



# Knoppix Version 6.3 highlights ON THE DVD

This month's DVD comes with an exclusive version of Knoppix. Knoppix creator (and Q&A mastermind) Klaus Knopper shares some insights on the latest release.

BY KLAUS KNOPPER

**K**noppix, a Debian-based Linux distribution, is optimized to run from the DVD as a Live system. System administrators and other IT professionals use Knoppix to troubleshoot downed Windows (and Linux) computers, but Knoppix also comes with a big collection of desktop tools, games, and other apps. Knoppix's Live boot orientation makes it a great choice for a flash drive system that puts your documents, settings, and desktop on a keychain.

## What's New in Knoppix 6.3?

The latest version of Knoppix comes with new features, such as:

- Google Chrome – Google's Firefox-based web browser (Figure 1) comes with a new interface with improve usability and interoperability with popular web applications. Chrome Version 4.0.249.43 is installed and can be updated via the Google repository.
- Adobe Acrobat Reader – Acrobat is one of the first and most feature-rich

PDF readers. The installed version also works as a plugin for Firefox and Google Chrome.

- Adobe Flash – Flash is popular for browser-embedded multimedia players. The proprietary plugin was licensed for the version of Knoppix included here and cooperates with both Firefox/Iceweasel and Google Chrome. For security reasons, Flash content on web pages has to be enabled in the *NoScript* security extension (the lower right button in the browser window) in Firefox/Iceweasel.
- ADRIANE Add-ons – A new network configuration tool has been added to

the ADRIANE user interface for users with sight impairments. An additional tool, *adriane-ht*, allows users to upload scanned texts to specific Braille displays. The screen reader now has ALSA support to enable voice output while playing music.

## nVidia Graphics Card Drivers

So far, owners of nVidia graphics cards have done without the accelerator functions needed mainly for Compiz Fusion, the 3D window manager, because of a lack of capable free drivers. Although the vendor provides drivers, licensing issues

Table 1: Cheat Codes

Boot Option	Effect
<code>knoppix lang=en</code>	Change the system to English language and keyboard support
<code>knoppix desktop=kde</code>	Launch the KDE desktop instead of LXDE
<code>knoppix desktop=gnome</code>	Launch the Gnome desktop instead of LXDE
<code>knoppix no3d</code>	Graphics setup without composite/3D
<code>Knoppix tohd=/dev/sda1</code>	Copy DVD content (folder) to disk and launch from disk

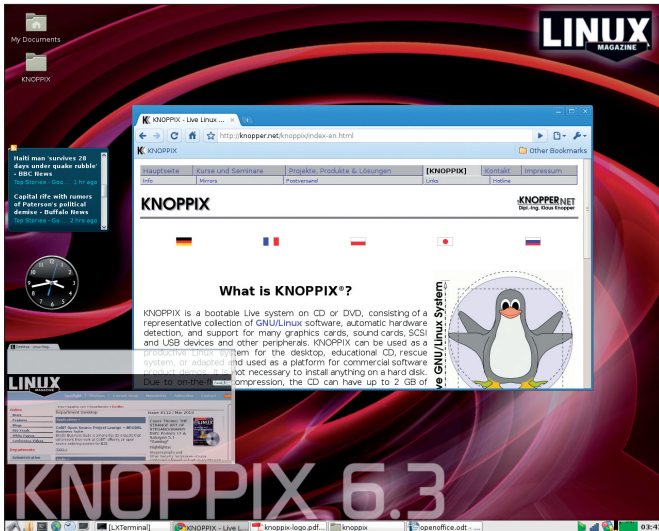


Figure 1: Try out Google's Chrome browser.

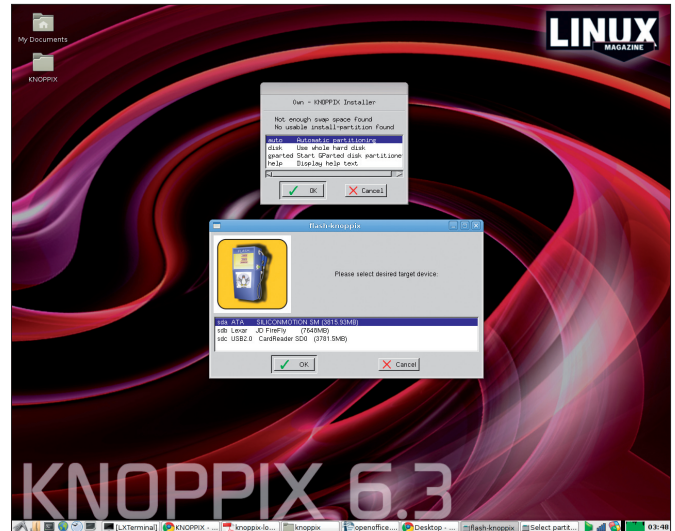


Figure 2: Setting up a flash drive to boot Knoppix.

are difficult in a free distribution. Version 6.3 includes drivers for nVidia cards that match the provided kernel. The drivers are pre-built and match the graphics libraries in the *Drivers* folder. Also, a short script facilitates the install (*install-drivers.sh*) – in the GUI or in text mode.

