

การ Clone Hard Disk จาก Server ผ่านเครือข่าย

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งานเทคโนโลยีสารสนเทศ

โรงไฟฟ้าพลังน้ำภาคตะวันออกเฉียงเหนือ

Clonezilla

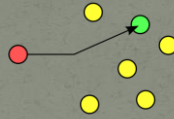
The Free and Open Source Software for Disk
Imaging and Cloning

- Uses **Partimage**, **ntfsclone** and **dd** to clone partitions or whole disks.
- Can save as gzip, bzip2, Lzo, or uncompressed image.
- Supports ext2, ext3, reiserfs, xfs, jfs, FAT and **NTFS** filesystems.
- Can save **to local** or **network drive**.
- Use easy to follow screens with directions
- Get It at: <http://www.clonezilla.org/>

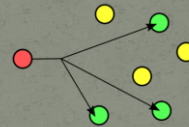


การรับส่งข้อมูล

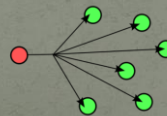
Unicast



Multicast



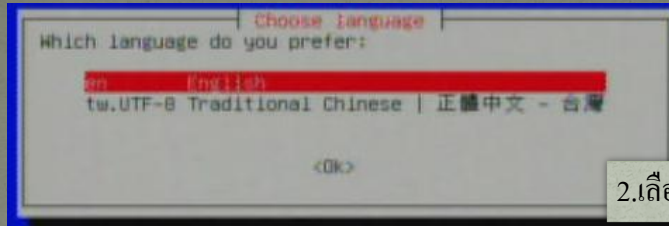
Broadcast



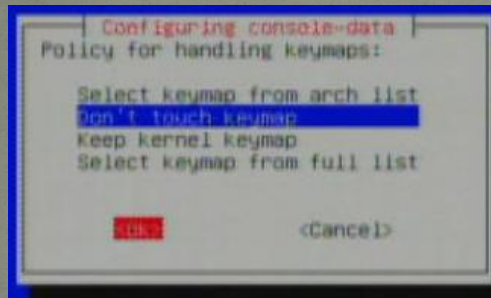
Part 1: Backup Master



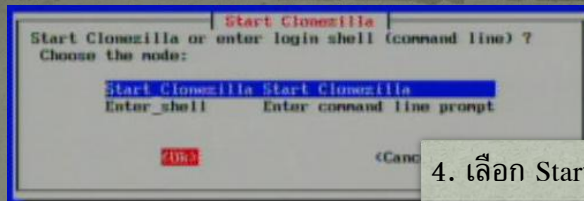
1.เลือก Clonezilla Live



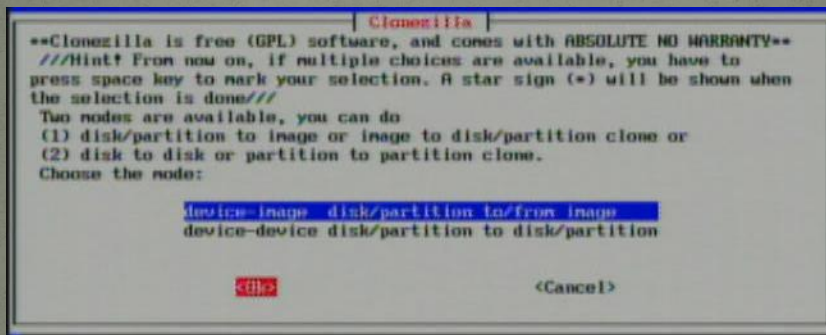
2.เลือกภาษา



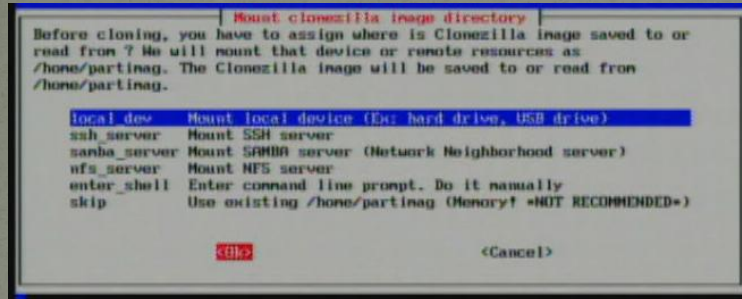
3.เลือก Don't touch keymap เพื่อกำหนดการใช้ เป็นภาษาอังกฤษ



