

Intel and Envivio Achieve Breakthrough Performance in Video Encoding

High quality encoding is an essential step in the delivery of video content, whether it is delivered to the desktop, the mobile phone, video-on-demand, or HDTV. Envivio Inc. is the leading provider of IP-based MPEG-4 video systems and solutions for telcos, enterprises, and broadcasters. Service providers worldwide use Envivio solutions to reduce their operational costs while offering subscribers the most compelling and highest quality video services anytime and anywhere.

Now, with the help of servers based on Quad-Core Intel® Xeon® processor 5400¹ Series, Envivio has achieved breakthrough performance in their Envivio® video transcoders. In comparing the new Streaming SIMD Extensions 4 (SSE4) with the Streaming SIMD Extensions 2 (SSE2), the SSE speeds up Envivio encoding time by 25% to 33%. Improvements like these accelerate the adoption of Intel quad-core technology by Envivio for its leading encoding systems.

Product information

Envivio Inc. is the top technology creator of IP video convergence encoding solutions for telcos and broadcasters. As the only company to offer convergence solutions supporting the “Three Screens” of video (TVs, PCs and mobile phones), Envivio makes IP video a reality over any type of network and to any multimedia device from mobile to HD. Envivio solutions deliver industry leading AVC (H.264), Windows Media Video (VC-1) and AVS compressed video quality at the lowest bit rate for mobile TV, Internet TV, IPTV and broadcast applications.

How Intel is helping Envivio

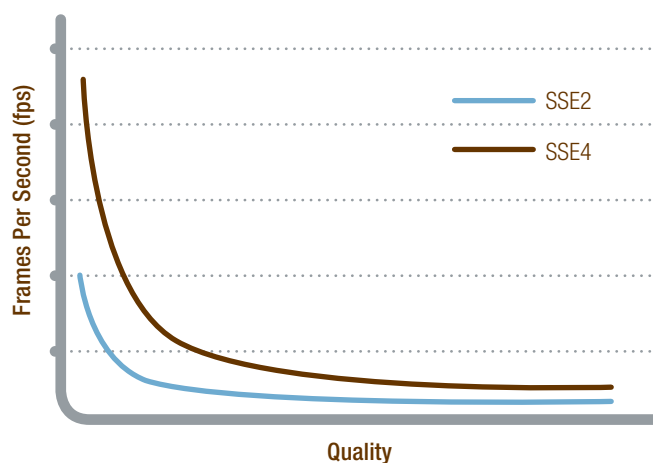
Using Intel® quad-core technology, Envivio can reach a higher level of video stream quality at the same cost because there are eight complete execution cores. Intel is helping Envivio test two different H264 algorithms, one on SSE2 and the other on SSE4, using an internal set of streams as input. With all the new technologies introduced by the Quad-Core Intel Xeon processor 5400 Series, the implementation of previously intractable algorithms has become a reality that has delivered a major breakthrough in video quality. Breakthroughs like these allowed Envivio to design an IPTV HD transcoder, the 4Caster C4 HD, presented for the first time at the 2008 National Association of Broadcasters show.

Intel technology benefits

Continuing to increase the video quality while keeping a lid on the costs of computation power is the challenge of the encoding industry. Envivio relies heavily on the Intel IPP library and Intel C++ compiler to develop its

unique and unrivaled compression algorithms. The built-in optimization technologies and multi-threading support in the Intel C++ Compiler help create code that runs best on the latest multi-core processors. The Intel IPP Library contains thousands of multi-core-ready, highly optimized software functions for multimedia and data processing applications.

Intel performance tools are also used by Envivio to optimize their software. Intel® VTune™ Performance Analyzer enhances the tuning of key applications, while Intel® Thread Profiler helps maximize performance of threaded code.



envivio®

Test results

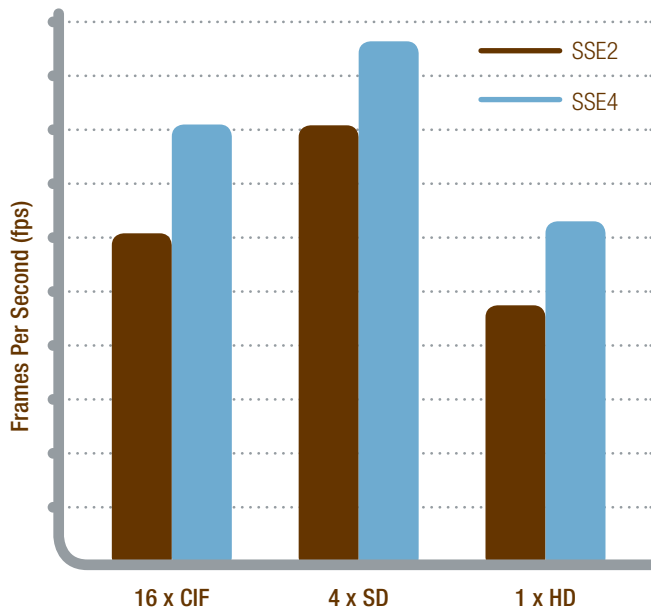
Envivio has developed an H264 encoder that delivers higher video quality at the lowest bit rate. The company continues to push towards higher quality encoding results, even while striving to deliver HD real-time transcoding on x86 platforms in 2008.

In a benchmark to compare H264 transcoders, one with SSE2 and the other SSE4, a test was run on a single box with two Intel Xeon Processor 5460's¹ with differing formats and numbers of transcoders to fully load the platform: 16 x CIF, 4 x SD and 1 x HD. Performance results for SSE2 were 31, 34, and 26 frames per second (fps) respectively. Compare that to the SSE4 algorithm that returned faster times for the same video formats—42, 50, and 33 fps—an increase of Envivio's encoding speed by 25% to 33%.

Clearly, Intel quad-core technology is optimizing performance for Envivio encoding systems, and making a measurable difference in video compression rates.

“Implementing high quality, real time video encoders in software has always pushed the technology envelope. With the advent of High Definition and H.264/AVC video compression technologies, the computational horsepower requirement has dramatically increased. Optimizing our encoding solution to take advantage of the new SSE4 instruction set provided by the new Quad-Core Intel® Xeon® processor 5400 Series allows us to improve the performance significantly. Furthermore, the innovative SSE4 instruction set make Envivio encoder speed considerably faster.”

— Jean-Pierre Hénot, Envivio CTO



¹Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families. See www.intel.com/products/processor_number for details.

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