

**NAME**

`djpeg` – decompress a JPEG file to an image file

**SYNOPSIS**

`djpeg` [ *options* ] [ *filename* ]

**DESCRIPTION**

`djpeg` decompresses the named JPEG file, or the standard input if no file is named, and produces an image file on the standard output. PBMPLUS (PPM/PGM), BMP, GIF, or Targa output format can be selected.

**OPTIONS**

All switch names may be abbreviated; for example, **-grayscale** may be written **-gray** or **-gr**. Most of the "basic" switches can be abbreviated to as little as one letter. Upper and lower case are equivalent (thus **-BMP** is the same as **-bmp**). British spellings are also accepted (e.g. **-greyscale**), though for brevity these are not mentioned below.

The basic switches are:

**-colors** *N*

Reduce image to at most *N* colors [legacy feature]. This reduces the number of colors used in the output image so that it can be stored in a colormapped file format. This feature cannot be used when decompressing lossless JPEG images.

**-quantize** *N*

Same as **-colors**. **-colors** is the recommended name. **-quantize** is provided only for backward compatibility.

**-fast** Select recommended processing options for low-quality output [legacy feature]. (The default options are chosen for highest-quality output.) Currently, this is equivalent to **-dct fast -nosmooth -onepass -dither ordered**. On modern CPUs, these settings have little or no performance benefit and are retained solely for backward compatibility.

**-grayscale**

Force grayscale output even if JPEG file is full-color. This feature cannot be used when decompressing full-color lossless JPEG images.

**-rgb** Force RGB output even if JPEG file is grayscale. This feature cannot be used when decompressing grayscale lossless JPEG images.

**-scale** *M/N*

Scale the output image by a factor *M/N*. Currently the scale factor must be *M/8*, where *M* is an integer between 1 and 16 inclusive, or any reduced fraction thereof (such as 1/2, 3/4, etc.) Scaling is handy if the image is larger than your screen. This feature cannot be used when decompressing lossless JPEG images.

**-bmp** Select BMP output format (Windows flavor). 8-bit colormapped format is emitted if **-colors** or **-grayscale** is specified, or if the JPEG file is grayscale; otherwise, 24-bit full-color format is emitted. This format can only be used when decompressing 8-bit-per-sample JPEG images.

**-gif** Select GIF output format (LZW-compressed) [legacy feature]. Since GIF does not support more than 256 colors, **-colors 256** is assumed (unless you specify a smaller number of colors). If you specify **-fast**, the default number of colors is 216. This format can only be used when decompressing 8-bit-per-sample or 12-bit-per-sample lossy JPEG images.

**-gif0** Select GIF output format (uncompressed) [legacy feature]. Since GIF does not support more than 256 colors, **-colors 256** is assumed (unless you specify a smaller number of colors). If you specify **-fast**, the default number of colors is 216. This format can only be used when decompressing 8-bit-per-sample or 12-bit-per-sample lossy JPEG images.

**-os2** Select BMP output format (OS/2 1.x flavor) [legacy feature]. 8-bit colormapped format is emitted if **-colors** or **-grayscale** is specified, or if the JPEG file is grayscale; otherwise, 24-bit full-color format is emitted. This format can only be used when decompressing 8-bit-per-sample JPEG images.

- pnm** Select PBMPLUS (PPM/PGM) output format (this is the default format). PGM is emitted if the JPEG file is grayscale or if **-grayscale** is specified; otherwise PPM is emitted.
- targa** Select Targa output format [legacy feature]. Grayscale format is emitted if the JPEG file is grayscale or if **-grayscale** is specified; otherwise, colormapped format is emitted if **-colors** is specified; otherwise, 24-bit full-color format is emitted. This format can only be used when decompressing 8-bit-per-sample JPEG images.

Switches for advanced users:

- dct int**  
Use accurate integer DCT method (default).
- dct fast**  
Use less accurate integer DCT method [legacy feature]. When the Independent JPEG Group's software was first released in 1991, the decompression time for a 1-megapixel JPEG image on a mainstream PC was measured in minutes. Thus, the **fast** integer DCT algorithm provided noticeable performance benefits. On modern CPUs running libjpeg-turbo, however, the decompression time for a 1-megapixel JPEG image is measured in milliseconds, and thus the performance benefits of the **fast** algorithm are much less noticeable. On modern x86/x86-64 CPUs that support AVX2 instructions, the **fast** and **int** methods have similar performance. On other types of CPUs, the **fast** method is generally about 5-15% faster than the **int** method.

If the JPEG image was compressed using a quality level of 85 or below, then there should be little or no perceptible quality difference between the two algorithms. When decompressing images that were compressed using quality levels above 85, however, the difference between the **fast** and **int** methods becomes more pronounced. With images compressed using quality=97, for instance, the **fast** method incurs generally about a 4-6 dB loss in PSNR relative to the **int** method, but this can be larger for some images. If you can avoid it, do not use the **fast** method when decompressing images that were compressed using quality levels above 97. The algorithm often degenerates for such images and can actually produce a more lossy output image than if the JPEG image had been compressed using lower quality levels.

