Components for the Linux-PC

RUNS WITH LINUX

BY GREGOR ANDERS

Linux has taken the step of putting the system onto the desktop. The most important features of modern Windows PC's are thus now available under Linux. Whether USB or hardware accelerated 3D representation – the constant booting of the other system, just to play a game for a short time or to read out images from a digital camera via USB, has finally come to an end.
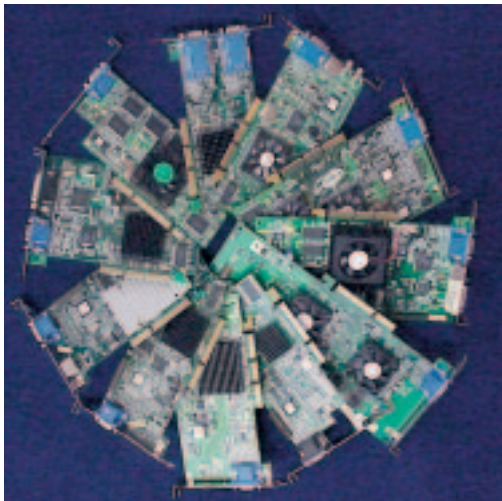
Graphics Power

Accelerated graphics with OpenGL support is integrated into XFree86 4.0, so even inexperienced users without the patches for the sources and recompiling can enjoy 3D under Linux. Whether nVidia's flagship GeForce2, Matrox's G400 range, ATI or Voodoo cards: drivers for these chipsets are already installed in the standard installation of the latest distributions from SuSE, Red Hat or Mandrake.

nVidia goes its own way in this matter and offers closed-source drivers, which realises almost every dream of the ambitious gamer. There is a set of installation instructions included in the packet. Those finding this too complicated can plump for the standard nVidia drivers from XFree 4.0.1, but will then have to do without ideal performance. But it must be noted that these drivers will not co-operate with cards with NV1 or 128/128ZX chipsets. For these older chips, though, there are open source drivers (see Table 1 in the previous article). 3dfx, ATI and Matrox are already receptive and have immediately provided developers with the necessary information to support their cards completely under Linux. At this point, though, it should be mentioned that many older graphics cards will no longer function with the new X-servers.

Voodoo graphics cards have the advantage that under XFree 3.3.6 they also benefit from the accelerated chips (3D exists however only in full screen mode). The open-source Glide library – the basic driver for Voodoo chips – may be old, too, but this also makes it more refined. If performance were the only criterion, then graphics cards with nVidia chips would come out near the top. But the stability of this proprietary driver still leaves a great deal to be desired. Anyone wishing to risk a little 3D game, will probably be unmoved by this, but in professional 3D applications the X-Server tends to come to a standstill now and then – especially if there is a parallel I/O intensive process running. Anyone who would nevertheless still like to settle on a nVidia based graphics card, should take a look at the GeForce256 variants, as these currently have the best price-performance ratio. It doesn't always have to be the top model.

The Matrox G400 DualHead Version allows two monitors to be connected to one graphics card, and thus practically doubles the desktop. A driver is also available (see Table 1). This is obviously a driver that comes with 3D acceleration (although only in single-head operation).

There is not yet any 3D support for ATI RageFury graphics cards with Rage 128 or Rage 128 Pro chips. For this reason in the case of professional

3D Power for the penguin: For almost all current graphics cards there are powerful drivers available. nVidia chips are especially fast, but sadly not particularly stable: The Voodoo driver is much more robust.

applications representation errors are the order of the day. With 3D games these cards are usually fast enough and attain roughly the same level of performance as Voodoo and Matrox chips.

For ATI's flagship Radeon, X-server specialists Xi-Graphics have recently brought out an alpha test version of an X-server with fast 3D architecture (*X Direct Access*, XDA for short) which functions similarly to the *Direct Rendering Infrastructure* (DRI) of XFree86-4.0.

In the next kernel 2.4, incidentally, AGP support will have a fixed size – although there is a backport patch for kernel 2.2, which all the mainstream distributors have included in their kernels. Don't expect too much from AGP, as most games scarcely make the most of the now usual 32MB graphics memory, so accesses by AGP to textures in the main memory are not even necessary. In scientific/professional applications this can of course look very different. A little tip for owners of an Athlon mainboard with VIA-KT133 chipset: If the *agpgart* module will not load, the entry

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options agpgart agp_try_unsupported=1
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in /etc/conf.modules bzw. /etc/modules.conf can truly work miracles.

Flicker and static

At a time when 17 inch monitors represent the lower end of what is acceptable, more and more users are employing their PC as a TV set. In this category Hauppauge WinTV variants are the commonest. But also Terratec TERRA TV+ or miroVIDEO PCTV pose no problems with setting up and use.

