



Codecs, Plugs and Rock 'n' Roll

by Mark Navin

Since the advent of the gramophone in the late 1800s, the technology used to store and play music has developed at a phenomenal rate. The same goes for moving pictures. After undergoing numerous format changes, the computer and the Internet represent the latest wave in how people buy and play movies and music.

Following on from vinyl, the cassette tape, compact disc and MiniDisc, the MP3 (www.mp3.com) has become *the* format in which to store music. It was developed in 1991 to enable analogue music to be housed digitally. The MPEG format was invented to do the same job for video.

The process of converting analogue pictures or music on DVD or CD to a digital format on a hard drive is called "ripping." The copied data, or "rips" are encoded and compressed to allow for storage. The higher the quality of picture or sound the larger the digital file created. An extremely rough rule of thumb is that one minute of audio requires 1 MB of storage space and one minute of video and audio needs about 10 MB of space. Multimedia companies are forever trying to boost the level of reproduction quality while reducing the size of files. This has resulted in the differing formats that prevail today.

A codec is a device or program used for compressing and decompressing the data to be played by a media player. As

you may have encountered, a video will sometimes play sound without pictures, or vice versa. This usually means that the player does not have the correct codec. In many cases, the media player realizes it is missing a codec and will download the appropriate one from its database on the Internet.

The ability to play music or video on computers is now as commonplace as sending e-mail. While special software is needed to play these media, there are plenty of options available. Microsoft has its ubiquitous Windows Media Player: a free and preinstalled player that can play music and video, providing the file is in the correct format. Apple has QuickTime Player (www.apple.com/quicktime), which also has a Windows version, and media software maker Real Networks produces RealPlayer (www.real.com). These three are currently the most popular.

Although QuickTime and RealPlayer provide free basic versions of their products (users have to pay for the feature-packed "Pro" versions), there is very little compatibility between the players' formats used to store the data. When a file that can be used on a variety of players is introduced, the applications try and take preference over each other. Users are interminably faced with requests to make a particular player the default player.

iTunes, Apple's multifunctional audio player, and iPod, the mobile player and storage device, helped cut the player's digital

umbilical cord to the computer. Not surprisingly, a flood of similar players has hit the market since Apple's initial assault.

Other popular players include WinAmp (www.winamp.com) and DivX Player (www.divx.com). Just as people enjoy customizing their own desktops, the same goes for media players. A customization is called a "skin."

Once the media has been digitally stored on your computer, the next step is to save it to a more permanent media. (Remember, hard drives *do* fail.) The latest storage method of choice is the DVD via a DVD burner. This is replacing the CD-ROM for one simple reason: a DVD can hold more data. A CD-ROM has the storage capacity of around 700 MB; a DVD can hold up to 4.7 GB. Even with the attempts to reduce file sizes, as the display size increases there remains the need for devices with larger storage capabilities. While DVD burning is a relatively new technology with differing standards, it's an effective way to keep those family digital photographs safe. (That's an early gift idea!)

The arrival of the digital media format has opened something of a Pandora's box in terms of copyright issues. Combined with peer-to-peer (P2P) networks, people can access music, video and even software for free over the Internet. The music industry, in particular, has spent considerable sums on litigation fighting the new technology. It has largely been a losing battle and

some common sense has finally prevailed. I say some because the debate on copyright-protecting CDs continues, as does the concept of "regions" for DVDs. In almost all attempts to restrict technology, someone, somewhere will work out how to patch and crack the protection, rendering it meaningless.

Napster (www.napster.com) was one of the first P2P casualties of the legal war. It has since become a legitimate vendor of online music. The P2P concept is still very much alive, however, with such networks as BitTorrent (www.bittorrent.com) and eMule (www.emule-project.net). The usual caveat applies: allow someone to access your hard drive and you have no effective protection against any problems that may occur.

Some famous artists have embraced the new technology and have used it very effectively to promote their products or revive a flagging career via the Internet. Unknown artists have also used the technology to force their way into the mainstream and cut out the music company giants.

There's no doubt that the Internet holds the key to the future of buying music. In a global industry that is worth \$33 billion a year, about 10 million songs were legally downloaded in the first half of 2005 from around 300 online music stores. Although online transactions only made up around five percent of the industry's sales for the same period, that number is bound to increase. □

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