

## Free software and its makers

# Projects on the Move

Free software includes such a diverse range applications that it can be hard to find the perfect tool. In this column, we pick the best of the bunch. This month you'll learn about the DBox2 as a video recorder, the IPv6 service provider Sixxs, and GNU/Linux Sarge. **BY MARTIN LOSCHWITZ**

It is a well-known fact that the Open Source Community is a typically male domain. This prompted the female members of the Debian project to organize their own mailing list, [debian-women], in an attempt to get more women involved in the Debian project. The first thing debian-women came up with is a criticism of the sexist terms used on the Debian website. All the pages they looked at used masculine style and terms, and the people behind debian-women would like to see Debian adopt a more neutral approach to language.

Read on for the latest on DBox2, Sixxs, and Sarge. I have but one request: if you can recommend a program you would like to see featured in *Projects on the Move*, email me with your suggestion [1]. I look forward to your comments.

## Linux on the DBox2

Since the first attempts to install Linux on the DBox2, huge improvements have been made, not the least of which is the installation. With a few simple steps, users can now replace the proprietary Beta-Nova software with Linux. And the introduction of Tuxbox [2] gives the DBox2 a Linux distro all of its own.

Up to the beginning of this year, Tuxbox's developer, Alexander Wild, always had a current image available for users to download and install on their



Ronald Raefle, visipix.com

boxes. The stable versions typically worked without any complaints and were by far the most widespread DBox2 images. After all, compiling the Tuxbox source code from the CVS repository is not everyone's idea of fun.

But in March this year, Alexander Wild withdrew this support, and there have been no current images since. The Yadi (Yet another DBox2 Image) project quickly stepped in to plug the gap left by the Wild images. The Yadi image GUI is very similar to Wild images with most changes taking place under the hood. The developers have improved the Electronic Program Guide (EPG) and added a number of enhancements and bug fixes. Check out [3] for more information on installing Yadi.

## Video Recording

Running Linux on your DBox not only gives you a prettier GUI but also allows you to leverage the benefits a normal Linux system provides, such as complete networking functionality. With some

added wizardry, you can also record MPEG 2 videos and store them on another device attached to the network (thanks to the integrated Ethernet port). In other words, you can use the DBox as a video recorder.

Because all DVB variants use pure MPEG video, the recording conditions are excellent. The device receiving the streams simply needs to store the video on a suitable storage medium. The VDR project at [4] has developed a software solution that does exactly that, and makes a full-featured DVD receiver of a normal PC with a DVB card.

This said, it is quite expensive to convert a standard PC into a multimedia machine that will not spoil the looks of your living room; and ready-made hard disk recorders are typically in the \$ 500 plus price range. The DBox2, which is auctioned for far less at eBay, could be just what the doctor ordered. The device was designed for fanless operations and makes no noise whatsoever. And it looks a lot neater than a normal PC case. In fact, the only piece of hardware the DBox lacks is a hard disk. That should be no obstacle if you say the magic word: NFS. Tuxbox supports NFS and has its own NFS drivers.

NFS is not difficult to set up. After replacing the Beta-Nova software with Linux, just load the SPTS driver (Single Program Transport Stream) via *Miscellaneous Settings* in the configuration menu, then reboot. Of course you need an NFS server on your LAN to store the recordings. After rebooting the DBox, mount the NFS directory in the network configuration menu. The local directory on the DBox is typically `/hdd`. You can

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use the recording configuration parameters to specify this directory as your recording directory.

## Remote Control

To record a program, simply browse the EPG, and press the red button on the remote when you find the right program. You can also set up a manual timer. The software displays a message shortly before the recording is due to start, and then automatically switches to the channel you want to record. If you have DVB-S (satellite), you can even switch to a small selection of other channels while recording, the only restriction being that the recorded channel and the channel you want to view must use the same transponder. (This explains the limited selection.)

Neutrino, the Tuxbox GUI, automatically hides any channels that you cannot select. DVB-C (cable) and DVB-T (antenna) do not allow you to view another channel while recording.

## Into the Archive

After completing a recording, you can play videos back on the D-Box. Tuxbox has had a movie player with this capability for quite a while now. There should be two files on the NFS server at this point: one with the *.ts* (Transport Stream) suffix, and another with the *.xml* suffix. The latter file contains information on the recording, and the TS file is an image of the captured stream. It includes the actual MPEG files but also stores stream error correction information. You will not need this additional data on your hard disk; a program like Replex [5] allows you to remove the extras. This said, a two-hour movie in

MPEG-2 format will still occupy about 4GByte on your disk, and it makes sense to transfer your recordings to CD or DVD to free up enough space.

