PRODUCT BRIEF

Media Encoding, Decoding, and Processing
Intel® Media Server Studio

Fast, Brilliant Media and Video Processing

A comprehensive software tool suite for developing enterprise-grade, high-performance, quality media solutions and applications

- Supports select Intel Xeon and Core processors. See Technical Specifications for details.
- Supports HEVC, AVC, MPEG-2 and more.
- Available in Linux* and Windows* versions.

Intel® Media Server Studio helps media software developers deliver fast, high-density, high-quality video transcoding—and innovate new, immersive viewing experiences on the latest Intel® Xeon® and Core™ processor-based platforms.[1]

- **Develop and optimize** media solutions and applications to get the best performance and quality.
- **Speed the transition to high frame rate and resolutions**; innovate 360-degree video and virtual reality.
- **Reduce infrastructure costs** with hardware-accelerated video transcoding.
- **Cut product time to market.** Write applications once and run them anywhere, with forward and backward compatibility.

Global video traffic is soaring—expected to account for up to 80 percent of all consumer Internet traffic by 2019.[2] This trend creates high demand for media processing in both the network and the cloud. Video solution providers need efficient video transcoding to reduce their infrastructure and development costs while improving viewing experiences. To stay competitive and meet consumer content viewing demands, it's essential to be ready to quickly transition to new frame rates (60fps and above), resolutions (4K and above), and video experiences such as 360-degree videos and virtual reality. Intel Media Server Studio helps ready the industry for these challenges by providing access to real-time hardware accelerated codecs.

Deliver Fast, High-Quality Video Transcoding

Intel Media Server Studio is a comprehensive software development tool suite for:

- Communications and cloud media distribution
- Live and over-the-top (OTT) broadcasting and streaming
- Cloud gaming and remote desktop
- Video conferencing applications

Intel Media Server Studio simplifies development with state-of-the-art components and features for tailoring visual quality and performance. It supports both Linux* and Windows Server* and provides media and OpenCL* SDKs, runtimes, graphics drivers, advanced performance and quality analysis tools, and more.

These capabilities allow developers to achieve real-time 4K@60fps HEVC decode and encode, and up to 18 AVC full HD@30fps transcoding sessions on Intel Xeon and 6th generation Intel Core processor-based platforms.[3]

Why You Need It

- **Build high-density media pipelines.** Achieve outstanding performance and density by taking advantage of the Intel® Quick Sync Video-enabled hardware-accelerated codecs on Intel® Xeon® E3 and Core® processor platforms[1] with Intel® Iris™, Intel® Iris™ Pro, and Intel® HD Graphics. Transcode up to 18 HD AVC@30fps streams per socket.
- **Stay competitive and innovate.** Deliver amazing viewing experiences—including quickly evolving 360-degree videos and virtual reality with real-time 4K HEVC@60fps encoding.
- **Streamline the development cycle** with support for multiple Intel® processor generations. Write applications once and run them anywhere. Instead of cobbling together tools and runtimes from different sources, use a consistent set of SDKs, runtimes, and drivers to quickly develop and optimize media apps and solutions.
- **Accelerate time to market.** Intel Media Server Studio can reduce development time, support, and infrastructure costs—key factors for differentiation in an ever-more-fragmented and commoditized ecosystem.
- **Develop high-performance, heterogeneous applications.** With the Intel® SDK for OpenCL™ Applications, build, debug, and analyze your apps. Get full control over media pipelines and exploit the full computational capabilities of Intel® Graphics Processors and CPUs.
- **Select an HEVC encoder that best fits your scenario.** Use Intel's hardware-accelerated HEVC codec for high-density Web, Over-the-top content (OTT), and video conferencing. Or choose GPU-accelerated or software HEVC encoder components if you need broadcast quality. With Intel's award-winning[4] portfolio of HEVC codecs and codec ingredients, you benefit from great compression and reduce bandwidth use with a broad range of Intel platforms: Intel Core and Xeon E3 and E5 processors and Intel® Visual Compute Accelerator add-in cards. Tap into a rich set of HEVC codec features such as ROI priority (QP) map for better functionality, and control for video conferencing, plus low-delay mode.

Choose the Edition that Meets Your Needs

Community Edition

- Delivers full access to Intel® Quick Sync Video-enabled, hardware-accelerated codecs (HEVC, AVC, and more), and provides a development environment for heterogeneous apps.
- Includes Intel® Media SDK, Intel SDK for OpenCL Applications, runtimes, and graphics drivers .
- Flexible encode infrastructure (FEI) to fine-tune encoding visual quality.
- Support is via an online forum.

Essentials Edition

- Includes everything in the Community Edition.
- Adds Priority Support with direct access to Intel tech experts.

