



Deploying Media as a Service in the Cloud to Meet Growing Demand

Updating and expanding existing infrastructure to support greater creation and consumption of media content can help service providers attract and retain customers

This solution brief describes how to solve business challenges through investment in innovative technologies.

If you are responsible for...

- **Business strategy:**
You will better understand how an Intel® architecture-based media-as-a-service platform will enable you to successfully meet your business outcomes.
- **Technology decisions:**
You will learn how the latest Intel® technologies work together to support growing demand for media content and works to deliver IT and business value.

Industry Strategic Challenges

Hundreds of cloud service providers (CSPs) offer similar services - but to retain and grow market share, they must provide niche services that meet customer needs and expectations. One area that is growing by leaps and bounds is cloud-based media services, such as live video streaming, cloud gaming, virtual desktop infrastructure (VDI) and media analytics. It may also be possible for CSPs to provide differentiated services for smart cities and smart factories, which are emerging markets for video ingestion combined with inference.

Opportunities abound to capitalize on the growing cloud-based video transcoding demand. Experts predict that consumer real time video-on-demand (VoD) traffic will nearly double by 2021.¹ Live sports feeds, such as the World Cup and the Olympic Games, and live concert streaming are obvious segments, but enterprise and industry applications are also ramping quickly into this space—education, aerospace, defense and political events just to name a few. CSPs that can efficiently and innovatively offer media and transcoding services as part of their scalable cloud service portfolio will reap top-line revenue and stronger customer subscriptions.

Outdated infrastructure that was built to support legacy video codecs cannot meet consumers' expectations for a smooth, responsive viewing experience in this new market. Achieving fast, high-quality transcoding is possible only by investing in transformational hardware and software throughout the media delivery chain (see Figure 1 on the next page).

Become Part of the Visual Cloud with Intel® Technology

More internet users, devices and connections, faster broadband speeds and more video viewing are driving the following primary usages in the Visual Cloud:

- Media creation and delivery
- Cloud graphics (including cloud gaming, industrial computer aided design (CAD) and remote rendering)
- Media analytics of the images generated in industries such as transportation, robotics and surveillance
- Smart cities and smart factories with video streams requiring artificial intelligence (AI)

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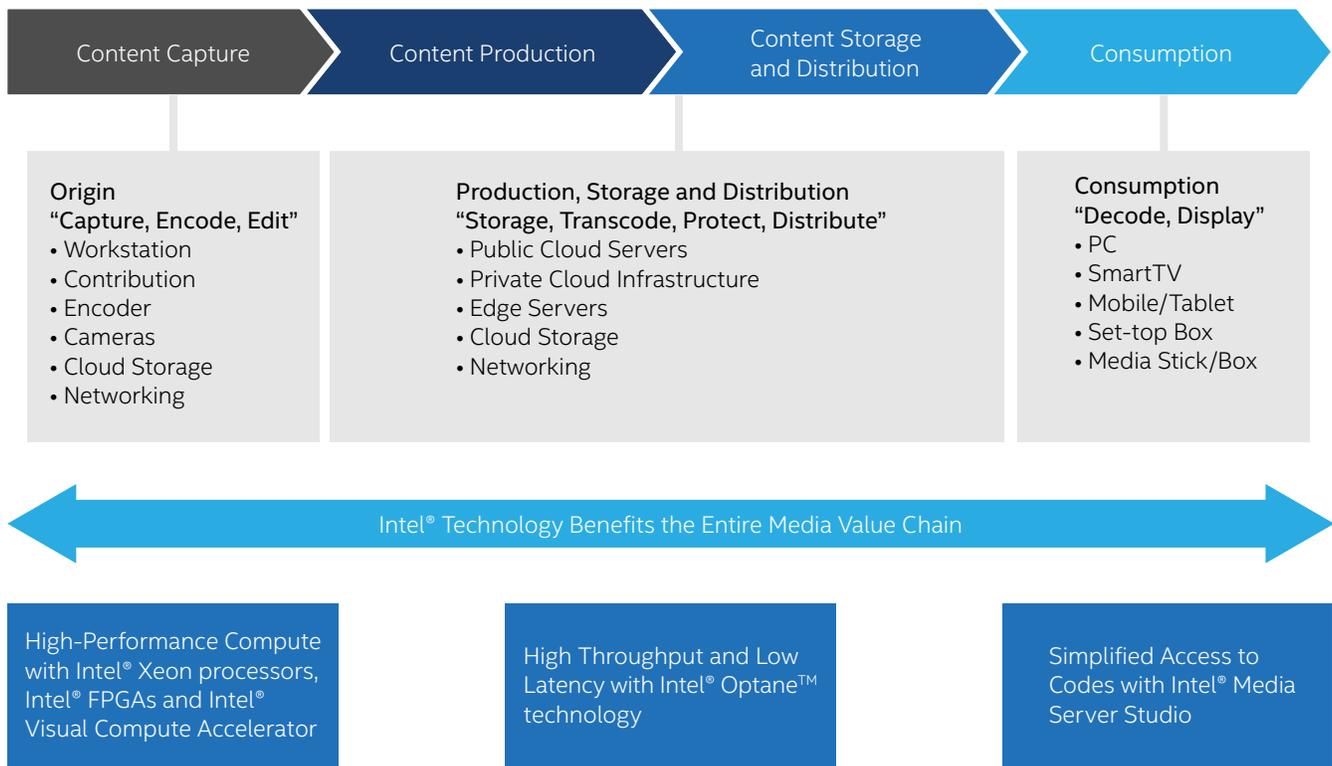