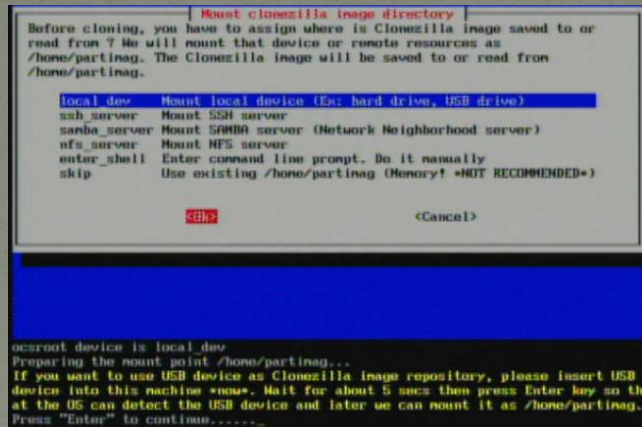
4. เลือก Start Clonezilla



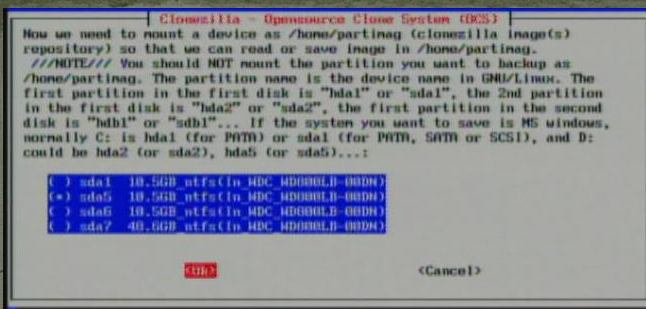
5. เลือก device-image disk/partition to/from image



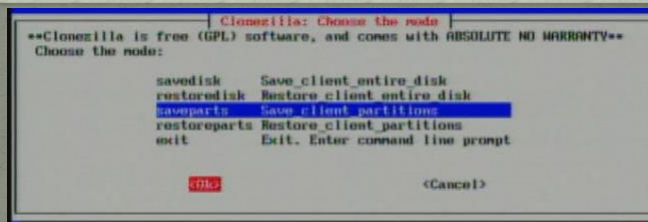
6. เลือก local_dev Mount local device (Ex: hard drive,USB drive)



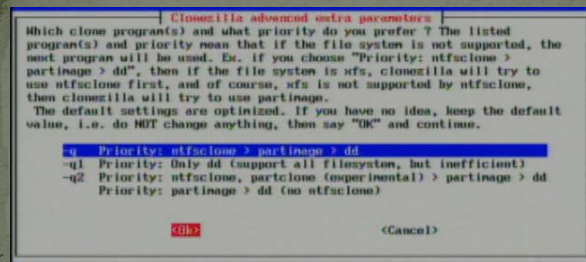
Clonezilla will give you time to plug in a USB drive



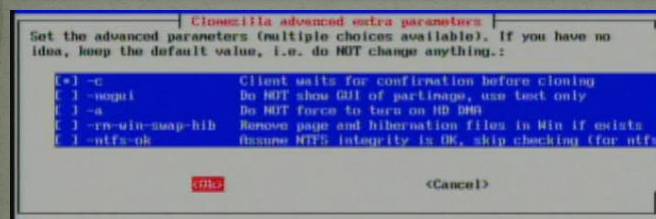
7. เลือก partition (destination) to hold image



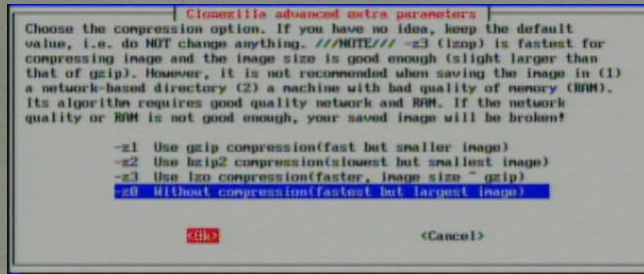
8. เลือก Saveparts Save client partitions



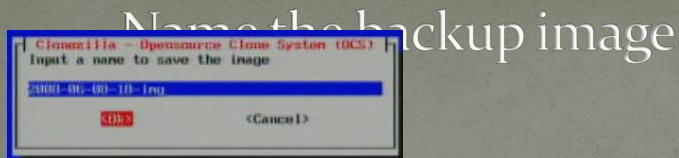
9. เลือก -q Priority: ntfsclone > partimage > dd



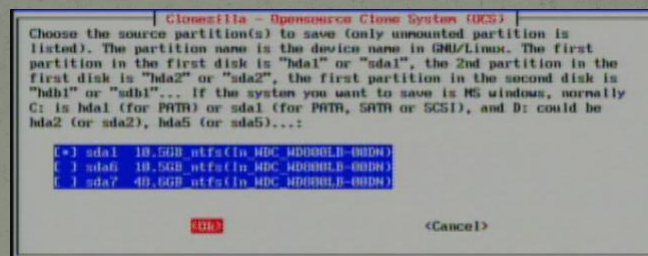
10. เลือก -c Client waits for confirmation before cloning



