



財團法人國家實驗研究院

國家高速網路與計算中心

NATIONAL CENTER FOR HIGH-PERFORMANCE COMPUTING

DRBL and Clonezilla

The deployment and restoration system

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

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DRBL and Clonezilla

- Diskless Remote Boot in Linux (DRBL) provides a diskless or systemless environment for client machines.
 - Unlike LTSP (Linux Terminal Server Project), DRBL uses distributed hardware resources and makes it possible for clients to fully access local hardware.
 - Peacefully coexist with the OS in client's local HD
 - Client machines are plug-and-play
- Clonezilla is a partitioning and disk cloning utility similar to Symantec Ghost or Rembo.
 - Unicast or multicast clone
- DRBL: for diskless/systemless vs. Clonezilla: for diskfull



Free Software Smart Classroom, FSSC

- Free software projects developed by NCHC Free Software Labs
- Our goal
 - FSSC (Free Software Smart Classroom)
 - DRBL, Clonezilla
 - Multicast VNC
 - Access Grid, E-learning
 - Cluster computing ready classroom
 - Grid computing ready classroom



DRBL - Diskless Remote Boot in Linux

- ✓ PXE/Etherboot + NFS + NIS - standing on a giant's shoulder

Orig: PC Cluster -> Free Software Classroom

1. Multi environment in computer classroom

- Linux & M\$ Windows coexist

2. Simplify the management

- All services and programs are in one server, you do not have to check every client
- OS and packages are installed once in DRBL server.

3. Hardware and installation are simplified, but software is full and all ready for clients!



LTSP and DRBL

- **Since there is LTSP, why DRBL ?**
 - Centralized resource vs. distributed resource
 - Thin client vs. powerful client
 - **Some people want to play 3D game or video in client**
 - Special features for DRBL
 - Clonezilla
 - One command to switch client environment
 - DRBL, FreeDOS, OS in local HD, memtest...
 - Linux network installation
 - DRBL is not suitable for old machines/thin clients
 - Choose what you need



Clonezilla

- ✓ Clonezilla [OCS (Opensource Clone System)]

- With partimage (<http://www.partimage.org>), ntfsclose, and udpcast (<http://udpcast.linux.lu/>), Clonezilla is a partitioning and disk cloning utility similar to Symantec Ghost or Rembo.
- In NCHC PC classroom, it takes about 50 minutes to clone 3.5 GBytes M\$ windows XP image for 36 clients. For multicast cloning, it takes about only 10 minutes.

