

Highlights of the live Linux landscape

LINUX LIVE

Many fine live Linux distributions are waiting for you right now on the Internet. The right choice depends on what you need.

BY FABRIZIO CIACCHI

A Linux *live* distribution is a complete operating system that starts and works exclusively from a CD or DVD. You can boot the live Linux system from any PC as long as the system supports the hardware. Because a live system runs from the CD or DVD drive, live distros don't alter the contents of the hard disk.

Windows users who are thinking of switching to Linux can use a live distro to try Linux without disturbing their configuration. You can also use a live distro to test whether a particular computer supports Linux or to recover a damaged system.

To start a live system, simply put the CD or DVD in the drive and reboot. (If this doesn't work, see the box titled "Booting from your CD or DVD Drive.")

The best live distros are not only for demo or recovery purposes. Many live systems come with a graphical environment, an office suite, Internet programs

(such as a browser, mail client, and messenger), and all the other tools you need to work in Linux.

Although live systems are designed to operate without touching the permanent configuration, many can also be installed on the hard disk like any other Linux distribution. Because live systems tend to be smaller and simpler than ordinary Linux systems, they are often an ideal solution for older computers with small hard disks and limited resources.

We tracked down a few of the most popular live distributions and tried them out. We'll begin our tour with the most popular and influential of all the live distros, the famous Knoppix. See the Linux Magazine website [1] for more information on permanently installing some of the distros described in this article.

Knoppix

Knoppix is generally considered *THE* Live Linux distribution. Knoppix was the first live distro to support a GUI desktop. Creator Klaus Knopper based Knoppix on Debian [2]. From its first release, Knoppix has grown in size and also in functionality; for example, it is possible to load all of Knoppix in RAM (if you have enough) and use the CD-Rom reader to read another CD. Knoppix also lets you pass a lot of commands at boot

time, for example, to set the language or activate the framebuffer. There is even a command for using braille hardware.

If you simply press ENTER at the boot screen, after few minutes, you are in KDE 3.4, with OpenOffice.org 2 beta, Mozilla Firefox, The Gimp, and other desktop apps familiar to the Linux faithful. The new DVD version has an unbelievable amount of software, including KDE-centric programs such as Kopete, Kaffeine, K3B, KOffice, and Konqueror, as well as Gnome-centric tools like Evolution and Rhythmbox. You'll also find graphics tools like Blender, Inkscape and Sodipodi, multimedia tools such as Xmms and Xine, and a collection of educational programs. This dream of a fully-functional, CD-based desktop system is achieved through the hard work of scripts that load the modules or programs, and the whole system functions with the precision of a Swiss clock.

Several other live distros are based on Knoppix. Some of these projects are only customizations, but others, such as Kanotix, add valuable features. Klaus Knopper often adopts these innovations back into later versions of Knoppix.

Slax

The main idea of the Slax project is to provide a set of several specialized

THE AUTHOR

Fabrizio Ciacchi <http://fabrizio.ciacchi.it> is an Italian student of computer science at the University of Pisa. He also works as a consultant and writes articles on Linux. In his free time, he collaborates with the Abiword project (www.abiword.org).



Figure 1: Knoppix 4 is a mature live distribution with a huge collection of applications.



Figure 2: Slax is a clean and fast live Linux system with a very small footprint.

small Linux versions from the same base system. At the moment, four versions of Slax are available. (A total of seven are planned.) All the Slax versions have a size smaller than 185 MB, which means that Slax fits on a Mini CD. The current versions of Slax include:

- **Standard edition** – a fast and easy to use Linux live CD. The boot process take no more than one minute, and the system is ready to use and easy to configure. The software is all KDE-centric: Konqueror, Juk as Music player, KPlayer as Media Player, Kopete for instant messaging, and KOffice instead of the more famous OpenOffice.org.
- **KillBill edition** – is very similar to the standard edition, but it has some emulation programs, like QEMU, dosbox, and WINE, to run Windows programs or emulate hardware architectures. You can install Internet Explorer using WINE, or you can test a CD ISO image using QEMU. (You'll find a very interesting article about QEMU in the Linux Magazine Archive [3].)
- **Popcorn edition** – The Popcorn edition of Slax is like its parents: very easy, very fast, and very clean. The distinguishing feature of the Popcorn edition is that KDE is replaced with XFCE, and this change causes other changes in the application lineup. You'll find BMP instead of Juk, Mplayer instead of Kplayer, and Abiword instead of KOffice.
- **Frodo edition** – Text-based Frodo is the "light" edition of Slax, intended only as a portable recovery system

that fits on a business card CD. (Other distributions, such as DamnSmall-Linux, provide a full working environment in the same space.)

