

The world according to Knoppix creator Klaus Knopper

KLAUS KNOPPER IN INTERVIEW



Klaus Knopper still has big ideas for the little distro that has spawned many derivatives and changed the way we think of live Linux. I asked Klaus about the past, present, and future of Knoppix.

BY JOE CASAD

LM So what do you do when you're not working on Knoppix? And what were you doing before all this started?

KK I graduated as an electrical engineer from the University of Kaiserslautern, Germany, and I have worked in Unix system administration and system software programming since I left school. While I was in school, I was already working as an independent consultant. I worked as a teacher, software developer, and system administrator, and, apart from the administration part, which I don't do anymore, this hasn't changed much. In addition to my consulting work and the several software projects I'm involved in, I currently teach informatics – basics and Linux software development – at the University of Applied Sciences at Zweibrücken.

LM How did you get started with Knoppix?

KK Knoppix started around 1999 when I got one of those business card sized "rescue CDs," which were given away as freebies at CeBit. Out of pure curiosity, and following the Open Source philosophy, I looked into the boot system to find out how it worked. Later I created a bootable CD with the programs I used frequently. This project of personal on-

the-job training, which I called "Knoppix" for lack of a better name, was published first in 2000 at the Atlanta Linux Showcase as a case study. Later I made Knoppix a public project with download mirrors at various places in order to get some feedback for hardware work-arounds and feature requests.

LM How do you decide what goes in Knoppix?

KK The content is strongly influenced by what I currently need for a training or consulting job. I also include tools I find useful or interesting. I get email daily from people who ask for a certain application or add-on feature. Some of these suggestions can be implemented and credited in Knoppix, but some cannot, mostly because of license and patent issues or space reasons.

LM Do you have a team of helpers, like other Open Source projects? Or do you tend to work alone?

KK I must admit that I do tend to

work alone, simply because of my extraordinary working hours and the fact that I tend to get too focused (or stubborn) on what I'm doing so I'm not very attentive to unrelated questions or suggestions. But there are about 3-5 people who regularly help improving parts of Knoppix, not to mention the hundreds of free software developers who create the Debian packages and the user software Knoppix is based on. Also, work from other Knoppix-derived distros often comes back into the Knoppix download edition, if this is legally and technically possible.

LM The new DVD version of Knoppix gives you so much more space. What are you using the additional space for? What

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are some of the things you're including in Knoppix 4 that wouldn't fit in previous versions?

KK Space always was the "final frontier" for a standalone CD edition that tried to keep everything from console-based rescue tools to killer applications and development IDEs on a single disk. With the ever-growing KDE and OpenOffice, the split into a CD "light" edition and a DVD "maxi" edition had to come sooner or later. I'm now trying to categorize the software into best of desktop and rescue tools for the CD and everything else for the DVD. You will find less developer software on the CD in the future. The DVD will contain more developer software, plus other packages that have gotten too large for the CD, including "unnecessary" stuff like cool free games.

One example to mention is the scientific text processing system LaTeX. I had to remove it from the CD, but it's now back on the DVD. Though I personally prefer LaTeX to any GUI-based text processor, OpenOffice was simply more important for showing office capabilities in Knoppix.

LM Knoppix needs to be aware of many different kinds of hardware. Do you sometimes have to work directly with HP, Intel, and other big companies?

KK I wish this was possible, however, large companies tend to be very non-cooperative and sometimes just seem to wait until someone reinvents the wheel and writes a reverse engineered or "accidentally working" driver for their hardware out of the clear blue sky. Also, a lot of cheap computer hardware is broken by design (or chance) today, and the Linux kernel is getting more and more bloated from workarounds for faulty BIOSes and boards, which is very sad. Having commonly accepted standards in hardware design would be great, but apparently, especially for manufacturers of graphics cards, this is a non-issue. Being incompatible with "concurrent products" seems to be a company mission in the thinking of some hardware designers. But still, I just use the plain Linux kernel from kernel.org, and additional modules for some newer hardware components that have not made it into the mainstream kernel

yet. This, hopefully, sends the message that hardware vendors should try to follow open standards and document their hardware well, so that it is easily supported in the next kernel release, rather than issuing an insecure and non-distributable proprietary kernel module on their own.

A big problem, in my opinion, is graphics cards. For some reason, it becomes a sport for graphics card vendors to issue semi-proprietary drivers with a more or less restrictive license that cannot really be considered "freely distributable." Trying to figure out what the driver does, or even improving or porting it, is strictly forbidden in most cases.

Some may think the reason for these licenses is to hide something, like special optimizations for specific benchmarks that would make people buy these cards. For me, most of these licenses are unacceptable. They are insecure because you never know for sure that there are no backdoors in these drivers that run in kernel context, and they are incompatible with the distribution license of Knoppix. Therefore, I'm not including them. I use the non-accelerated but free drivers for these cards. Other Knoppix derivatives, however are less picky about license

"Space has always been the 'final frontier' for a standalone CD..."

issues and sometimes do include these proprietary drivers.

LM What is the attitude of these big hardware companies toward what you're doing?

KK As of 2005, they are only supportive in the way they sometimes use Knoppix (or a derivative) as a kind of advertisement that their hardware is x percent Linux compatible. Unfortunately, for most vendors, it seems to be unacceptable that they should follow any standards in their hardware development; instead, they believe that Linux should be modified in order to support their non-standard hardware better. This is, in my opinion, the wrong way. Of course, there are exceptions. Some vendors are known to make 100% Linux-supported hardware. But still, only a few people ask for this when shopping for new hardware.

Market pressure is still not high enough to keep vendors from making hardware



Figure 1: Klaus Knopper receiving a "Software Titan" award from a German PC magazine.