- ✓ Save and restore different OS images

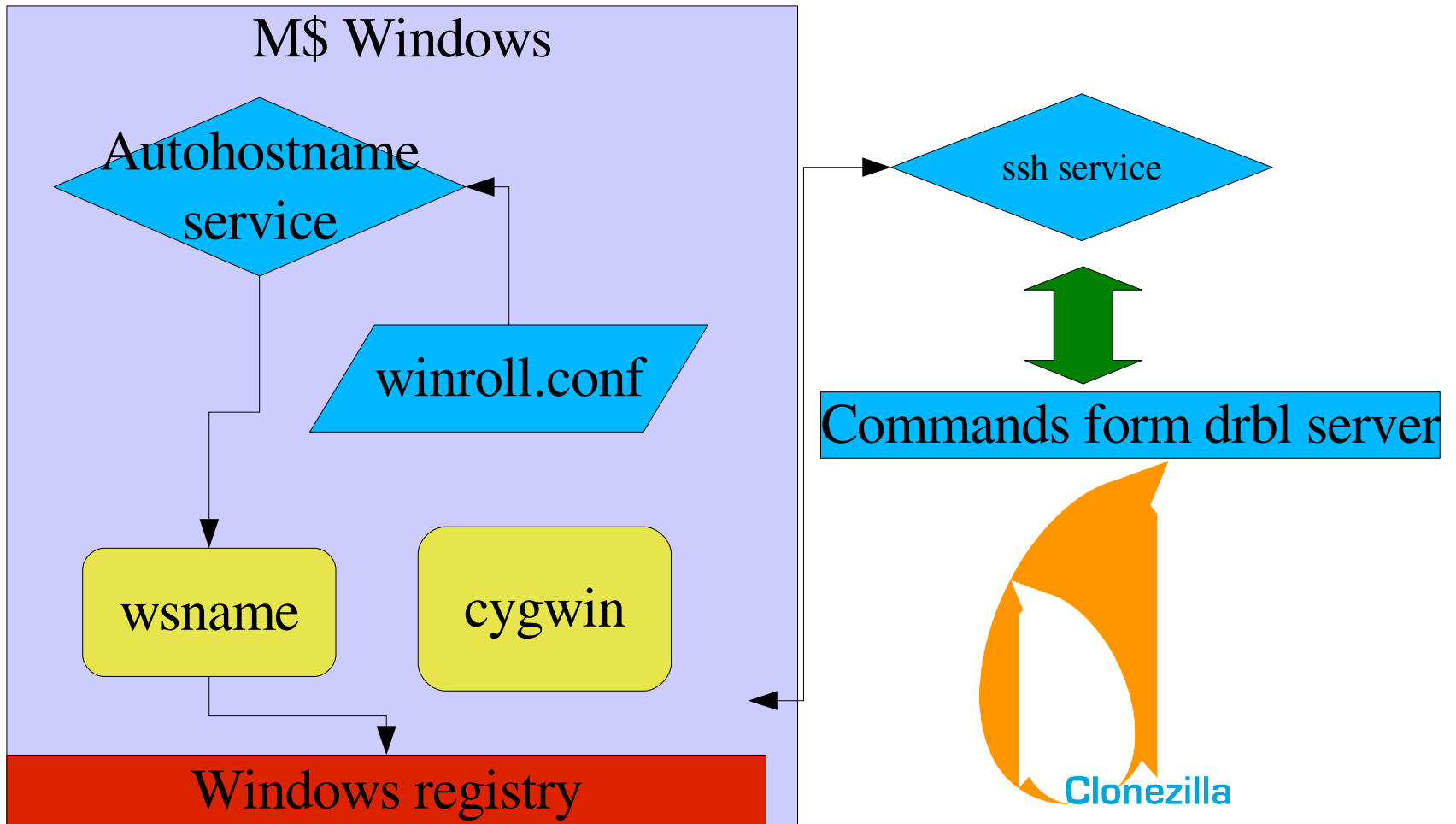
- ✓ GNU/Linux, M\$ windows
- ✓ File system: ext2/3, xfs, jfs, reiserfs, ntfs, fat.
- ✓ Supports LVM2

