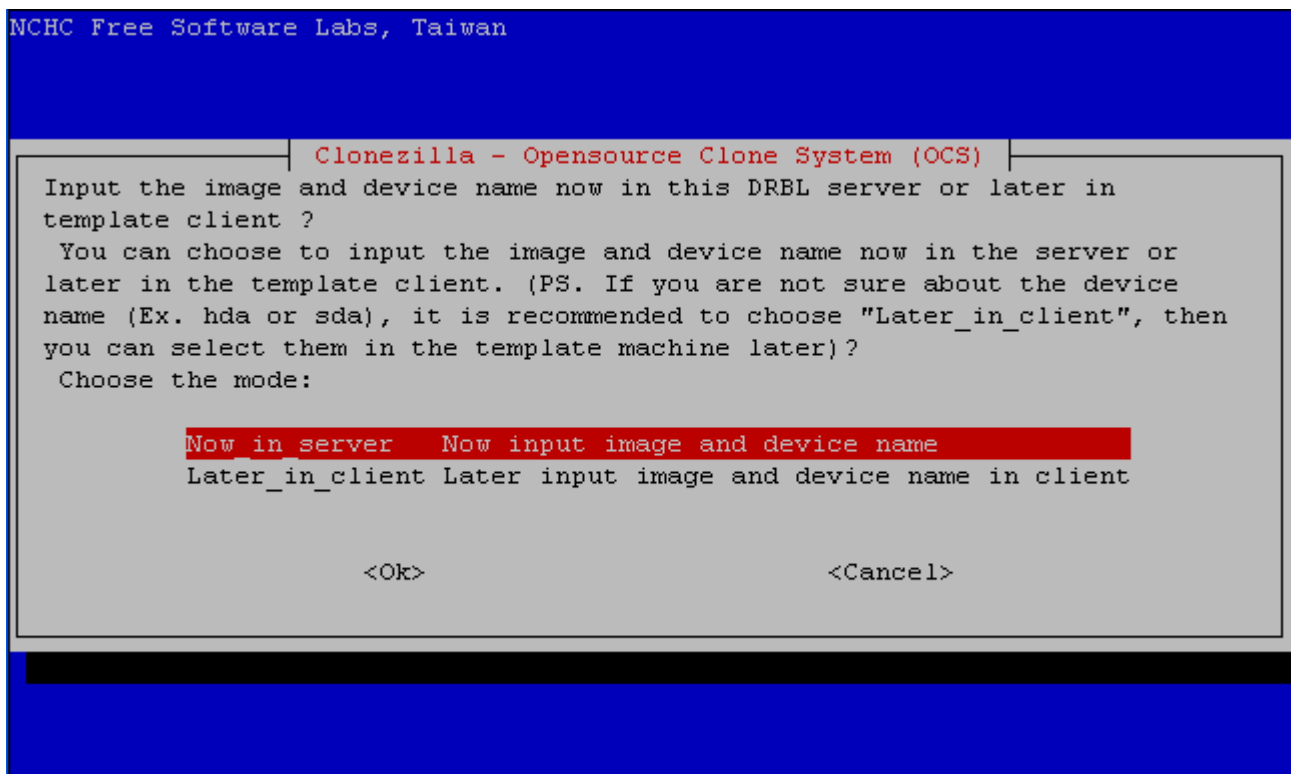
เลือก All - Select all clients



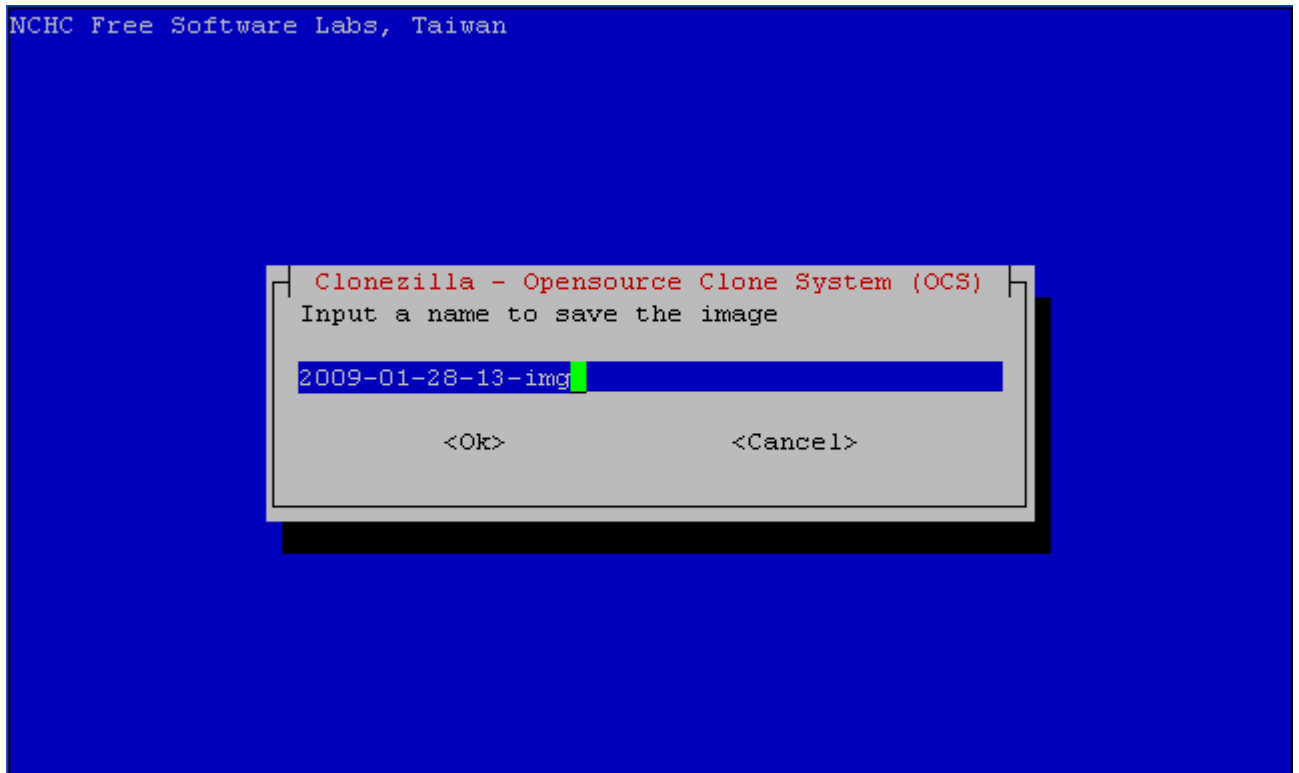
ทำการเลือก clonezilla-Start - Start clonezilla mode



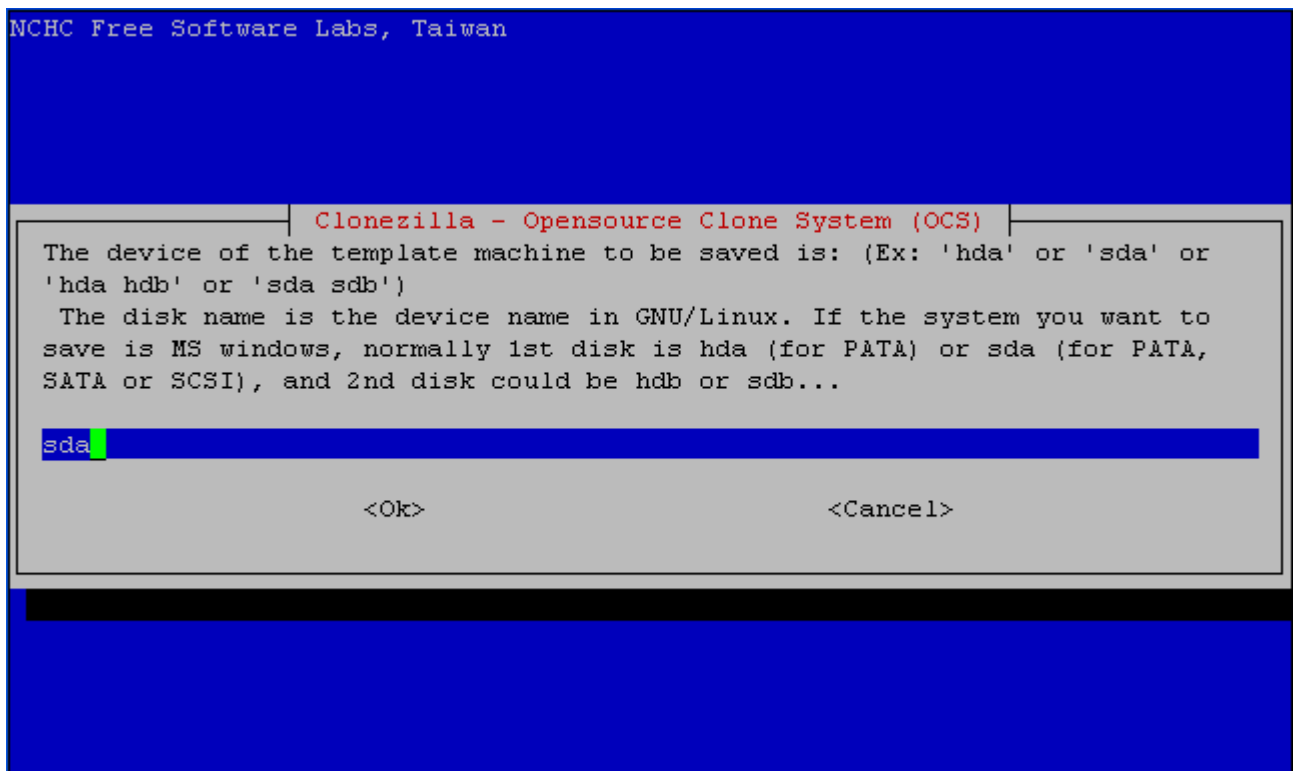
เลือก Save-disk เพื่อทำการดิ่ง Image ทั้ง HDD