- dct float**  
Use floating-point DCT method [legacy feature]. The **float** method does not produce significantly more accurate results than the **int** method, and it is much slower. The **float** method may also give different results on different machines due to varying roundoff behavior, whereas the integer methods should give the same results on all machines.

- dither fs**  
Use Floyd-Steinberg dithering when quantizing colors [legacy feature].

- dither ordered**  
Use ordered dithering when quantizing colors [legacy feature].

- dither none**  
Do not use dithering when quantizing colors [legacy feature]. By default, Floyd-Steinberg dithering is applied when quantizing colors. This is slower but usually produces the best results. Ordered dithering is a compromise between speed and quality. No dithering is faster but usually looks awful. Note that these switches have no effect unless color quantization is being done. Ordered dithering is only available in **-onepass** mode.

- icc file**  
Extract ICC color management profile to the specified file.

- map file**  
Quantize to the colors used in the specified image file [legacy feature]. This is useful for producing multiple files with identical color maps, or for forcing a predefined set of colors to be used. The *file* must be a GIF or PPM file. This option overrides **-colors** and **-onepass**.

**-nosmooth**

Use a faster, lower-quality upsampling routine.

**-onepass**

Use one-pass instead of two-pass color quantization [legacy feature]. The one-pass method needs less memory, but it produces a lower-quality image. **-onepass** is ignored unless you also specify **-colors** *N*. Also, the one-pass method is always used for grayscale output. (The two-pass method has no improvement in that case.)

**-maxmemory** *N*

Set limit for amount of memory to use in processing large images. Value is in thousands of bytes, or millions of bytes if "M" is attached to the number. For example, **-max 4m** selects 4000000 bytes. If more space is needed, an error will occur.

**-maxscans** *N*

Abort if the JPEG image contains more than *N* scans. This feature demonstrates a method by which applications can guard against denial-of-service attacks instigated by specially-crafted malformed JPEG images containing numerous scans with missing image data or image data consisting only of "EOB runs" (a feature of progressive JPEG images that allows potentially hundreds of thousands of adjoining zero-value pixels to be represented using only a few bytes.) Attempting to decompress such malformed JPEG images can cause excessive CPU activity, since the decompressor must fully process each scan (even if the scan is corrupt) before it can proceed to the next scan.

**-outfile** *name*

Send output image to the named file, not to standard output.

**-memsrc**

Load input file into memory before decompressing. This feature was implemented mainly as a way of testing the in-memory source manager (jpeg\_mem\_src().)

**-report**

Report decompression progress.

**-skip** *Y0,Y1*

Decompress all rows of the JPEG image except those between *Y0* and *Y1* (inclusive.) Note that if decompression scaling is being used, then *Y0* and *Y1* are relative to the scaled image dimensions.

**-crop** *WxH+X+Y*

Decompress only a rectangular subregion of the image, starting at point *X,Y* with width *W* and height *H*. If necessary, *X* will be shifted left to the nearest iMCU boundary, and the width will be increased accordingly. Note that if decompression scaling is being used, then *X*, *Y*, *W*, and *H* are relative to the scaled image dimensions. Currently this option only works with the PBMPLUS (PPM/PGM), GIF, and Targa output formats.

**-strict**

Treat all warnings as fatal. This feature also demonstrates a method by which applications can guard against attacks instigated by specially-crafted malformed JPEG images. Enabling this option will cause the decompressor to abort if the JPEG image contains incomplete or corrupt image data.

**-verbose**

Enable debug printout. More **-v**'s give more output. Also, version information is printed at startup.

**-debug**

Same as **-verbose**.

**-version**

Print version information and exit.

**EXAMPLES**

This example decompresses the JPEG file *foo.jpg* and saves the output in 8-bit BMP format in *foo.bmp*:

**djpeg -bmp** *foo.jpg* > *foo.bmp*

## ENVIRONMENT

### JPEGMEM

If this environment variable is set, its value is the default memory limit. The value is specified as described for the **-maxmemory** switch. **JPEGMEM** overrides the default value specified when the program was compiled, and itself is overridden by an explicit **-maxmemory**.

## SEE ALSO

**cjpeg**(1), **jpegtran**(1), **rdjpgcom**(1), **wrjpgcom**(1)

**ppm**(5), **pgm**(5)

Wallace, Gregory K. "The JPEG Still Picture Compression Standard", Communications of the ACM, April 1991 (vol. 34, no. 4), pp. 30-44.

## AUTHOR

Independent JPEG Group

This file was modified by The libjpeg-turbo Project to include only information relevant to libjpeg-turbo, to wordsmith certain sections, and to describe features not present in libjpeg.