

Glossary of Common Digital Media Formats

Format name: JPEG

Details:

JPEG is a commonly used method of "lossy" compression for digital photography images. The degree of compression can be adjusted, allowing a selectable trade-off between storage size and image quality. JPEG typically achieves 10:1 compression with little perceptible loss in image quality, and is the file type most often produced in digital photography or computer generated images.

The term "JPEG" is an acronym for the Joint Photographic Experts Group, which created the standard. The MIME media type for JPEG is *image/jpeg*, except in Internet Explorer, which provides a MIME type of *image/pjpeg* when uploading JPEG images.

JPEG/JFIF supports a maximum image size of 65535×65535 pixels

Uses:

JPEG compression is used in a number of image file formats. JPEG/Exif is the most common image format used by digital cameras and other photographic image capture devices; along with JPEG/JFIF, it is the most common format for storing and transmitting photographic images on the World Wide Web. These format variations are often not distinguished, and are simply called JPEG.

usage: as JPEG files are so ubiquitous. almost any website will have JPEG examples. Here are a couple of links to Artists that use JPEG images either in their creative practices or to document their creative practices:

<http://society6.com/Meomi>

http://www.roslynxley9.com.au/artists/13/Dale_Frank/

Pros & Cons:

Pro - low storage size: JPEG images are extremely prevalent on the Internet because of their ability to compress images to a small size. This means rapid download, which is an advantage.

Con - loss of image quality: the main problem with the JPEG format is the "lossy" compression can cause degradation of the image where parts of the image appear pixelated or blocky and patchy due to the loss of information during compression. Once information has been lost, it cannot be restored, so it is necessary to save the original high quality image before compressing into JPEG format.

Format Name TIFF

Details TIFF is, in principle, a very flexible format that can be lossless or lossy. The details of the image storage algorithm are included as part of the file. In practice, TIFF is used almost exclusively as a lossless image storage format that uses no compression at all. Most graphics programs that use TIFF do not compression. Consequently, file sizes are quite big. (Sometimes a lossless compression algorithm called LZW is used, but it is not universally supported.)

Example (uncompressed)

<http://users.wfu.edu/matthews/misc/graphics/formats/uncompr.tif>

This is usually the best quality output from a digital camera. Digital cameras often offer around three JPG quality settings plus TIFF. Since JPG always means at least some loss of quality, TIFF means better quality. However, the file size is huge compared to even the best JPG setting, and the advantages may not be noticeable.

A more important use of TIFF is as the working storage format as you edit and manipulate digital images. You do not want to go through several load, edit, save cycles with JPG storage, as the degradation accumulates with each new save. One or two JPG saves at high quality may not be noticeable, but the tenth certainly will be. TIFF is lossless, so there is no degradation associated with saving a TIFF file.

Do NOT use TIFF for web images. They produce big files, and more importantly, most web browsers will not display TIFFs.

Copied from: <http://users.wfu.edu/matthews/misc/graphics/formats/formats.html>

Format Name : PNG

Details : PNG is also a lossless storage format. However, in contrast with common TIFF usage, it looks for patterns in the image that it can use to compress file size. The compression is exactly reversible, so the image is recovered exactly.

Example: <http://users.wfu.edu/matthews/misc/graphics/formats/png.png>

PNG is of principal value in two applications:

1. If you have an image with large areas of exactly uniform color, but contains more than 256 colors, PNG is your choice. Its strategy is similar to that of GIF, but it supports 16 million colors, not just 256.
2. If you want to display a photograph *exactly* without loss on the web, PNG is your choice. Later generation web browsers support PNG, and PNG is the only lossless format that web browsers support.

PNG is superior to GIF. It produces smaller files and allows more colors. PNG also supports *partial transparency*. Partial transparency can be used for many useful purposes, such as fades and antialiasing of text. Unfortunately, Microsoft's Internet Explorer does not properly support PNG transparency, so for now web authors must avoid using transparency in PNG images.

Copied from: <http://users.wfu.edu/matthews/misc/graphics/formats/formats.html>

Format Name: GIF

Details: GIF creates a table of up to 256 colors from a pool of 16 million. If the image has fewer than 256 colors, GIF can render the image exactly. When the image contains many colors, software that creates the GIF uses any of several algorithms to approximate the colors in the image with the limited palette of 256 colors available. Better algorithms search the image to find an optimum set of 256 colors. Sometimes GIF uses the nearest color to represent each pixel, and sometimes it uses "error diffusion" to adjust the color of nearby pixels to correct for the error in each pixel.

GIF achieves compression in two ways. First, it reduces the number of colors of color-rich images, thereby reducing the number of bits needed per pixel, as just described. Second, it replaces commonly occurring patterns (especially large areas of uniform color) with a short abbreviation: instead of storing "white, white, white, white, white," it stores "5 white."

Thus, GIF is "lossless" only for images with 256 colors or less. For a rich, true color image, GIF may "lose" 99.998% of the colors.

