

Producing H.264 Video for Flash

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My friend Jan has a great article on H.264 video production on his site. You can read the first part below, and catch the rest [on his blog](#).

Introduction

As a producer of video on the web, you know that you're judged by the quality of your video. In this regard, many producers are considering converting from the venerable On2 VP6 codec to H.264. H.264 offers better visual quality than VP6, and the AAC audio codec offers much better quality than the MP3 codec paired with VP6. Starting with Adobe Flash Player 9 Update 3, you could play back files encoded in H.264/AAC formats. As of September 2008, the penetration of H.264/AAC-compatible players exceeded 89% in all Internet-connected PCs. No wonder they're switching over.

This article first discusses the issues involved in such a changeover, including the potential requirement for royalties. I then describe the H.264-specific encoding parameters offered by most encoding programs. Finally, I cover how you can produce H.264 video with Adobe Media Encoder CS4 and Adobe Flash Media Encoding Server 3.5.

What is H.264?

H.264 is a video compression standard known as MPEG-4 Part 10, or MPEG-4 AVC (for "advanced video coding"). It's a joint standard promulgated by the ITU-T Video Coding Experts Group (VCEG) and the ISO/IEC Moving Picture Experts Group (MPEG).

H.264's audio sidekick is AAC (advanced audio coding), which is designated MPEG-4 Part 3. Both H.264 and AAC are technically MPEG-4 codecs--though it's more accurate to call them by their specific names--and compatible bitstreams should conform to the requirements of Part 14 of the MPEG-4 spec.

According to Part 14, MPEG-4 files containing both audio and video, including those with H.264/AAC, should use the .mp4 extension, while audio-only files should use .m4a and video-only files should use .m4v. Different vendors have adopted a range of extensions that are recognized by their proprietary players, such as Apple with .m4p for files using FairPlay Digital Rights Management and .m4r for iPhone ringtones. (Mobile phones use the .3gp and .3g2 extensions, though I don't discuss producing for mobile phones in this article.)

Like MPEG-2, H.264 uses three types of frames, meaning that each group of pictures (GOP) is comprised of I-, B-, and P-frames, with I-frames like the DCT-based compression used in DV and B- and P-frames referencing redundancies in other frames to increase compression. I'll cover much more on this later in this article.

Like most video coding standards, H.264 actually standardizes only the "central decoder...such that every decoder conforming to the standard will produce similar output when given an encoded bitstream that conforms to the constraints of the standard," according to Overview of the H.264/AVC Video Coding Standard published in IEEE Transactions on Circuits and Systems for Video Technology (ITCSVT). Basically, this means that there's no standardized H.264 encoder. In fact, H.264 encoding vendors can utilize a range of different techniques to optimize video quality, so long as the bitstream plays on the target player. This is one of the key reasons that H.264

encoding interfaces vary so significantly among the various tools.

Will there be royalties? Find out by checking out the [second part of this article](#) on [Jan's blog](#).