

# JPEG2000

JPEG2000 is an image compression standard developed by the Joint Photographic Experts Group (JPEG), part of the International Organization for Standardization (ISO). It is designed to allow differing image forms (e.g. bi-level, gray-level, color, multi-component) within multiple imaging models such as a web server, real-time transmission, image library archival and platforms with limited buffer and bandwidth resources (e.g. mobile devices).

JPEG2000 provides low bit rate operation with rate-distortion and subjective image quality performance without sacrificing performance at other points in the rate-distortion spectrum.

JPEG2000 addresses areas where current standards fail to produce the best quality of performance, such as:

- Low bit rate compression performance
- Lossless and lossy compression in a single codestream
- Large images (JPEG is restricted to 64kx64k images without tiling). JPEG2000 will handle image sizes up to  $(2^{32} - 1)$
- Single decompression architecture
- Error resilience for transmission in noisy environments, such as wireless and the Internet
- Computer generated imagery
- Compound documents
- Region of interest coding
- Improved compression techniques to accommodate rich content and higher resolutions
- Metadata mechanisms for incorporating additional non-image data as part of the file

JPEG2000 handles up to 256 channels of information, as compared to JPEG, which is limited to only RGB data. Thus, JPEG2000 is capable of describing complete alternate color models, such as CMYK, and full ICC (International Color Consortium). JPEG2000 exhibits better compression efficiency than JPEG, results show an approximate 40% reduction in file size over JPEG compression.

JPEG2000 refers to all parts of the standard: Part 1 (the core) is now published as an International Standard, five more parts (2-6) are complete or nearly complete, and four new parts (8-11) are under development.

Application areas for JPEG2000 include:

- Internet
- Digital Photography
- Medical Imaging
- Wireless imaging
- Document imaging
- Pre-Press
- Remote sensing and GIS
- Cultural Heritage
- Scientific and Industrial
- Digital Cinema
- Image archives and databases
- Surveillance
- Printing and scanning
- Facsimile

For additional detail, visit the official site of Joint Photographic Experts Group, JPEG, and Joint Bi-level Image experts Group (JBIG) at [www.jpeg.org](http://www.jpeg.org)

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