Digital audio player

A digital audio player (DAP) is a device that stores, organizes and plays digital music files. It is more commonly referred to as an MP3 player (because of the MP3 format's ubiquity), but DAPs often play many additional file formats. There are three main types of digital audio players:

**Flash-based Players** - These are solid state devices that hold digital audio files on internal or external media, such as memory cards. Due to technological limitations, these are relatively low-storage devices, commercially ranging from 128MB to 8GB, such as the 2nd generation iPod nano and the iriver clix, which can often be extended with additional memory. As they are solid state and do not have moving parts, they are very resilient. In effect, they do not suffer limitations that owners of Hard Drive-based players face, such as fears of dropping their player or fragmentation.

**Hard Drive-based Players or Digital Jukeboxes** - Devices that read digital audio files from a hard drive. These players have higher capacities, ranging from 1.5GB to 160GB, depending on the hard drive technology. At typical encoding rates, this means that thousands of songs — perhaps an entire music collection — can be stored in one MP3 player. Because of the storage capacity, devices that also display video and pictures are often hard-drive based. The Apple iPod, Creative Zen and Microsoft Zune are examples of popular digital jukeboxes.

**MP3 CD Players** - Devices that play CDs. This includes both audio CDs and home-made data CDs containing MP3 or other digital audio files.

**History**

The precursors to DAPs were portable CD players and MiniDisc players (neither being generally considered a "digital audio player"). Non-mechanical DAPs were introduced following the popularity of the precursors.

When in the year 2000 USB became more common, most players adopted the USB standard.

By the end of 1999, Compaq made a significant improvement in DAPs' space limitations by using a laptop hard drive for song storage rather than low-capacity flash memory. The Personal Jukebox (PJB-100), had 4.8GB of storage space, which held about 1200 songs or 100 CDs.

The arrival of Apple Computer's iPod in 2001, combined with the opening of the iTunes Store in 2003 that created the legal music download business, greatly expanded the market.

In 2004, Microsoft introduced their Digital Rights Management (DRM) technology under the PlaysForSure brand. This technology allows consumers to rent music from subscription music services such as Napster, Rhapsody, and Yahoo Music Unlimited and transfer it to their compatible digital audio players.

In 2006, MSI developed and showcased the first solar powered player, the *MSI MEGA 540*, at CeBIT in Hanover, Germany.\[^2\]
Equipment

Generally speaking, digital audio players are portable and use headphones, although users often connect players to car and home stereos. Some DAPs also include FM radio tuners and/or microphones for voice recording. Many players can encode audio directly to MP3 or other digital audio formats directly from a line in audio signal. Most have semi-permanent rechargeable batteries while others have conventional battery bays for disposable or rechargeable batteries.

Some players incorporate a dock connector that allows them to slot into accessories such as chargers, speakers, or car and home stereos.

While early players tended to use flash memory, the development of tiny hard-disk drives of typically 10 to 40 Gbyte capacity made it possible to save entire music collections onto a digital audio player at reasonable cost. In 2006 the cost of external flash cards dropped sharply, largely because of the increasing popularity of the digital cameras, and this has made the use of external flash cards a more attractive option in music players.

The use of external flash cards makes it possible in principle to move collections of music between personal players, portable players with speakers, home audio systems, and car players, though in practice car and home players that will handle MP3 files and folders properly, with tracks, albums and playlists selectable, are hard to find.

Flash digital audio players have even been incorporated into sunglasses, as demonstrated by the Oakley's "thump" model in 2004.

A new type of digital audio player has emerged as a result of satellite radio companies' push into popular markets in the North America (XM Radio [1] and Sirius). These devices are linked to the paid subscriber's account in that the players record a certain number of programs, like a TiVo, and allows the user to listen to pre-recorded programs, often popular songs or talk shows, while on the run. This has caused the music industry to be concerned about the high-fidelity music becoming pirated secondary to the ease of recording.

Major brands

Apple iPod
Archos
Cowon
Creative NOMAD, Zen, and MuVo
LG
Microsoft Zune
Philips GoGear
RCA Lyra
Samsung Yepp
Sandisk Sansa
Sony Walkman, PlayStation Portable
Toshiba Gigabeat

Most modern digital audio players, like the recent Creative Zen players, the Microsoft Zune or the fifth-generation Apple iPod, are technically Portable Media Players.