Mastering Clonezilla: A hands-on Lab on Disk Imaging and Cloning

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Outline

- Introduction to Clonezilla, 5 mins
- Create a Clonezilla bootable media, 5 mins
- Disk Imaging, 10 mins
- Disk Cloning, 5 mins
- Advanced Features
  - Unattended mode, 10 mins
  - Massive deployment with multicast or bittorrent mode, 15 mins
- Hands-on, Q&A, 40 mins
Outline

- Introduction to Clonezilla
- Create a Clonezilla bootable media
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  - Massive deployment with multicast or bittorrent mode
- Hands-on, Q&A
System imaging and cloning - backup

You want to crash!!!
I show you how to crash!!!

image source: maggiesfarm.anotherdotcom.com
www.compsults.com, and jervisdabreo.com
Massive system deployment
What is Clonezilla?

- A partition and disk imaging/cloning utility similar to True image® or Ghost®
- GPL license
- Mainly supported by NCHC, Taiwan
- A bare metal recovery tool for

*Logo source: (1) Larry Ewing, Simon Budig and Anja Gerwinski, (2) Apple, (3) Microsoft, (4) Marshall Kirk McKusick, (5) VMWare, (6) Distrowatch.com
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Create a Clonezilla bootable media

- **CD**
  - Download Clonezilla live iso file
  - Burn it on a CD

- **USB flash drive**
  - Download Clonezilla live zip file
  - Prepare a USB flash drive with vFAT partition (~500 MB)
  - Unzip clonezilla zip file to the vFAT partition of USB flash drive, e.g.,
    - `unzip clonezilla-live-3.1.2-22-amd64.zip -d /media/disk/`
  - If for legacy BIOS, run makeboot.sh, e.g.,
    - `sudo bash /media/disk/util/linux/makeboot.sh /dev/sda1`
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- **Disk Imaging**
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Disk imaging

• Save an image

• Restore an image
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Disk Cloning

• Disk to disk cloning
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Unattended mode

- Using **boot parameters** to make that
  - https://clonezilla.org//fine-print-live-doc.php?
    path=clonezilla-live/doc/
    05_Preseed_options_to_do_job_after_booting

- The boot parameters of Clonezilla live
    clonezilla-live/doc/99_Misc/00_live-boot-
    parameters.doc#00_live-boot-parameters.doc
Massive deployment

• Massive deployment normally requires
  – A server
  – Installation and setup
  – Extra storage to keep the image repository

• Massive deployment straight from the source machine
  – No extra server is required
  – No installation
  – No extra storage device is required
Massive deployment

• Massive deployment **from an image**
  – Take multicast mechanism as an example

• **Massive deployment straight from the source machine**
  – Take bittorrent mechanism as an example
Massive deployment schematic

DHCP server
NFS server
(Physical notebook)

Template machine
(VM)

Network Switch
(VM)

Client 1
(VM)

Client 2
(VM)
- NeiPu Elementary School, Taichung, Taiwan
- Clonezilla using BT from raw device. 60 GB data
- Deployment time: ~10s minutes for each machine

Thanks to Mr. Tien-Yu Chiu & Date Huang.
Ref: https://www.facebook.com/chiutienyu
Hands-on Lab

- It’s recommended to use virtual machines for testing
  - E.g., Virtualbox (https://www.virtualbox.org)
  - We have prepared VM OVA files and Clonezilla images you can copy.
  - Give it a try. If any questions, please ask.

- **On site Clonezilla booth**
  - Please go to Clonezilla booth

- **After LFNW 2024**
  - Please ask online: https://clonezilla.org
Questions?

Great!  ??????
Appendix

Great!  ?????
Comparisons

• Three types of experiments for massive deployment
  – Multicast
  – BT
    • BDMfaI
      – BT deployment mechanism from an image
    • BDMfRD
      – BT deployment mechanism from the raw device
• Deployed a Ubuntu Linux system (~50 GB) to 1 to 32 destination machines in a computer classroom.
Experimental results
Total deployment time

![Graph showing total deployment time vs. number of destination machines for different methods: Multicast, BDMfaI, BDMfRD.](image)
Experimental results
Average time for each client

Average time (sec)

Number of destination machines
- Multicast
- BDMfaI
- BDMfRD

Clonezilla.org
Experimental results

Speedup

Number of destination machines

Ideal, Multicast, BDMfaI, BDMfRD