

NetBSD Live CDs

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Jan Schaumann

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Focus on NetBSD

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- NeWBIE:
 - based on NetBSD/i386 3.0
 - caters to desktop users
 - contains tools for web browsing, chat, entertainment, etc

Why only NetBSD?

<insert obligatory shameless advocacy here>

Why only NetBSD?

Mmmmm, NetBSD...

- one of the oldest open source operating systems
- most portable operating system in the world
- possibilities for specialized Live CDs are endless:
 - embedded market (firewalls, routers etc.)
 - desktops on commodity hardware
 - server market (think NetBSD/xen Live CDs, kickstart etc.)

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Clearly the greatest thing since:



Why only NetBSD?



But...

Can't we all get a long?

- NetBSD can learn from other people's mistakes "experiences".

<insert friendly smiley here>

- NetBSD is not so different from the other BSDs:
 - all BSDs share and exchange code
 - all BSDs lack market share
 - advocacy for one flavor of BSD could help the others as well

Kumbaya!

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Nowadays we have:

- FreeBSD based:
 - FreeSBIE (Desktop, test-run + installation)
 - Frenzy (“portable system administrator toolkit”)
- NetBSD based:
 - NeWBIE (Desktop oriented)
- OpenBSD based:
 - Anonym.OS (anonymity/security focused desktop)
 - Olivebsd (general purpose desktop)

...and of course many others.

Common traits

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- target audience overlapping
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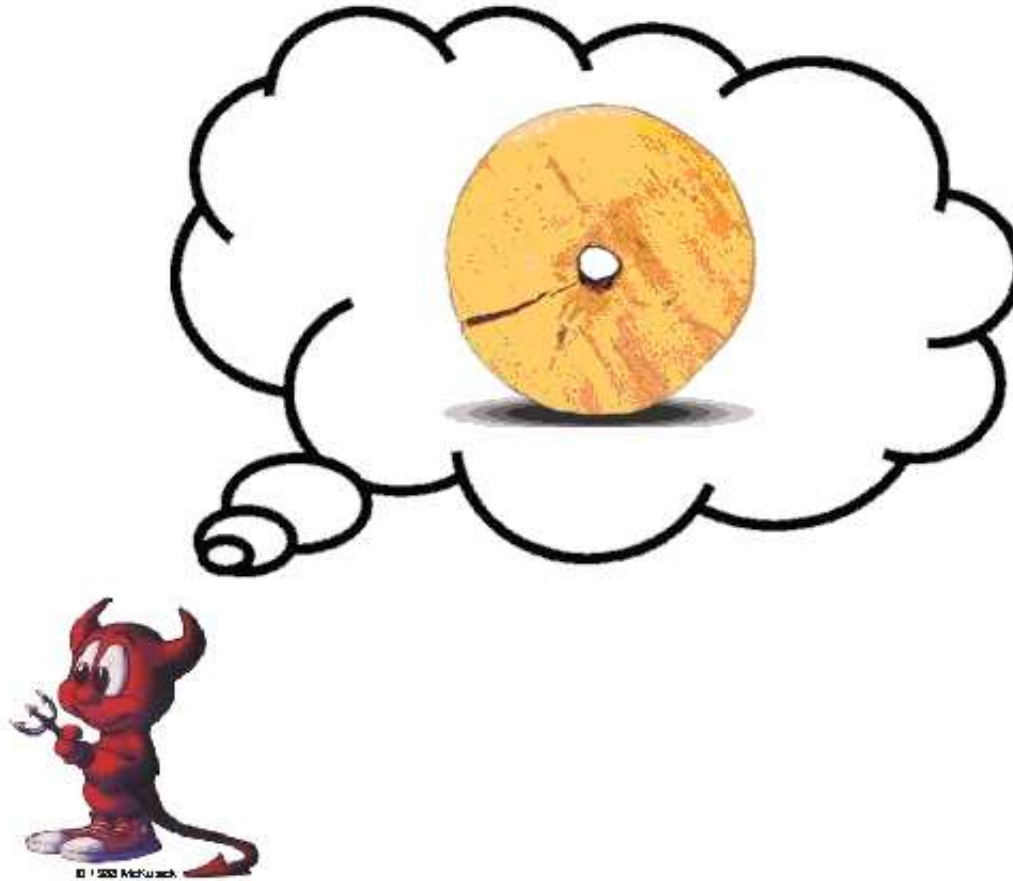
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This looks a lot like...

*BSD Live CDs

“You know what would be great..?”