The other Slax versions under development are:

- **Server edition** – The Slax Server edition, which will contain common server programs such as DNS, DHCP, SMB, HTTP, FTP, MySQL, SMTP, POP3, IMAP, and SSH, is near to its release.
- **Hacker edition** – So far the Hacker edition is only a concept. This edition will be a Swiss Army knife for Linux hackers; it will contain all the known security-related tools, like network sniffers, intrusion detection systems, and so on.
- **Professional edition** – The last edition of Slax will be a union of all the others, and the hope will be to create this union in a 1.4 GB (Mini DVD). This version will also contain gcc, make,

and kernel source, which will let the user compile any software – including the Linux kernel.

Slax has some very interesting characteristics, such as its module system, which makes it easy for the developers to customize the different versions from a common base. The Slax module system also lets users quickly and easily install software from the Slax homepage; if you want to create your own Slax CD, just add the modules you need to the `/module` directory. Or, if you want to use a module on the fly, open a terminal window and write `uslivesmod module-name.mo`.

Unless you like working with vi, you may have some trouble booting Slax in graphical environments. In the Standard and the KillBill edition, you may need vi to edit the `xorg.conf` file. vi is not even included with the Popcorn edition, which could cause even more problems. In spite of these complications, Slax is

Booting from your CD or DVD Drive

To use a Linux live CD, you need to configure your computer to boot from the CD drive. Many modern PCs boot from the CD/DVD drive by default. If your system doesn't boot automatically when a CD or DVD is in the CD/DVD drive, consult your vendor documentation or watch the boot screen for instructions on how to enter the BIOS configuration menu. (The instructions may vary depending on your motherboard manufacturer.) Select as your first boot device your CD/DVD drive; if you have options for both a CD reader and a CD/DVD

writer, be sure to select the CD reader, because, commonly, this option has better support for booting. Save the BIOS setting, insert the Live CD in the drive, and reboot.

Remember that booting from a Linux live distribution doesn't touch your installed system; the only way to destroy the data on your hard disk is if you "play" with the partitions, so if you're worried about protecting your data, don't try any of the options that affect your hard disk unless you are sure of what you are doing.



Figure 3: The simple and practical Mepis distribution is based on KDE.



Figure 4: Elive comes with the very fast and attractive Enlightenment 17 window manager.

one the most powerful live distributions; it is fast and easy to install, and the range of editions cover a range of user needs, with some small problems related to the distro's young age.

Mepis

Mepis may be the only Debian-based live distribution that takes all of its software from the original Debian repository. This Debian-centric focus is a big advantage for Mepis, because, in a way, Mepis IS Debian. The disadvantage is that the software may not be as up-to-date as the software in other distributions.

Unlike Knoppix, which offers the broadest possible range of software and options, Mepis concentrates on simplifying the choices. You'll find fewer options for boot and hardware detection, and, in general, the Mepis philosophy is to offer a "best in category" application for each function, rather than providing an assortment of programs that do the same thing. Consequently, Mepis has gained

a reputation as a system that is simple and uncomplicated for beginners to install and use.

Mepis has become one of the most popular Linux distributions and now has a life of its own. The installation is very easy, and the included software is appropriately balanced. Mepis is a good solution because of its solid base (Debian), its eye-candy (KDE), and its easy configuration (with the Mepis OS Center).

