

An up-to-date overview of free software and its makers

Projects on the Move

Free software covers such a diverse range of utilities, applications and other assorted projects, that it can be hard to find the perfect tool from all that programming effort. We pick the best of the bunch for you, including - Apple's iPod, the nitty-gritty on IRC.

BY MARTIN LOSCHWITZ



The price of portable miniature MP3 players has dropped to well below US\$ 100. Sadly, the low price is not always an advantage, as the sound quality tends to suffer.

Apple's iPod is anything but "cheap". Apple's asking price for the iPod is still US\$ 299. For that amount of money, the owner can expect excellent sound quality and a nicely-finished, good-looking device. You also get a large hard disk with a capacity of up to 40GB into the bargain.

There are Linux programs for uploading music to the device, organizing tracks, and creating playlists by now. Before you start, you may want to consider replacing Apple's default HFS+ operating system with VFAT. Linux does support HFS+, but the driver is slightly buggy. The VFAT driver is much more stable, and the iPod is perfectly happy to run with VFAT. Surf to [1] for a how-to on formatting the disk.

The Gtkpod [2] tool, and the GnuPod script collection [3], allow for convenient

track management on the iPod. As the name suggests, Gtkpod uses the GTK2 interface, whereas the GnuPod tools are command-line programs, and this typically makes Gtkpod a more convenient choice. Users can synchronize local directories with the iPod, create playlists, and sort their tracks. Gtkpod also allows users to rate tracks, and sort them by order of preference.

If synchronizing with Linux does not keep you happy, why not install Linux on the machine? The iPod Linux project at [4] lets you do so. The project website provides the required tools, and a guide that tells you how to install and configure the iPod. As proof, the website shows a photo of an iPod outputting Linux kernel messages in its display.

All in all, the iPod turns out to be extremely Linux-friendly. Gtkpod takes the pain out of managing your music. If you have always wanted to have the Tux framebuffer logo in your LCD display, this is your big chance – thanks to iPod Linux.

Oikarinen in 1988, describes a protocol that allows multiple clients to communicate directly via a central server. There are five Requests for Comment (RFCs) by now, and a multitude of server variants, whose only common denominator is basic IRC functionality.

Way back in 1990, the best-known IRC servers joined forces to create a network without a fixed structure. There was an average of 12 users for 38 servers. That same year, another network with 25 servers started up. This time it did not have any users, as it was entirely concerned with testing the new IRCd version 2.6.

In August, a few admins decided to link an open server to the existing network, which had been known as Anarchy Net, or simply A-Net, up to this time. The server allowed third parties to attach their own IRC servers to the network. Its hostname was *eris.berkeley.edu*. As Eris caused quite a stir, the EFNet [5] (Eris Free Net) was founded just a short time later. Most of the servers and users on the A-Net left to join EFNet, which has since become the largest IRC network in the world.

As EFNet grew very quickly, the lines were often overloaded. This led to net splits, i.e. servers started dropping connections to other servers. Clever IRC users exploited this. Both servers have an open channel to a specific network. If a computer loses its network connection, the channel continues to exist both on the computer and on the network. An attacker joining an empty channel on one of the affected servers automatically assumes operator privileges.

When the network link is reestablished, the attacker retains his privileges. Thus, a net split will allow a previously non-privileged user to assume operator privileges, and take over the role of the "chanop" in that channel. Users and server operators alike were unhappy with this security loophole. This meant

THE AUTHOR

Martin Loschwitz is from a small German town called Niederkrüchten and a developer for Debian GNU/Linux. Martin's leisure time is mainly pre-occupied with activities in the Debian or GNU community.

IRC History and Software

Many Internet users prefer Internet Relay Chat (IRC) rather than email, as IRC allows a quicker and more timely exchange of information. The IRC standard, which was developed by Jarkko

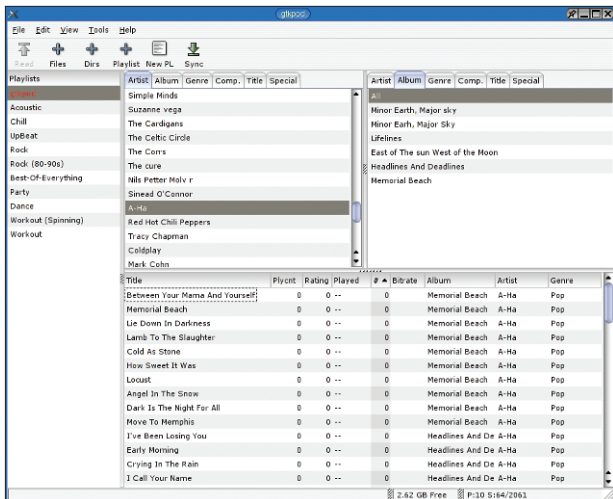


Figure 1: The Gtkpod main screen. Gtkpod is a program that works with Apple's iPod. It can handle playlists, track rating, and data synchronization tasks.

extending the contemporary IRCd to resolve the issue. 1992 saw the introduction of another test network, which was opened up to normal users just a short while later. This was the birth of Undernet [6].