Professional Edition

- Includes everything in the Community and Essentials editions.
- Adds enterprise-quality HEVC codec components and audio codecs.
- Includes expert-grade performance and quality analyzers (Intel® VTune™ Amplifier, Video Quality Caliper), Premium Telecine Interlace Reverser, and more.

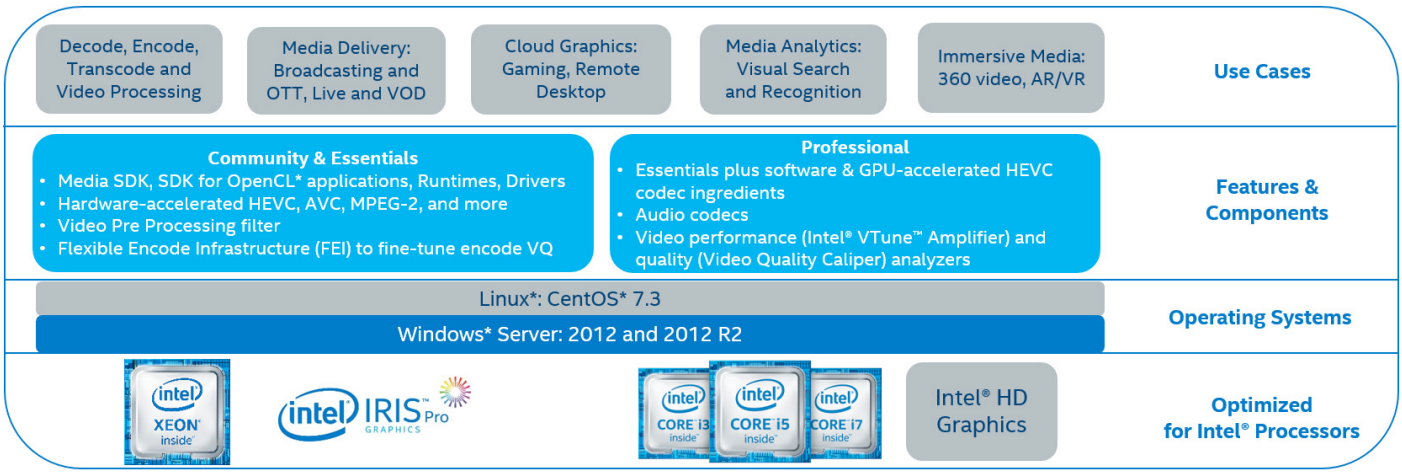
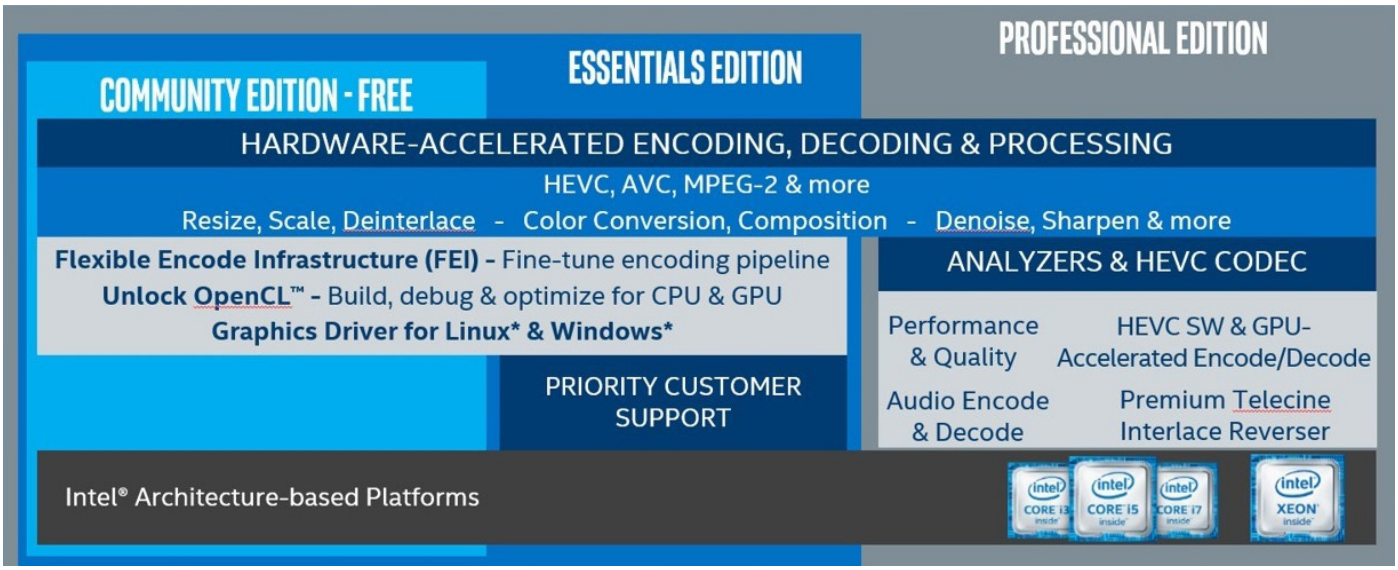


Figure 1. Intel Media Server Studio, its components, support, and complementary advanced video analyzer tools.



