

## Drag and Drop

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Drag-and-drop is the process of moving files by pointing with the mouse, clicking the left mouse button, and "dragging" to the desired location. In ThumbsPlus, you can use this method to move or copy graphics files.

## Aspect Ratio

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The relation between the height and width of an image. For example, a square has an aspect ratio of 1-to-1 (the height is the same as the width).

## Pixel

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A pixel is a dot in a raster image, or [bitmap](#). Depending on the color resolution, a pixel takes from 1 to 24 bits to represent in memory and on disk. Therefore, an uncompressed bitmap which is 100 pixels wide by 100 pixels high can require from 10,000 to 240,000 bits (1250 to 30,000 bytes).

## Metafile

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A metafile is a stored sequence of drawing commands which the computer can repeat to generate an image. Like [vector](#) graphics, metafiles can contain simple drawing commands (such as *line*, *rectangle*, *circle*, *arc*, *polygon*); they may also contain commands to set colors, fill areas, display text. Unlike vector graphics, metafiles can include [bitmaps](#). Thus, metafiles are much more flexible than bitmaps, but they are more difficult for programmers to support and usually slower to display.

## Grayscale

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A grayscale image contains various levels of gray. At its simplest form (two levels of gray -- black and white), this is a [bi-level](#) image. Usually, grayscale images contain from 4 to 256 levels of gray, though some file formats (notably [TIFF](#)) can store as many as 65,536 levels of gray per [pixel](#).

## Monochrome

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This term is sometimes used to refer to a [bi-level](#) graphic; other times it refers to a single-channel [grayscale](#) image. In ThumbsPlus, it is used as a synonym for bi-level.

## Bi-level

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Of two intensities (generally black and white). Bi-level graphics are sometimes referred to as [monochrome](#) or black and white, but either of these terms can be misleading, as each sometimes refers to single-channel color, which can be [grayscale](#). Bi-level is a much less ambiguous description of a one-bit-per-[pixel bitmap](#).

## Bitmap

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A bitmap (also known as *raster graphic*) is a graphics image composed of small dots ([pixels](#)). These dots can be simple on-or-off bits (a [bi-level](#) bitmap), or represent colors. Windows supports four levels of raster images: bi-level (1 bit per pixel), 16-color (4 bits per pixel), 256-color (8 bits per color), or 16 million color (24 bits per pixel, also known as [Truecolor](#)). Raster graphics do not generally scale to larger sizes very well; the dots become squares or rectangles and the image appears grainy. Also, raster images use lots of disk space and memory. However, they generally display faster than [metafile](#) or vector graphics and can show much more true-to-life detail than vector graphics. Scanned images, such as CompuServe [GIF](#) files, are raster images.



## Autocrop

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A method to automatically remove same-colored borders from an image. In ThumbsPlus, this may be accomplished using the [Edit - Autocrop](#) menu option, or in batch mode from the [Miscellaneous Batch Operations](#) dialog box.

## Color Depth

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For images, Color Depth refers to the amount of information required to specify the color or level of a pixel. Here are some common depths (in bits), and corresponding common names for them:

1-bit	<a href="#"><u>Bi-level</u></a>	<a href="#"><u>Monochrome</u></a>
4-bit	<a href="#"><u>Indexed color</u></a>	<a href="#"><u>Grayscale</u></a>
8-bit	<a href="#"><u>Indexed color</u></a>	<a href="#"><u>Grayscale</u></a>
24-bit	<a href="#"><u>Truecolor</u></a>	<a href="#"><u>RGB</u></a>
32-bit	<a href="#"><u>CMYK</u></a>	RGBA
48-bit	<a href="#"><u>Truecolor</u></a>	<a href="#"><u>RGB</u></a>

## Crop

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Cropping an image involves selecting an area and removing the rest. ThumbsPlus can crop manually (where you select the crop area) from the [View Window](#); ThumbsPlus can also [autocrop](#), removing unnecessary space from around an image. You can control when ThumbsPlus does this automatic cropping from the [General Options](#) dialog box.

## Color Quantization

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Color quantization is the process of finding the best set of colors ([palette](#)) for representing an image. Two methods are provided in ThumbsPlus - *median cut*, which does a very good job for real-world (scanned or photographed images), and *popularity*, which does well for drawn images.

The popularity method simply picks the  $n$  colors used the most in the image; this tends to leave out colors for highlights in photographs, which are important even though not the most popular.

The median cut method assigns all available colors to boxes, then splits the boxes to determine a representative set of colors. There are three median cut options in ThumbsPlus: 5-bit, 6-bit and 8-bit. The more bits available for each color component, the more memory and time required to quantize, and the better color matches that are obtained.