A Host of New IRC Networks

The Undernet IRCd developers' original aim was to harden the network against exploits. To achieve this aim, they integrated timestamp functions that withdrew a user's operator status if that user had joined a channel during a split, thus usurping chanop privileges. The programmers also implemented the first "CService", which allowed users to register a channel, helping them to retain operator status in that channel indefinitely.

In the summer of 1994 another IRC network was founded; it was known as DALNet [7] after its founder Dalvenjah's nickname. DALNet used the Undernet IRCd. DALNet had a new feature that allowed nicknames to have more than nine characters. Also, the DALNet IRCd was capable of banning users on a network wide basis. Besides the CService, which was known as Chanserv on DALNet, there was also a Nickserv that allowed users to register nicknames, thus preventing misuse.

The biggest split of all time in the world of IRC happened back in 1996. The EFNet operators disagreed on how to protect the network in case of net splits. This prompted European EFNet

admins to launch their own project, called IRCNet [8]. The US EFNet kept the original name.

Server Software Variants

The server software used today is as diverse as the networks themselves. IRCNet still uses the original IRCd [11] server, which provides only basic IRC support. This said, very little of Jarkko Oikarinen's original code has survived. Christophe Kalt is mainly responsible for the ongoing development of IRCd, which is currently at version 2.10.3p5. Don't expect to find services such as Chanserv or Nickserv in IRCd.

EFNet uses Hybrid [12], which is based on the original IRCd. One of the major differences between Hybrid and IRCd is the net split protection mechanism. Also, Hybrid provides services [13] and has a few enhancements, which have even been ported back into the original IRC daemon. These include channel modes, +I and +e, which protect a user from being banned.

You might also stumble across Ratbox IRCd [14], a Hybrid fork, on EFNet. Ratbox is fully compatible to Hybrid,

although there are a few differences. Bahamut [15] is another Hybrid fork, which is used on the DALNet and has a few interesting features. For example, it prevents viruses and worms from spreading by intercepting DDC connection requests.

Undernet has used Ircu [16], which is based on the original IRCd, ever since its inception. Quakenet's Asuka [17], in turn, is based on Ircu. FreeNode uses a Hybrid variant called Dancer [18] which provides facilities for centralized network administration.

It is questionable whether there will be any more major developments in the future IRC, as it has some serious competition. Various instant messaging protocols, such as ICQ, AIM, and SILC [19] (which works in a similar way to IRC, but is SSL-integrated). Who knows whether IRC will be capable of holding its own against these technologies?

Debian on AMD's 64

64 bit CPUs are slowly but surely conquering the mass markets. Intel's Itanium and Itanium II are not exactly show stoppers, but Intel's arch-rival AMD seems to be on the path to success with its own 64 bit platform. The Opteron easily outpaces most 32 bit CPUs, especially for server applications. Now AMD looks set to corner the desktop market with its Athlon64, which is based on the AMD64 architecture. Although there isn't actually a 64 bit version of the Windows operating system, it probably won't be long until Microsoft

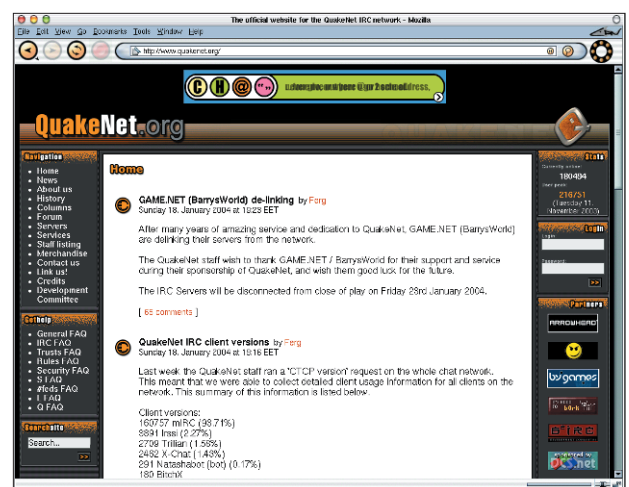


Figure 2: The Quakenet IRC network simply appeared from nowhere. It grew extremely quickly and has now become one of the world's biggest networks.

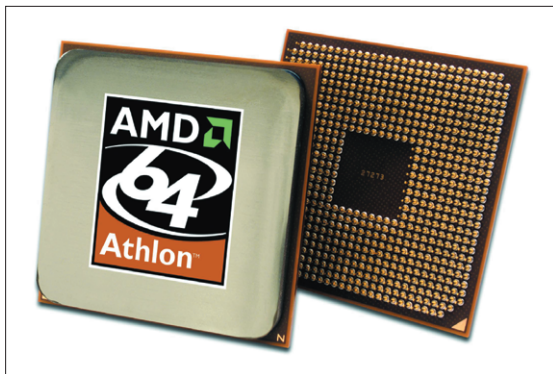


Figure 3: AMD's Athlon 64. Now that Suse and Red Hat have paved the way, Debian looks set to release a version for this CPU.

delivers the goods. In the meantime, the Athlon64 has a high-performance 32 bit emulation mode.