- ✓ DRBL-winRoll

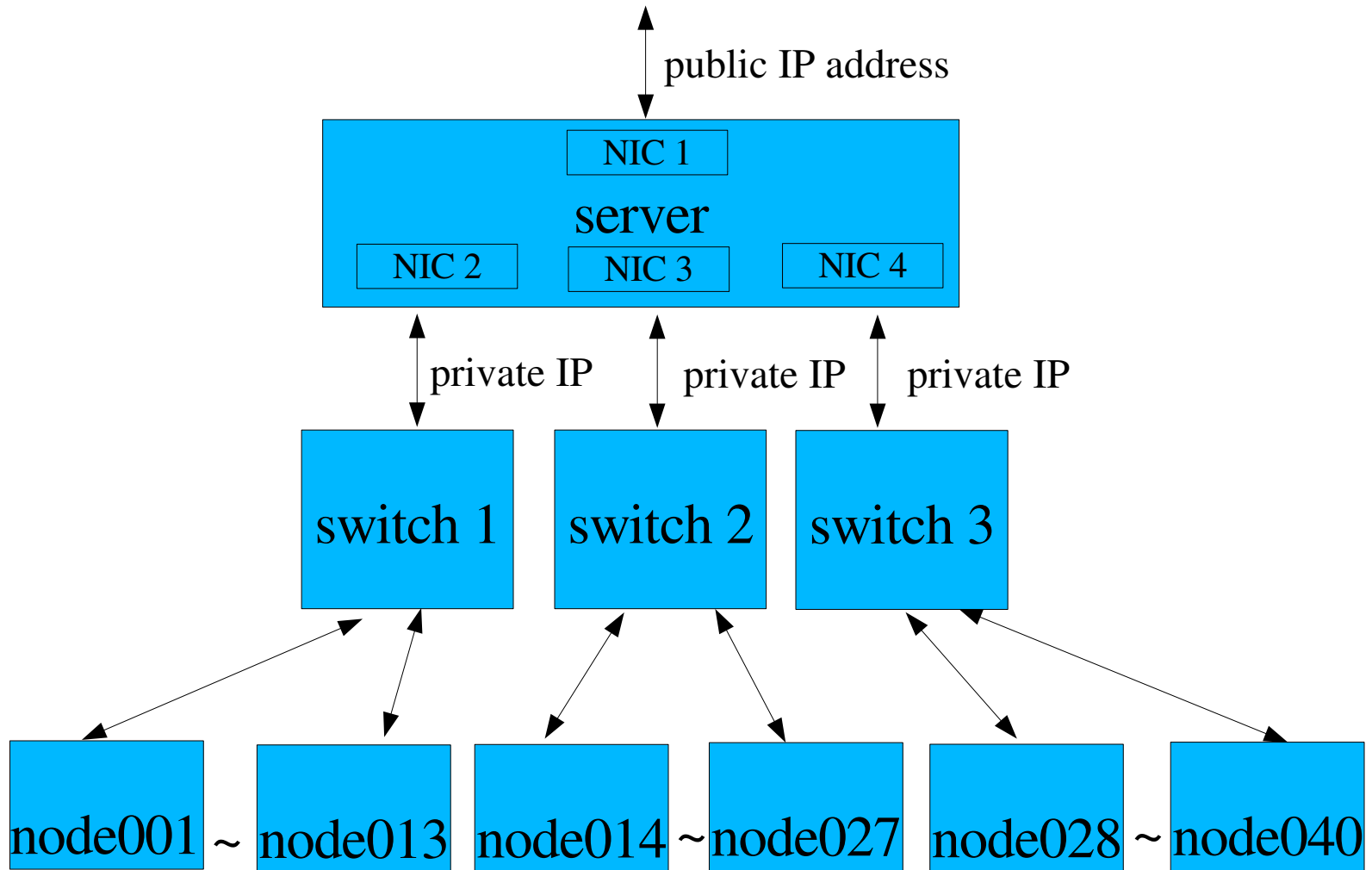
- ✓ A DRBL extension in M\$ windows, (1) change hostname, SID and workgroup name automatically after cloning (2) accept command from server.



drbl-winRoll



DRBL Environment



DRBL



server



switch



client nodes



pxe/etherboot

DHCP



pxe/etherboot

192.168.0.1

pxe/etherboot

172.16.100.10

TFTP



boot

boot

NFS



/, /usr, /home ...

/, /usr, /home ...

NIS



user login

user login



Installation

- <http://drbl.nchc.org.tw>; <http://drbl.sf.net>
- GNU/Linux distributions
 - i386/X86_64 platform
 - Debian Woody(3.0)/Sarge(3.1)/Etch(4.0), B2D,
 - Ubuntu Breezy(5.10)/Dapper(6.06)/Edgy(6.10),
 - RedHat Linux 8.0, 9, Fedora Core 1, 2, 3, 4, 5, 6
 - Mandrake 9.2, 10.0, 10.1, Mandriva LE2005 (10.2), 2006, 2007.
 - CentOS 4 (4.1, 4.2, 4.3, 4.4)
 - SuSE 9.3, 10.0, 10.1, OpenSuSE 10.0, 10.1
- 4 steps to install
 - Install GNU/Linux
 - Install DRBL package
 - Configure server
 - Configure client