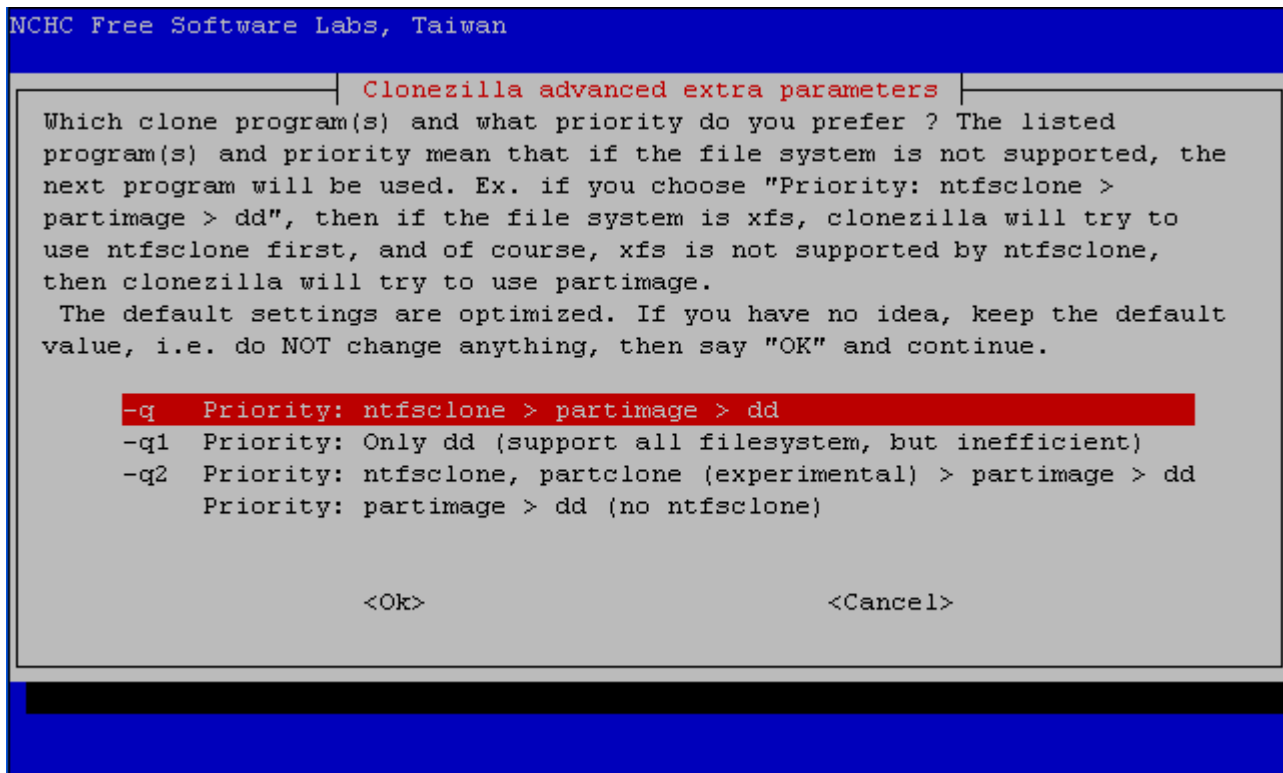
เลือก Now in server



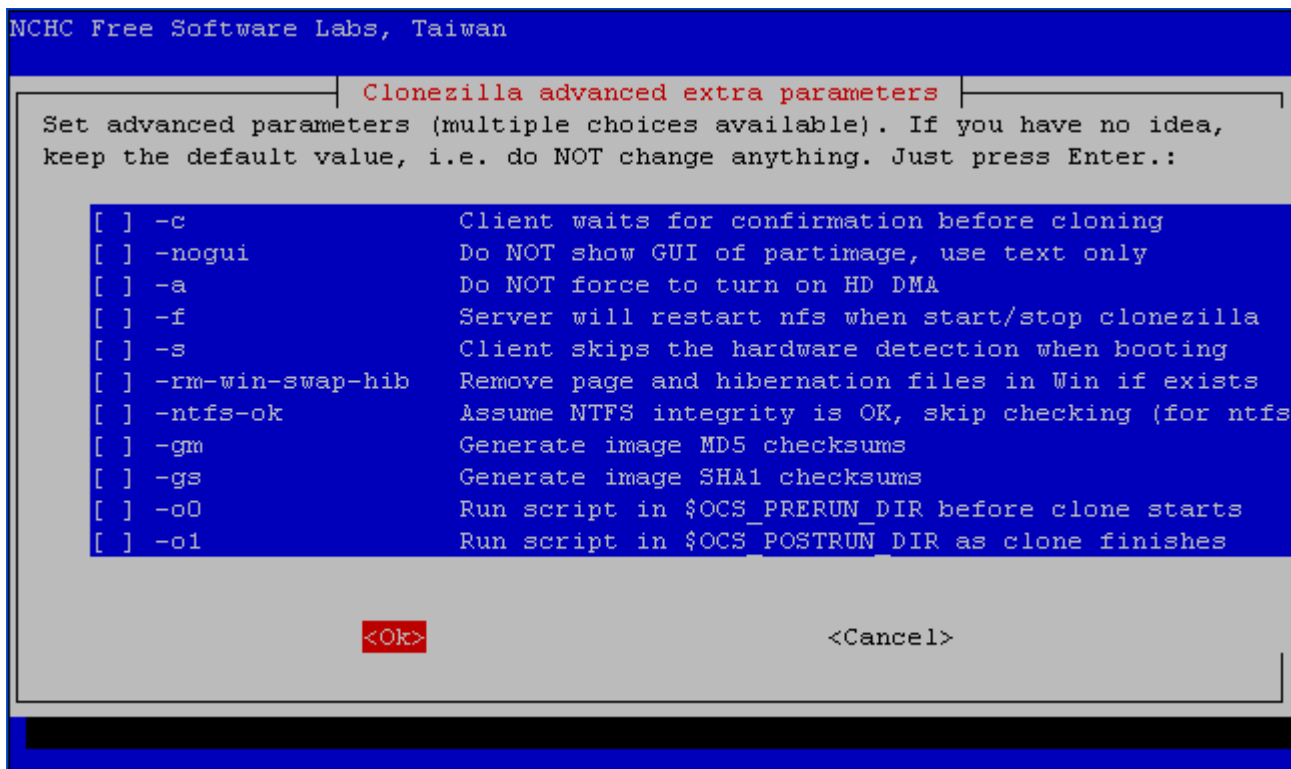
ทำการตั้งชื่อ Image



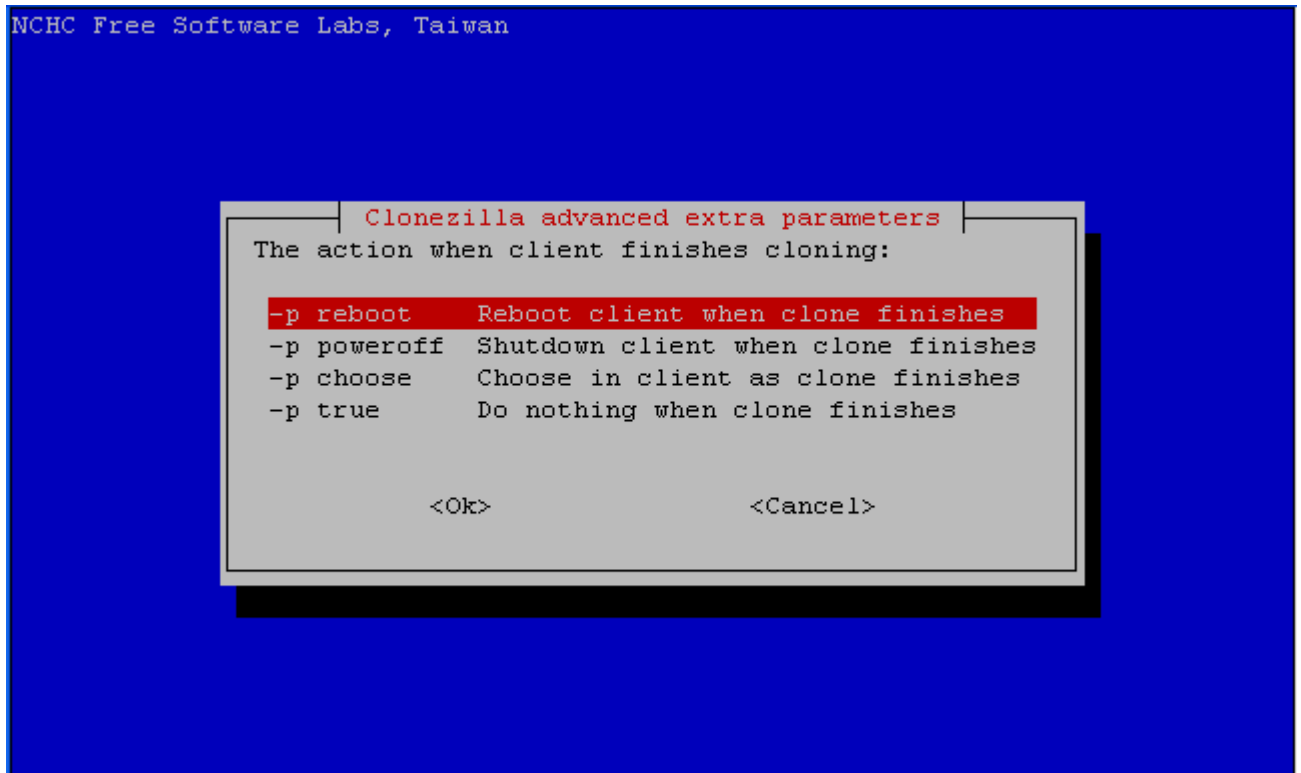
เลือก HDD ที่ต้องการทำ Image  
(sda คือ HDD ลูกแรกในเครื่องลูก)