After completing the installation, your nVidia graphics card should work in accelerated mode with Compiz support. If your card is not supported, you need to remove the drivers you installed with *./install-drivers.sh -u* to get the graphical system working again (because the nVidia libraries are not compatible with the free graphics modules).

## Knoppix Cheat Codes

Some machines don't fully support automatic hardware detection. In other cases, a component might be disabled at a very early system state. Knoppix cheat codes help the user troubleshoot problems by defining important features of

the boot configuration. You can specify the desktop, language, or keyboard configuration through cheat codes (as shown in Table 1). You'll find a comprehensive list of Knoppix cheat codes in the *KNOPPIX* directory on the DVD.

## Compiz Fusion

Compiz Fusion was the result of merging the 3D window manager projects Beryl and Compiz; it extends the desktop, adding new functions and effects. Many Intel onboard chipsets and ATI/Radeon cards include the required hardware acceleration and composite (transparency) support out of the box, but nVidia cards and other proprietary cards require the user to install a proprietary driver. Compiz comes up with a wobbling logo shortly after you launch the LXDE desktop. On KDE and Gnome, you can launch Compiz as an add-on from the *Settings* menu.

Some of Compiz's most useful functions are listed in Table 2. The *Super* key

is somewhere left of the Space key on most keyboards. It may be labeled with a house, a penguin, or a broken window.

You will find the hotkeys and mouse gestures that enable and disable the individual functions through the *Compiz-fusion* settings in the *Bindings* tab.

## Installing Knoppix on Disk

Knoppix is a Debian GNU/Linux system optimized and configured for a Live boot. Many distros, including Debian itself, have more comprehensive installation programs that offer more configurable details. The Knoppix Installer simply unpacks the system running from the DVD or flash disk and copies it, along with a boot manager, to the disk. My only motivation for offering an installer was that many people requested a feature that installs Knoppix quickly to disk. Because Knoppix is reduced to a minimum size, the Knoppix installer is one of the quickest approaches to drop-

## Knoppix on a USB Flash or SD Card

A flash drive or SD card is definitely the most convenient means for creating a mobile version of Knoppix. Installing on a flash disk combines the benefits of automatic hardware detection with the ability to permanently store data such as the system settings.

*Flash-knoppix* (Figure 2), which you will find below *Install KNOPPIX on Flash* in the Knoppix Settings menu, requires a medium with an existing partition table for the install; the primary partition has to be FAT32. This is the case with most USB flash disks and SD cards, although some

operating systems use *floppy* mode – that is, they do without a partition table. In this case, this method will not work, and you will need to rewrite the partition table.

*Flash-knoppix* creates a copy of the boot folder (and of Knoppix) on the flash medium and installs the Syslinux bootloader, which uses the same syntax as the Isolinux loader used on the DVD. The configuration file for Isolinux, *isolinux.cfg*, which also contains the default boot options, simply needs to be renamed to *syslinux.cfg*.

If your computer does not support booting from a USB stick, simply insert the USB

stick and boot from a DVD, which you can then quickly remove as soon as the kernel and the ramdisk have been loaded. The mini-ramdisk then searches all the existing drives for a *KNOPPIX* folder, which it finally finds on the USB stick.

The first time you boot from the flash disk, you will be prompted to define the size of the persistent Knoppix image in which settings and personal data such as documents and downloads are stored. The maximum size is 4000(MB); the minimum size 200(MB). Please enter a number (without the "MB"!).

Table 2: Compiz Functions

Action	Description
Drag mouse to top right corner of screen	Miniature live overview of all windows
Drag mouse to top left corner of screen	Overview of all desktop workspaces
Ctrl+Alt+Left-click	Grab and rotate the desktop cube
Ctrl+Alt+Arrow key	Turn to the next cube surface
Alt + left-click	Grab window in any position
Super+mouse wheel or Super+Arrow key	Zoom
Super+l	Fix zoom (lock)
Super+Alt+Left-click	Draw on screen
Super+Alt+k	Delete drawing
Super+Shift+Left-click	Draw with fire
Super+Shift+c	Delete fire

ping a ready-to-use Debian system onto a disk. To install to the local hard disk:

1. Create a Linux (data) partition and a swap partition,
2. Decompress the cloop container images on the Linux partition,
3. Set up a bootloader.