## Gamma

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Generally, gamma correction is a process to make pictures appear more accurately on a specific monitor. Differences in color value do not exactly map to changes in brightness on the screen; the gamma value defines a curve which specifies the way a monitor displays specific color values. The [Monitor Gamma](#) dialog box helps you find the appropriate gamma value for your monitor.

The other piece of the equation is figuring out the corrected gamma value to which an individual picture was adjusted. The CompuServe GIF definition specifies that GIFs should be adjusted for a gamma value of 2.0 -- you can set the "[assumed gamma](#)" for any picture, or set the default for any file type.

Generally, if pictures appear dark and have little detail in the shadow regions, they're probably linear (gamma = 1.0). Try setting your monitor gamma to an appropriate value, and the assumed gamma to 1.0.

**Note:** If either the assumed gamma or the monitor gamma is zero, ThumbsPlus will not gamma correct the image for display.

## Desktop

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The window that acts as the background for all windows in Windows 3.1. Other windowing systems generally call this the root window. Icons appear at the bottom of the desktop window.

[Wallpaper](#) appears on the desktop.

## Palette

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A color palette is much like an artist's palette -- it's the selected color values that are used to represent an image. 24-bit ([truecolor](#)) images don't have a palette; each [pixel](#) includes the color information in it. When reducing a 24-bit image to an 8-bit or 4-bit image, you'll need to select an appropriate color palette, or have ThumbsPlus compute an optimized palette for you, using [color quantization](#).

A palette stored with an [indexed color](#) image is also known as a *color map*.

## Wallpaper

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A Windows bitmap displayed in the background (the [desktop](#)). From ThumbsPlus, this image may be tiled (repeated to fill the screen) or centered.



## Graphic Import Filter

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A program or library (DLL) which can convert graphics from one format to another. Microsoft provides several filters with Word for Windows and other products. ThumbsPlus can sometimes use these filters to import graphics files, though because they are not written or supplied by Cerious Software, they cannot be guaranteed to work.

## Token

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A sequence of letters or symbols which represent something else. For example, '%F' is a token which represents a file name in the editor command string invoked by ThumbsPlus.

## Indexed color

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Indexed color images contain several colors or levels of gray and a [palette](#) (or color map) which specifies the color of each given level. Most indexed color images are 4 or 8 bits per [pixel](#) (16 or 256 colors).

## CMYK

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This color specification derives from the names of the colors of inks combined for printing in color:

**C**yan

**M**agenta

**Y**ellow

**black**

The more common method of specifying color for display is [RGB](#) (red, green, blue).

## Truecolor

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A truecolor image is most often represented by a full color value for each [pixel](#) of the image. In most cases, 8 bits (256 levels) each of red, green and blue (RGB). Other schemes may represent colors using other methods, such as HSI, HSL, YUV, YCbCr, L\*a\*b, or [CMYK](#). Because RGB is the prevalent method for representing images for display, it is used internally by ThumbsPlus.

Some file formats may allow more bits per pixel (12 or 16), but the difference in image quality is usually slight. The chief advantage of a wider range of pixel values is less information loss during image processing.

## Dither

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Dithering is a process which allows many colors to be represented by a few. For example, the standard Windows VGA driver only has 16 colors, and combines these in simple patterns (*ordered dither*) to represent many more. An ordered dither is acceptable when viewed from a distance, but often causes images to appear grainy and cluttered. Better dithering methods, called *error diffusion*, provide a better appearance, especially for real-world images. One key to a successful dither is providing enough and appropriate colors to work with ([palette](#) selection or [color quantization](#)).

ThumbsPlus provides several error diffusion dithers for use when reducing the number of colors in an image: Floyd-Steinberg, Burkes and Stucki; and a single ordered dither (ThumbsPlus Quick), which is used to quickly dither [Truecolor](#) (24-bit) images for an 8-bit ([indexed color](#)) display.

## Profile (.INI file)

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Lists configuration options and selections for a program. The Windows profile is called WIN.INI; the general profile for ThumbsPlus is THUMBS.INI. Profile files are generally stored in the Windows directory to be unique for each user in a network environment. Also, ThumbsPlus stores database-specific options in a THUMBS.TUO file, in the same directory as the database. For more information on the THUMBS.INI file and THUMBS.TUO files, see [INI & TUO File Settings](#).

## Identity palette

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An identity palette is a 256-color [palette](#) that includes the 20 reserved Windows colors in the first 10 and last 10 positions in the palette. Files created with such palettes may be somewhat quicker to display in 256-color display mode. Also, some graphics applications require files with identity palettes. You can make any palette with 17 or more colors (and 236 or fewer) into an identity palette by selecting the option in the [Color Depth](#) dialog box.



