AceThought
Your Partner in Innovation

# MPEG-4/H.263 Software Decoder

*for Intel x86 and ARM Cortex-A (ARMv7 & ARMv8) Processors*

## Overview

AceThought has developed extremely efficient products based on MPEG-4 and H.263 technology and our MPEG-4 Simple Profile (SP), Advance Simple Profile (ASP), H.263 P0, H.263 P3 and Sorenson Spark software video decoders IP is available on a range of Intel x86 and ARM Cortex Ax platforms.

MPEG-4 is a widely adopted ISO/IEC video standard developed by Moving Pictures Expert Group (MPEG). MPEG-4 is used for compressing video for delivery on Web (streaming media), Mobile, IPTV and Digital TV.

The H.263 video compression standard has been developed by ITU-T Video Coding Expert Group (VCEG). H.263 is widely used for video- conferencing at low bit-rates.

## Benefits

- Optimized for 32 and 64 bit **ARM Cortex-A** (ARMv7, ARMv8) and **Intel x86** architecture.
- Supported on **Android**, **iOS** (iPhone, iPad), **Windows 10 Phone**, **Linux**, **Mac OSX** and **Windows**.
- Multi-thread for multi-core processors.
- **ANSI C** implementation with key modules optimized for vector instructions (ARM **NEON** and Intel **SSE**, **AVX**).
- Efficient software architecture
- Re-entrant library
- Error detection of lost packets and frames
- Availability of both C and C++ interfaces for easy integration.
- 720p HD decoding on single core and 1080p HD decoding on dual/quad core.

## Features

- Fully compliant with ISO/IEC 14496-2 MPEG-4 **Simple & Advance Simple Profile**
- Fully compliant with ITU-T H.263 Profile 0 (**H.263v1**) and Profile 3 (**H.263v2**)
- Support for **DivX®** & Xvid®
- Support for **Sorenson Spark v1, v2**
- I, P and B pictures
- Interlace Coding
- ½ and ¼ pixel interpolation
- H.263 & MPEG Quantization
- Global Motion Compensation (GMC)
- Support for H.263 Annexes I, J, K & T
- Advanced INTRA Coding, Deblocking, Slices, Modified Quantization, Custom Picture Format (CPF).

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## Performance

Ace Thought's Multi-threaded MPEG-4 decoder processing requirement is measured in millions of cycles per second (MHz). The Table 1 below summarizes the MHz for Single-Threaded MPEG-4 decoder on single core ARM Cortex-A9 application processor with NEON™ Advanced SIMD and DDR2 RAM.

**Table 1. Performance Benchmark Numbers for Single Core ARM Cortex-A9**

| Profile | Resolution | Bit-Rate | Frame-Rate | MHz *(Single-Threaded)* |
|---|---|---|---|---|
| SP | 1280x720 | 4Mbps | 24fps | 412 |
| ASP | 1280x720 | 4Mbps | 24fps | 465 |
| ASP - QPel | 1280x720 | 4Mbps | 24fps | 585 |
| ASP | 1920x1080 | 4Mbps | 24fps | 876 |
| ASP - QPel | 1920x1080 | 4Mbps | 24fps | 995 |

The Table 2 below summarizes the MHz for Dual-Threaded MPEG-4 decoder on dual core ARM Cortex-A9 application processor with NEON™ Advanced SIMD and DDR2 RAM.

**Table 2. Performance Benchmark Numbers for Dual Core ARM Cortex-A9**

| Profile | Resolution | Bit-Rate | Frame-Rate | MHz *(Dual-Threaded)* |
|---|---|---|---|---|
| SP | 1280x720 | 4Mbps | 24fps | 256 |
| ASP | 1280x720 | 4Mbps | 24fps | 291 |
| ASP - QPel | 1280x720 | 4Mbps | 24fps | 374 |
| ASP | 1920x1080 | 4Mbps | 24fps | 542 |
| ASP - QPel | 1920x1080 | 4Mbps | 24fps | 636 |