11. เลือก -z0- Without compression (fast but largest image)



12. ป้อนชื่อ Image



13. เลือก Source partition(s)

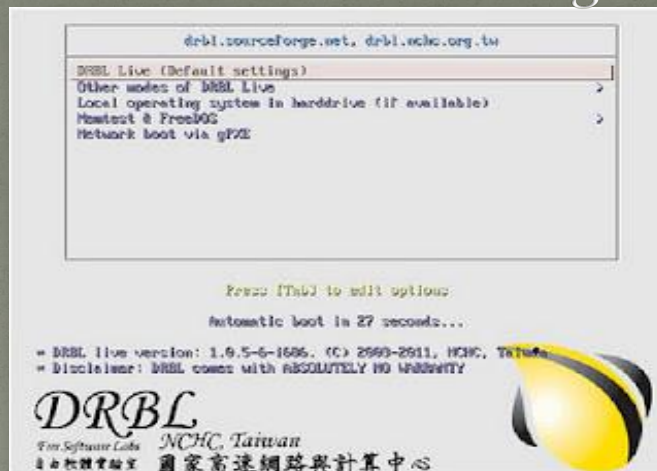
```

Reading the partition table for /dev/sda...RETURN=0
done!
Saving the MBR data for sda...
1+0 records in
1+0 records out
512 bytes (512 B) copied, 0.000151336 seconds, 3.4 MB/s
=====
Starting saving /dev/sda1 as /home/partinag/2000-06-00-10-img/sda1.img...
/dev/sda1 filesystem: ntfs.
=====
Checking NTFS integrity in /dev/sda1... done!
Checking the disk space...
Use ntfsclone with cat to save the image instead of partimage.
Split image file with size limit 2000 MB.
=====
If this action fails or hangs, check:
* Is the disk full?
=====
ntfsclone v2.0.0 (libntfs 10:0:0)
NTFS volume version: 3.1
Cluster size : 4096 bytes
Current volume size: 10407197696 bytes (10400 MB)
Current device size: 10407199744 bytes (10400 MB)
Scanning volume ...
100.00 percent completed
Accounting clusters ...
Space in use : 2041 MB (25.2%)
Saving NTFS to image ...
= 0.57 percent completed

```

จบขั้นตอน Master Image

Part 2: Restore Image



1. เปิดเครื่องใหม่ โดยใช้แผ่น DRBL (Diskless Remote Boot in Linux) Live CD เลือก DRBL Live กด Enter



2. ทำการเลือกภาษา โดยการเลือกเป็นภาษาอังกฤษ



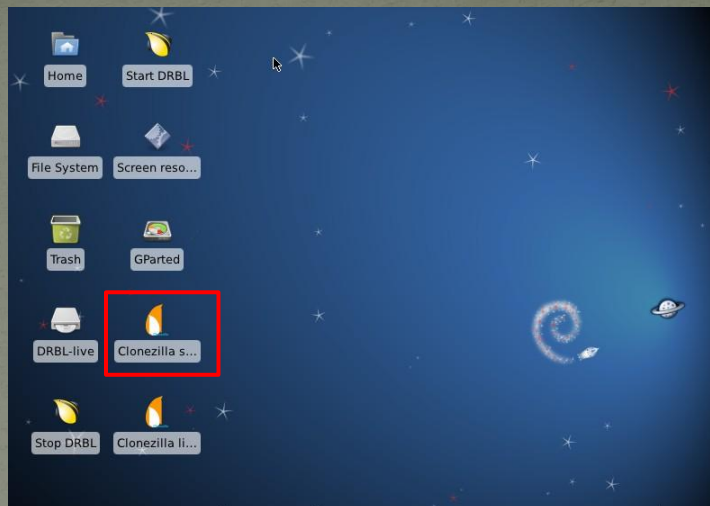
3. เลือก Don't touch keymap

```

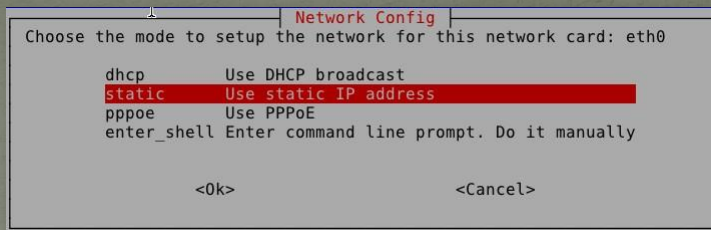
///NOTE/// Later we will enter graphical environment if you choose "0". However,
if graphical environment (X-window) fails to start, you can:
Run "sudo forcevideo-drbl-live" to configure it again. Choose 1024x768, 800x600
or 640x480 as your resolution and the driver for your VGA card, etc. Most of the
time you can accept the default values if you have no idea about them.
If failing to enter graphical environment, and it does not return to text mode,
you can reboot again, and choose "1" here to config X manually.
=====
Which mode do you prefer?
(0) Continue to start X-window automatically to use DRBL live
(1) Run "forcevideo-drbl-live" to configure X-window settings manually
(2) Enter command line prompt to configure X-window by yourself
(0)