## **OLE (Object Linking and Embedding)**

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Object linking and embedding is a method used in Microsoft Windows to connect documents of one type to another. For example, a Paintbrush picture ([BMP](#)) may be embedded in a Word document, or a Corel drawing may be linked into a Write file. ThumbsPlus can sometimes use OLE to create thumbnails of file types which aren't directly supported; see the [File Type Configuration](#) dialog box for more information.

## Digital Image Filtering

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Digital image filtering performs processing on an image by combining or comparing individual pixels with their neighbors. Many interesting and useful affects can be obtained, such as sharpening, blurring, edge detection and embossing. Many such filters are available in ThumbsPlus from the [Image - Filter - Select Filter](#) menu selection.

Linear filters -- those with a fixed array (or *convolution mask*) defining how to combine a pixel with its neighbors to compute the result -- may be defined in ThumbsPlus using the [Image - Filter - New Filter](#) menu selection.

## Path

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The DOS Environment variable which specifies where DOS and Windows look for executable files when no explicit drive or directory information is given. It is usually set in the **AUTOEXEC.BAT** file, which runs when DOS starts up.

Also, a directory specification may be referred to as a path.

## CD-ROM

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A CD (compact disk) used to store data. ROM stands for "Read-Only Memory." You cannot write to a CD-ROM disk, but they are quite useful for distribution of large amounts of data, and much more reliable than floppy disks.

## Purge

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To eliminate unneeded, unused or deleted space. In the context of ThumbsPlus, you can Purge the database by selecting the Purge button from the [Database Statistics](#) window. This will release all disk space occupied by deleted or moved thumbnails so it can be used for other files.

## Icon

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An icon is a small representation of something. Icons in the Windows environment are not usually worshiped; but judging by the size of some people's icon libraries, they're at least *admired*.

## Resolution

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The resolution of an image describes the detail at which it was obtained, or at which it is designed to be printed. For example, a 300 dpi image was scanned at or designed to be printed at 300 dots per inch. (So, a 300 x 300 [pixel](#) image at 300 dpi should print as 1 inch by 1 inch).

Except in the U.S., resolution is usually referred to as dots per centimeter (dpc) or pixels per meter (ppm).

Note that changing the resolution of a [bitmap](#) does not change its information content -- resolution is really a hint to an application program to suggest a suitable size for printing. Most applications scale for the output device to present the image at or close to its original size.

Most applications also allow you to scale an image to a desired size. Also, many images do not contain resolution information.

## TrueType

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A TrueType font is a [font](#) developed using a particular font technology which describes each character as a sequence of closed b-spline curves. There are also provisions for hinting, which provides better-looking characters at small point sizes.



## Font

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A font is a particular type style. For example, Arial is the font in which this help file is rendered. ThumbsPlus can create thumbnails of and view character sets of [TrueType](#) fonts.

## Highcolor

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This term usually refers to display hardware that is capable of reasonably good color depth, but not as realistic as [Truecolor](#) (24-bit).

Most high-color displays are 15-bit (32,768 colors -- 5 bits each for red, green and blue) or 16-bit (65,536 colors -- 5 bits each for red and blue; 6 bits for green because the eye is more sensitive to green).

Although high-color displays save some video memory, they generally run slightly slower than truecolor displays because of the translation requirement (Windows runs in truecolor mode, but the display driver must translate the 8-bits-per-pixel RGB [pixels](#) to the high-color representation).

## Interpolation

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Interpolation is a process of computing intervening values from given values (generally by averaging). For example, when ThumbsPlus changes the size of a [bitmap](#), it can interpolate and compute the extra pixels as weighted averages (based on closeness) of neighboring [pixels](#).

## Rasterize

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Rasterizing (or rasterization) is the process of drawing a [metafile](#) or [vector](#) graphic to a [bitmap](#). This creates a fixed-size raster graphic from the metafile or vector graphic.

## Thumbnail

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A small representation of an image, used as an aid in indexing or cataloging graphics images.

ThumbsPlus is particularly adept at creating useful thumbnails for [bitmaps](#) , [fonts](#) and [metafiles](#).

## Vector graphic

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Vector graphics are graphic objects composed of the definition of drawn shapes and lines -- rectangles, arcs, ellipses, curves, etc. [Metafiles](#) are similar, but more robust; they may also contain text and [bitmap](#) (raster) elements.

Because they are descriptions of shapes rather than a table of individual dots ([pixels](#)), vector graphics may be scaled more readily and more accurately than raster graphics.

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