

# DIGITAL SOUND FORMAT

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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.

## **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

iPod® is a brand of portable media players designed and marketed by Apple and launched on October 23, 2001. The line-up currently consists of the hard drive-based iPod classic, the touchscreen iPod touch, the video-capable iPod nano, and the screenless iPod shuffle. Former products include the compact iPod mini (replaced by the iPod nano) and the spin-off iPod photo (re-integrated into the main iPod classic line). iPod classic models store media on an internal hard drive, while all other models use flash memory to enable their smaller size (the discontinued mini used a Microdrive miniature hard drive). As with many other digital music players, iPods, excluding the iPod Touch, can also serve as external data storage devices.

Apple's iTunes software is used to transfer music to the devices. As a jukebox application, iTunes stores a music library on the user's computer and can play, burn, and rip music from a



CD. It also transfers photos, videos, games, and calendars to those iPod models that support them. Apple focused its development on the iPod's unique user interface and its ease of use, rather than on technical capability. As of October 2007, the iPod had sold over 141

million units worldwide (stated in "The Beat Goes On" conference) making it the best-selling digital audio player series in history.<sup>1</sup>

<sup>1</sup> <<http://en.wikipedia.org/wiki/iPod>>march 04, 2008

MPEG-1 Audio Layer 3, more commonly referred to as MP3, is a digital audio encoding format using a form of lossy data compression.

This encoding format is used to create the MP3's small file, as a way to store a single segment of audio, commonly a song, such that the file can be easily organized and transferred between computers or other devices such as MP3 players.

MP3's use of a lossy compression algorithm is designed to greatly reduce the amount of data required to represent the audio recording and still sound like a faithful reproduction of the original uncompressed audio for some listeners, but is not considered High Fidelity audio by the elite connoisseur. An MP3 file that is created using the mid-range bitrate setting of 128 kbit/s will result in a file that is typically about 1/10th the size of the CD file created from the original audio source. An MP3 file can also be constructed at higher or lower bitrates, with higher or lower resulting quality.

MP3 is an audio-specific format. It was invented by a team of international engineers at Philips, CCETT (Centre commun d'études de télévision et télécommunications), IRT, AT&T-Bell Labs and Fraunhofer Society, and it became an ISO/IEC standard in 1991. The compression works by reducing accuracy of certain parts of sound that are deemed beyond the auditory resolution ability of most people. This method is commonly referred to as Perceptual Coding. [1]

It provides a representation of sound within a short term time/frequency analysis window, by using psychoacoustic models to discard or reduce precision of components less audible to human

hearing, and recording the remaining information in an efficient manner. This is relatively similar to the principles used by, say, JPEG, an image compression format.<sup>2</sup>

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<sup>2</sup> <<http://en.wikipedia.org/wiki/MP3>> March 04, 2008