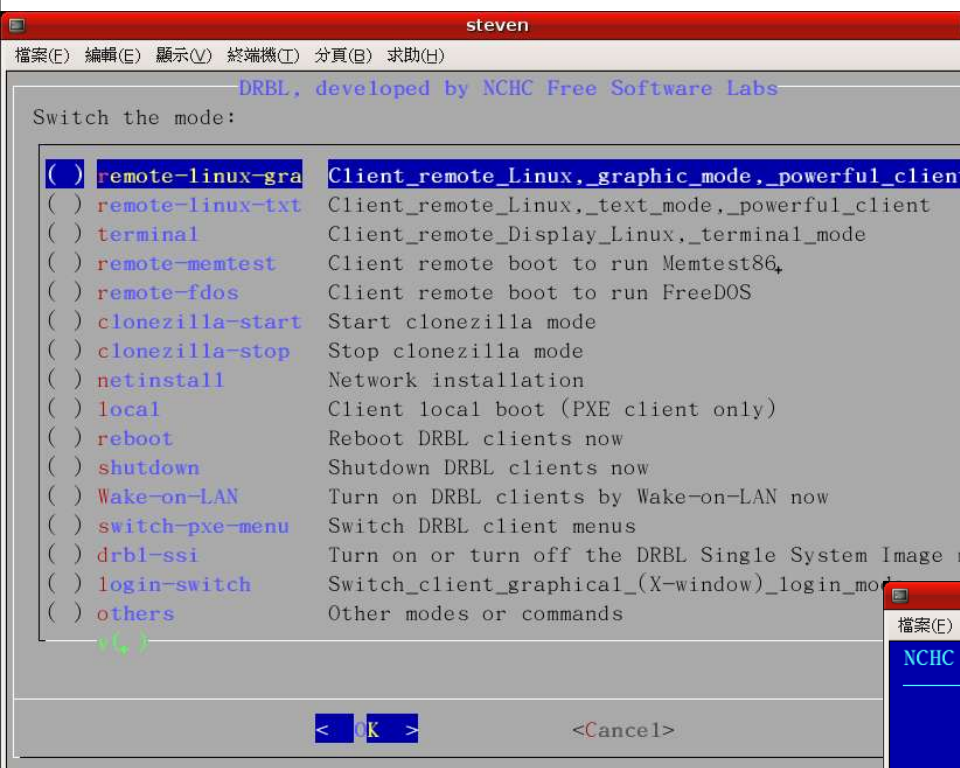
Modes of DRBL/Clonezilla

	Full DRBL	Full Clonezilla	DRBL SSI	Clonezilla Box
/etc, /var of client	NFS-based	NFS-based	Tmpfs-based	Tmpfs-based
Files in /etc and /var of client after reboot	Kept	Kept	Gone	Gone
Extra space in server/client	~ 50 MB*	~ 50MB*	0	0
Max client #/ethernet card in server	253	253	253	253