```

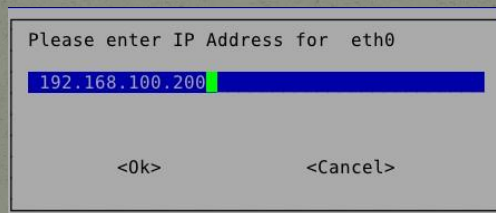
4.ให้กด Enter เพื่อเลือกข้อ “0” เพื่อทำการ Start “X window”



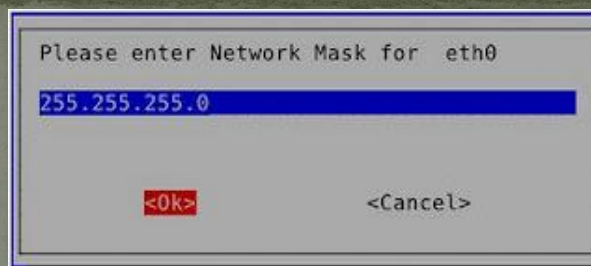
5.เลือก Clonezilla Server เพื่อสร้างเครื่องแม่ข่ายในการกระจาย Master Image ไปยังเครื่องลูกข่าย



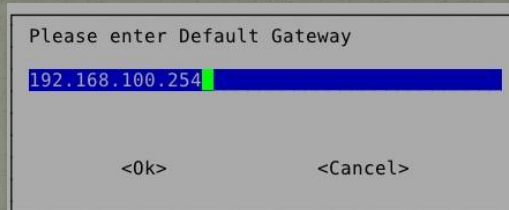
6.เลือก static เพื่อกำหนด IP Address



7.ใส่หมายเลข IP Address สำหรับเครื่อง Server



8.เลือก OK เพื่อกำหนดตั้งค่า Network Mask ให้หลังจากทำการตั้งค่า IP Address และเลือก OK



9.เลือก OK ได้กำหนดสิทธิ์ Gateway หลังจากทำการตั้งค่า IP Address และ กด OK

```

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For info, please visit https://www.isc.org/software/dhcp/

Listening on LPF/eth0/08:00:27:82:89:62
Sending on   LPF/eth0/08:00:27:82:89:62
Sending on   Socket/fallback
DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 8
DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 12
DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 19
DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 16
DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 6
No DHCP OFFERS received.
No working leases in persistent database - sleeping.
OK. Now writing the setting to network config file... Done!
///Note/// You have more than one network cards. Now you can continue to configure them if you want. However, remember (0) Use private IP address. Class C (192.168.x.y) is recommended. (1) Set the IP address in different subnet, i.e. All the network cards have different IP address in different subnet (E.g. 192.168.100.254 for eth1, 192.168.101.254 for eth2...). Do NOT set it in the same subnet with the existing one. (2) You should "NOT" assign any "default gateway" to those network cards for clients to connect!
Some network card(s) are not configured, continue to configure another network card?
(Y/n) y

```

10. กดปุ่ม Y เพื่อยืนยัน

```

Mount Clonezilla image directory
Before cloning, you have to assign where the Clonezilla image will be saved to or read from. We will mount that device or remote resources as /home/partimag. The Clonezilla image will be saved to or read from /home/partimag.
Select mode:
local_dev Use local device (E.g.: hard drive, USB drive)
ssh_server Use SSH server
samba_server Use SAMBA server (Network Neighborhood server)
nfs_server Use NFS server
enter_shell Enter command line prompt. Do it manually
skip Use existing /home/partimag (Memory! *NOT RECOMMENDED*)
<Ok> <Cancel>