Live CDs

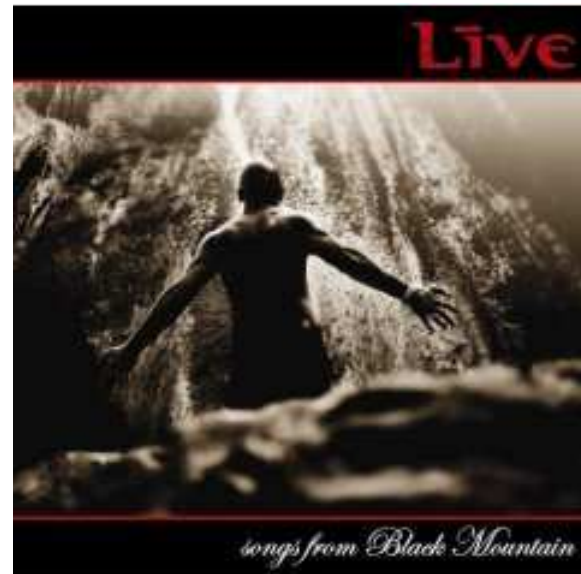
Live CDs

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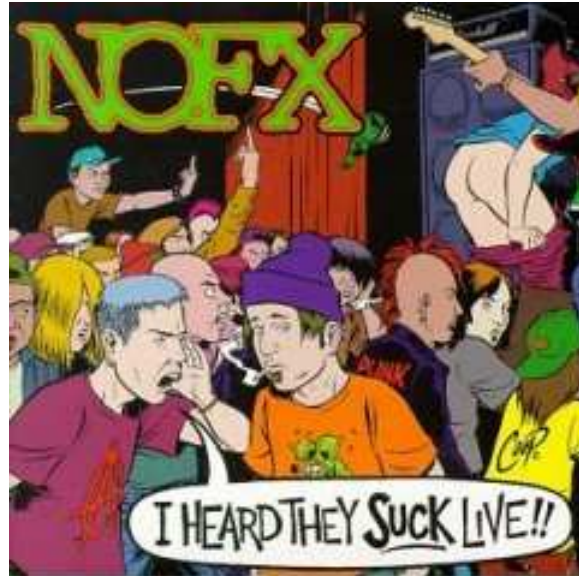
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Kinds of Live CDs



Kinds of Live CDs



Linux Live CDs

All together now:

Linux Live CDs

All together now:



Linux Live CDs

All together now:



Knoppix!

Linux Live CDs

All together now: Knoppix!

Sure, but what else?

- Kanotix
- WHAX
- Mutagenix
- Morphix
- Phaeronix
- Burnix
- ...

Linux Live CDs



?

Types of a Live CD

Regardless of OS:

- Install CDs
- Desktop oriented CDs
- “Swiss Army Knife”
- Focus on Security
- Fixed or specialized environment
- any combination of the above

Install CDs

Actually a *specialized environment*:

- boot OS from read-only media
- provide a set of tools to install the OS
- can be used as a “rescue” CD
- tightly integrated into OS release engineering process

Usually very generic in nature, but might

- be extended to do unattended installs or mass-installation
- be customized according to a System Administrator’s preferences

Desktop oriented Live CDs

The quintessential Live CD:

- targeted towards novice users
- used as a marketing tool
- simulates a “full installation”
- lets users test the OS without committing to an installation
- more and more Live CDs allow the user to install the environment to the disk
- shwag value: almost as high as t-shirts (yowza!)

Desktop oriented Live CDs

Requirements for a desktop Live CD:

- wide range of hardware supported in the kernel
- automatically detect and configure X Window System
- large number of third-party applications
 - installation and configuration
 - maintenance overhead
 - compressed filesystem support
- needs to be updated frequently
 - new release of OS
 - updates of installed add-ons

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=> Almost impossible to maintain in project internal release engineering process!

“Swiss Army Knife”



“Swiss Army Knife”



“Swiss Army Knife” Live CD

A useful tool for System Administrators.

- can be brought on a plane!
- no X required
- a number of applications to troubleshoot system failures or network problems
- native binaries for a number of different operating systems
- private keys to access specific systems
- custom tools and programs

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=> Most useful if customized to match specific setup.

Focus on security

Just as with a full OS, many different applications:

- embedded firewall
- instant router
- data analysis or forensics
- variations of the “swiss army knife”
- secure desktop environment

Fixed Environment

Provide a temporary and specialized environment with certain restrictions and possibilities.

Examples:

- “internet kiosk”
- anonymous browsing stations
- integrate machines with a different OS into a (temporarily) shared resource
- ensure an identical restricted competition environment

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- integrate machines with a different OS into a (temporarily) shared resource
- ensure an identical restricted competition environment

=> Heavy customization required.

Are Live CDs different?

Let's compare Live CDs to your regular Operating System:

- All existing *OS installations* target a specific purpose.
- To be really useful, all *OS installations* require some level of customization.
- Users have different ideas on how to use an *OS installation*.
- Imagine an *OS installation* that only comes in one of a few flavors, or let's you do only one of a few specific tasks!

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Then why do we treat Live CDs differently?

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A consistent and coherent environment!

The BSDs have always taken pride in

- high code quality
- providing a *complete* operating system
- providing a *coherent* environment
- *consistent* release engineering
- a single “vendor”

Creating Live CDs

Considerations for creating Live CDs:

- Live CDs are most valuable if they provide the same flexibility as the basic Operating System.
- Live CDs have the highest marketing value if they are up to date.
- There is no “One Size Fits All” solution.

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Implications:

- provide a framework to create a *generic* Live CD
- let release engineering produce these generic Live CDs
- let third parties use the framework and extend the generic Live CD

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In NetBSD, we need to consider:

- platforms that support booting from CD
- tools available on those platforms
- integration of the installer into the Live CD
- small footprint => possibilities to extend installer
- support for larger images via `vndcompress(1)` (“cloop2” format)
- next big thing: NetBSD/xen Live CD for buzzword value

*BSD Live CDs

...

/* ... */

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*BSD Live CDs

Thanks!