

The Net Effects of MP3

Scott Tilley



Listen closely and you'll hear yet another Net-driven revolution in progress: direct-to-the-consumer digital music. The music is stored in a format called MP3, which provides near-CD quality sound using a fraction of the disk space previously required. As with other phenomena popularized by an energetic Internet community, MP3 is shaking the very foundations of the established industry.

Consumer demand and the open source movement

The Internet's aptitude for dramatically altering existing business models has become readily apparent of late. The open source movement, as exemplified by the Linux operating system and the Apache Web server, is causing a measurable change in the attitudes of established corporations. What is truly amazing is that these changes are being driven by consumer demand for products and services that companies didn't know existed, or are reluctant to pursue.

A prime example of a new market trend that many staid companies are hesitant to embrace is the MP3 music phenomenon. Many people already enjoy streaming audio, such as that provided by Web-casting radio stations in the RealAudio format from RealNetworks, Inc. Now a new technology is taking center stage, a digital audio format called MP3 that provides near-CD quality recording and playback in a highly compressed format.

The effects of Internet-driven, bottom-up events such as MP3 are profound and far-reaching. In this column, I focus on the net effects of MP3 on several entities: the recording industry, the companies providing new media players such as RealPlayer and QuickTime, and users. First, let's look at what makes MP3 unique.

MP3

The sometimes low quality of streaming audio programs, which often sound like distant AM radio broadcasts, has increased interest in several new digital audio standards. MP3 is the most popular digital audio format on the Internet. The term MP3 refers to MPEG 1 layer 3 audio. MPEG stands for Motion Picture Experts Group, an international standards body. MP3 has become very popular because it is a non-proprietary open standard that offers compressed music with near-CD quality sound. It is not streaming, which refers to a transmission format that allows the user to experience audio and video as it is downloaded from a network in real time. But because of the high compression ratios

possible, downloads are not nearly as onerous as they are with other audio formats, such as Windows' WAV files.

Like other digital compression techniques, MP3 uses a "perceptual coding" approach to reduce the size of the music file. It works by identifying portions of the audio that the human ear cannot hear, and removing them from the sample. This allows the MP3 encoder to produce a much more compressed version of the recording, but with sound fidelity nearly indistinguishable from the original.

The degree of compression offered by MP3 is variable; the more compression, the smaller the file size, but the lower the audio quality. However, even at high compression ratios of 18:1, the resultant audio file produces sound that is comparable to a CD. A four-minute song on a CD takes about 40 megabytes of storage. When converted to MP3, the file is about 2.6 megabytes. At a less aggressive 12:1 compression ratio, which is true CD quality, the MP3 file takes about 4 megabytes.

The effects on the recording industry

The group with perhaps the most to lose from the propagation of MP3 music is the established recording industry. One of the reasons the MP3 format is such a worry to the industry is the proliferation of pirated music on the Internet, seemingly free for the downloading. Digital copies can be made with no loss of fidelity and most MP3 players do not provide any copyright-protection mechanisms.

Recording companies fear this will cause people to download music without paying royalties, thereby undercutting their entire business model. However, similar concerns were voiced when the tape recorder and the VCR initially appeared. Since their introduction, music sales and video sales and rentals have grown tremendously.

Nevertheless, the Internet-oriented nature of the MP3 format may make the current situation a little different from what occurred with the tape recorder or the VCR. For example, unsigned artists are setting up their own e-commerce Web sites and offering their music for a small fee, bypassing the traditional recording industry's established methods for distributing artists' work. As with all revolutions, such dramatic changes tend to make some people very nervous—especially those with a stake in maintaining the status quo.

The effects on new media players

There is little doubt that MP3 has the potential to greatly affect the established recording industry. But what about the effects on the so-called "new media" establishment?

Internet-oriented products like RealNetworks' RealPlayer, Microsoft's Media Player, and Apple Computer's QuickTime all provide recording and playback of digital audio and video. They have all added support for MP3 to their products, and have been quicker to react to the MP3 phenomenon than the old-guard recording industry has, but that may be because they don't have as much to lose.

In the streaming media arena, there are several competing formats vying for dominance. RealNetworks is the undisputed leader in streaming-media technology from a market-share perspective. Its free RealPlayer program is installed on most personal computers, allowing people to experience Web-casting radio stations and live video feeds. As with most things Internet, the technology is evolving so rapidly that consumers and companies can barely keep up. For example, Microsoft released its new MS Audio 4 suite a few weeks ago. Apple Computer released QuickTime 4, a streaming version of its popular movie player at about the same time. Technology discussions aside, neither of these two alternatives has had nearly the impact as RealPlayer.

However, RealNetworks' focus has so far been on streaming media, which has the advantage of supporting live broadcasts, but the disadvantage of suffering from the vagaries of the Internet. For example, it must compensate for lost packets and network outages.

Consumer demand for MP3 has forced RealNetworks, Microsoft, and Apple to adapt their media players to support MP3 in addition to their proprietary formats. It is clear that they too are being affected by the encroachment of MP3 on their products.

The effects on users

As I type this, I am using a free MP3 player to listen to music that I "ripped" from my own CD collection. The sound quality is such that most people would not know that the source is my hard drive, not the CD player. I've tried several different programs for encoding and playing MP3 files. Most of them are a little rough around the edges, but RealNetworks' recently released RealJukebox product may change that by bringing MP3 to the masses.

Perhaps more significantly, the recent introduction of the Rio portable MP3 player from Diamond Multimedia Systems has caused quite a stir. Weighing just over two ounces, the Rio holds about one hour's worth of near-CD quality music. It has no moving parts, lasts twelve hours on a single AA battery, and connects to your computer to download MP3-encoded music using a simple cable. It also has an expansion slot that accepts flash memory cards, the type used in digital cameras, to hold more music.

Diamond is not the only manufacturer of players that is hopping onto the MP3 bandwagon. Samsung, Creative Labs, and Thomson Multimedia are just three consumer electronics companies with MP3 players in the pipeline. Creative shipped its Nomad product this month, and Thomson plans to ship its Lyra product later this summer. All are second-generation MP3 players that include enhancements such as voice recording, FM radio reception, and support for other digital audio formats.

How will this digital downloading affect the current preferred music format, the compact disc? It might be wise to consider the fate of the phonographic record player, which is all but extinct. In this net-centric music scenario, CDs are anachronisms. Why have CDs at all, when the music can be downloaded in digital format directly from the Internet?

Does this mean you have to junk your CD collection and start investing in memory cards instead? Not entirely. But the adoption of MP3, or even better compression formats to come, will affect how you experience music in the future. It may very well be that all music becomes digital, downloaded, and dramatically better. The net effects of MP3 on users will be positive and beneficial.

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