Mepis comes in three versions:

- **SimplyMepis** – the standard edition, with the best available software for the Linux user. SimplyMepis is fast, easy to use, and easy to configure. It contains basic desktop applications like OpenOffice, The Gimp, and so on; the next version (planned to be released soon) will contain Xorg instead of Xfree and updates to the desktop applications (such as the OpenOffice.org 2.0 beta).
- **MepisLite** – This "lite" edition of Mepis is intended for older and less powerful PCs. The ideal user of this

Mepis edition is a Windows 98 user who wants an operating system that is modern and fast. This edition is a good choice if you have a Pentium II with 128 of Ram.

- **SoHoServer** – The SoHo edition of Mepis is missing much of the multimedia, office, and graphic software but includes server programs such as Apache2, PHP4, Perl, MySQL, ProFTPD, Bind, DHCPd, Postfix, Dovecot, Shorewall, Squid, DansGuardian, Webmin, and Usermin.

Mepis is a very good option for users who are looking for simplicity.

Kurumin

Kurumin is one of the most exciting distributions based on Knoppix. First of all, Kurumin is very fast, and the KDE-based user interface with Crystal icons is quite attractive.

In only 420 MB, Kurumin has all the programs you need, such as OpenOffice.org (which is called KuruminOffice) 1.1.2, GIMP 2.2.6, Mozilla Firefox and

Table 1: Live Distros Comparison

Distribution	Homepage	Last Release	ISO size	Kernel	Desktop	Office Suite
Knoppix	http://www.knoppix.net	4	700 MB (CD) 3.2 GB (DVD)	2.6.12	KDE 3.4.1	OpenOffice 2 beta
Slax	http://slax.linux-live.org	5.0.6	47 MB (Business Card CD) 185 MB (Mini CD)	2.6.12	KDE 3.4.1	KOffice 1.4
Mepis	http://www.mepis.org	3.3.1	700 MB (CD)	2.6.12	KDE 3.3.2	OpenOffice.org 1.1.4
Kurumin	http://www.guiadohardware.net/kurumin	5.0	420 MB (CD)	2.6.11	KDE 3.3.2	OpenOffice.org 1.1.2
Elive	http://www.elivecd.org	0.3	660 MB (CD)	2.6.11	Enlightenment 1.9 and 17	OpenOffice.org 1.9.125
Zen	http://www.zenlinux.org	1.2.3	1.1 GB (Mini DVD)	2.6.11	Fluxbox 0.9.12	OpenOffice.org 1.1.4
Gnoppix	http://www.gnoppix.org	1.0	650 MB (CD)	2.6.10	Gnome 2.10	OpenOffice.org 1.1.3
Kanotix	http://kanotix.com	2005-03	700 MB (CD)	2.6.11	KDE 3.4.1	OpenOffice 2 beta



Figure 5: Zen Linux comes with the Fluxbox window manager and the ROX file manager.



Figure 6: The Gnome-based Gnoppix distribution includes tools like *AbiWord*.

Thunderbird, Gaim, Skype, aMSN, K3B, Kaffeine, and Xmms.

Kurumin has many useful tools for configuring the appropriate hardware or setting up a particular program. You'll also find an intuitive control panel that lets you configure the hardware.

One problem with Kurumin is that the live boot appears to be localized only for Brazilian Portuguese, so you might need to know some Portuguese to use it on-the-fly. If you install Kurumin to your hard disk, you can localize to any language.

Elive

Enlightenment is an experimental, graphical environment that focuses on speed and flexibility. From the first release to the 16th Enlightenment has provided a very impressive graphical display, sacrificing, in some cases, the usability of the system. The last release, E17, has maintained the impressive graphics but with more usability and a cleaner appearance.

When you boot the Elive live distro, you can choose either E16 or E17. The older Enlightenment 16 may look strange to someone who uses KDE or GNOME. Enlightenment 17 is definitely the more advanced GUI option. You'll find a toolbar very similar to the Mac OS X bar that launches the programs and highlights the icons; also there is a set of applets, referred to as modules, that check parameters such as the temperature and frequency of the CPU.

Elive is one of my favorite live distros from the group I tested, only for the fact

of its truly innovative graphical environment. As a word of advice, if you decide to install, prepare to upgrade immediately after you install, because some of the components that work from the live CD do not work from the hard disk.