Figure 1. Intel® technologies offer business value at every step of the media delivery chain

Incorporating Intel® technology into their Visual Cloud infrastructure provides CSPs with multiple business benefits, including improved density, efficiency, and quality; reduced cost of delivery and better viewing experiences. Here are some real-world examples:

- **Real-time HEVC HDR broadcasting.** Mobile Viewpoint* is using Intel® processors with hardware HEVC encoding and Intel® Media Server Studio Professional Edition to power Mobile Viewpoint's live, high-resolution, reliable broadcasting solution.²
- **360 VR experiences.** Intel, Wowza Media Systems*, and Rivet Media* teamed up to deliver real-time streaming 4K, 360-degree VR video to multiple devices by using the Intel® Xeon® processor's hardware-assisted graphics capability.³
- **Sports video replays.** Slomo.tv*, a producer of instant replay servers, innovated a family of videoReferee* systems that provide instant high-quality video replays from up to 18 cameras direct to referee viewing systems.⁴
- **Real-time live video streaming.** With Intel's assistance, NAVER* optimized the performance of its in-house transcoding application to run on Intel Xeon processors, exceeding expectations for image quality and performance, for a low total cost of ownership (TCO).⁵

Enabling Transformation

CSPs can use Intel's building blocks to build cutting edge, disruptive, profitable and highly effective video encoders and transcoders. Intel offers a deep understanding of the changing nature of video processing itself with the core competency that comes from the company's rich and long history with digital media technologies.

Integrated graphics (Iris® Pro) avoids the extra cost, complexity and power consumption of discrete graphics. Alternatively, Intel's hardware acceleration provides a dramatic improvement in discrete graphics processing throughput over pure-software approaches, while also reducing cost and permitting higher flexibility as compared to customized hardware solutions. A Visual Cloud solution built on Intel® architecture offers scalable performance with hardware-accelerated codecs and a comprehensive set of SDKs and APIs. Here are just a few benefits of such a platform:

- Compute performance driven by powerful Intel® processors, the Intel® Visual Compute Accelerator card (Intel® VCA Card) and Intel® FPGAs with hardware accelerators that include off-the-shelf video transcode and inference library images.
- High-performance video streaming with Intel® Xeon® Scalable processors and Intel® Advanced Vector Extensions 512 (Intel® AVX-512).

- Smart networking using advanced Intel® Network Interface Cards (NICs), which can offload certain tasks from the processor and free up compute cycles.
- High throughput and low latency enabled by Intel® Optane™ technology.
- Simplified access to hardware-accelerated codecs and programmable graphics through optimized software.

Visual Cloud by the Numbers

- By 2020, 75 percent of mobile data traffic will be video.⁶
- Facebook generates 8 billion video views per day.⁷
- 400 hours of video are uploaded to YouTube every minute.⁸
- Global enterprise video market segment will grow from USD 16.98B to USD 36.84B by 2020.⁹

Solution Ingredients

- Intel® Xeon® processor Scalable family
- Intel® Xeon® processor E3 family with Iris® Pro graphics
- Intel® FPGAs with hardware codec accelerators
- Intel® Visual Compute Accelerator
- Intel® Media Server Studio
- Intel® Media SDK
- Intel® Optane™ SSD DC P4800X Series with Intel® 3D XPoint™ technology
- Intel® networking technology

Find the solution that is right for your organization. Contact your Intel representative or visit intel.com/VisualCloud

Solution Summary

CSPs with legacy infrastructure will struggle to deliver the media experiences their customers expect. Intel® hardware and software, such as processors, accelerators, and SDKs can help service providers keep up with the exploding Visual Cloud marketplace.



¹ <https://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-indexvni/complete-white-paper-c11-481360.html>

² <https://software.intel.com/en-us/articles/mobile-viewpoint-hevc-live-broadcasting-solution-using-intel-media-server-studio>

³ <https://www.youtube.com/watch?v=zgXsePX0ZOI>

⁴ <https://software.intel.com/en-us/articles/amazing-video-experiences-make-game-changing-calls-in-sports>

⁵ <http://www.intel.com/content/www/us/en/secure/partner/cloud-insider/solutions/media-visual/naver-selects-intel-for-real-time-video-transcoding.html> (requires sign-up for the Intel® Cloud Insider Program)

⁶ <https://www.cisco.com/c/en/us/solutions/service-provider/visual-networking-index-vni/index.html>

⁷ <http://www.businessinsider.com/facebook-is-now-generating-8-billion-video-views-per-day-2015-11>

⁸ <https://www.statista.com/statistics/259477/hours-of-video-uploaded-to-youtube-every-minute/>

⁹ <https://www.marketsandmarkets.com/Market-Reports/enterprise-video-market-1182.html>

All information provided here is subject to change without notice. Contact your Intel representative to obtain the latest Intel product specifications and roadmaps.

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