Exploring Ubuntu's cousin for the classroom

SCHOOL TOOL

Don't know much about history? Don't know much biology? Don't

panic: Edubuntu will lead you to the wonderful world of classroom

Linux. **BY ERIK BÄRWALDT**

Many Linux users have heard of an Ubuntu variant for educational environments called Edubuntu, but the descriptions in the press are often light on details. We took a close look at Edubuntu Linux and discovered a versatile distro with an interesting collection of software.

Edubuntu is designed to serve three roles:

- A full-fledged PC operating system, with its major focus on educational software;
- A management system for schools (timetables, room plans, etc.);
- A server and client for computer cabinets.

At first glance, you won't find any obvious differences between Edubuntu and the other Ubuntu derivatives. Edubuntu runs on 32-bit and 64-bit PCs, and on PowerPC machines. In addition to a combined Live/Install CD, Edubuntu comes with an alternative CD for hard disk installation, as well as a DVD with a far greater selection of packages. You can use the DVD as a live medium, an installation disk or a rescue system [1].

If you decide to install Edubuntu as a permanent feature on your disk,

both live versions will guide you through the installation and basic configuration with a GUI installer. In contrast to popular commercial distributions, Edubuntu does not offer a choice of various desktop and server variants, nor can you influence the installation of the Grub bootloader. This can be a problem, especially if an operating system pre-exists on your disk (see the "Grub Issues" box). If you are installing on a computer that al-

ready has an operating system in place, you should take a close look at the existing partitioning, as a single incorrect entry in Edubuntu's GUI-based partitioner can be disastrous.

The installer in the alternative version has all the charm of a text console with a colored background. On the other hand, it does have a couple of extra options, including options for the Grub bootloader. Even if you use the alternative version, it won't hurt to back up your existing data before you launch into the install.

Educational Programs

After completing the install, Edubuntu comes up with the Gnome window manager and a default theme showing a green blackboard with a chalk sketch of a world map. It is immediately obvious that the distribution is aimed at students and teachers. Icons and symbols use warm colors that contrast with the background so that they will be more easily identifiable to children. If you replace the background with something more suitable to the age group of the children who will be using the computer, they should take to Edubuntu in next to no time.

Clicking *Applications* in the panel finally takes you to the first major change from other distributions. The topmost submenu, *Education*, takes you straight to the educational programs. The developers have integrated

Figure 1: Edubuntu is Linux for school children. A variety of desktop backgrounds let you tailor the system to students of different age and grade levels.

the KDE runtime environment with Edubuntu to make the whole KEdu suite available on the Gnome desktop. Users will discover programs for math, science, and languages.

The typing trainer, which teaches touch typing, and the TuxPaint painting program are slightly off subject here. One thing that you will notice is the KEduca test system, which gives teachers the ability to compile, set, and mark multiple-choice tests on any subject.

If the applications in the KEdu suite are not enough to keep you happy, you will find a wealth of other educational programs for various topics in the Ubuntu online repositories. For example, you can quickly and reliably install the Childsplay games collection for infants to your disk via *Add/remove application*. Use of repositories is free, and you do not need to register.

The Edubuntu media, which Canonical will ship worldwide free of charge, has a couple of additional hidden goodies, such as full-fledged dictionaries, which you can store locally on your hard disk. Dictionaries include *dict-gcide* and a thesaurus, *dict-moby-thesaurus*.

The excellent GCompris software for junior school children supports VGA, SVGA, and XGA resolutions. GCompris does not appear in the Gnome panel if the computer uses a resolution above 1024x768. There is a good reason for

this: if the resolution is higher, manually launching GCompris takes down the X server, which forces users to restart. The fact that the system automatically configures itself to avoid this problem is an impressive indication of how much care and attention the developers have given Edubuntu.

For Schools

Schools and colleges don't just need educational programs on computers for their students; the administrative staff also needs an IT environment that works reliably and meets their needs. The Shuttleworth Foundation has taken on the task of developing a complete administrative suite for educational institutions in the form of SchoolTool and its smaller sibling SchoolBell. The SchoolTool and

SchoolBell suites include applications for tasks such as classroom management, timetable management, and course management. While SchoolTool covers the administrative side, SchoolBell targets students or pupils wishing to manage their own timetables [2].

Both software packages have easily readable and almost identical interfaces, making it easy for occasional users to find their way around. The web-based applications are accessible via any popular web browser. To prevent unauthorized users from changing entries at will, both applications are password-protected.

Because the Shuttleworth Foundation wants to give users access to applications in their own language, SchoolTool and SchoolBell have been translated into other languages, which means that schools all over the world can turn to SchoolTool as a free and powerful tool for school office work.

