MPEG-4 AVC/H.264

MPEG-4 AVC/H.264 or MPEG-4 Part 10, is a high compression digital video codec standard written by the ITU-T Video Coding Experts Group (VCEG) together with the ISO/IEC Moving Picture Experts Group (MPEG) as the product of a collective partnership effort known as the Joint Video Team (JVT). The ITU-T standard and the ISO/IEC MPEG-4 Part 10 standard (formally, ISO/IEC 14496-10) are technically identical, and the technology is also known as AVC, for Advanced Video Coding. The final drafting work on the first version of the standard was completed in May of 2003.

H.264 is a name related to the ITU-T line of H.26x video standards, while AVC relates to the ISO/IEC MPEG side of the partnership project that completed the work on the standard, after earlier development done in the ITU-T as a project called H.26L. It is usual to call the standard as H.264/AVC, or AVC/H.264 to emphasize the common heritage. The name H.26L, harkening back to its ITU-T history, is far less common, but still used. Occasionally, it has also been referred to as "the JVT codec", in reference to the JVT organization that developed it. (Such partnership and multiple naming is not unprecedented, as the video codec standard known as MPEG-2 also arose from a partnership between MPEG and the ITU-T, and MPEG-2 video is also known in the ITU-T community as H.262.)

The intent of H.264/AVC project has been to create a standard that would be capable of providing good video quality at bit rates that are substantially lower (e.g., half or less) than what previous standards would need (e.g., relative to MPEG-2, H.263, or MPEG-4 part 2), and to do so without so much of an increase in complexity as to make the design impractically expensive to implement. An additional goal was to do this in a flexible way that would allow the standard to be applied to a very wide variety of applications (e.g., for both low and high bit rates, and low and high resolution video) and to work well on a very wide variety of networks and systems (e.g., for broadcast, DVD storage, RTP/IP packet networks, and ITU-T multimedia telephony systems).

The JVT recently completed the development of some extensions to the original standard that are known as the Fidelity Range Extensions (FRExt). These extensions support higher-fidelity video coding by supporting increased sample accuracy (including 10-bit and 12-bit coding) and higher-resolution color information (including sampling structures known as YUV 4:2:2 and YUV 4:4:4). Several other features are also included in the Fidelity Range Extensions project (such as adaptive switching between 4x4 and 8x8 integer transforms, encoder-specified perceptual-based quantization weighting matrices, efficient inter-picture lossless coding, support of additional color spaces, and a residual color transform). The design work on the Fidelity Range Extensions was completed in July of 2004, and the drafting was finished in September of 2004.

Since the completion of the original version of the standard in May of 2003, the JVT has also done one round of "corrigendum" errata corrections, and an additional round of such corrigendum work is now nearing completion and should be finished in early 2005.

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