The Avidemux [6] program removes the ads from the files and supports frame by frame cutting. The export function *Save as DVD PS* prevents Avidemux from converting the file to a different format.

If you do not have a DVD recorder, you can still use *divx2svcd* or *mencsvcd* from the Mplayer suite to convert your MPEG 2 videos to SVCD format. Both programs have pre-configured *.bin* and *.cue* files that you can burn directly to CD. This said, a DVD recorder does give you a lot more options.

As DVD is MPEG 2-based, there is no need to reformat your video recordings. The DVD Styler [7] additionally gives you the option of adding a menu and splash screen to your DVD. This is a useful feature if you want to create a DVD with various episodes of your favorite soap. The menu allows you to choose the episode you want to view.

## Sixxs – IPv6 for Everyone

Although there are enough IP addresses to go round in the US, the alarm bells have been going off in other parts of the world – Japan in particular – for quite a while now. Pessimists still assume that the IPv4 (Internet Protocol Version 4, the current version) address space with its four billion addresses will be running out of space in the near future.

Registries charge a lot of money for IP addresses. In environments of all sizes – from tiny home networks to massive enterprise networks – users have moved to Network Address Translation (called NAT) to avoid the expense of buying IP addresses that may not be used, even though NAT can cause various



Figure 2: The Sixxs Internet Points of Presence (POPs) in Europe.

application issues. The fact that most IP addresses are assigned dynamically has also given birth to workarounds such as dynamic DNS. And the trend toward connecting all kinds of electronic devices like mobile phones, PDAs, TVs, and even refrigerators to the Internet aggravates the situation even more.

If widespread connection of IP-capable devices continues, we can expect to run out of IPv4 address space quite quickly. The Internet Engineering Task Force, or IETF for short, developed version 6 of the Internet protocol to address the ROADS (Running Out of Address Space) issue more than ten years ago. IPv6 has enough addresses to assign a unique address to every toaster. But the Internet is slow to react. IPv6 has not been as pervasive as expected, and there are very few Internet service providers that actually advertise IPv6 support.

Thus IPv6 remains a domain of technically competent users and programmers. Some backbones are accessible only via IPv6, but since most of the Internet still uses IPv4, users need to tunnel IPv6 packets across the IPv4 Internet.

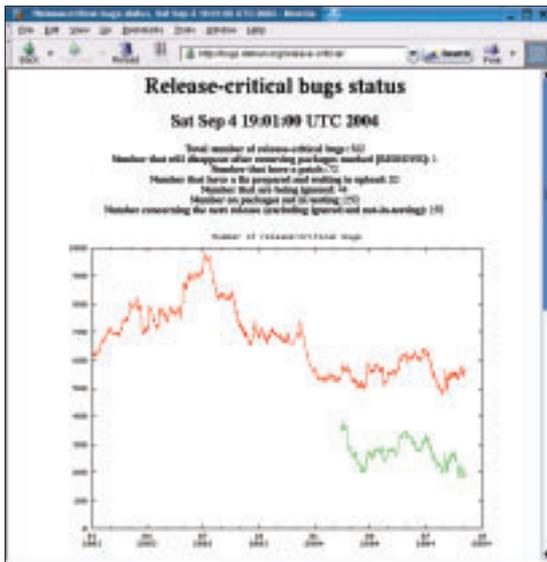
## Using IPv6 to Connect LANs

Sixxs.net [8] is a so-called tunnel broker that gives users free access to the IPv6 Internet. Sixxs offers a simple IPv6 tunnel with a single IPv6 address. Sixxs also offers complete IPv6 subnets, which allow users and enterprises to attach a whole LAN, rather than a single computer, and removes the need for a NAT-based Internet connection.

Sixxs uses a rating system to manage quality of service. You get 25 credits for registering. 25 credits will get you an IPv6 tunnel with a single IP address (in



Figure 1: Tuxbox provides a Linux distro for the DBox2.



**Figure 3: There are still too many release critical bugs in Debian. But release assistant Steve Langasek is still convinced that Sarge will be released on September 15.**

fact, this costs you only 15 credits). Users are given 5 credits for each week that their IPv6 endpoint remains accessible. After just one week you have enough credits to apply for a complete subnet, which again costs 15 credits. After one more week, you can even add a nameserver for the reverse lookup records in your subnet.