- **Virtualized environment.** Use Intel Media Server Studio software implementation on the Intel Xeon processor E5 family with KVM+Xenon Linux*.
- **Optimize application performance and quality** with advanced tools: Intel® VTune™ Amplifier provides analysis of graphics processor and CPU performance for media and OpenCL apps with rich sorting, filtering and visualization options. Video Quality Caliper is a graphical tool for objective and visual quality inspection of encoded and uncompressed streams.

Key Features and Components

- **Video decoders (hardware-accelerated):** H.265 (HEVC) 8-bit, H.264 (AVC) 8-bit, MPEG-2, VC-1, MVC, MJPEG
- **Video encoders (hardware-accelerated):** H.265 (HEVC), H.264 (AVC) 8-bit, MPEG-2, MVC (Windows Server OS only), MJPEG (software)
- **Video codec components:** H.265 (HEVC) software and GPU-accelerated decode and encode, 8- and 10-bit
- **Advanced performance and quality analyzers:** Intel VTune Amplifier and Video Quality Caliper
- **Programmability:** OpenCL 1.2 and 2.0, video motion estimation (VME), VEBox, HEVC PAK extensions
- **Flexible encode infrastructure (FEI)** for AVC encode[5]
- **Video processing filters:** Deinterlacing, Resizing, Rotating, Cropping, Composition and Alpha Blending, Color Conversion, Denoising, Frame-Rate Conversion, Videosignal Info, Advanced Deinterlacing handling scene changes (Linux only), Mirroring (Windows only)
- **Premium Telecine Interlace Reverser** to convert telecined or interlaced video to progressive format
- **Screen capture** (Windows only)
- **Audio codecs:** AAC decode and encoder, MPEG decoder

Technical Specifications

Hardware Requirements	Supports the following platforms with integrated graphics: • Intel Xeon E3-1200 v4 processor family with C226 chipset • Intel Xeon E3-1200 and E3-1500 v5 processor family with C236 chipset • 5th generation Intel Core processors • 6th generation Intel Core processors Additionally, for Intel Xeon E5 v4 and v5 processors, support of software-only (CPU) HEVC decode and encode, select video pre-processing (CSC, scaling, DI), and virtualization (KVM*, Xen*) is available.
Operating Systems	**Linux: CentOS 7.2 and 7.3** • CentOS is the preferred Linux operating system. Versions and kernels supported vary based on the release. See Release Notes for correct kernel per release. • Other Linux distributions through a generic OS model (Intel Media Server Studio generally works on these operating systems; however, support is not provided for Linux distributions other than Gold OS). The installation process applies many changes to the kernel, graphics driver, libdrm, and libva graphics stack. These changes would need to be reverted to request OS vendor support. **Windows** • Microsoft Windows Server* 2012 and 2012 R2,and, for development only, Windows 8 64-bit See also individual component tool release notes for supported OS and required software: • Intel SDK for OpenCL Applications • Intel VTune Amplifier

Technical Specifications (Continued)

Known OEM/ODM Functional Platforms	• Intel® Visual Compute Accelerator • HPE ProLiant* m710p and m710x server cartridges • Super Micro* Microserver 1U or mini tower MBD/system (X11SSV-M4F/M4) • Kontron SYMKLOUD* MS2900 media • Artesyn SharpStreamer* • Adlink MCS-2080 Media Cloud Server*
Languages	C++, OpenCL 1.2 & 2.0

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Other Resources

- Intel Xeon E3 15xx v5 processor product brief >

[1] Specific hardware technical specifications apply, see details.

[2] Cisco Visual Networking Index: Forecast and Methodology, 2014-2019 White Paper, 2015, pg 2

[3] Specific hardware technical specifications apply. See performance benchmarks for details.

[4] 2015 Global Video Encoding & Transcoding Technology Innovation Leadership, Frost & Sullivan, and 2015 HEVC/H.265 Video Codec Comparison Report, and Appendix, Moscow State University.

[5] Flexible Encoder Infrastructure (FEI) is an extension of Intel® Media SDK that gives more control over encoding process compared to the standard Media SDK API. This feature is available with limitations: 1) Only AVC encode supported; 2) Intel does not provide technical support for the FEI through the media community forum or Intel Premier Support; 3) Building an application with FEI may take significantly more effort compared to the standard Intel Media SDK API; 4) FEI validation is limited. Some combinations of encoding parameters may lead to unstable application behavior, crashes and hangs; 5) FEI API is not backward compatible; 6) FEI is subject to the same EULA terms as Media Server Studio. Some FEI components are distributed as "pre-release materials" which restricts their usage according to the EULA.

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