



Clonezilla

An Open and Flexible Imaging-based Architecture for System Deployment



Steven Shiau, Ceasar Sun, Jazz Wang, Thomas Tsai
{steven, ceasar, jazz, thomas}@nchc.org.tw

Free Software Lab
NCHC, Taiwan

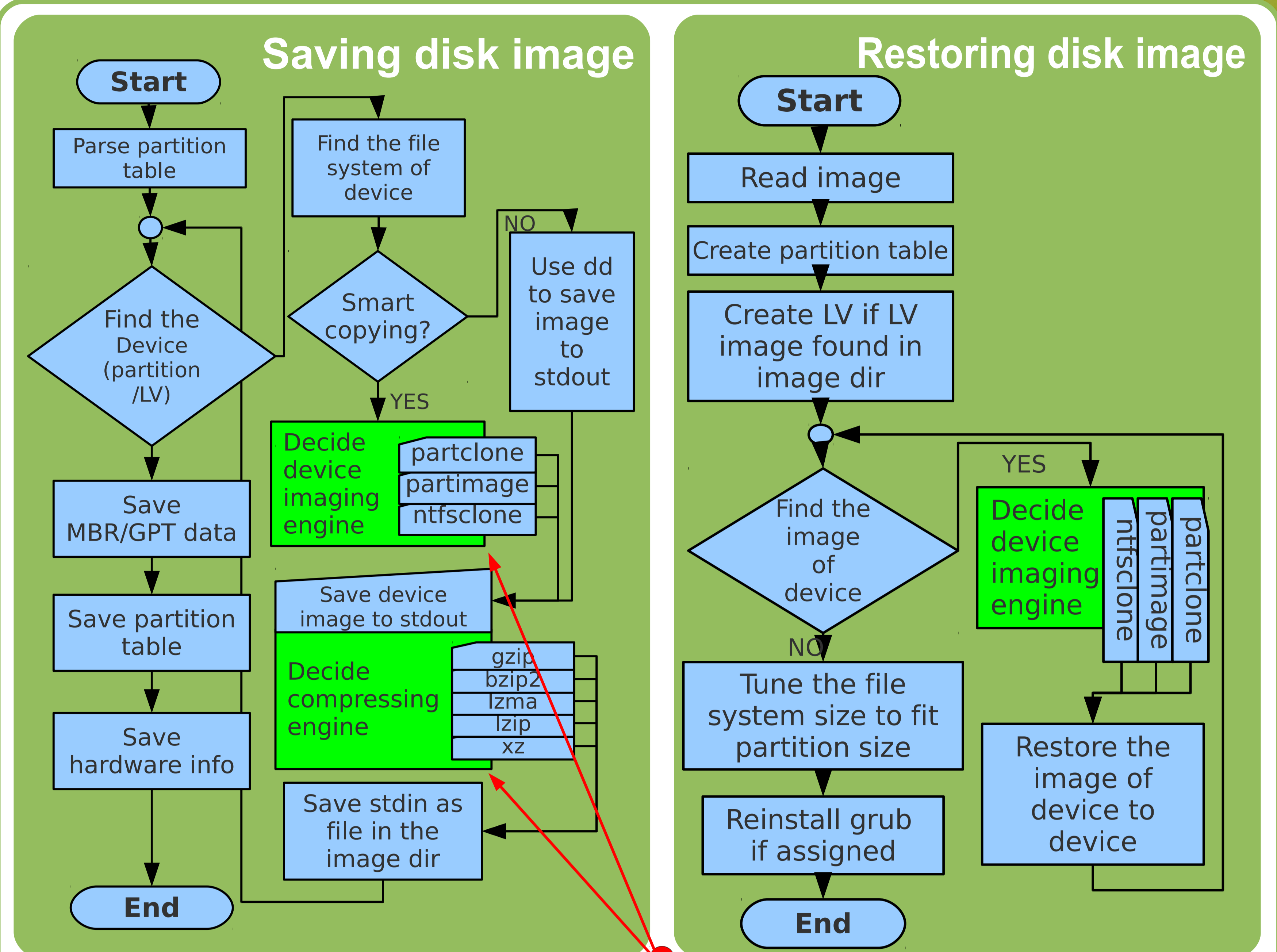
ABSTRACT

Clonezilla is an open-source disk imaging and cloning suite. It is based on Partclone, Partition Image, ntfsclone, and UDPcast with features such as plug-ins for subsystems like partitioning and a multicast mode for massive deployments. In this research, its open architecture (Figure 1 and 2) and the comparisons (Table 1 and 2) with other similar software would be presented.