But there is also such a thing as negative credit. Five credits are deducted if your IPv6 endpoint is down for a day. After a week of inactivity, your endpoint and the whole subnet are disabled. Sixxs uses this sophisticated credit system to ensure that the user database and the registered tunnel are up to date. The maintainers are also open to abuse reports. If a user is caught abusing a Sixxs tunnel, that user can expect to lose his or her access privileges.

Connecting a computer to the IPv6 network takes some preparation. One major prerequisite is an operating system that speaks IPv6, of course. Besides Linux, most modern systems can handle the new protocol, including Windows 2000 and XP. Check the Sixxs pages [8] for a HOTO on configuring the tunnel.

To support a complete IPv6 network, you will typically need radvd (Linux) or rtadvd (BSD). As IPv6 provides a large number of addresses, there is no need for a NAT gateway. However, you do need a computer on the network to handle address assignments and routing

information. The clients pick up an address from this machine, and the routing daemon defines routes.

Sixxs also has a service for Internet users with dynamic IPv4 addresses. You need to install a heartbeat daemon on your IPv6 endpoint to send a signal to Sixxs every 60 seconds. The heartbeat, and the user credentials for the Sixxs system, prove that the IPv6 endpoint is up. At the same time, the tunnel route is updated if the IPv6 guest has a new IPv4 address.

## Towns Leaves – but Sarge Is On Its Way

Sarge is coming on September 15 2004. At least this is

the date that Debian Release Assistant, Steve Langasek, quoted in his August 2 message, in which he gives general status information for Debian GNU/Linux 3.1 (Sarge). But Steve Langasek's message [9] included one really big item of news concerning Anthony Towns' departure.

Anthony Towns has been the Debian Project Release Manager for many years, but in recent months he has been the target of allegations and insults, as, in fact, have many other developers. Thus, the step comes as no surprise to many insiders. This prompted Steve Langasek's criticism of the developer community, which accompanied the announcement. Steve appealed to Debian developers to start working towards common targets again and bury their personal differences.

Steve's announcement quashed rumors of the Sarge release being postponed to an unspecified future date due to Anthony Towns' departure. Steve announced that, in cooperation with Colin Watson, who was promoted to Release Assistant under Anthony Towns, he would try to take the necessary steps to finalize the Sarge release. The community froze the base and standard Debian components on July 31. Any modifications to these components need to be okayed by the release assistants.

Steve Langasek's timeline envisages removing all release-critical errors before

September 12, by either fixing the bugs or simply removing the packages from the Sarge tree.

## No AMD-64

The second big obstacle along the way to the release is the Debian installer. The new installation system already works on all eleven architectures that Debian supports, but the developers still need to remove a few bugs. What Steve Langasek's timeline also means is that Sarge will not support AMD's 64-bit CPUs.

The lack of AMD-64 support is definitely a blow to Debian. Let's hope that the new architecture makes it into the testing tree immediately after Sarge is released.

The period just after the Sarge release is likely to be interesting, as the developers postponed a lot of changes to avoid delays. One subject is the removal of any documentation that is not covered by the GFDL (GNU Free Documentation License). And there is still the issue with firmware files that do not conform with the Debian Free Software Guidelines.

Version 3.4 of the GNU Compiler Collection is also ready to go, and it introduces a new group of ABI incompatibilities. Along with these post-release changes, the developers will finally integrate the AMD-64 architecture.

If Steve Langasek's plan works out, Debian should be approaching the next stable release by the time this magazine hits the newsstands. But experience tells us that you don't always get what you expect. ■

## INFO

- [1] Tips and suggestions:  
[projects@linux-magazine.com](mailto:projects@linux-magazine.com)
- [2] Tuxbox: <http://www.tuxbox.org>
- [3] <http://developer.berlios.de/projects/yadi/>
- [4] VDR: <http://www.cadsoft.de/vdr/>
- [5] Replex: <http://www.metzlerbros.org/dvb/>
- [6] Avidemux video cutting on Linux:  
<http://avidemux.sf.net>
- [7] DVD Styler for creating DVDs:  
<http://dvdstyler.sf.net>
- [8] Sixxs IPv6 service:  
<http://www.sixxs.net>
- [9] Steve Langasek's message on Sarge:  
<http://lists.debian.org/debian-devel-announce/2004/08/msg00001.html>