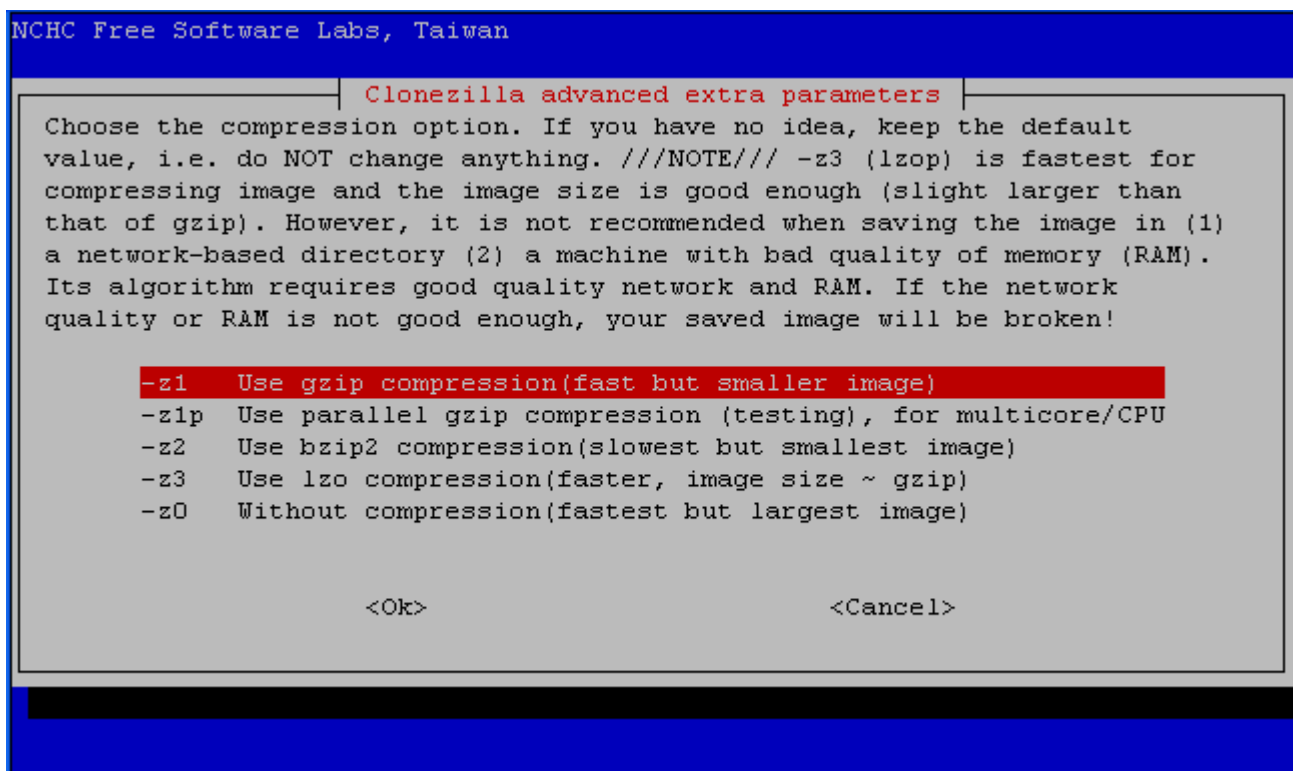
เลือก -q เรียงลำดับรูปแบบในการ Clone



หัวข้อนี้ไม่ต้องเลือกอะไร ปล่อยให้ว่างไว้

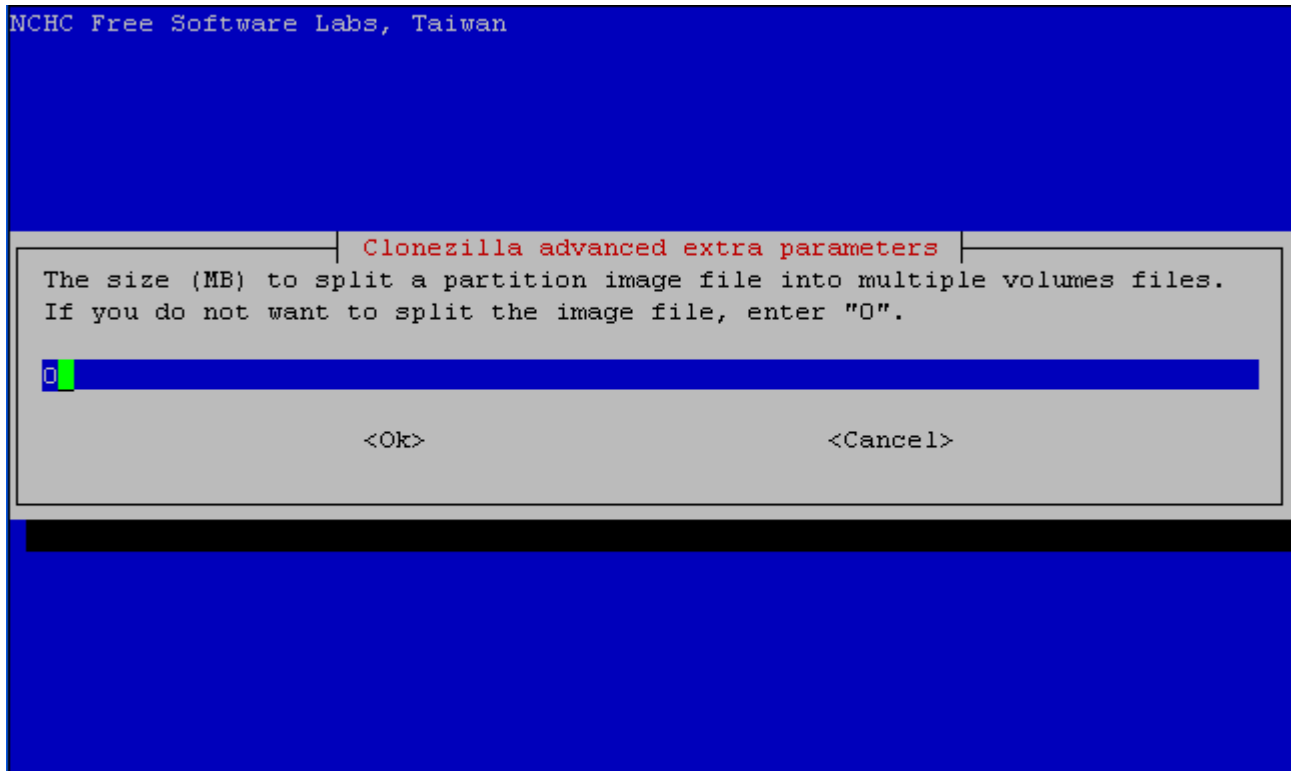


ให้ทำการ Reboot เครื่อง Client หลังจากที่ดำเนินการเสร็จ



เลือกรูปแบบการบีบอัดไฟล์ Image ให้เลือก -z1



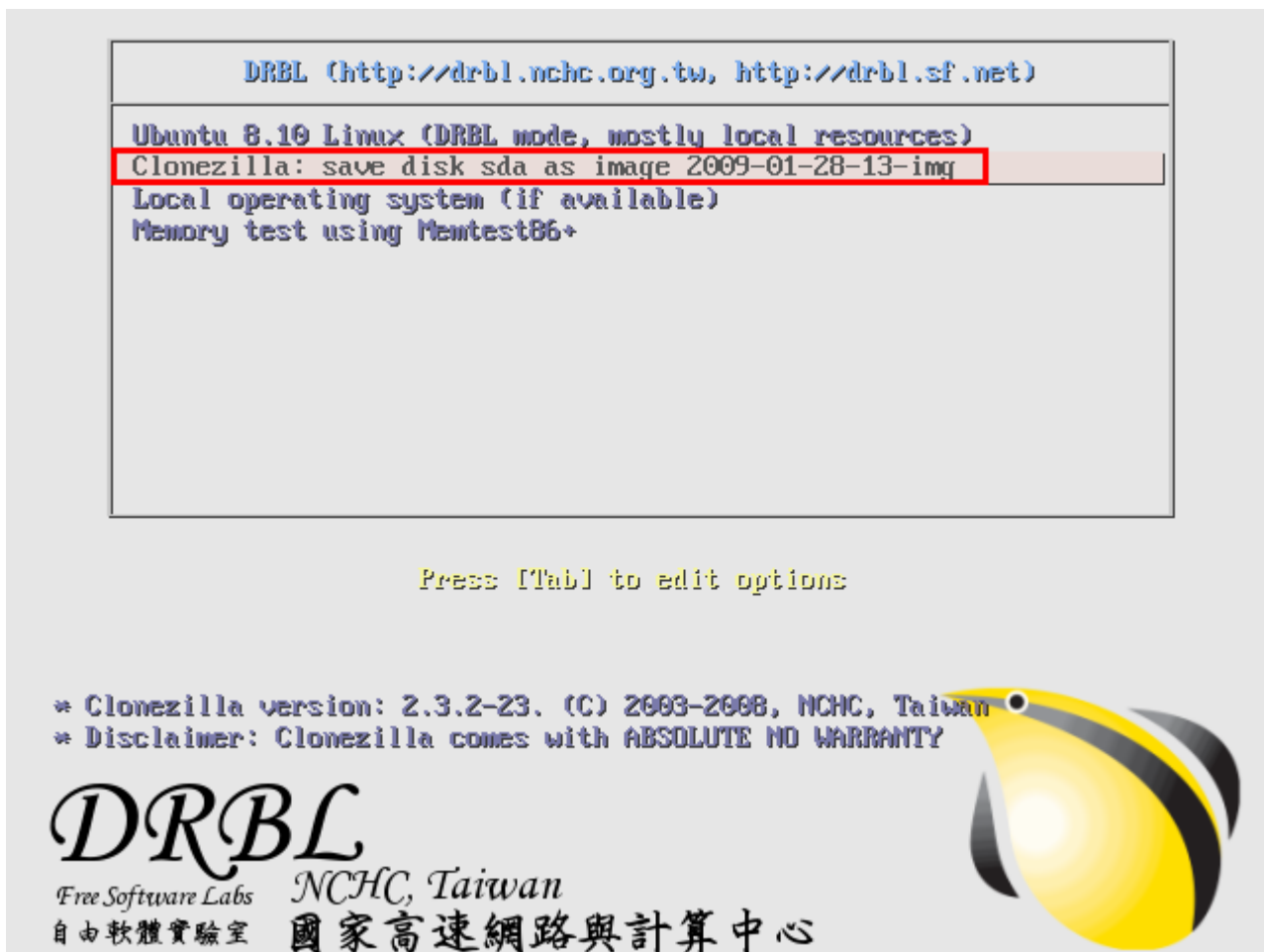


เลือก 0 เพื่อสร้าง Image เป็นไฟล์เดียว

```
Make "clonezilla" as default label in /tftpboot/nbi_img/pxelinux.cfg/default.
The MENU LABEL is "Clonezilla: save disk sda as image 2009-01-28-13-img"
Client jobs are logged in '/var/log/clonezilla-jobs.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 the client to make the template ima
ge! Note: If the partition you want to save is NTFS filesystem, it is recommende
d to defrag that partition first.
NOTE! (1) If Etherboot is used in client machine, version 5.4.0 or newer is requ
ired! (2) If the cloned OS is MS windows, and it fails to boot with error messag
e like "Missing Operating System" or "Invalid System Disk", then you can try to
(1) change the IDE harddrive setting in BIOS to use LBA mode instead of AUTO mod
e. (2) Or you can try to use parameter -tl when restoring.
This is for all clients, so we remove other host-based PXE config files in /tftp
boot/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 -q -p reboot -z1 -i 0 -l en_US startdisk save 2009-01
-28-13-img sda
done!
root@CloneZilla:~#
```

เสร็จแล้ว Server ก็จะทำการเตรียม Menu สำหรับ Save Image

ต่อไปให้ทำการ Boot เครื่อง Master ด้วย Network จะได้เมนูดังรูป




DRBL (<http://drbl.nchc.org.tw>, <http://drbl.sf.net>)

Ubuntu 8.10 Linux (DRBL mode, mostly local resources)  
Clonezilla: save disk sda as image 2009-01-28-13-img  
Local operating system (if available)  
Memory test using Memtest86+

Press [Tab] to edit options

\* Clonezilla version: 2.3.2-23. (C) 2003-2008, NCHC, Taiwan  
\* Disclaimer: Clonezilla comes with ABSOLUTE NO WARRANTY

**DRBL**  
Free Software Labs NCHC, Taiwan  
自由軟體實驗室 國家高速網路與計算中心



เลือก Menu Clonezilla : save disk sda as image

```
[ 0.000000] SMP: Allowing 1 CPUs, 0 hotplug CPUs
[ 0.000000] Found and enabled local APIC!
[ 0.000000] PM: Registered nosave memory: 0000000000009f000 - 00000000000a0000
[ 0.000000] PM: Registered nosave memory: 00000000000a0000 - 00000000000f0000
[ 0.000000] PM: Registered nosave memory: 00000000000f0000 - 0000000000100000
[ 0.000000] Allocating PCI resources starting at 50000000 (gap: 40000000:bffc0000)
[ 0.000000] PERCPU: Allocating 41628 bytes of per cpu data
[ 0.000000] Built 1 zonelists in Zone order, mobility grouping on. Total pages: 259727
[ 0.000000] Kernel command line: initrd=initrd-pxe.img devfs=nomount drblthin cli=off selinux=0 1 clientdir=node_root ocs_opt="--language en --use-ntfsclone -p reboot -z1 -i 0 savedisk 2009-01-28-13-img sda" BOOT_IMAGE=vmlinuz-pxe
[ 0.000000] Enabling fast FPU save and restore... done.
[ 0.000000] Enabling unmasked SIMD FPU exception support... done.
[ 0.000000] Initializing CPU#0
[ 0.000000] PID hash table entries: 4096 (order: 12, 16384 bytes)
[ 0.000000] TSC: Unable to calibrate against PIT
[ 0.000000] TSC: using PMTIMER reference calibration
[ 0.000000] Detected 2205.081 MHz processor.
[ 0.004000] Console: colour UGA+ 80x25
[ 0.004000] console [tty0] enabled
[ 0.004000] Dentry cache hash table entries: 131072 (order: 7, 524288 bytes)
[ 0.004000] Inode-cache hash table entries: 65536 (order: 6, 262144 bytes)
```

