Getting to know MP3s

MP3 PLAYERS

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Although they are not quite giving media players away with Cornflakes yet, they do appear to be everywhere. Here we will look at just a few to see what features are available.

MPEG Audio Layer 3, a subset of the MPEG standard for A/V storage, is an audio format that produces highly compressed files while sacrificing very little audio quality - the perceived frequency response and signal-to-noise ratio are retained. Essentially, MP3 works by removing inaudible information. Compression ratios of up to 12:1 (for stereo files) can be achieved with very little degradation.

MP3 files are compressed sound files that rely on a Fraunhofer compression routine. This is similar to zipping a sound file but also removes any sound information that could not be heard by the human ear. This greatly reduces the size of file, with a normal stereo CD being some 650MB and 74 minutes, whereas in MP3 format this is usually about 60MB. Mono speech only (such as a radio show) is compressed even further. This means you could make a CD-R of over ten hours of music or put days worth onto your hard drive. The Fraunhofer compression is a proprietary algorithm, which may be charged for in the future. This causes problems to producers of free players and encoders. Currently Fraunhofer does not charge for those players that are given away, but that could always change. For a shocking example of the charging rates visit *http://www.mp3licencing.com*

To overcome this limitation an open source project has produced Ogg Vorbis. The Ogg part is a framework in which streams of data can be presented. One such stream can be audio. The Vorbis part is the audio codec that has been written patent free and released under the LGPL. Ogg Vorbis tracks are currently slightly larger than MP3 as the code is not yet optimised. Listening to a track in MP3 encoding and comparing to an Ogg Vorbis encoded file gives no noticeable difference.

As it currently stands you are more likely to get hold of MP3 files but should aim to take advantage of Ogg Vorbis. With any type of compressed audio file, the drawback is firstly to play the files you need a player and secondly to get the files. To obtain the files you could either download them (from sites such as *http://www.MP3.com*), buy them online, or at a computer show or you could always make your own. Downloading MP3 files on a normal 56K modem is still painfully slow, with a five-minute tune usually taking about half an hour. Buying has the problem that the range is severely limited.

Making your own MP3 file requires encoder software. With Linux we have encoders in the form of BladeEnc, LAME, oggenc and mp3encode. These take the file or files and output the required MP3

format file. On a standard 500MHz machine this usually takes double the time of the track to encode. As these are so time-consuming they are usually console-based, but graphical front-ends (such as Grip) are available.

MP3 players usually support playlists. This means you can create a list of your favourite tunes to play from whichever directories that you've saved the MP3 files in. They can then be saved as a playlist. This has the advantage that you can have collections of themed music set up, depending on your mood, without having to search each directory again.

Streaming is where the audio file is sent out in a continuous stream to be listened to live. For example, a music concert may decide to stream its broadcast so those connected online can listen in real time. If you want to stream data then you need to set up a streaming server (i.e. an Internet audio broadcasting system based on Mpeg audio technology). There are several, such as SHOUTcast and icecast. To receive the streamed data you need a stream compliant player.