```

11. เลือก local_dev เพื่อเชื่อมต่อไฟล์ Image จาก External Harddisk หรือ Harddisk ในเครื่อง

```

card. However, pay attention to those clients connected with eth0 (The first
network card in this machine). Since DHCP service will be run on this server,
it's better not to lease IP address to ANY client. It is better to lease IP
address to only PXE/Etherboot clients connected to eth0, not ANY client (they
can be any other MS Windows or any GNU/Linux client). However, if this limit
ation is set, and you are using DRBL a Clonezilla server, the restored OS by
Clonezilla won't be able to lease IP address from this DRBL server.
Do you want to lease IP address to PXE/Etherboot client only? ///NOTE/// If y
ou say no, any machine connected with eth0 might lease IP address from this D
RBL server. THIS IS VERY ANNOYING if you have other machines you do not want
them to join DRBL environment! They might lease IP address from this DRBL ser
ver! Therefore, it's ONLY when you are SURE all the machines connected with e
th0 are used as DRBL/Clonezilla clients, you can say 'no' here.
[Y/n] y
Only one network card with one IP address, so now creating an alias IP address
s to be used for DRBL clients... done!
Preparing clonezilla image home dir...
ocsroot device is local dev
Preparing the mount point /home/partimag...
If you want to use USB device as a Clonezilla image repository, please insert
USB device into this machine "now". Wait for about 5 secs then press Enter k
ey so that the OS can detect the USB device and later we can mount it as /hom
e/partimag.
Press "Enter" to continue.....

```

12. ให้กด Enter โปรแกรมจัดการค้นหา Harddisk และอุปกรณ์เชื่อมต่อทาง USB

```

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

sda1          53.7GB ntfs(In VBOX HARDDISK )
%005          10.7GB ntfs(In VBOX HARDDISK )

<Ok>          <Cancel>

```

13. Clonezilla จะทำการ Mount a Device และหา Master Image



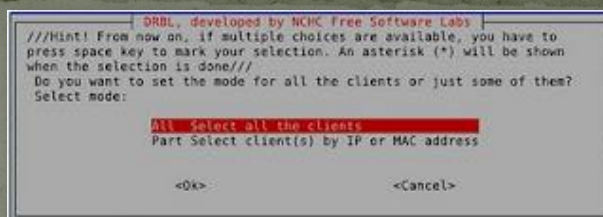
14. ทำการเลือกไฟล์ Master Image ที่ทำการบันทึกไว้

```
Getting /dev/sdb5 info...
/dev/sdb5 filesystem: ntfs
ntfs-3g /dev/sdb5 /tmp/local-dev -o noatime
Scanning dir /tmp/local-dev... done!
done!
The file system disk space usage
.....
Filesystem      Size  Used Avail Use% Mounted on
aufs            252M  6.7M  245M   3% /
tmpfs           252M   0  252M   0% /lib/init/rw
proc            0     0   0     - /proc
sysfs           0     0   0     - /sys
udev           244M 164K  244M   1% /dev
tmpfs           252M  4.0K  252M   1% /dev/shm
devpts          0     0   0     - /dev/pts
/dev/sr0        394M  394M   0 100% /live/image
tmpfs           252M  6.7M  245M   3% /live/cow
tmpfs           252M   0  252M   0% /live
tmpfs           252M  26K  252M   1% /tmp
fusectl         0     0   0     - /sys/fs/fuse/connections
/dev/sdb5       10G  1.5G  8.6G  15% /tmp/local-dev
/tmp/local-dev  10G  1.5G  8.6G  15% /home/partimag
.....
Press "Enter" to continue.....
```

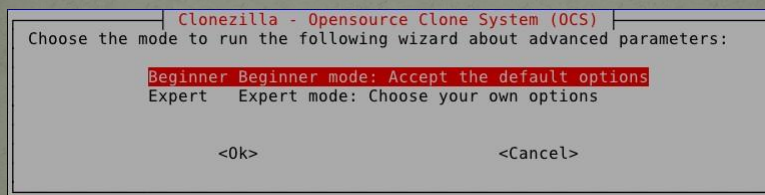
15. ให้กด Enter เพื่อทำการยืนยัน

```
The file system disk space usage
.....
Filesystem      Size  Used Avail Use% Mounted on
aufs            252M  6.7M  245M   3% /
tmpfs           252M   0  252M   0% /lib/init/rw
proc            0     0   0     - /proc
sysfs           0     0   0     - /sys
udev           244M 164K  244M   1% /dev
tmpfs           252M  4.0K  252M   1% /dev/shm
devpts          0     0   0     - /dev/pts
/dev/sr0        394M  394M   0 100% /live/image
tmpfs           252M  6.7M  245M   3% /live/cow
tmpfs           252M   0  252M   0% /live
tmpfs           252M  20K  252M   1% /tmp
fusectl         0     0   0     - /sys/fs/fuse/connections
/dev/sdb5       10G  1.5G  8.6G  15% /tmp/local-dev
/tmp/local-dev  10G  1.5G  8.6G  15% /home/partimag
.....
Press "Enter" to continue.....
.....
Now we will continue to run drblpush to make the changes work for DRBL environment.
This might take several minutes...
Press "Enter" to continue...
```