เครื่องก็จะการ Boot เข้า Linux

```

*****
*****
Starting saving /dev/sda1 as /home/partimag/2009-01-28-13-img/sda1.XXX...
/dev/sda1 filesystem: ntfs.
*****
Checking NTFS integrity in /dev/sda1... done!
Checking the disk space...
Use nftscclone with gzip to save the image instead of partimage.
Image file will not be split.
*****
If this action fails or hangs, check:
* Is the disk full ?
* Network connection and NFS service.
*****
nftscclone v2.0.0 (libntfs 10:0:0)
NTFS volume version: 3.1
Cluster size      : 4096 bytes
Current volume size: 8578932736 bytes (8579 MB)
Current device size: 8578934784 bytes (8579 MB)
Scanning volume ...
Total Time: 00:00:05, Ave. Rate:    0.0MB/min, 100.00% completed!
Accounting clusters ...
Space in use      : 3675 MB (42.8%)
Saving NTFS to image ...
Elapsed: 00:00:07, Remaining: 00:32:35, Completed:  0.36%, Rate: 112.35MB/min,

```

เสร็จแล้วก็จะเริ่มทำการ Save Image (รออย่างเดียว)

เมื่อ Clone เรียบร้อย เครื่องลูกก็จะ reboot เองโดยอัตโนมัติ และก็มีแจ้งที่ Server

Client 192.168.200.4 (08:00:27:1f:ee:f5) finished cloning.  
 Stats: Saved /home/partimag, /dev/sda1, success,  
 3675 MB, 34.218 mins, 102.0 MB/min;

เป็นอันเรียบร้อย โดย Image จะทำการเก็บไว้ที่  
 /home/partimag

```

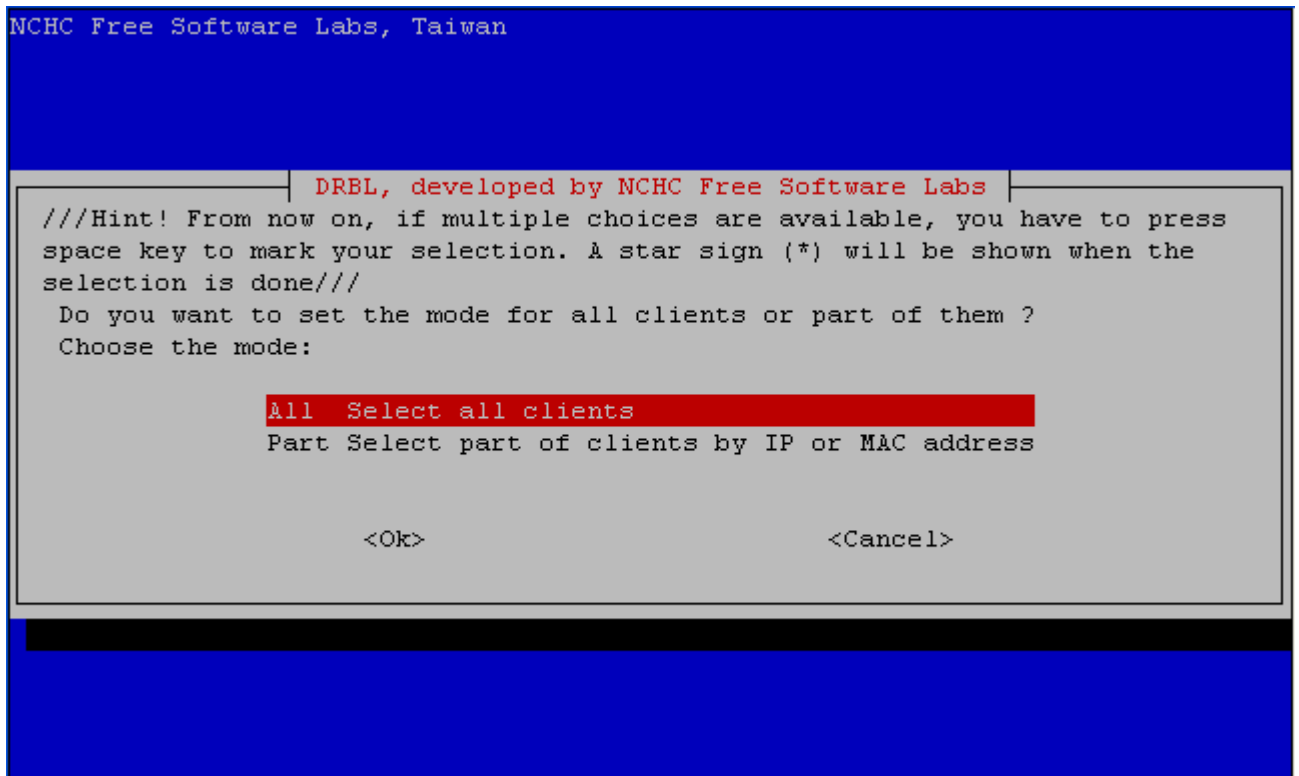
root@CloneZilla:/home/partimag/2009-01-28-13-img# ls -lh
total 1.1G
-rw-r--r-- 1 root root    4 2009-01-28 14:01 disk
-rw-r--r-- 1 root root  907 2009-01-28 14:00 Info-dmi.txt
-rw-r--r-- 1 root root 5.8K 2009-01-28 14:00 Info-lshw.txt
-rw-r--r-- 1 root root   69 2009-01-28 14:01 Info-packages.txt
-rw-r--r-- 1 root root    5 2009-01-28 14:01 parts
-rw----- 1 root root 1.1G 2009-01-28 14:00 sda1.ntfs-img
-rw-r--r-- 1 root root   36 2009-01-28 13:26 sda-chs.sf
-rw-r--r-- 1 root root  512 2009-01-28 13:26 sda-mbr
-rw-r--r-- 1 root root  254 2009-01-28 13:26 sda-pt.parted
-rw-r--r-- 1 root root  259 2009-01-28 13:26 sda-pt.sf
root@CloneZilla:/home/partimag/2009-01-28-13-img# █

```

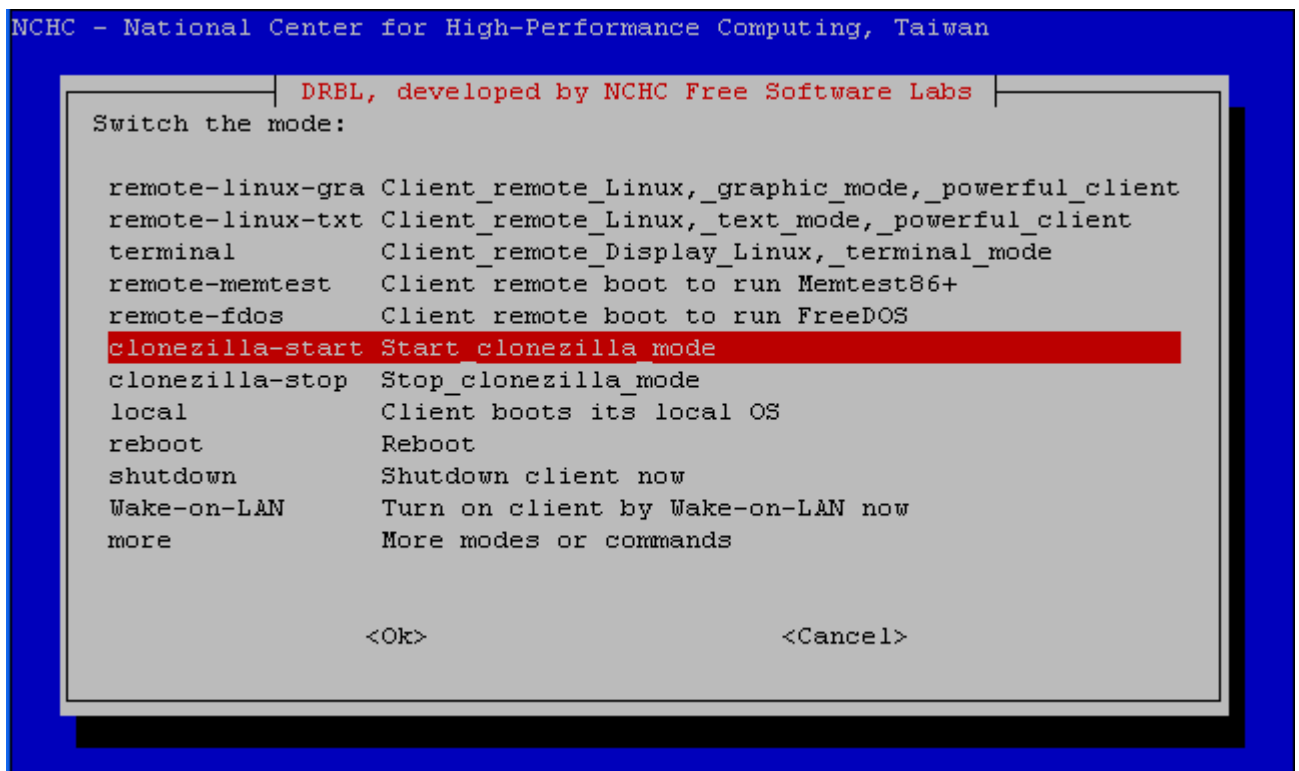
## ตอนที่ 3

## ขั้นตอนง่าย Image แบบ UniCast

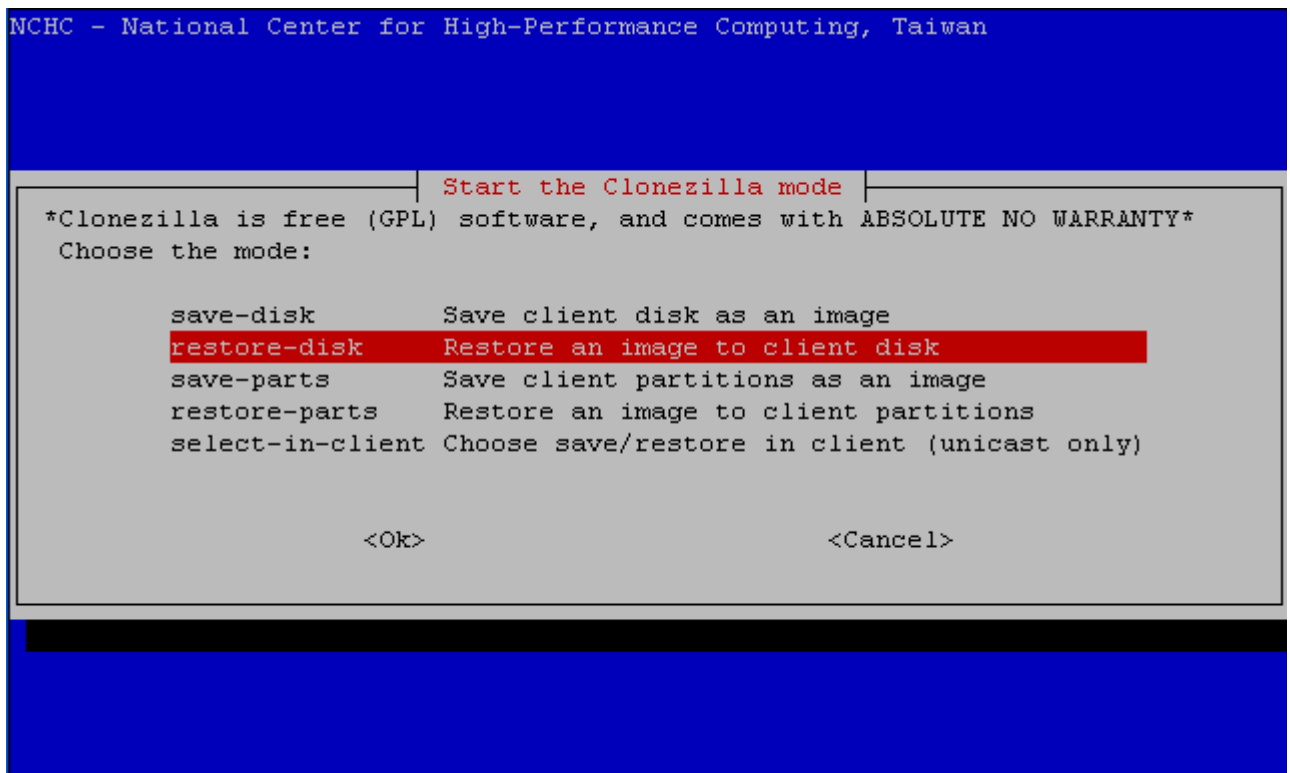
ให้ทำการ Remote ไปยังเครื่อง Server แล้วใช้คำสั่ง /opt/drbl/sbin/dcs