Zen Linux

The goal of Zen is to provide a good Linux Live CD that is very fast and has a

Burning an ISO Image

The most common way to obtain a live CD is to download the ISO image and burn the image to a CD disk. Some popular tools for burning an ISO image include Easy CD Creator (for Windows), Nero (for Windows/Linux), or K3B (for Linux).

Linux also includes tools for burning an ISO image from the console. The exact commands may depend on your hardware configuration and your Linux. To burn a CD image, for example, you could enter something like:

```
$ cdrecord dev=/dev/hdc   
 /path/image.iso
```

Where *hdc* (or *hdd*) is your CD writer device, and *image.iso* is the ISO file name (with the eventually path).

To burn a DVD, you could try:

```
$ growisofs -Z   
 /dev/scd0=/path/image.iso
```

Where *scd0* is your DVD writer and *image.iso* is the ISO file name (with path).

The burning process can take from 15 to 40 minutes, depending on your hardware and your system performance.

lot of software. Unfortunately, they do not fully realize this goal. It is true that they have a lot of software (for example, The Gimp, OpenOffice, and many other standard applications); however, the user interface is not very intuitive.

The default system includes the Fluxbox window manager, plus the ROX file manager, with a blue metal graphic (with a blue mouse cursor); this choice is not so bad, but when we opted for an alternative like Xfce (which is included), it was not configured at all, and this seemed like a symptom of underlying problems. Zen, however, is the only distribution that comes in a Mini DVD format and with a software collection on the scale of Knoppix.

If you want to install Zen on your hard disk, be careful. By default, the installer tries to install automatically by erasing partitions; if you select a custom installation, be sure you know what you are doing.

Gnoppix

Gnoppix started as a Knoppix clone that comes with Gnome instead of KDE. The Gnoppix system has since grown into a good, clean alternative to Knoppix, but with the explosion of changes to the Knoppix distro, Gnoppix has since fallen behind.

Ubuntu's rise to fame has given Gnoppix a new lease of life. The Gnoppix distribution is now part of the Ubuntu project. This new role is sort of a limitation; Gnoppix is very closely related to Ubuntu and doesn't seem to add anything new (in the way that Knoppix adds



Figure 7: Like Knoppix, Kanotix comes with lots of vintage games.

features to Debian). Gnoppix is primarily a live version of Ubuntu Linux, but at least that makes it a good tool for testing whether your system supports Ubuntu.

Kanotix

Kanotix is a Knoppix derivative that was created to provide some features that Knoppix didn't offer. For instance, Kanotix was released with a 2.6 kernel, at a time when Knoppix was still using 2.4. With the latest release of Knoppix, the gap between the distros has narrowed, but Kanotix still offers some advantages.

One of the most interesting Kanotix features (which is copied by several other Linux distributions) is the kernel configuration. In fact, a lot of Knoppix-based distributions use the Kanotix kernel because it permits better hardware detection.

One promising project based on Kanotix is SymphonyOS [4], a live Linux

distribution that includes a new and revolutionary desktop environment based on FVWM.

Conclusions

Live distros give Linux users a tool for emergency situations and also provide a means for non-Linux users to try Linux before they install.

Your choice of the perfect live Linux system depends on what you need. If you're looking for a lean, simple system that is easy to install and has a good selection of "best in category" applications, Mepis wins. Knoppix, on the other hand, is the parent of all live distributions, and it is a good alternative if you want lots of software and lots of configuration options. For some beginning Linux users, Knoppix might have *too many* options.

Slax is another promising live distro with the "less is more" philosophy, but it still has some minor problems due to its young age. ■

INFO

[1] Permanent installation tips: <http://www.linux-magazine.com/Magazine/Downloads/63/LiveDistros>

[2] Debian official site: <http://www.debian.org>

[3] "Virtual Benefits: System Emulation with QEMU" http://www.linux-magazine.com/issue/52/QEMU_System_Emulation.pdf

[4] SymphonyOS: <http://www.symphonyos.com>