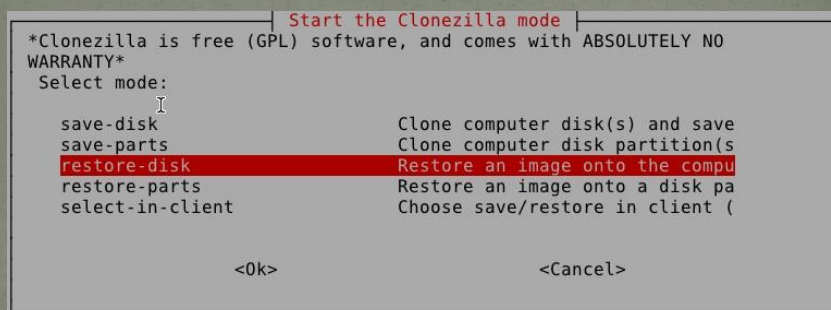
16. กด Enter



17. เลือก All Select all the clients



18.เลือก Beginner Mode



19.เลือก restore - disk เพราะต้องการ Cloneทั้ง Hard disk. จากต้นฉบับ

Clonezilla advanced extra parameters | Mode: restore-disk
The action to perform when client finishes cloning:

-p reboot Reboot client when the clone finishes
-p poweroff Shutdown client when the clone finishes
-p choose Choose in client when the clone finishes
-p true Do nothing when the clone finishes

<Ok>

20. เลือก -p reboot

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

sda1 52.4GB ntfs(In ST9750423AS) ata-ST9750423AS 5WS4E4LM
sda2 556GB ntfs(In ST9750423AS) ata-ST9750423AS 5WS4E4LM
sdc1 1000GB ntfs(In Portable) ata-ST1000LM010-9YH146 W100P7XE

21. เลือก Hard Disk ที่เก็บ Master Image

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

2012-09-28-16-img 2012-0928-1638 sda1

<Ok>

22. เลือก Master Image

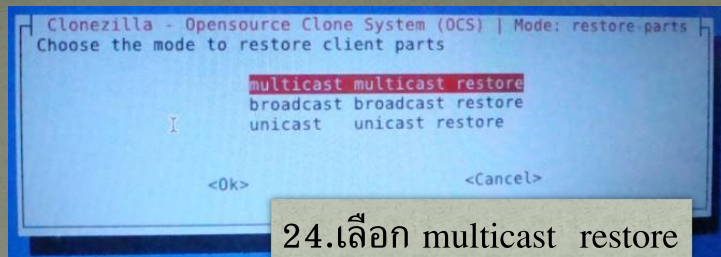
Clonezilla - Opensource Clone System (OCS) | Mode: restore-parts
Choose the target partition(s) to be overwritten (ALL DATA ON THE PARTITION WILL BE LOST AND REPLACED!!) The partition name is the device name in GNU/Linux. The first partition in the first disk is "hda1" or "sda1", the 2nd partition in the first disk is "hda2" or "sda2", the first partition in the second disk is "hdb1" or "sdb1"... If the system you want to save is MS windows, normally C: is hda1 (for PATA) or sda1 (for PATA, SATA or SCSI), and D: could be hda2 (or sda2), hda5 (or sda5)... (Press space key to mark your selection. An asterisk (*) will be shown when the selection is done)

[*] sda1 disk(sda) partition(1)

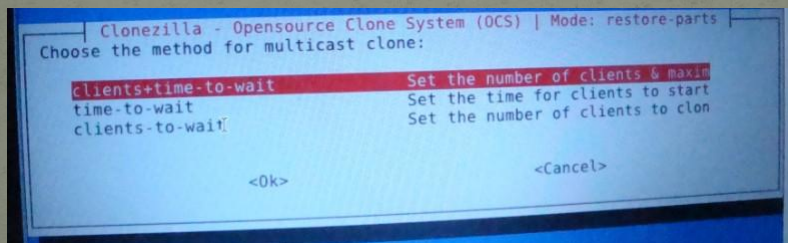
<Ok>

<Cancel>

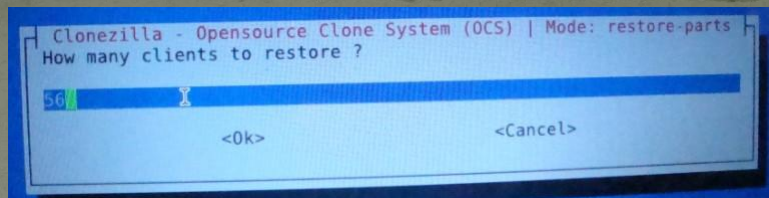
23. เลือก client partition ที่ต้องการโคลน