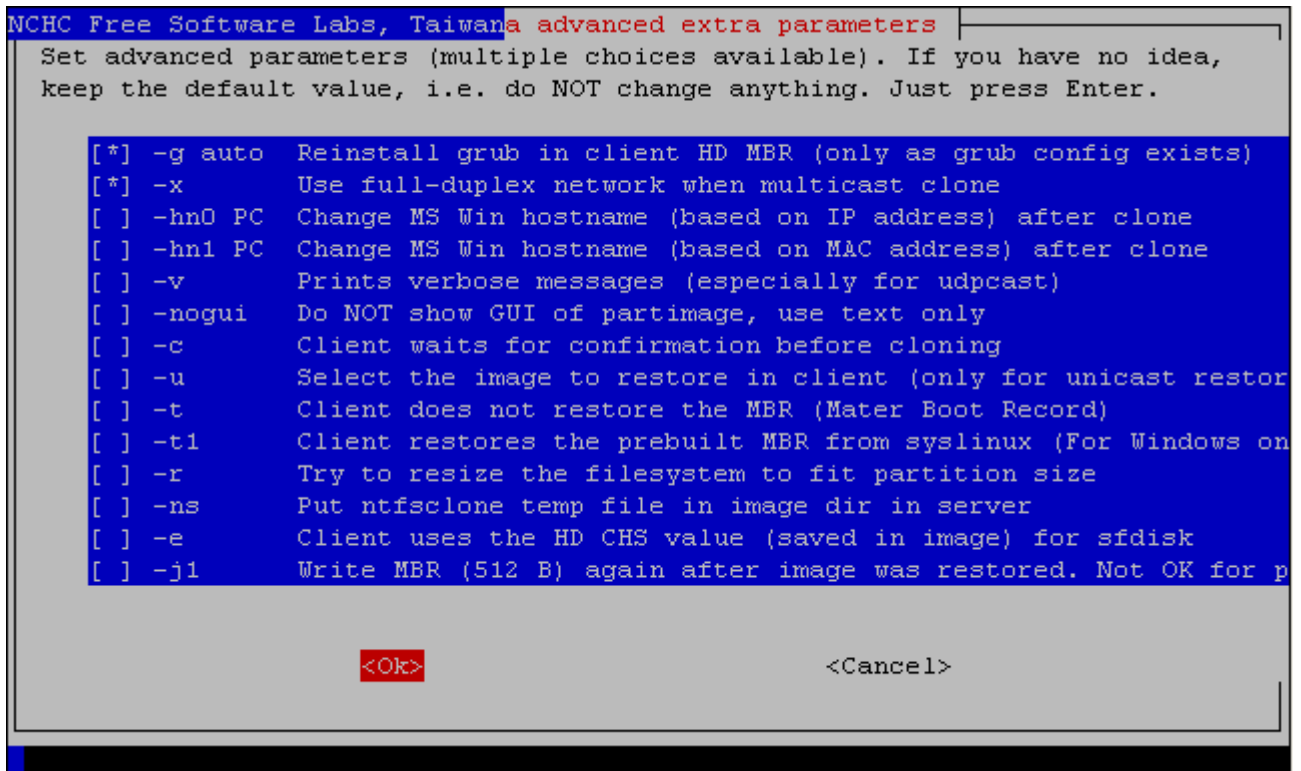
เลือก All - Select all clients



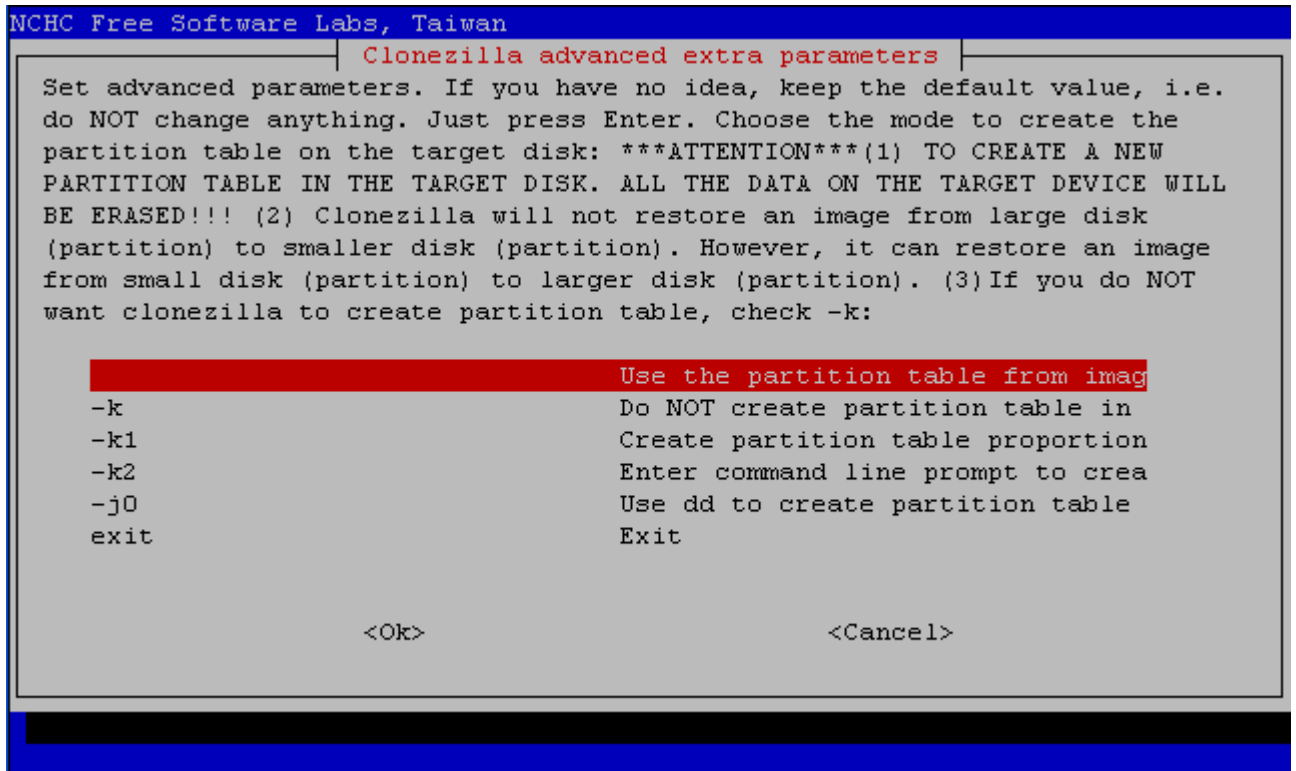
### ทำการเลือก clonezilla-Start - Start clonezilla mode



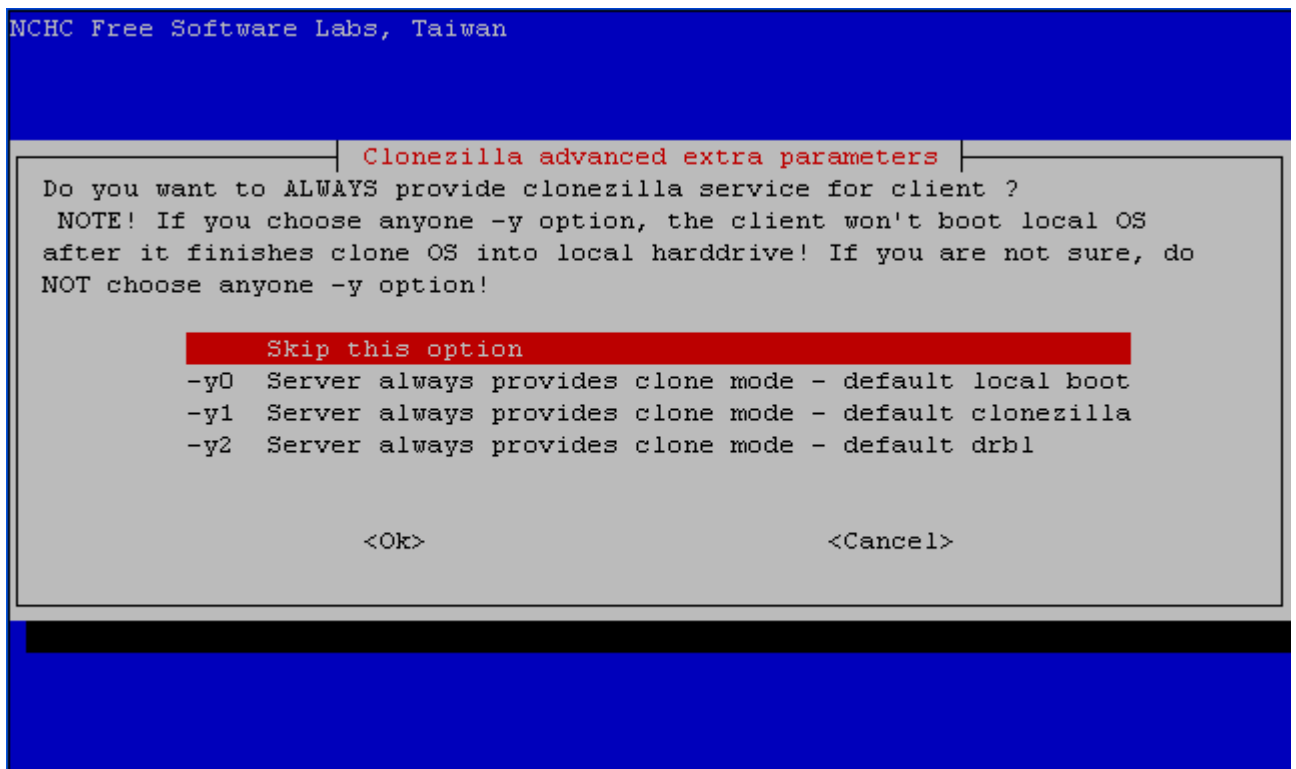
### ทำการเลือก restore-disk Restore an image to client disk