Athlon64 support is no problem for Linux distros – at least in theory – as the kernel has supported the platform for quite a while now. Keeping to the theory, you simply need a 64 bit kernel and a suitable compiler to build your programs. Suse was first to react, winning the race to provide a distribution for AMD64 CPUs with Red Hat hot on its heels.

Library tickets

Of course, the Debian developers will have to look into the possibilities of integrating Athlon64 support in their distribution sooner or later. People started putting on their thinking hats quite a while back, starting up a developer group on Debian's Sourceforge counterpart *alioth.debian.org*. Interestingly, the group chose to call itself Debian x86-64. The name was controversial, as it was simply too long for most developers. At this time of writing, AMD64 seems to be the generally accepted name for the project.

What is far more important than the name discussion is resolving current technical problems. Some people may ask themselves why the AMD64 should be handled in exactly the same way as the Intel 64 bit server architecture, that is, by creating a completely independent architecture branch. It doesn't make much sense to run 32 bit programs on the Itanium, or Itanium II, as the performance is abysmal. This is not true of the AMD64. The integrated 32 bit emulation allows 32 bit applications to run without

impacting performance in any major way.

This will lead to users in many scenarios wanting to run a system based on 64 bit files, while still having the option to run 32 bit programs if and when needed. Unfortunately, the *dpkg* package manager cannot handle this at present. As a result, developers face some non-trivial restructuring.

The Alioth AMD64 project aims to investigate and resolve these issues step by

step. Goswin von Brederlow recently sent a message to the *debian-devel* mailing list [20] suggesting an approach.

In his message, Goswin gives a detailed discussion of the problem. To allow a system to run binaries built for both the i386 and the AMD64 architectures, the major libraries for both architectures need to be available on that system. One way of achieving this would be to distribute the AMD64 libraries in packages of their own, and to unpack the files in directories such as */lib64*. Viewed superficially, this would seem to be a possible answer. A closer look reveals that this method would mean changing more or less every package in the archive (in order to resolve dependency changes).

This is why Goswin suggested a different approach. He would like to modify *dpkg* to allow it to install two different packages with the same name. Also, packages that provide a special ABI, and are thus entirely architecture-dependent, should have an extra line in the *control* file. The line for packages of this type would be *ABI: strict*. Also, developers would need to specify the architecture for which they compiled the package in the *dpkg status* file. Finally, the packages with major libraries would still need to store their files in */lib64*. This would allow for storing two identically named packages on a single system.

Goswin's suggestion provoked a long thread on the *debian-devel* list. Debian's Release Manager, Anthony Towns, warned that this suggestion contravened all the standards that Debian had introduced throughout its development history. Steve Langasek stated that fun-

damental changes of this kind were out of the question before the release of Debian GNU/Linux 3.1, aka Sarge. Goswin had announced that he at least wanted to integrate the *dpkg status* file modifications prior to the Sarge release.

It remains to be seen if Debian will support the AMD64 architecture in the near future. One thing is for sure, Debian can't afford to postpone supporting the new architecture for too long.

That's all folks...

... for this month at least, but we do have one request before we go: If you can recommend a program that you would like to see featured in *Projects on the Move*, why not mail me with your suggestion [21]? I look forward to your comments!

INFO

- [1] VFAT on the iPod: <http://www.formorer.de/~formorer/ipod.html>
- [2] Gtk Pod: <http://gtkpod.sourceforge.net/>
- [3] Gnu Pod: <http://www.gnu.org/software/gnupod/>
- [4] The iPod Linux project: <http://ipodlinux.sourceforge.net/>
- [5] EFNet: <http://www.efnet.org/>
- [6] Undernet: <http://www.undernet.org/>
- [7] DALNet: <http://www.dal.net/>
- [8] IRCNet: <http://www.irc.net/>
- [9] Quakenet: <http://www.quakenet.org/>
- [10] Freenode: <http://freenode.net/>
- [11] Information on IRCd: <http://www.irc.org/techie.html>
- [12] Ircd Hybrid: <http://www.ircd-hybrid.org/>
- [13] Hybserv2: <http://www.2mbit.com/hybserv2/>
- [14] Ircd Ratbox: <http://www.ircd-ratbox.org/>
- [15] Bahamut: <http://bahamut.dal.net/>
- [16] The Undernet Coder Committee: <http://coder-com.undernet.org/>
- [17] The Quakenet Developer Committee: <http://dev-com.quakenet.org/>
- [18] Dancer IRCd: http://freenode.net/dancer_ircd.shtml
- [19] SILCNet: <http://www.silcnet.org/>
- [20] Message from Goswin von Brederlow: <http://lists.debian.org/debian-devel/2004/debian-devel-200401/msg00762.html>
- [21] Tips and suggestions: projects@linux-magazine.com