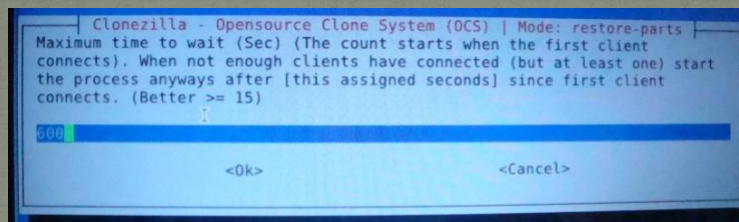
24.เลือก multicast restore



25.Client + time - to - wait



26.เลือกจำนวนเครื่องลูกข่ายที่ต้องการ Clone ใส่ตัวเลขจำนวนที่ต้องการ Clone



27.กำหนดเวลาตั้งแต่ประมาณ 10 นาที

```

done!
*****
The DRBL environment is ready, so we can start the Clonezilla se
*****
Now the clonezilla mode is: restore-disk
Setting client as clonezilla-restore-disk mode...Searching for
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 -n 1 -t multicast restoredisk -o 2011-11-21-12
clonezilla.lock dir: /var/lock/clonezilla
Warning!!! "range" option is found in dhcpd.conf, this is not a
perate Clonezilla... It is better to let your DRBL client acquir
ress by setting MAC address in dhcpd.conf so that you will NOT c
OS of some unknown machines.
Press "Enter" to continue.....

```

28. กด Enter เพื่อยืนยัน

```

*****
Clean all the previous saved config file if they exist...done!
Client OS type when doing Clonezilla job is: nfsroot
start ocs service -n 1 -t multicast restoredisk -o 2011-11-21-12
clonezilla.lock dir: /var/lock/clonezilla
Warning!!! "range" option is found in dhcpd.conf, this is not a
perate Clonezilla... It is better to let your DRBL client acquir
ress by setting MAC address in dhcpd.conf so that you will NOT o
OS of some unknown machines.
Press "Enter" to continue.....
Finding the multicast seed ethernet port... done.
Will use ethernet port eth0 for multicast seed in this clonezill
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
make sure all the switches are connected to each other, other
ast packets will not be sent to every clients from the etherne
d above via all the switches, so the multicast clone might NOT
Press "Enter" to continue.....