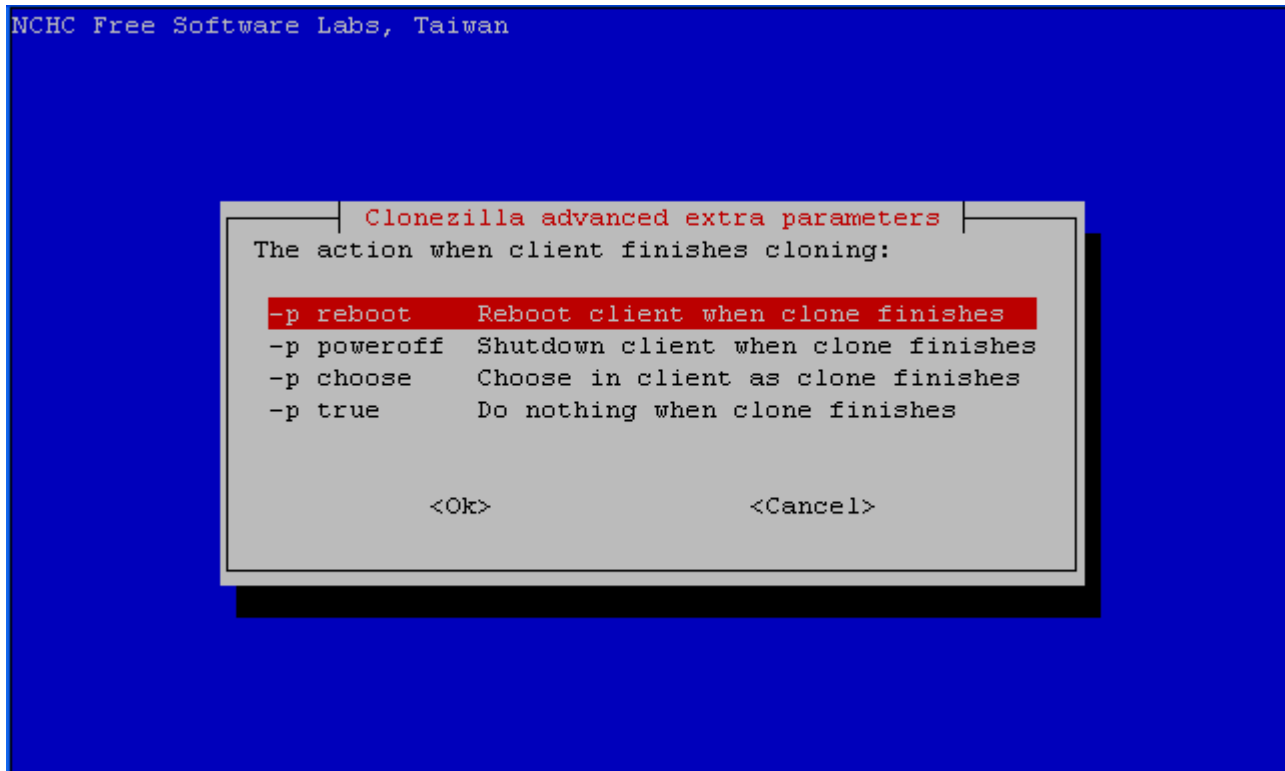
### เลือก -g auto และ -x (option อื่นให้ทดสอบเอาเองนะครับ)



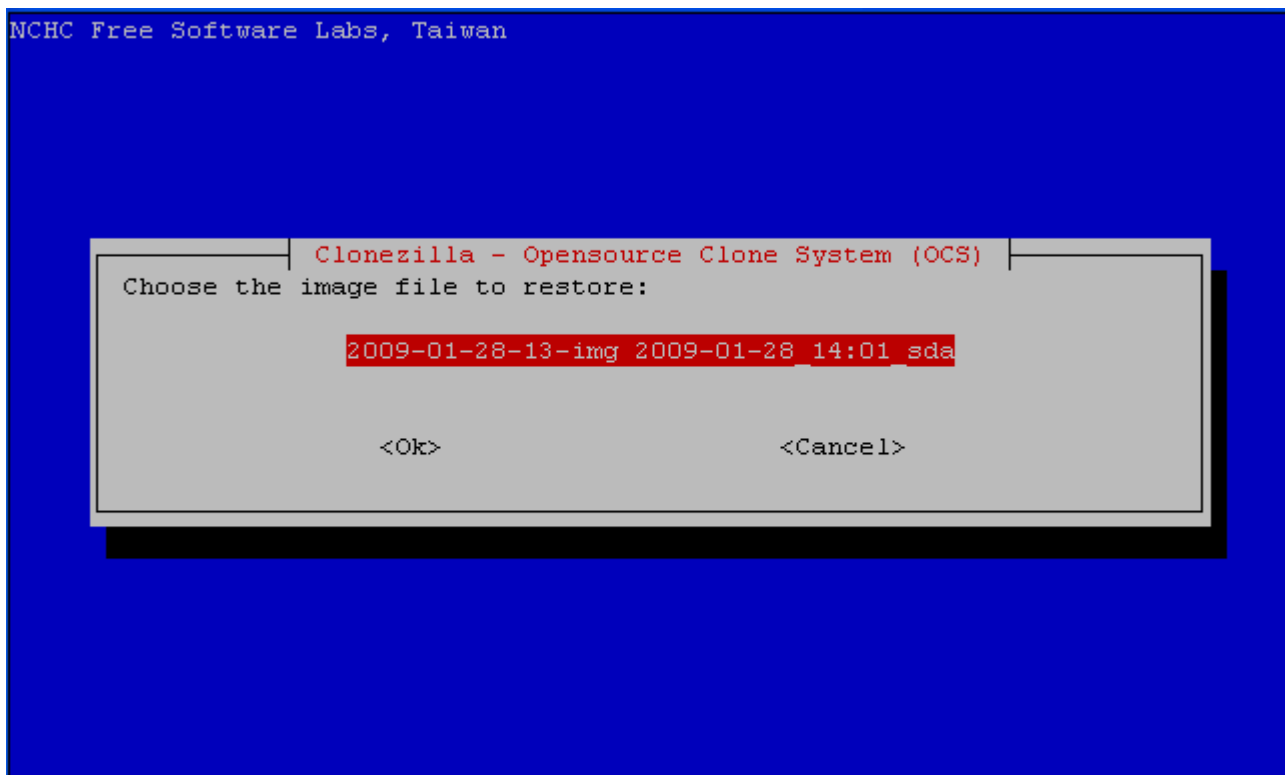
เลือก Use the partition table from image



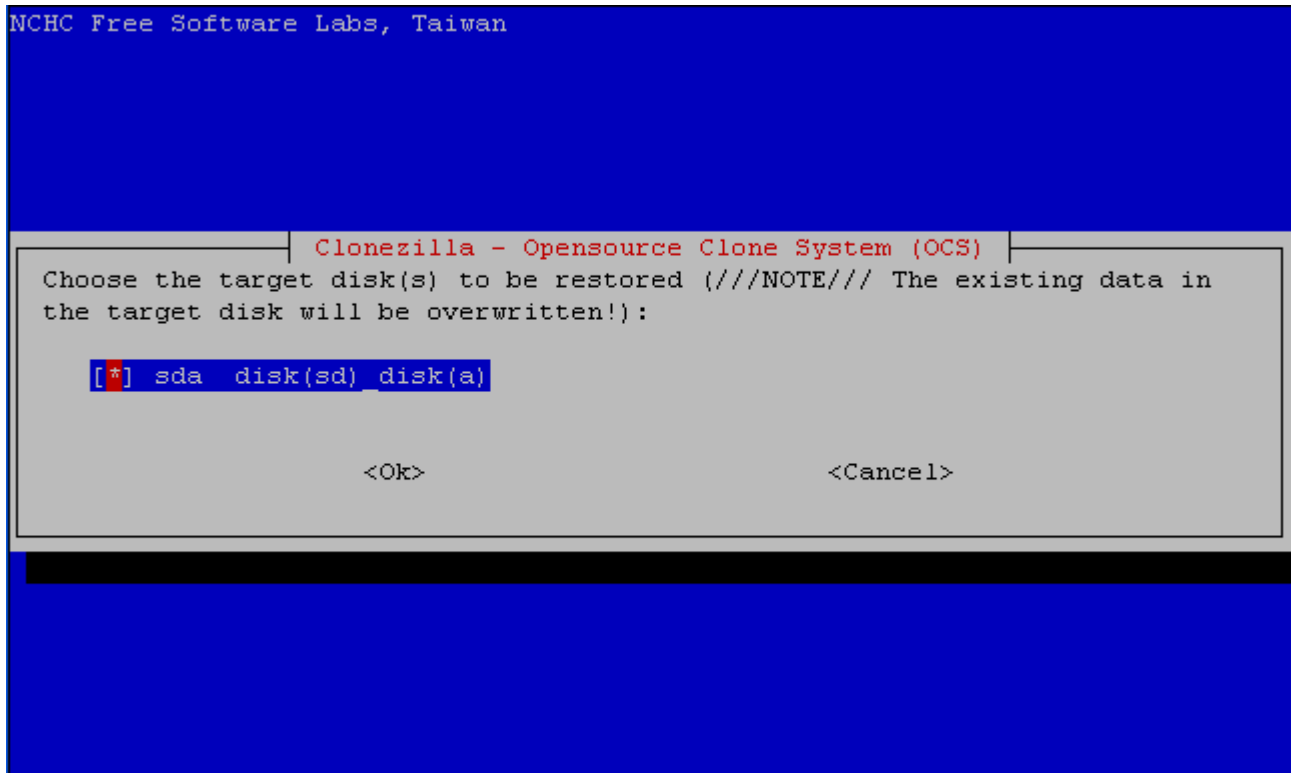
เลือก Skip this option



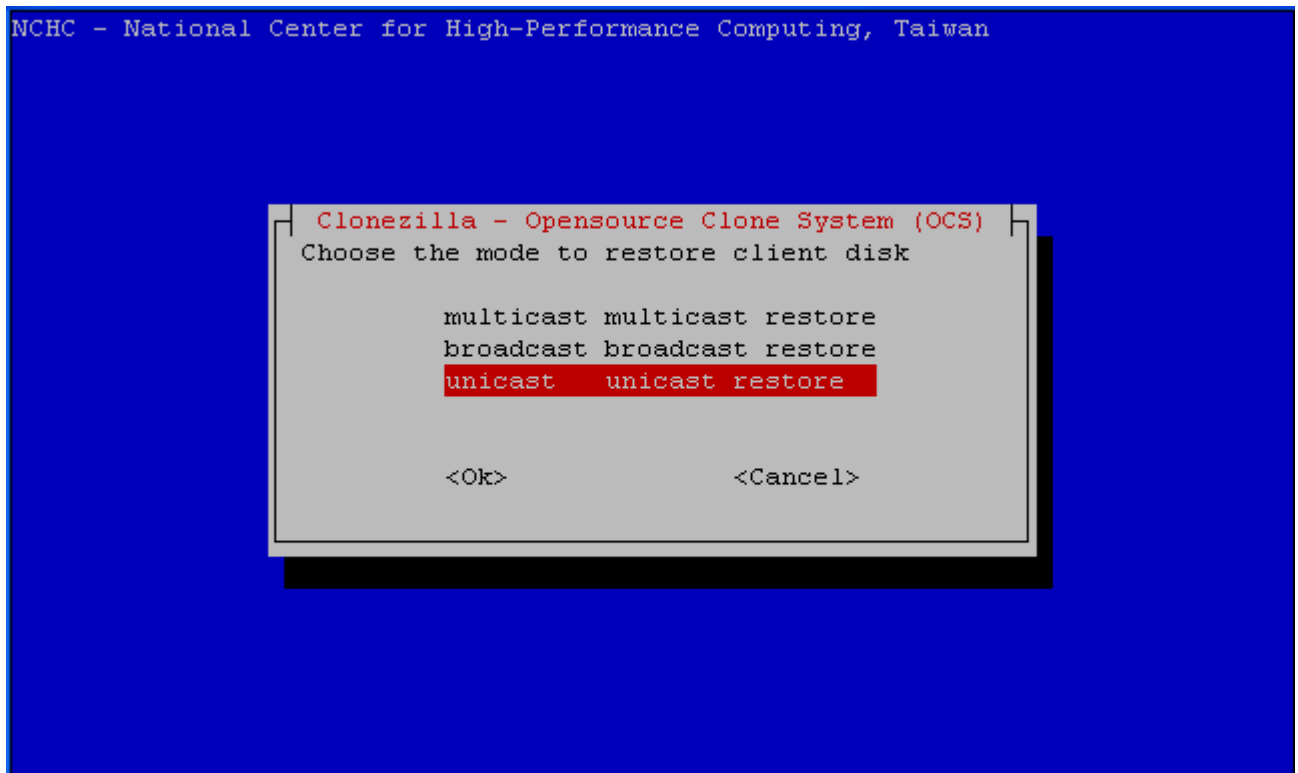
ให้ Reboot เครื่องลูกหลังจาก Clone เสร็จ



