

# Creating bootable USB media

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# Bootable USB media

- There are a number of utilities that support copying the contents of a Linux live CD or DVD ISO image to a USB flash drive, and making that flash drive bootable.

# Why bootable USB?

- Why bother with using a special utility to copy an ISO image to a USB flash drive, when you can just burn media?
  - Much smaller, and more sturdy
  - Higher capacity – you can fit multiple live images on a large USB flash drive
  - Stays crunchy, even in milk...

# Persistence – the killer app for bootable USB

- Many Linux distros support “persistence”, the ability to retain data on the USB flash drive between boots.
- This is implemented by creating a writable overlay over the read-only live distro.
- At least part of the bother of using a special utility is to set this up.

# How to create bootable USB media on Linux

- Sadly, most of the utilities that are able to create bootable USB flash drives work only on Windows.
- But, you do have some options.

# Brute Force

- The simplest, and most basic thing you can try.
- May be the only thing you can try if you're trying to create a bootable USB flash drive containing a distro installation CD or DVD (rather than a live distro).
- Simply “dd” the ISO file directly to the USB device.

# Using “dd”

- Be REALLY careful! This example assumes the USB device is “/dev/sdb” - your system may differ, you must be absolutely sure!
- Must be done from command line.
  - `sudo dd if=<filename>.iso of=/dev/sdb bs=8M`
- This should result in a USB flash drive that is bootable, and usable to do whatever that ISO image does.
- It doesn't always work – sometimes you end up with a flash drive that won't boot. But it works often enough to be worth trying.
- Strictly readonly – no persistence.
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# One more note about the “dd” option

- It would be nice to have a GUI to help you do this, to help prevent mistakes with the output device. If you get the output device wrong, you may erase the partition table and/or data on a hard drive, and it's suddenly a very bad day...
- Such GUI's do exist to perform this function on Windows (as an example, see <http://sourceforge.net/projects/win32diskimager>)
- Sadly, I am not aware of any such GUI disk imagers for Linux.

# Using “unetbootin” to create a bootable live flash drive with persistence

- “unetbootin” is a GUI to help you create bootable flash drives.
- Available in default package repos on many mainstream distros.
- Supports creating bootable live USB media of many different distros.
- Will download the ISO for you if you want.
- Only supports persistence for Ubuntu.

# Bootable live, persistent media for other distros

- Many distros have their own utilities for creating bootable persistent live media.
  - Fedora has “liveusb-creator”
  - Ubuntu has “usb-creator”
  - Others have ... others.
- These all create a single bootable distro per flash drive, and allow you to select how much space will be used for persistent data.

# What about all that extra space?

- A full CD image is 700 meg. A full DVD image is about 4.3 gig.
- What if your USB flash drive is 16 gig? 32 gig? What do you do with all that extra space?
- You can use it all for persistence, if you want...
- But, why can't I have multiple distros on the same bootable USB at the same time?

# Good news – you can!

- Utilities exist that allow creation of bootable USB flash drives with multiple live distros at the same time.
- At boot time, a menu appears asking you which live distro you want to boot.

# Bad news – in general, you only can, if you use Windows...

- Almost all of the utilities to create multi-bootable USB flash drives work only on Windows (even though they create bootable Linux media).
- See <http://www.pendrivelinux.com> for additional info. The one I use on Windows is called “YUMI”, and it works quite well.

# Creating multi-bootable USB flash drives, on Linux...

- I'm only aware of one utility that allows this. It is called "MultiSystem".
- In it's default packaging, it works only on Debian-based systems (including Ubuntu)
- <http://www.pendrivelinux.com/multiboot-create-a-multiboot-usb-from-linux/>
- It does a similar thing to what YUMI does, except it does it on Linux.

# MultiSystem – the inconvenient points...

- Web site is entirely in French.
- Documentation is entirely in French.
- If you don't read French, you may have a tough time... (Though they do include links to Google Translate, to help you.)
- For all it's annoyance, it is effectively the only game in town right now for creating multi-bootable USB media from a Linux host.



# If you are really brave ... multi-bootable USB using Grub

- Grub can be made to boot the contents of an ISO file directly.
- <http://www.pendrivelinux.com/boot-multiple-iso-from-usb-via-grub2-using-linux/>
- There are instructions, but no GUI to help you.
- It's only tested for the distros listed on the web page above, though includes instructions for trying others.
- Not for the feint of heart – you're pretty much on your own...

# Questions?

- Thanks for coming today!