Hot disks

CD burners have long since found their way into the free system. Certainly, ease of use when creating a CD on the command line is not as great as with the

well known user environment from Redmond, but with *gcombust* and XCDRoast there are two options for avoiding the mess of command switches of *cdrecord*. An exhaustive comparison of 16 different CD burn programs can be found at *http://sites.inka.de/~W1752/cdrecord/frontend.de.html*.

Unfortunately in some circumstances getting an ATAPI CD burner to perform may be somewhat more complicated than a SCSI device (distribution-dependent), as the cheaper burner has to be addressed via a SCSI emulation layer in the kernel. Hence this tip to all newbies: Allow plenty of time for reading and testing. One place to start with this should be the CD Writing Howto, found at *http://www.ibiblio.org/pub/Linux/docs/HOWTO/CD-Writing-HOWTO*.

With the Siemens DVB card in the digital video recorder

Linux supports all SCSI and ATAPI CD burners almost without exception

USB? That'll do nicely

For a long time Linux users had no substitute for the serial parallel cable chaos. But more and more often, customers buying hardware find that the device they want is now only offered as a USB variant, or you don't always want to wait so long, just because (due to the lack of support) you have to fall back on the slow serial variant. USB is marching into Linux with the launch of kernel 2.4, which has been in the test phase for a long time. For the current user kernel (2.2.17) there is a backport for 2.4 sources (this should become an integral part of 2.2.18). All current mainstream distributors have integrated this patch into their kernel, and so the Linux user can use a large number of USB devices out of the box: The hardware range supported extends from USB mouse/ keyboard via USB digital cameras up to USB scanners or printers. At *http://www.linux-usb.org/devices.html* there is an exact listing of all currently supported USB devices. For the sake of security, care should be taken when buying a USB mouse/ keyboard that this comes with a PS/2 adapter – just in case.

Sound for all

Most sound cards no longer cause any problems for Linux thanks to the ALSA project and OpenSoundSystem, but there can be complications with a few onboard variants. Generally you should make sure your PC is as free as possible from onboard components, to avoid unnecessary problems. A later update on a faster graphics card or better sound card is very hard to do with onboard components and may even be impossible. Both Intel's AC97 sound chip as well as various SoundBlaster versions detect the distributions during installation and integrate the necessary driver at the same time.

Unfortunately support of so-called WinModems is less advanced. At present only devices with

Lucent chips work. It is advisable to avoid these and choose an external modem, even if this is usually dearer. For those who would like to try it anyway, the recommended site is *http://www.o2.net/~gromitkc/winmodem.html*

DVD, the Cinderella

DVD support under Linux is still in baby shoes. Development is being thwarted by problems of patent rights, which make it impossible for Open Source developers to write Linux DVD software, without involving themselves in breaking the law. The DVD algorithms are copyright and cannot be used with a licence. One place to start, for those who want to try anyway, is the site *http://www.linuxdvd.org*

Scanner, printer & co.

Using scanners (parallel, SCSI or USB versions) is, thanks to the SANE project, no longer a magic trick – but before buying you should find out if the object of your choice will function with Linux (see SANE homepage in the table). The use of printers under Linux, however, does often pose a problem: GDI printers oriented to Windows will usually only run with Linux with a great deal of effort (if at all). And the free drivers available for Linux are very often of much lower quality than their commercial Windows counterparts. This is due to the fact that these drivers often use complicated and/or patented processes for colour balance. Lexmark is one of the first manufacturers to supply its printers in the SOHO sector (Small Office/Home Office) with high-quality Linux drivers.

Massive mass storage

Hard disks are getting bigger and cheaper all the time. Cheap (E)IDE disks have still got a bad reputation in the professional field although thanks to UltraDMA 33/66/100 and 7200 RPM the IDE based mass storage of SCSI variants is not far behind in terms of performance. But there is also a good reason for this: There are sometimes considerable stability problems in DMA mode – especially with newer motherboard chipsets, whose Linux-UDMA drivers are still marked as experimental. In the case of an office workstation, though, it usually does not matter if the hard disk is only operated in the slow PIO mode. Software developers are learning to quickly evaluate the smooth progress of continuous operation during the execution of I/O intensive applications and prefer to rely on the SCSI host adapter – where DMA is guaranteed. Anyone brave enough, incidentally, can try to optimise hard disk accesses by IDE devices with:

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hdparm -d1 -c1
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the hard disk is put into DMA mode and 32-bit I/O accesses are activated.   ∎

The author

Gregor Anders is employed at the computer centre of the University of Cologne at the Help desk. When he is not helping students with their day-to-day Windows problems, he programs Web sites in Perl and PHP.

Whether scanner, printer or input devices: Linux supports all kinds, but a look at the Linux USB homepage can save a lot of bother