[left]
Grip before connecting to a CDDB

[right]
Grip after connecting to a CDDB and retrieving information

Mpg123

Now at version 0.59r from *http://www.mpg123.de/*

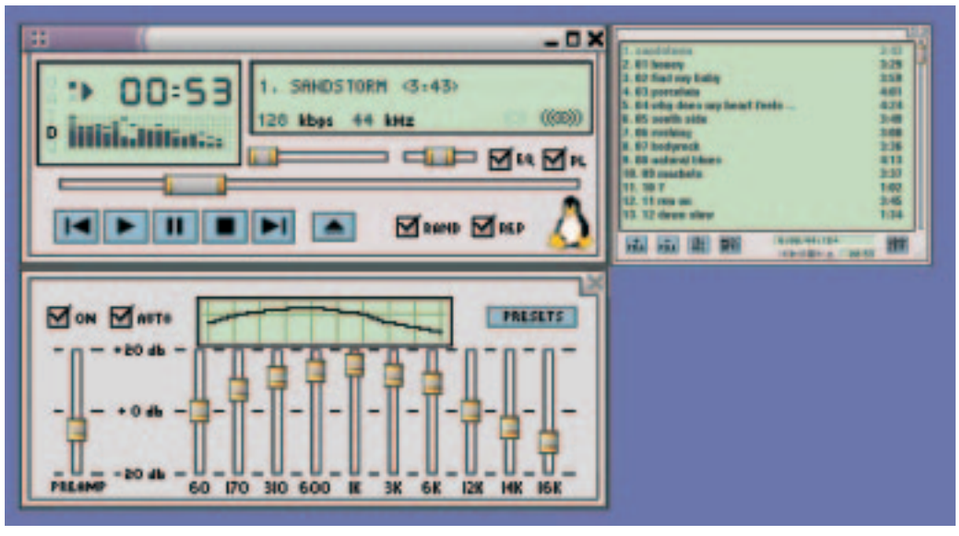
Mpg123 is a real time MPEG Audio Player for Layer 1,2 and Layer3. (MPEG 2.0 with Layer1/2 not heavily tested). It has been tested with Linux, FreeBSD, SunOS4.1.3, Solaris 2.5, HPUX 9.x and SGI Irix. It plays Layer 3 in stereo on an AMD-486-120Mhz or a faster machine. This is the base decoding engine used by many of the following players.

Grip

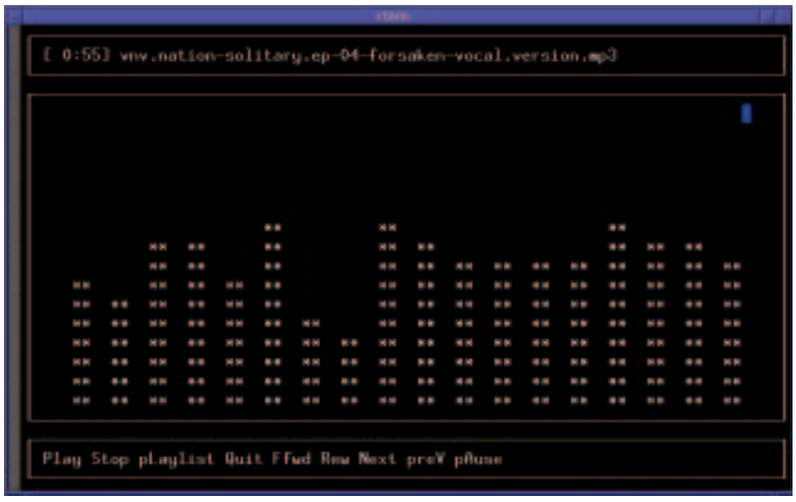
Grip is gtk based and capable of handling all encoders, but also supports ripping and playing of MP3 files. Currently at version 2.95 it is only a 155K download for the rpm. It has the ripping capabilities of cdparanoia built-in, but can also use external rippers (such as cdda2wav). It also provides an automated front-end for MP3 encoders, thus letting you take a disc and transform it easily straight into MP3s.

Grip also can handle CDDB. This is where you decide to rip a CD album, but rather than have to type in all the ID3 information yourself, the system uses the Internet to look it up on a database. If the information is not there then you update the database when you have typed in the ID3 tags on the basis that if everyone does a little then it saves time for everyone. Using this system worked well – finding a popular Moby album instantly, but as expected an obscure album was not present.

The lower part of the Grip screen is the built in player. It also supports DigitalDJ to provide a unified computerised version of your music collection. As well as Grip, there is a CD player only version, called



XMMS with a skin



[top]
Gamp showing you do not need x for fancy graphics

GCD for those who are not interested in track ripping or encoding.