<http://clonezilla.org> , <http://clonezilla.sourceforge.net/>

FEATURES

- Free (GPL) Software
- File systems supported: Ext2/3/4, ReiserFS, Reiser4, XFS, JFS, Btrfs (testing), HFS+, FAT, NTFS, UFS+ and VMFS (Table 1)
- Linux Logical Volume Manager 2 (LVM2) stackable block device (Table 2) is supported
- Grub 1 and grub 2 is supported
- Serial console is supported
- Multicast supported in Clonezilla Server Edition (SE)
- The MBR, partition table, partition(s) or entire disk(s) can be saved and restored
- Smart copying on supported file systems whereas use sector-to-sector copying via dd
- A tunable image format is implemented (Figure 2)



Imaging and compressing engines can be easily added

Figure 1. The open and flexible architecture of Clonezilla

The partition layout of the disk to be imaged

```

root@debian:~# ls -alFh /home/partimag/lucid-2010-07-28-07-img/
total 220M
drwxr-xr-x 2 root root 512 07:12 ./
drwxr-xr-x 7 root root 168 07:12 ../
-rw-r--r-- 1 root root 420 07:12 disk
-rw-r--r-- 1 root root 34K 07:12 Info-dmi.txt
-rw-r--r-- 1 root root 18K 07:12 Info-lshw.txt
-rw-r--r-- 1 root root 1.4K 07:12 Info-lspci.txt
-rw-r--r-- 1 root root 260 07:12 Info-packages.txt
-rw-r--r-- 1 root root 10 07:12 parts
-rw----- 1 root root 216M 07:12 sda1.ext4-ptcl-img.gz.aa
-rw----- 1 root root 2.3M 07:12 sda5.ext4-ptcl-img.gz.aa
-rw-r--r-- 1 root root 36 07:11 sda-chs.sf
-rw-r--r-- 1 root root 1.0M 07:11 sda-hidden-data-after-mbr
-rw-r--r-- 1 root root 512 07:11 sda-mbr
-rw-r--r-- 1 root root 434 07:11 sda-pt.parted
-rw-r--r-- 1 root root 310 07:11 sda-pt.sf
-rw-r--r-- 1 root root 53 07:12 swapppt-sda2.info
  
```

Annotations:
 - **image name:** lucid-2010-07-28-07-
 - **hardware information:** disk
 - **real data of partition sda1, sda5:** sda1.ext4-ptcl-img.gz.aa, sda5.ext4-ptcl-img.gz.aa
 - **disk C.H.S. value via sfdisk:** sda-chs.sf
 - **Use dd to save MBR and other hidden data:** sda-hidden-data-after-mbr, sda-mbr
 - **partition info from parted and sfdisk:** sda-pt.parted, sda-pt.sf
 - **UUID and label info of sda2 (swap partition):** swapppt-sda2.info

Figure 2. Files about the image taken by Clonezilla

LIMITATIONS

- The destination partition must be equal or larger than the source one
- Differential/incremental backup is not implemented yet
- Online imaging/cloning is not implemented yet
- Software RAID/fake RAID is not supported by default (extra manual processing is required)
- Recovery Clonezilla live with multiple CDs or DVDs is not implemented yet

	ext2/3	ext4	reiserfs	reiser4	xfs	jfs	btrfs (testing)	HFS+ (Mac)	FAT (MS Win)	NTFS (MS Win)	UFS+ (*BSD)	VMFS (Vmware Esx(i))
Clonezilla 1.2.6-24	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
FOG 029	Y	N	Y	N	Y	Y	N	N	Y	Y	N	N
Fsarchiver 0.6.10	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	N
G4L 0.34	Y	N	Y	N	Y	Y	N	N	Y	Y	N	N
Mondo Rescue 2.2.9.4	Y	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
Partimage 0.6.9	Y	N	Y	N	Y	Y	N	N	Y	Y	N	N
True Image 2011	Y	Y	N	N	N	N	N	N	Y	Y	N	Y
Ghost 15.0	Y	N	N	N	N	N	N	N	Y	Y	N	N

Table 1. Comparison – Smart copying file systems of other OSes

	Interface	Based on	License	Provides Live CD/USB	Live copying	Differential backup	Smart copy full disk			Raw copying	Without server	Server/client
							basic	with LVM2	with firmware RAID			
Clonezilla 1.2.6-24	TUI	partclone	GPL	Y	N	N	Y	Y	N	Y	Y	Y
FOG 029	GUI	partimage	GPL	N	N	N	Y	N	N	Y	N	Y
Fsarchiver 0.6.10	CML		GPL	Y	Y	Y	N	N	N	N	Y	N
G4L 0.34	TUI	g4u, dd, partimage, ntfsclone	GPL	Y	N	N	N	N	N	Y	N	Y
Mondo Rescue 2.2.9.4	TUI	afio, mondi	GPL	Y	Y	Y	Y	Y	N	Y	Y	N
Partimage 0.6.9	TUI		GPL	Y	N	N	N	N	N	N	Y	Y
True Image 2011	GUI	Proprietary	Proprietary	Y	Y	Y	Y	Y	N	Y	Y	Y
Ghost 15.0	GUI	Proprietary	Proprietary	Y	Y	Y	Y	N	N	Y	Y	Y

Table 2. General comparisons

"Clone as Free as You Want"

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