เลือก Image ที่ต้องการ Clone



เลือก Disk ปลายทางที่ต้องการ Clone



เลือก UniCast Restore



```

The MENU LABEL is "Clonezilla: unicast restore 2009-01-28-13-img to disk sda"
Client jobs are logged in '/var/log/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 in client machine, version 5.4.0 or newer is requ
ired! (2) If the cloned OS is MS windows, and it fails to boot with error messag
e like "Missing Operating System" or "Invalid System Disk", then you can try to
(1) change the IDE harddrive setting in BIOS to use LBA mode instead of AUTO mod
e. (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 /tftp
boot/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 -x -p reboot -l en_US startdisk restore 2009-
01-28-13-img sda
done!
root@CloneZilla:~# █

```

## CloneZilla ก็ทำการสร้าง Menu Boot สำหรับ UniCast Restore

เมื่อบูตเครื่องลูกที่ต้องการ Clone ผ่าน Network ก็จะได้ตามรูป

<http://drbl.nchc.org.tw>, <http://drbl.sf.net>)

Ubuntu 8.10 Linux (DRBL mode, mostly local resources)

**Clonezilla: unicast restore 2009-01-28-13-img to disk sda**

Local operating system (if available)

Memory test using Memtest86+


Press [Tab] to edit options

\* Clonezilla version: 2.3.2-23. (C) 2003-2008, NCHC, Taiwan  
 \* Disclaimer: Clonezilla comes with ABSOLUTE NO WARRANTY

# DRBL

Free Software Labs  
自由軟體實驗室

NCHC, Taiwan  
國家高速網路與計算中心



```
Loading vmlinuz-pxe.....
Loading initrd-pxe.img.....
.....ready.
```

เมื่อเลือก Menu Restore Image ก็จะทำการ Boot เข้า Linux

```
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/sda < /home/partimag/2009-01-28-13-img/sda-p
t.sf
Checking the integrity of partition table in the disk /dev/sda...
Restoring partition /dev/sda1...
*****
Clean filesystem header in device /dev/sda1...
*****
*****
Starting unicast restoring image 2009-01-28-13-img to /dev/sda1...
If this action fails or hangs, check:
* Is the saved image /home/partimag/2009-01-28-13-img/sda1.ntfs-img* corrupted ?
* Network connection and NFS service.
*****
ntfsclone v2.0.0 (libntfs 10:0:0)
Ntfsclone image version: 10.0
Cluster size          : 4096 bytes
Image volume size     : 8578932736 bytes (8579 MB)
Image device size     : 8578934784 bytes
Space in use          : 3675 MB (42.8%)
Offset to image data  : 56 (0x38) bytes
Restoring NTFS from image ...
Elapsed: 00:00:41, Remaining: 00:06:24, Completed: 9.63%, Rate: 517.89MB/min, _
```

แล้วก็จะเริ่ม Clone เองอัตโนมัติ (รออย่างเดียว)

Client 192.168.200.5 (08:00:27:1f:ee:f5) finished cloning.

Stats: Unicast restored 2009-01-28-13-img, /dev/sda1, success,  
3675 MB, 7.262 mins, 504.0 MB/min;

## ตอนที่ 4

## ขั้นตอนง่าย Image แบบ หลายเครื่อง

ให้ทำการ Remote ไปยังเครื่อง Server แล้วใช้คำสั่ง /opt/drbl/sbin/dcs

```
NCHC Free Software Labs, Taiwan

DRBL, developed by NCHC Free Software Labs

///Hint! From now on, if multiple choices are available, you have to press
space key to mark your selection. A star sign (*) will be shown when the
selection is done///
Do you want to set the mode for all clients or part of them ?
Choose the mode:

All Select all clients
Part Select part of clients by IP or MAC address

<Ok> <Cancel>
```

เลือก All - Select all clients

```
NCHC - National Center for High-Performance Computing, Taiwan

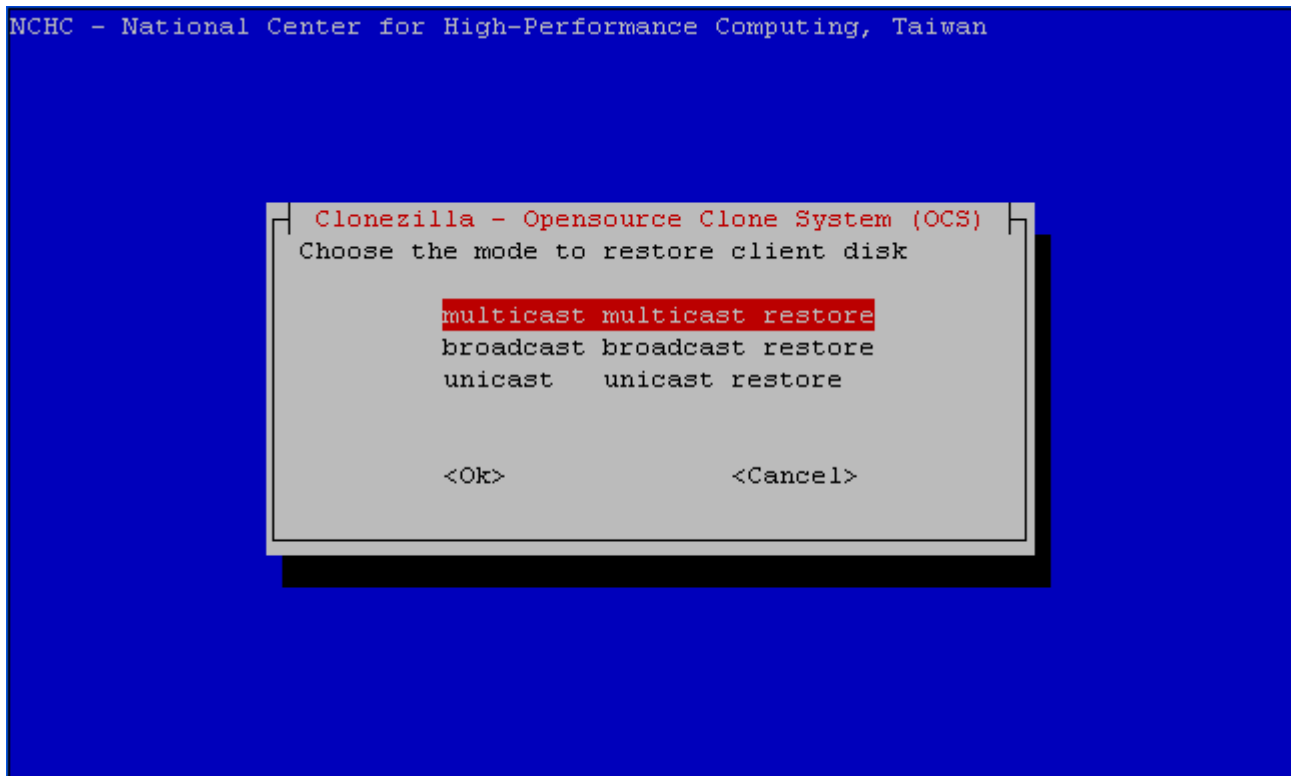
DRBL, developed by NCHC Free Software Labs

Switch the mode:

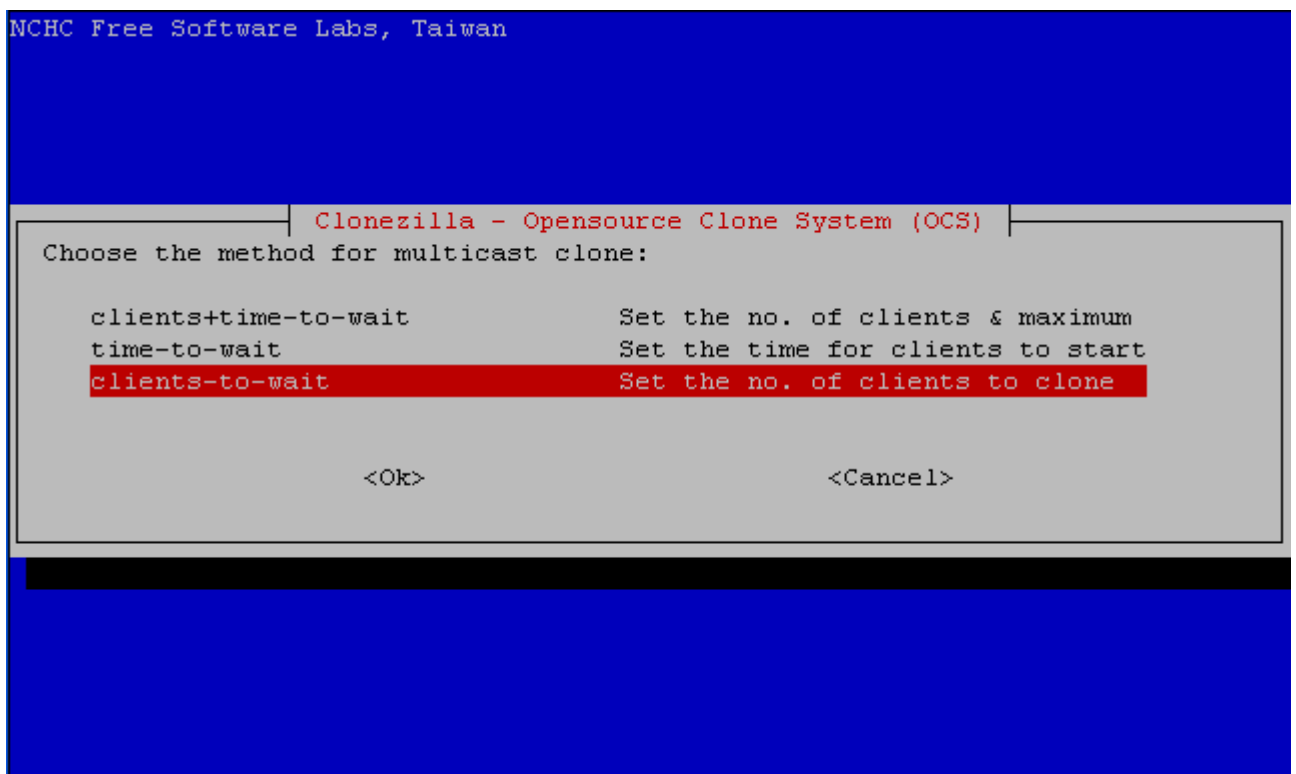
remote-linux-gra Client_remote_Linux,_graphic_mode,_powerful_client
remote-linux-txt Client_remote_Linux,_text_mode,_powerful_client
terminal Client_remote_Display_Linux,_terminal_mode
remote-memtest Client remote boot to run Memtest86+
remote-fdos Client remote boot to run FreeDOS
clonezilla-start Start clonezilla mode
clonezilla-stop Stop clonezilla mode
local Client boots its local OS
reboot Reboot
shutdown Shutdown client now
Wake-on-LAN Turn on client by Wake-on-LAN now
more More modes or commands

<Ok> <Cancel>
```