“My advice is to just return hardware that does not work with a plain Linux kernel, right to the place where you bought it...”

that only works with one closed-source, architecture-dependent driver.

My advice is to just return hardware that does not work with a plain Linux kernel, right to the place where you bought it, and ask for your money back. If many people claim their right to get hardware that simply works without problems on ANY OS, this could maybe change the ignorance of some vendors.

LM Where do you go from here? Putting Knoppix on DVD seems like such a big change. Do you have other changes in mind for the future?

KK What I'm thinking about is adding some tools to get Knoppix bootable from other devices, like memory sticks or onboard flash disks. There are already Knoppix derivatives for this purpose, but I think it should be possible to actually create your own version of Knoppix-on-a-stick from the menu of a running Knoppix CD or hard disk installation.

Keeping up with current hardware development and adding new and interesting software would be a full time job if I did it continuously, but I'm trying to slow down a little with the release frequencies because I'm also involved with other projects.

LM How do you spend most of your Knoppix time? Can you take us on a brief tour of a typical upgrade cycle? What needs to happen each time you put out a new version of Knoppix?

KK Not much time is needed for minor bugfixes and software updates, due to the easy-to-upgrade Debian software maintenance system. Sometimes, when a new KDE version appears or new

technologies like unionfs make life easier (mainly for me), a more significant amount of time is needed to reach a stable state again after an update and then improve things.

Whenever there is a severe bug that affects stability, a new version will appear as soon as possible (sometimes right the next day), but luckily, this hasn't been necessary

very often. For major changes, I usually take some time and release the new version “when it's ready.”

Whenever I have a paid-for order for a Knoppix “special release” edition, I can put more time and effort into Knoppix to get a release ready within a certain timeframe. In most cases, the special features programmed for this specific version will appear later in the public download edition.

LM Tell us more about the paid-for special editions. Who orders a special edition and why?

KK As with most Open Source and Free Software projects, most of the work on Knoppix is done in my free time and is mostly for the sake of curiosity or to gain experience and knowledge about new software. But sometimes a customer requests a Knoppix version customized for a specific purposes, and this is, of course, paid work like in any other

commercial software engineering project. The work is usually licensed under the conditions of the GNU general public license. (It has to be, if the work is based on Free Software.)

Customers who ask for commercial Knoppix remasters are usually computer magazines that would like to include a bootable live CD or DVD with the issue or who would like to sell something that is not available “off-the shelf” yet. For example, a publisher might ask for a Linux-based virus scanner that runs self-contained off a mini CD, or a SAMBA server on CD, or a special games edition. Other customers include government agencies that would like a standardized platform for their own software, schools, educational or scientific units of universities, or international projects related to education or science.

As flexible as GNU/Linux is, there are many purposes for specialized live CDs, and it's always good to have a platform that is known to work on many different computers.

Knoppix is of course not the only live CD that is good as a base for such projects, but it is easier to use Knoppix for remasters than live distros that contain proprietary/demo software that is not “freely distributable also in modified form, for non-commercial as well as commercial use.” That's one of the reasons why I'm very careful about licenses of software included in Knoppix.

LM Knoppix is listed as a member of the new Debian Common Core Alliance (DCCA). How will the new DCCA change the way you work on Knoppix? Will the alliance assume some tasks you're doing now?

KK The alliance is trying to establish interoperability and package compatibility between various Debian-based distributions, so no matter which Debian brand you use, you can update or extend one distribution with software from the other.

Knoppix is already about 99% Linux Standard Base (LSB) compliant, however, because of the history of being designed to run from a read-only medium, there are some changes to mainstream Debian that should, in the long term, be handled differently. It is already possible to harddisk-install

Knoppix and upgrade it from the Debian software archives, but in some cases, you have to watch out for versioning problems between KDE and system libraries, for example, or patched versions of Debians software (like `sysvinit-knoppix`).

When Knoppix adopts the DCCA core package list and integrates Knoppix-specific changes only as separate packages, this will hopefully make some things easier after a hard disk installation. Knoppix will behave more like a standard Debian system (with extensions) than it does now.

LM Who is deciding this core package list for DCCA? Are you part of a committee that votes on what will be included in the core?

KK Like most Free Software projects, DCCA has a developer mailing list where everyone can post suggestions and discuss which packages should be included with the common core of packages. There have been very few disputes so

far, probably because, for technical people, it is quite clear which components are absolutely necessary and which are optional.

You have to keep in mind that DCCA is not trying to change the way Debian works or develops. We are just trying to find and establish a common base between commercial Debian-based distributions using the software that's public available from Debian. So far, there is no strict voting system or hierarchy, as many questions are decided by consensus or easily resolved by technical solutions and metapackages. Currently, we are discussing kernel packaging issues, which is not as easy a topic as the LSB-conformance questions. In case there are recommendations for new packages or changes of dependencies, this will be done within the usual Debian way of issuing a proposal (in the form of a patch, for example) to the individual package maintainers.

LM Out of all the live Linux distributions in the world, what makes Knoppix

different? To put it another way, what is the principle reason for the success of Knoppix?

KK Knoppix was designed as a live system (with mostly myself as the target user) for doing real and productive work on foreign computers with a quickly self-configuring and easy-to use, pre-installed Linux system.

Knoppix is not just a demonstration disk or a hacker's tool. Other distributions have live CD versions that show the (simulated) installation process and the look and the feel for the "real" distro that is sold in a box, but these "evaluation CDs" are not meant to run permanently.

The software included in Knoppix is commonly used in various distributions, though I have tried to include a mix of useful programs for the novice as well as the expert.

For the large download numbers and the 20,000 visitors per day who go to a download mirror over the Knoppix Webpage, I have no real explanation. ■

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