```

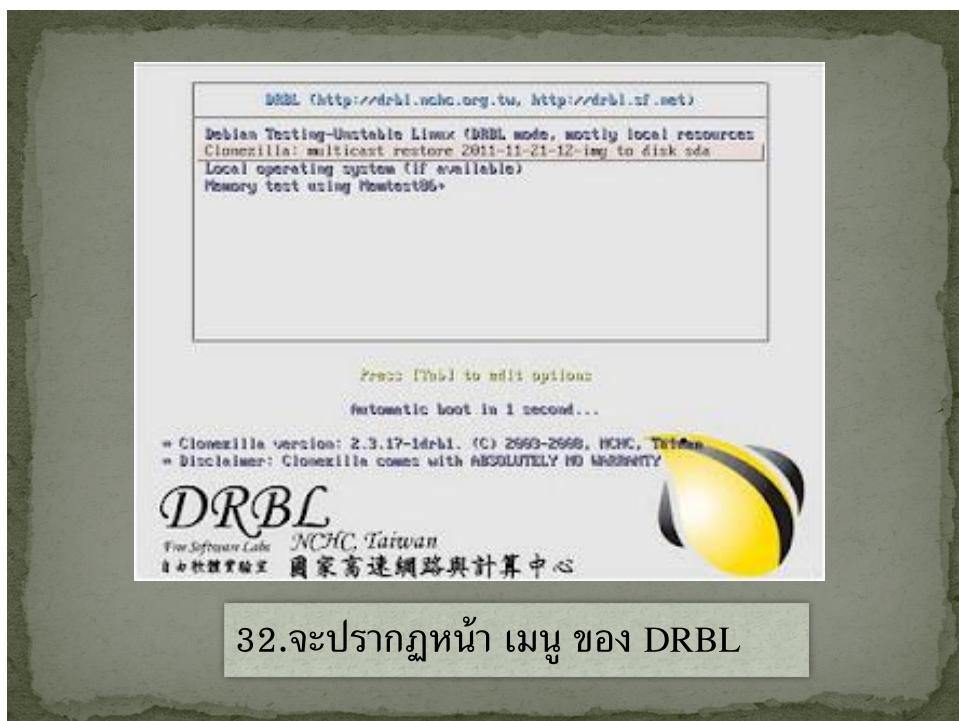
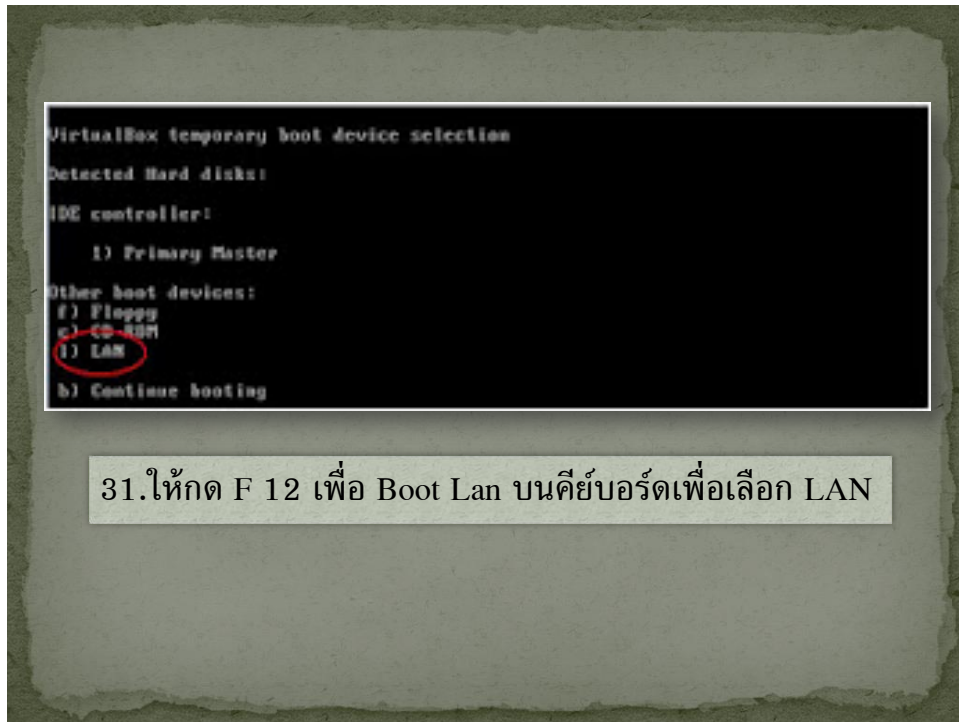
29. กด Enter เพื่อยืนยัน

```

You can try to (1) change the IDE hard drive settings in the BIOS t
ode instead of AUTO mode. (2) Or you can try to use parameter -tl
img.
This is for all clients, so we remove other host-based PXE config
ftpboot/nbi_img/pxelinux.cfg/ and keep /tftpboot/nbi_img/pxelinux.
only.
Clean all the previous saved PXELINUX config file if they exist...
PS. Next time you can run this command directly:
/opt/drbl/sbin/drbl-ocs -b -g auto -e1 auto -e2 -x -h0 PC -c -r -
eboot --clients-to-wait 1 -l en_US.UTF-8 startdisk multicast_resto
21-12.img sda
This command is also saved as this file name for later use if nece
/ocs-2011-11-21-12-img-2011-11-23-15-53
done!
*****
///NOTE/// DO NOT CLOSE THIS WINDOW UNTIL CLIENTS FINISH THE CLONE
ow must remain so that the clone services spawned by Clonezilla ca

```

30. เครื่องลูกข่าย (Client) ที่ต้องการ Clone



```

Setting the TERM as linux
=====
Connect the image dir: /home/partimag
=====
Stopping mkswapfile services... Disk /dev/sda doesn't contain a valid partition
table
Wget:
Shutting down the Logical Volume Manager
  No volume groups found
  No volume groups found
Finished Shutting down the Logical Volume Manager
Activating the partition info in /proc... done!
=====
The following step is to restore an image to the hard disk/partition(s) on this
machine: "/home/partimag/2011-11-21-12.img" -> "/dev/sda"
WARNING!!! WARNING!!! WARNING!!!
WARNING!!! THE EXISTING DATA IN THIS HARDDISK/PARTITION(S) WILL BE OVERWRITTEN! ALL
EXISTING DATA WILL BE LOST!
=====
Machine: VirtualBox
CPU: (64-488 VBOX_HARDDISK__ata-VBOX_HARDDISK__VBOX__64bit-SetDrive2)
=====
Are you sure you want to continue?
(y/n) y

```

33.ให้กดปุ่ม y เพื่อยืนยันในการดำเนินการโคลนนิ่ง



34.เมื่อ Boot อีกครั้งจะได้เครื่องพร้อมใช้งาน

Clonezilla



- เป็นทางเลือกหนึ่งในการ Clone Hard disk partition
- สามารถ Clone เฉพาะเครื่อง หรือ จำนวนมาก ผ่านเครือข่ายได้
- สามารถ Update Master Image ได้ง่ายเนื่องจากเก็บใน Server
- ช่วยลดเวลาในการติดตั้งระบบ
- The Free and Open Source Software

ขอบคุณครับ