Edubuntu as a Server

A Linux educational distribution would not be complete if you could only use it for administration and single-user systems. Many schools have computer cabinets with a complete network of computers for educational purposes.

Edubuntu supports various approaches to setting up a cabinet. While other operating systems require the student machines and the server to have powerful, state-of-the-art hardware – which means investing in newer, more powerful machines whenever a new release becomes available – Edubuntu prefers a terminal server approach. In server-based computing, a server handles all the work occurring on the network, while the student machines

Grub Issues

Just like other Ubuntu versions, Edubuntu installs the Grub bootloader in your hard disk's Master Boot Record (MBR). Although the installation routine checks the disk for existing operating systems before doing anything else, there is no guarantee that it will correctly add them to the Grub menu.

To enable a working Grub configuration on another partition, launch the system from a Live CD, like Knoppix or Kanotix, and working as root, give the following commands:

```
root# mount -o dev,rw /mnt/hda2
root# chroot /mnt/hda2
root# grub
grub> root (hd0,1)
grub> setup (hd0)
grub> quit
```

The preceding command sequence assumes you want Grub to read its configuration from partition *hda2* on booting. Note that Grub starts counting partitions with 1, not 0.
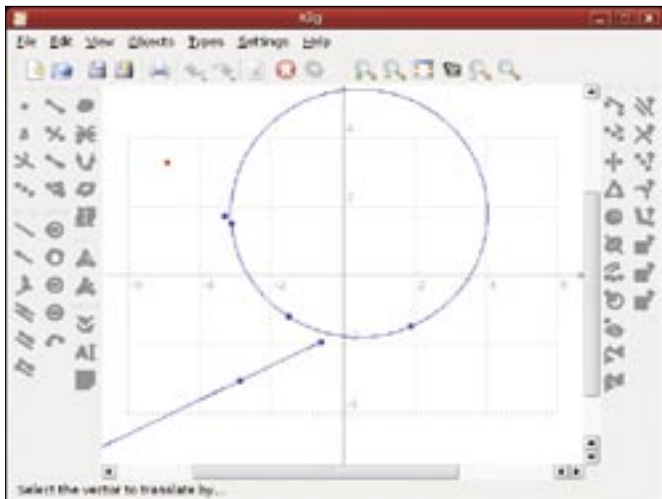
Figure 2: Edubuntu comes with a large selection of educational programs.

Figure 3: Improve your typing skills with TuxType, which is part of the Tux4Kids package.

can be thin clients with more restricted resources. In fact, a thin client doesn't even need a hard disk because it can boot off the network.

The advantages of the terminal server model are obvious. First of all, installing a terminal server network of this kind is cheaper because you can use older hardware for the client systems – possibly machines that have been discarded as too old for service elsewhere.

Once you get the nextwork installed, there is no need for expensive hardware upgrades: a simple machine with a bootable NIC will do fine. As the clients boot off the network, you can do without hard disks or CD ROM drives.

Another advantage is vastly improved and simplified management of the whole system. Instead of installing and maintaining software on a large number of individual machines, you can manage the network centrally through the terminal server. Using thin client workstations without removal media also minimizes the danger of problems caused by students bringing media from home.

Schools that have full-fledged PCs with internal hard desks can run the Edubuntu client locally and still connect to the terminal server via a configuration program that is integrated in Edubuntu. For machines without internal storage media, you just need to enable the net-

work boot option. This is the only configuration step you need to perform at the workstation.

Edubuntu's terminal server is implemented in the distribution by a version of the LTSP server ("Linux Terminal Server Project") [3]. The required software packages are available from the Ubuntu repositories.

A second NIC connects the terminal server to the Internet. It makes sense to install a firewall on the terminal server to achieve some degree of security.

Seamless integration of the LTSP server with Edubuntu means simple, time-saving management of the whole network, without the administrator needing too much knowledge of the underlying technologies; this is good for teachers, who often demonstrate more commitment than background knowledge when volunteering to manage the school network.