Example: <http://users.wfu.edu/matthews/misc/graphics/formats/optmedcut.gif>

If your image has fewer than 256 colors and contains large areas of uniform color, GIF is your choice. The files will be small yet perfect. Here is an example of



an image well-suited for GIF:

Do NOT use GIF for photographic images, since it can contain only 256 colors per image.

Copied from: <http://users.wfu.edu/matthews/misc/graphics/formats/formats.html>

Audio Files

File Name: MP3

Details: [MP3](#) is the name of the file extension and also the name of the type of file for [MPEG](#), audio layer 3. Layer 3 is one of three coding schemes (layer 1, layer 2 and layer 3) for the compression of audio signals. Layer 3 uses perceptual audio coding and psychoacoustic compression to remove all superfluous information (more specifically, the redundant and irrelevant parts of a sound signal. The stuff the human ear doesn't hear anyway). It also adds a MDCT (Modified Discrete Cosine Transform) that implements a filter bank, increasing the frequency resolution 18 times higher than that of layer 2. The result in real terms is layer 3 shrinks the original sound data from a CD (with a bit rate of 1411.2 kilobits per one second of stereo music) by a factor of 12 (down to 112-128kbps) without sacrificing sound quality.

Example:

Copied from:

http://www.webopedia.com/DidYouKnow/Computer_Science/2005/digital_audio_formats.asp

Example; <http://mp3skull.com/mp3/example.html>

File Name: WMA

Details: Window Media Audio. WMA was developed by Microsoft as a competitor to MP3 files and is a lossless compressed audio format.

Copied from:

<http://stereos.about.com/od/portableandpersonalaudio/f/audiofiles.htm>

Example; <http://mp3skull.com/mp3/example.html>

File Name: FLAC

Details: **FLAC (Free Lossless Audio Codec)**. Like Apple Lossless Compression, FLAC employs "lossless" compression, which reduces the stored music file's size, but then restores the data package bit-for-bit identical to the original music file on playback. It supports high-resolution audio with greater bit depths and sample rates and also supports metadata tagging and will retain metadata when the files are backed up. In spite of the fact that FLAC is an extremely common and accepted format, it is not supported by iTunes. This means you can't rip, store or play back FLAC music files using iTunes. A variety

of programs are available for converting FLAC files to iTunes- compatible file formats such as Apple Lossless, AIFF, WAV, MP3 or AAC, including Max (sbooth.org/max), Fluke (macupdate.com/app/mac/28768/fluke), or DB Power Amp (dbpoweramp.com/dmc.htm).

Be aware that FLAC files are high quality files and that converting them to MP3 or AAC will permanently delete much of the data from the original music files. To maintain the integrity of FLAC files it is important that they are converted to a lossless or uncompressed file format such as Apple Lossless, AIFF or WAV. This is not only recommended but essential!

Copied from: http://www.audioquest.com/audio_file_formats/

Example; <http://www.2l.no/hires/>

File Name: WAV

Details: WAV is a music file format capable of storing Linear PCM audio (the digital encoding format used on compact discs) in completely uncompressed form. Ripping a CD and storing it as an uncompressed WAV results in “bit perfect” storage; the ripped music file is identical to the original CD data package. WAV files can also store high-resolution music files at greater bit depths and sampling rates than CD’s 16-bit/44.1kHz resolution. Uncompressed WAV files can be ripped and played back in iTunes and are very high quality. However, they do take up more hard drive storage space than AAC, MP3, or Apple Lossless. WAV files have one notable limitation- they do not support attached metadata tagging. Things like album art, song titles and other convenience features that enhance music library management and playback will be lost in subsequent generations (backups).

If you have already ripped your music as WAV files you can convert them to AIFF using iTunes. This is easy to do. Simply highlight all the WAV files you wish to convert and then use the “Advanced” drop down menu from the iTunes nav bar and select “Convert to AIFF.” Be certain that you have enough available hard drive space as this will temporarily double the amount of storage occupied by the music files you’ve chosen to convert. Once iTunes has completed the WAV to AIFF conversion you can delete the WAV files. Note that for high-resolution files we recommend using Max or some other aftermarket file converter. iTunes will not convert high-resolution files at full sample rate. Converting outside of iTunes will lose the attached metadata for the files, but that inconvenience is outweighed by the loss of sound quality that would result in decreasing the sample rate using iTunes’ integral WAV-AIFF conversion.

Copied from: http://www.audioquest.com/audio_file_formats/

Example;

<http://www.mybloodyvalentine.org/Musicdetail.aspx?rid=599&fid=20&brid=5&ract>
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File Name: AIFF (Audio Interchange File Format)

Details: AIFF is similar to WAV. This music file format is capable of storing uncompressed Linear PCM audio. Ripping a CD and storing it as uncompressed AIFF results in “bit perfect” storage with the ripped music file identical to the original data on the CD. Like WAV files, AIFF files can also store high-resolution music files at high bit depths and sampling rates. AIFF files can be created and played back in iTunes on Mac OSX and Windows XP/Vista/7 and are very high quality. But they, too, require more hard drive storage space. AIFF files support

permanent metadata tagging, like album art, song titles and other convenience features that enhance music library management and playback. Backups of AIFF music files will retain all of the metadata making AIFF the best all around choice for performance and convenience.