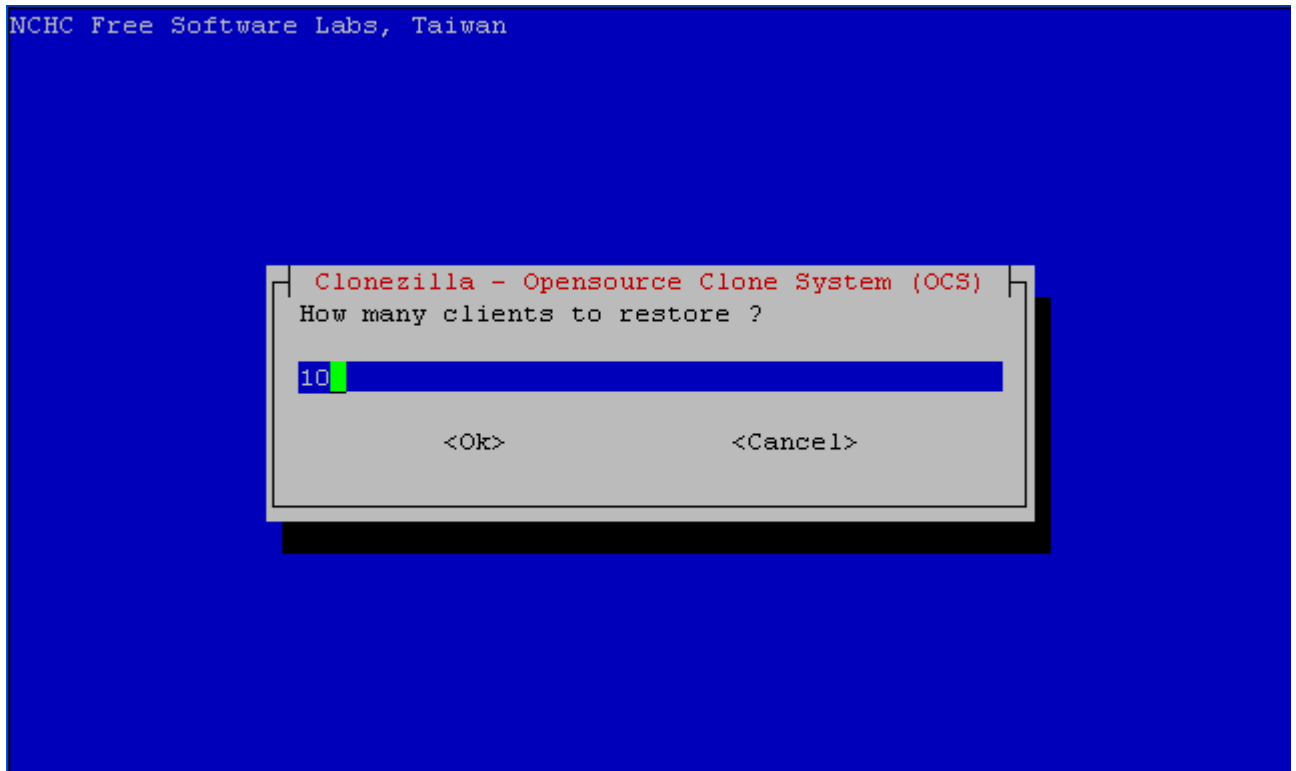
ทำตามขั้นตอนเหมือนตอนที่ 3 จนถึงขั้นตอนเลือก mode



เลือกแบบ multicast restore



เลือก clients-to-wait เพื่อระบุจำนวนเครื่องที่ต้องการ clone

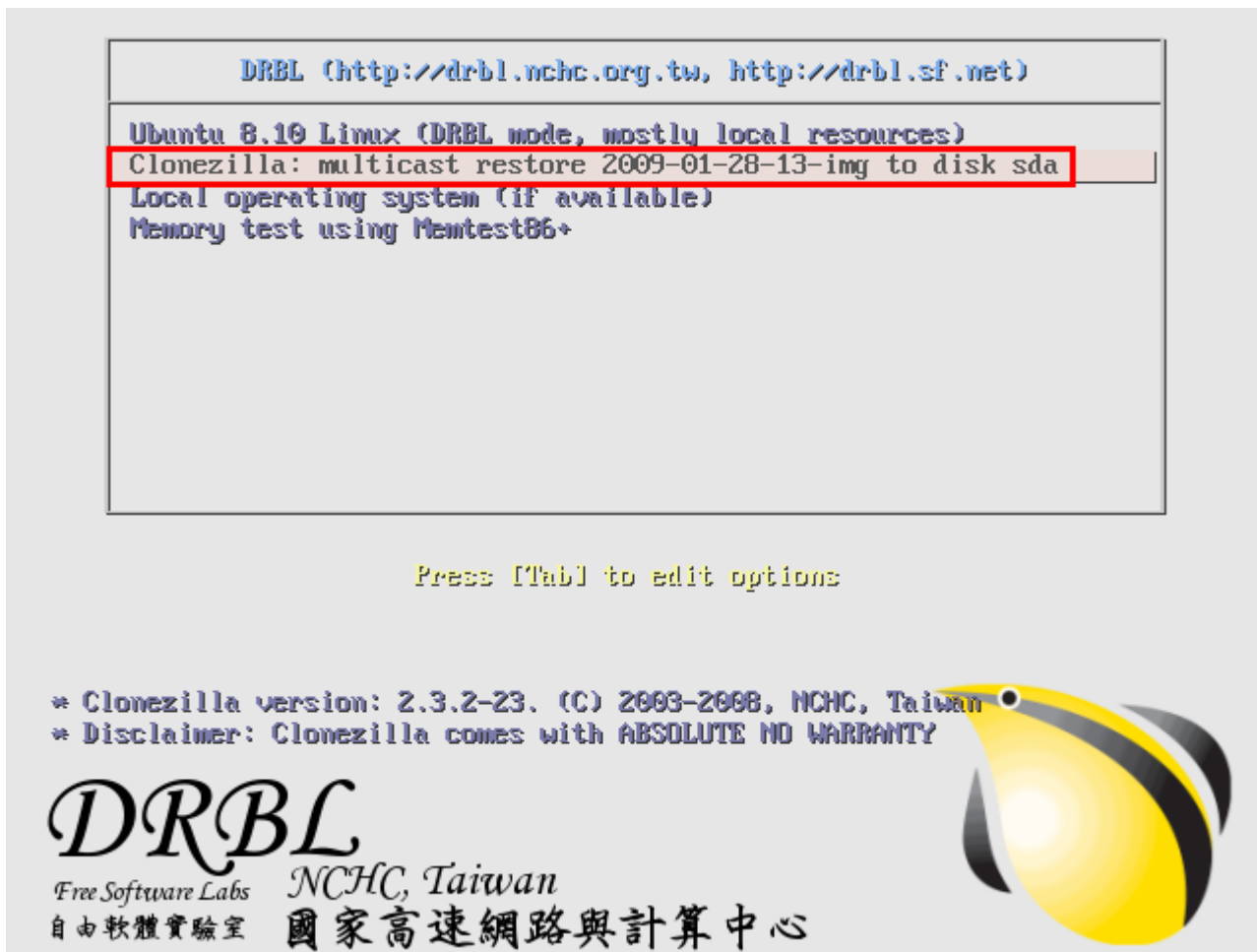


ระบุจำนวนเครื่องที่จะทำการ clone

```
The MENU LABEL is "Clonezilla: multicast restore 2009-01-28-13-img to disk sda"
Client jobs are logged in '/var/log/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 in client machine, version 5.4.0 or newer is requ
ired! (2) If the cloned OS is MS windows, and it fails to boot with error messag
e like "Missing Operating System" or "Invalid System Disk", then you can try to
(1) change the IDE harddrive setting in BIOS to use LBA mode instead of AUTO mod
e. (2) Or you can try to use parameter -tl when restoring.
This is for all clients, so we remove other host-based PXE config files in /tftp
boot/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 -x -p reboot --clients-to-wait 10 -l en_US st
artdisk multicast_restore 2009-01-28-13-img sda
done!
root@CloneZilla:~#
```

Server ก็ทำการเตรียม Menu Boot สำหรับ MultiCast Restore ไว้ให้

เมื่อทำการ Boot เครื่องที่ต้องการ Clone ผ่าน Network ก็จะได้เมนูดังนี้



เลือก เมนู Clonezilla : multicast restore img to disk

```
/dev/sda3          0          -          0          0          Empty
/dev/sda4          0          -          0          0          Empty
Successfully wrote the new partition table

Re-reading the partition table ...

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/sda < /home/partimag/2009-01-28-13-img/sda-p
t.sf
Checking the integrity of partition table in the disk /dev/sda...
Restoring partition /dev/sda1...
Clean filesystem header in device /dev/sda1...
*****
Starting multicast restoring image 2009-01-28-13-img to /dev/sda1...
*****
Waiting for multicast clone to start...
If this action fails or hangs, check:
* Is the saved image /home/partimag/2009-01-28-13-img/sda1.ntfs-img* corrupted ?
* Network connection or switch ? Did you forget to link those network switches i
f you have more than 1 ? Does your network switch block multicast packet ?
*****
ntfsclone v2.0.0 (libntfs 10:0:0)
```

เมื่อ Boot เข้า Linux แล้วทุกเครื่องที่ทำการ Clone จะมาหยุดอยู่ที่หน้าจอดังรูป

```
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/sda < /home/partimag/2009-01-28-13-img/sda-p
t.sf
Checking the integrity of partition table in the disk /dev/sda...
Restoring partition /dev/sda1...
Clean filesystem header in device /dev/sda1...
*****
Starting multicast restoring image 2009-01-28-13-img to /dev/sda1...
*****
Waiting for multicast clone to start...
If this action fails or hangs, check:
* Is the saved image /home/partimag/2009-01-28-13-img/sda1.ntfs-img* corrupted ?
* Network connection or switch ? Did you forget to link those network switches i
f you have more than 1 ? Does your network switch block multicast packet ?
*****
ntfsclone v2.0.0 (libntfs 10:0:0)
Ntfsclone image version: 10.0
Cluster size          : 4096 bytes
Image volume size     : 8578932736 bytes (8579 MB)
Image device size     : 8578934784 bytes
Space in use          : 3675 MB (42.8%)
Offset to image data  : 56 (0x38) bytes
Restoring NTFS from image ...
Elapsed: 00:00:14, Remaining: 00:09:16, Completed: 2.45%, Rate: 386.19MB/min, _
```

เมื่อจำนวนเครื่องที่ Clone ครบตามจำนวนที่กำหนดไว้

ทุกเครื่องก็จะเริ่มต้น Clone ไปพร้อม ๆ กัน

Client 192.168.200.6 (08:00:27:1f:ee:f5) finished cloning.

Stats: Multicast restored 2009-01-28-13-img, /dev/sda1, success,  
3675 MB, 8.682 mins, 420.0 MB/min;

เมื่อทำการ Clone เสร็จเรียบร้อยแล้ว ทุกเครื่องก็จะ reboot เองโดยอัตโนมัติ