All-purpose Edubuntu

Edubuntu is not only suitable for education and server applications; the distribution has a massive collection of software packages available to any Ubuntu derivative. In fact, the repositories now have more than 19,000 packages. With
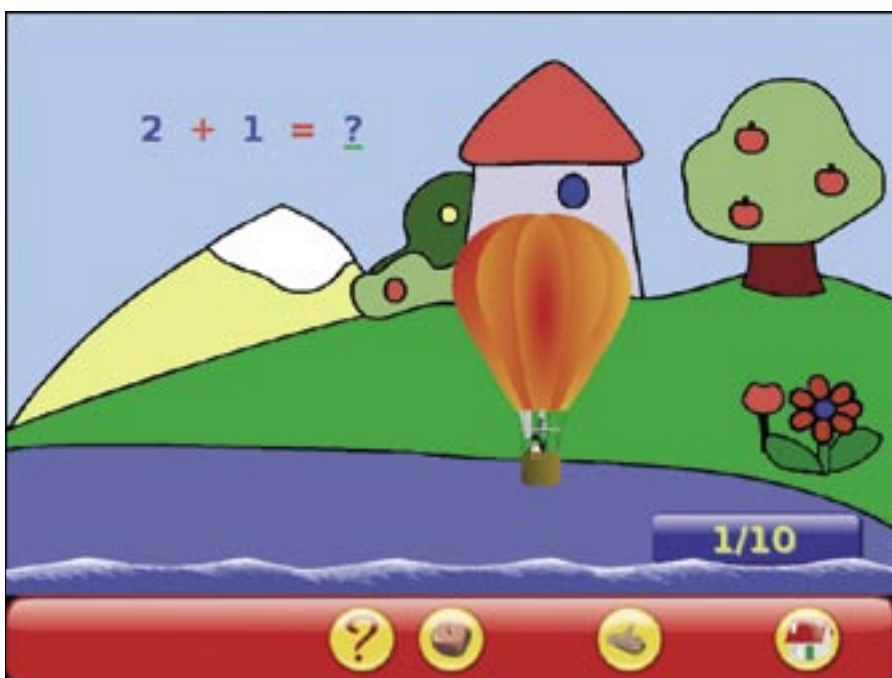

Figure 4: The Gcompris package provides a rich collection of software for kindergarten.

INFO

[1] Edubuntu homepage:
   http://www.edubuntu.org

[2] SchoolTool project:
   http://www.schooltool.org

[3] LTSP project homepage:
   http://ltsp.org

this backing, Edubuntu can offer any popular service or application – from a developer tools, through multimedia software, to office and financial programs. In fact, Edubuntu is as versatile as any Linux distribution.

Conclusions

The Shuttleworth Foundation has developed a great piece of software with the Ubuntu-inspired Edubuntu Linux distribution. With Edubuntu, students of all ages will discover a wealth of educational tools and a test server tailored to their needs.

School administrators can save time with the calendar and timetable tools, and school IT managers will be delighted with Edubuntu's easy installation and configuration.

The whole Edubuntu distribution is delivered free of charge by South African billionaire Mark Shuttleworth's foundation, giving schools the freedom to spend their tight financial budgets on other things. The Shuttleworth Foundation guarantees several years of support
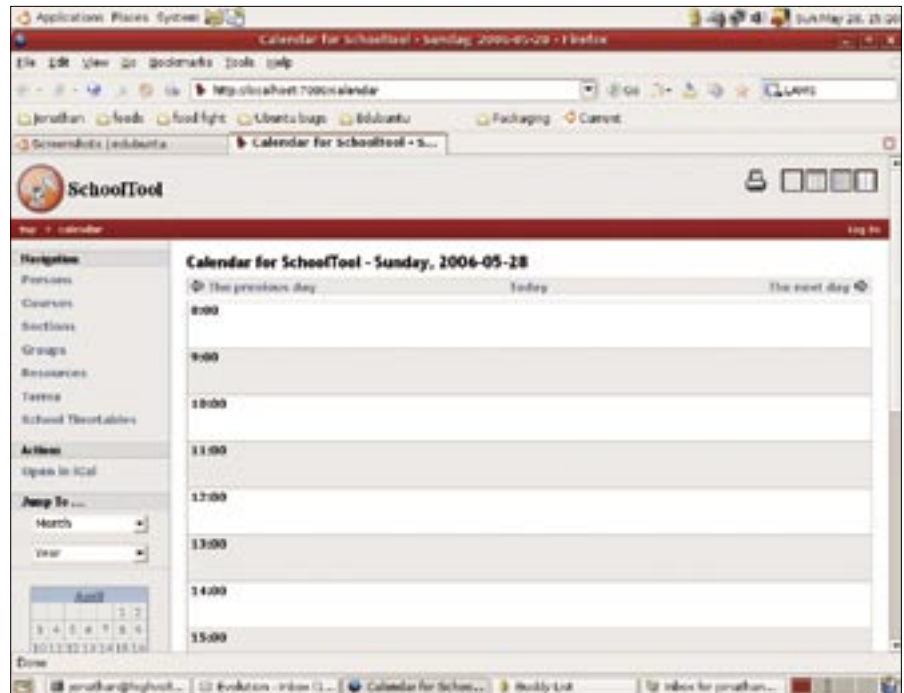

Figure 5: Edubuntu also provides management software for teachers.

and updates for the current Edubuntu 6.06 LTS version – both for server and client applications. This pledge of

support will reduce the drain on school tech budgets for expensive hardware upgrades in the years to come. ∎