Storing your digital music files in lossless or uncompressed form doesn't mean you have to reduce the amount of music stored on your iPod, iPhone or mobile device. iTunes allows users to convert higher data rate music files to 128kbps AAC on the fly as the music is sync'd to the mobile device in question. There is no need to maintain separate high- and low- bitrate libraries.

Copied from: http://www.audioquest.com/audio_file_formats/

Example; <http://tobiah.org/pub/aiff/>

Video/Multimedia Files

File Name: MP4

Details: MP4 is a video format mainly used by camcorders and cameras that is gaining popularity. The quality of a video coded using .MP4 is very high and the file size relatively small. .MP4 standard is becoming more popular than .FLV for online video sharing, as it compatible with both online and mobile browsers and also supported by the new HTML5.

Copied from

<http://www.webnethosting.net/the-different-types-of-video-file-formats-on-the-internet/#sthash.776tbE4j.dpuf>

Example; <http://www.longtailvideo.com/support/jw-player/29234/basic-mp4-video/>

File name: mov

mov, .MooV, .qt

Any of these file extensions means that the file is an Apple Quicktime movie. Applications that can view QuickTime video include: Simple Text, WordPerfect, and Microsoft Word. Flattened QuickTime video clips can be viewed on Unix workstations with xanim and on IBM-compatible personal computers with Media Player.

Copied from <http://library.rice.edu/services/dmc/guides/animation/multimedia-file-formats>

Example; <http://support.apple.com/kb/HT1425>

.avi

AVI is a file format developed by Microsoft and primarily used in Windows. AVIs are compressed movies that can be viewed in Windows environments with Media Player and on Unix workstations with xanim.

Copied from <http://library.rice.edu/services/dmc/guides/animation/multimedia-file-formats>

Example; <http://www.mysticfractal.com/video/fp.avi>

.mpg, .mpeg

MPEG files use the MPEG-1 video compression routine, a universal protocol for creating and displaying time coded data created by the Motion Picture Experts Group. MPEG video clips can be viewed with **mpeg_play** on Unix workstations,

Sparkle on Macintoshes, and MPEG_PLAY on IBM-compatible personal computers.

Copied from <http://library.rice.edu/services/dmc/guides/animation/multimedia-file-formats>

The Document

When it comes to word processors, it's a bit baffling that so many programs can't read each other's simple text. They are just letters of the alphabet after all, right? Any five year old can read the alphabet, so why can't my computer? These are common document file types along with the programs that can read them:

DOC, Microsoft Document: used by Microsoft Word 2003. By far the most common and widely used document type, any word processor should be able to read a DOC.

DOCX, Microsoft Document 2007: similar to the DOC, but uses updated coding to accommodate new features included in Microsoft Word 2007. Microsoft Word 2007 and Corel WordPerfect will have no problem with DOCX.

TXT, text file: plain text file [easily](#) read by any word processor.

RTF, Rich Text Format: originally developed to preserve formatting such as indentations, spacing, italics, etc. Works with all word processors.

PDF, Portable Document Format: Adobe created the PDF as an image based alternative to other document types. To read a PDF, you need to download the Adobe PDF Reader—it's free online.

ODT, OpenDocument Text: Document that requires the open source and free office suite, OpenOffice.

WPD, WordPerfect Document: Corel's standard document type. Requires Corel WordPerfect.

Copied from <http://office-software-review.toptenreviews.com/home-office/common-office-file-formats-and-extensions-explained.html>

The IPA file type is primarily associated with 'iPhone/iPod Touch' by Apple Inc.. This extension is used for applications on iPhone and iPod Touch devices downloaded from the iTunes App Store. It is basically a ZIP container.

Copied from <http://filext.com/file-extension/IPA>

App File

Files that contain the .app file extension are executable application program files that are run on the Mac OS X operating system. The APP file format is similar to the Windows EXE file format, but it is used on Mac computers instead of Windows-run computers.

The .app file extension is also used by the Alphacam CAD/CAM computer aided drafting software program. This CAD application is used for the Woodworking industry and it is often used in the design and manufacturing of various furniture components. The .app files used by this software store the designs that are created by the software.

Copied from <http://file.org/extension/app#>

The XAP file type is primarily associated with 'Silverlight' by Microsoft Corporation. Microsoft Silverlight is a cross-browser, cross-platform, and cross-device plug-in for delivering interactive applications for the Web. Generally, the XAP file is a ZIP archive.

Copied from <http://filext.com/file-extension/XAP>

Example; <https://itunes.apple.com/us/app/impossible/id297652486>