The bootloader can launch other operating systems on the same disk. Please make sure you have an easily restorable external backup of all your critical data and the backup medium is not con-

nected to your computer during the install. You could easily make a mistake selecting the medium or modifying a partition, and restoring your system will require a great deal of trouble and effort.

The installer needs a Linux partition of at least 15GB and a swap partition of at least 1GB to install Knoppix. You'll have the choice of manual partitioning using gparted, automatic partitioning of the free (unpartitioned) disk space, or a complete repartition the whole disk.

After installing, update the whole system or individual packages using the typical Debian tools – for example:

```
sudo aptitude update
sudo aptitude install frozen-bubble
```

Some caution is advised for kernel updates; the kernel used for Knoppix integrates all the drivers needed for accessing hard disks and drives, whereas you need to create the initial ramdisk with the required modules for the Debian kernel. Normally, the kernel is not automatically updated, unless you explicitly specify that you want an update.

## Debugging and Support

I would be happy to answer your technical questions about the current version of Knoppix – this doesn't include complaints about transport or packaging damage. I tend to collect frequently asked questions and publish the answers. You can use the contact form on <http://knopper.net/kontakt/?kontakt=knoppix> or mail me at [bugs@knopper.net](mailto:bugs@knopper.net). ■

## FAQ

**Question:** *Why does Knoppix still have this totally obsolete command-line boot menu? There are so many neat, graphical boot managers that let you use the arrow keys or have menus with color highlighting.*

**Answer:** True enough; however, Isolinux and Syslinux are tried-and-trusted boot managers that just keep on working, even if you attach really rare input devices that can completely confuse the graphical boot managers.

**Question:** *What is the root password? There must be one; why don't you want to tell us what it is?*

**Answer:** Actually, there are no predefined passwords; in other words, all logins are blocked by default. You can easily verify this by looking at the `/etc/shadow` file:

```
sudo egrep -e '(root|knoppix)' /etc/shadow
root:x:14627:0:99999:7:::
knoppix:x:14627:0:99999:7:::
```

The `x` in the second column represents an invalid encrypted password that does not match the password entered. This makes it impossible to log in, if you are not already logged in via Knoppix auto-login. By default, root shells run on the first four text consoles to support rescue and report

work on the computer, whereas the GUI-based console runs an LXDE session for the non-privileged user `knoppix`. You can use the `sudo` command, or its GUI variants `gksudo` or `kdesu`, to switch to superuser mode; all of this works without a password on Knoppix. If you do need to run a program that insists on you entering a password, and which you can't teach to do otherwise, just set a password like this:

```
sudo passwd root
sudo passwd knoppix
```

In both cases, you are prompted to type the new password twice.

**Question:** *I've heard that you can boot Knoppix across a network without needing a DVD drive or USB flash disk. How do you do this?*

**Answer:** Knoppix includes all the components it needs to run as a terminal server. To allow this to happen, one computer on the LAN, which has been configured as a DHCP server and file server using the `knoppix-terminalserver` starter, has to boot Knoppix from a DVD or flash disk (you can optionally configure this machine as a web cache and DNS proxy). After starting these services, other machines on the same network that have boot-capable network cards

or a PXE emulation disk (available from <http://www.rom-o-matic.net/>) can boot and pick up the exported Knoppix DVD off the network. This means that you can run a complete pool of Linux PCs without having to install Linux on a single machine. Before you try this out, make sure that the DHCP server you launch on Knoppix doesn't collide with an existing server to avoid unpleasant surprises for other users on the network.

**Question:** *How do you build Knoppix?*

**Answer:** Ever since Mikroknoppix (Version 6.0), I have used a makefile-based build system with the Debian installation in a subdirectory, which is defined as the working directory using `chroot` if the filesystem needs to be updated or modified. Boot and graphics files are located outside of this folder. When I put this together, the content of the installation folder was compressed using `mkisofs` in combination with `create_compressed_fs` and stored in `Knoppix/Knoppix` as an image file. The other visible files on the DVD are copied into this, and `mkisofs` is then used to create an ISO image that boots Isolinux. The whole thing is easily automated using the makefile so that the compression and mastering process is easily reproducible.