* depends on the packages installed in the server



DRBL and Clonezilla



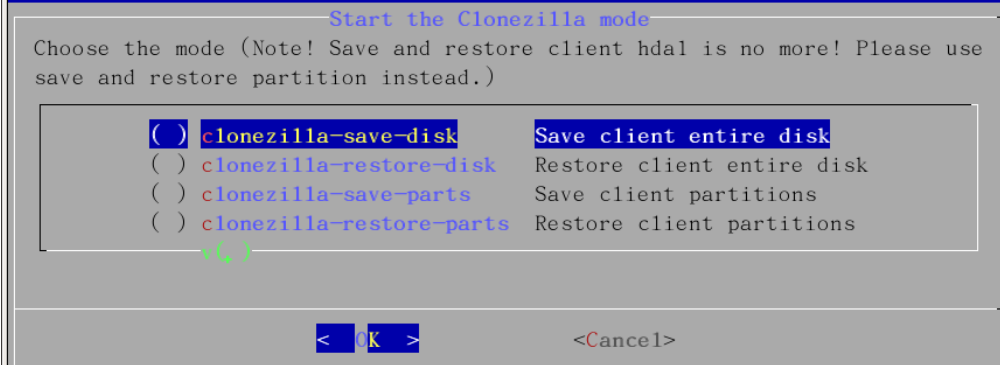
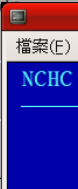
國家高速網路與計算中心

NCHC, Taiwan

自由軟體實驗室 Free Software Labs

http://free.nchc.org.tw

DRBL



Live Demo for DRBL/Clonezilla

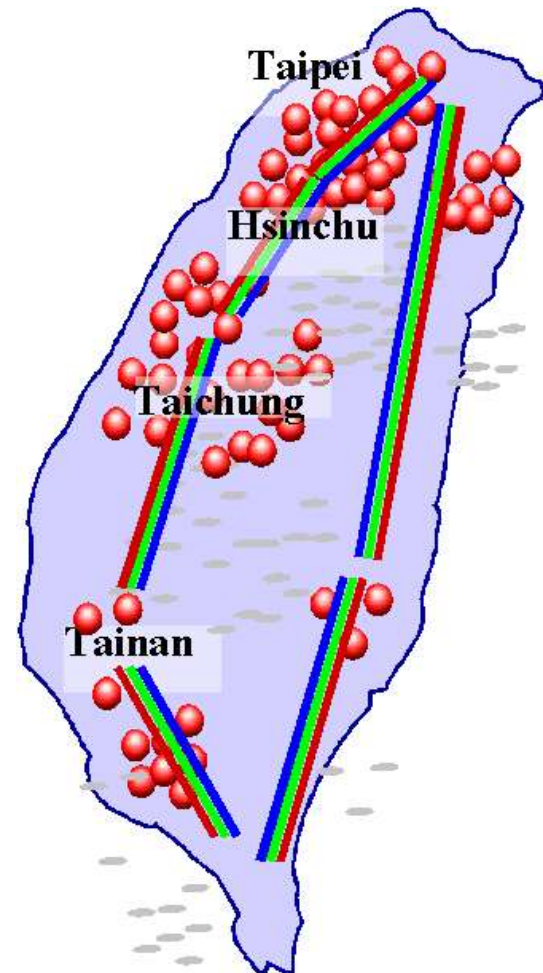
- DRBL
 - Manage the clients.
- Clonezilla save/restore image
 1. Add one application or modify the setting to one client machine,
 2. Upload an image to a set of images to be distributed to clients on a LAN.
 3. Restore the image to the clients.
- Some video in NCHC about DRBL and Clonezilla



Known sites/users in Taiwan

- Known sites/users about 310

- Public Sector
 - Primary/High school 102
 - University 68
 - Hospital 3
 - TV station 1
 - Government 7
 - NPOs 18
- SMB 78
- Misc 35



*Statistics on 2006/5/29



DRBL/Clonezilla users around the world

- Japan
 - Osaka Prefecture University
 - Tokyo Christian University
- Canada
 - Department of Education, Province of Nova Scotia
- Holland
 - NCCW (National Computer Centre Wonen)
- Indonesia
 - E-learning Centre, Aceh
 - Index Opensource Cafe, Manado (North Sulawesi)



DRBL/Clonezilla users around the world

- Portugal
 - College ISPGaya
- USA
 - Internet Cafe @ Chicago
 - University of Louisville
- Brazil, France, Germany, Sweden, UK...
- More than 10,000 downloads from 2003 to 2006 around the world.





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Question ?