XMMS

XMMS started out as a clone of the popular Windows application WinAmp. It is currently at version 1.2.4 and available from *http://www.xmms.org*

Along with being a player of audio it supports skins and plug-in features. Skins are similar to themes in that they allow you to change the look and feel of the player. This is done by creating bitmap files of what image you require and storing these in the *~/.xmms/Skins* directory. Changing the skin is either done by using the dropdown menu, or pressing Alt+S to bring up a list of those contained in the directory. The bitmaps are WinAmp 2.0 standard skins and can be placed in the directory in their compressed form.

There is a built-in graphic equaliser and either an oscilloscope or spectrum analyser. The volume can be controller with a wheel mouse if required.

However if you are not content with these features then you can use the plug-ins that are available. These are varied, ranging from Input decoders (Ogg Vorbis files are supported) to visualisation add-ons. Again the range for these is huge and includes diverse modules such as a Tux penguin dancing in time or to spectrum analyser effects like a blur scope.

Gamp

If resources are low then Gamp being a console-based player could be the answer. Available from *http://www-users.cs.umn.edu/~wburdick/gamp/*

It is a ncurses mp3 player for Linux. The codec for Gamp is based upon amp by the Croatian Tomislav Uzelac. The ncurses interface gives most of the functionality of an X-based mp3 player without all the bulk, and without requiring X. As can be seen in the figure it includes a spectrum analyser.

GQmpeg

GQmpeg 0.8.1 by the same author as GQview can be downloaded from *http://www.geocities.com/SiliconValley/Haven/5235/mpeg-over.html*

is an X Windows front end to the mpg123 mpeg audio player. Similarly it includes playlist support and playback options. GQmpeg requires mpg123 version .59o for actual playback of mpeg audio files. If you have mpg123 v0.59p or later then streaming inputs are possible. It supports Winamp skins as well as its own custom skins and comes complete with a skin editor.

Kmp3

GQmpeg showing a port of a K-jofol skin.

Kmp3-1.0 released. Kmp3 is a KDE Mp3 player that runs on a number of different Unix systems, including Linux.

The mpeg audio engine is based on mpg123; however, the end result is a player that uses less CPU than the console-only mpg123 on many systems. Sporting an attractive, easy-to-use and full-featured GUI, Kmp3 is suitable for practically anyone. Capable of using both EsounD and ALSA, it can also be run form the command line with

```
kmp3 song1.mp3 ... songN.mp3
kmp3 *.m3u
```

The latter is for playing full playlists.

http://www.kmp3.org/

Kmpg

Similarly to Kmp3, Kmpg is a mp3 player for KDE. Downloadable from *http://www.rhrk.uni-kl.de/~mvogt/linux/kmpg/*

It supports playlists and has a built in mixer for mp3 streams, zipped Winamp skin support. It is also a mpeg video player.

Kmp3 standard player

CDparanoia III 9.7

http://www.xiph.org/paranoia/

CDparanoia is a Compact Disc Digital Audio (CDDA) extraction tool, commonly known on the net as a 'ripper'. The application is built on top of the Paranoia library, which is doing the real work (the Paranoia source is included in the CDparanoia source distribution). Like the original cdda2wav, CDparanoia package reads audio from the CDROM directly as data, with no analog step between, and writes the data to a file or pipe in WAV, AIFC or raw 16 bit linear PCM.

CDparanoia is a bit different from most other CDDA extraction tools. It contains few-to-no 'extra' features, concentrating only on the ripping process and knowing as much as possible about the hardware performing it. CDparanoia will read correct, rock-solid audio data from inexpensive drives prone to misalignment, frame jitter and loss of streaming during atomic reads. CDparanoia will also read and repair data from CDs that have been damaged in some way.

At the same time, however, CDparanoia turns out to be easy to use and administrate; it has no compile time configuration, happily autodetecting the CDROM, its type, its interface and other aspects of the ripping process at runtime. A single binary can serve the diverse hardware of the do-it-yourself computer laboratory from Hell. ■

Kmp3 skin configuration

Kmpg showing a Winamp skin and the default player

Kmpg running a video CD