

Digital Sound Format

Chris Valenzuela

Mr. Goldstone

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Digital Sound Formats

Windows-compatible personal computers (PCs) generally did not offer sound capabilities in the early 1990s. To play sound, users could purchase and install a sound card and speakers.

Add the proper software, and the computer could then play sounds.

In most cases, the software only provided the capability to play back sound in the .WAV, MIDI, and CD audio formats. Today, sound cards, speakers, and software come standard on most PCs, including notebooks.

SOUND FORMATS

Sound formats have proliferated as well, as the technology industry searches for a format that's efficient to transfer over the Internet. While .WAV, MIDI, and CD audio have been commonplace for years, sound files in these formats can be rather large. For example, a single minute of music can take 10M (10 megabytes) of space or more. While it is possible to download such a large file from a location on the Internet, downloading such large files generally takes too much time to be practical. A number of software companies have worked for years to create a more compact digital sound format.

MPEG

MPEG layer 3—or MP3, for short—finally offers the promise of Internet- and PC-friendly sound. MP3 compression squeezes audio files by 11-to-1, so a three-minute song that previously occupied 33M only uses about 3M in the MP3 format.

Songs in the MP3 format sound just as great as CD-quality sound files in other formats.

The MP3 format achieves this blend of small size and high quality by leaving out sounds that humans can't actually hear. This includes sounds in very high and low frequencies, as well as quieter frequencies hidden by louder frequencies in the song.

¹MP3 is a new technology using MPEG compression, shrinking down data by a factor of 12 and still retaining CD-like quality. Factors of up to 24 and more still allow for a quality significantly better than just reducing linearly the sampling frequency and the number of bits. This is realized by "perceptual coding" techniques taking into account the limited resolution of the human ear. Maybe you already heard about MP3. As interest in audio over the Internet increased, MPEG Layer-3 files, music files that are capable of storing long audio tracks with CD quality sound in a fraction of the space, appeared. With this ease of piracy, it's a shock to the entire music industry.

MP3 Legal information - MP3s can be owned legally, providing the following: you encode songs off of your own CDs and keep them for yourself, obtain written permission from the copyright holder of the music, or the music is available with the copyright owner's consent. It is illegal to encode MP3 files and share them with any other entity unless you have written permission of the copyright holder of the music. It is also illegal to download any songs or music off of the Internet for CDs you do not have in your own possession and rightfully own or have no copyright holders consent.

¹<<http://www.computerhope.com/mp3.htm>>March 4, 2008

ADVANTAGES

Here are a few of the advantages the MP3 format offers:

1. Songs download faster.
2. You can purchase and download a single song for about a dollar rather than downloading and buying an entire CD.
3. You can create your own CD-Recordable (CD-R) full of favorites.
4. Downloaded songs can be stored indefinitely on a hard disk, Zip disk, or CD-R disk.
5. You can buy a special player to play the downloaded songs independent of your computer.

DISADVANTAGES

Before you begin purchasing MP3 software or downloading songs, you should understand these drawbacks and controversies:

Recording companies have expressed concerns that MP3 encourages piracy (illegal copying). Software for converting CD-audio songs to MP3 doesn't cost much and the process doesn't take long.

- If a song becomes corrupted, you have to download and purchase it again.
- Existing audio CD players cannot play the MP3 format.
- The sound quality for MP3 files differs slightly from the original CD-quality sound.

NEWEST TRENDS

²The good: The iPod Nano has a gorgeous, super slim design with a bright, photo-friendly screen. It is easy to operate and works seamlessly with iTunes and the iTunes Music Store, which has the world's largest selection of music. It boasts a nimble processor and system performance



with no skipping, thanks to flash memory.

The bad: The iPod Nano suffers from unspectacular battery life, and though the device is durable, it scratches easily; blemishes show up more drastically on the black version.

The Nano is pricey in terms of gigabytes per dollar, and its 4GB maximum capacity is not a good fit for many power users. The player skips many sought-after extra features such as FM radio and A/V-out, and it doesn't work with Camera Connector. The USB power adapter (\$29) is not included.

The bottom line: Thanks to its limited capacity, the gorgeous iPod Nano isn't for everybody, but it sets the standard for MP3 players to come.

²< http://reviews.cnet.com/mp3-players/apple-ipod-nano-4gb/4505-6490_7-31515637.html>

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