4K/8K UHD Broadcast Encoding & OTT Transcoding Accelerators

Virtual Reality & 360° Video Streaming Accelerators

Ultra-High-Density Cloud Media Processing Accelerators & Platforms

Interoperable IP Media Adapters and Encoding Platforms for UHD Live Production

Small Encoding Modules for HD/UHD Live Streaming & Self Broadcasting

Integration, Customization & Design Services

Advantech VEGA Video Infrastructure Solutions

Accelerating UHD Workflow Transformation







Enabling an Intelligent Planet

www.video-acceleration.com

About Advantech Video Solutions

Advantech's Video Solutions Division has been developing broadcast-quality video solutions for some of the top OEMs in the industry. Customers can leverage our strong video expertise and leading-edge computing and networking design skills to accelerate the deployment of their next-generation media solutions:

	Contribution & Live Production	Media Processing & Distribution			
Video Acceleration	 Support for a variety of mezzanine compression implementations such as Sony LLVC and intoPIX TICO for 4K video transport over 10GbE 	Efficient HD/UHD H.264/H.265 encoder, decoder and transcoder PCIe acceleration for higher density, lower TCO deployments			
Networking	 IP media transport supporting different industry standards such as SMPTE 2022 and Sony IP Live 	 Low latency media-over-IP interfacing & switching Software-defined networking & ToR switching 			
Computing	 Ethernet, SDI/ASI, HDMI/DVI, USB, and analog interface flexibility Embedded computing solutions for field applications 	 Application-ready x86 platforms optimized to run compute- intensive video processing applications FPGA expertise for innovative IP integration 			

We apply our solid media technology knowledge to engineer innovative solutions for our customers. From design through quality assurance and production to global logistics, our teams integrate with our customers' teams to create a highly collaborative environment that minimizes the risk of developing complex solutions.

Advantech scalable video platforms are designed with modularity in mind to meet a wide range of application scenarios. From ultra-light modules that can be embedded into live streaming devices to high-density architectures for live cloud media services, our video processing platforms provide a user space software framework supported by our software engineering team that simplifies their integration into your new IP workflow solutions.



From Acquisition to Distribution

The media industry is undergoing a profound transformation driven by the fundamental change in video consumers' behaviour that disrupts the traditional business model. Broadcasters and service providers are looking to optimize their operations and monetize the big opportunities that the online media era brings. Advantech helps video equipment manufacturers lead the media workflow transformation with products that address its current upheaval, the processing impact of UHD, the widescale move to IP and the convergence of broadcast and IT technologies.

The Online Video Era - In 2020



There will be 26.3 billion networked devices (3.4 per capita), 41% of which will be video enabled consumer devices.



Internet traffic will grow 3-fold from 2015. Video will be 82% of all Internet traffic.



It would take an individual over 5 million years to watch the amount of video that will cross the Internet each month.

Leading Innovation for the New IP Video Infrastructure

Advantech VEGA Video Platforms and PCI Express Accelerators are designed to boost video infrastructure performance from acquisition to distribution at the lowest power budget while fully complying with the media industry needs. By providing access to the latest 4K/8K video processing and IP media technologies on commercial-off-the-shelf IT platforms we accelerate the deployment of next-generation, open and more efficient solutions across a wide range of media applications from broadcast encoding and OTT transcoding to cloud, mobile and 360° video. Advantech's proven expertise in networking and computing enables us to lead innovation in the IP transition of the industry and get our customers ahead of the curve.

Here are the principal issues confronting the industry and how we can help.





The Move to IP

One of the major disruptors in the industry is the migration to IP that improves flexibility, reduces costs, and allows more use of commercial computing and networking gear. Advantech accelerates this transition by working together with key industry partners through industry alliances such as AIMS or IP Live on standard and interoperable solutions that unlock the full potential of the new IP media infrastructure.

UltraHD and HEVC

The advent of 4K/8K and H.265 are a double whammy for the industry, together significantly outstripping the processing capability of many infrastructure elements. Advantech provides a wide range of easy-to-integrate, ultra-low-power video acceleration cards and application-ready platforms that efficiently scale throughput of high-density video infrastructure solutions to enable next-generation UHD services.

The Media Cloud

As the need for video ingest, processing and storage skyrockets, media companies are considering moving to cloud-based architectures. However, some aspects of video processing are less than optimal in a generic IT cloud environment. Advantech acceleration technology offloads heavy-lifting video processing tasks and enables higher density, server based solutions that bring data center efficiencies to cloud media deployments.

Simplifying the Customization Process

Advantech has invested heavily in dedicated resources to develop the essential building blocks that enable the deployment of innovative and integrative video infrastructure solutions, including video acquisition, video transport, video processing and video distribution. With Advantech, you are not limited to a standard products offering alone. Our flexible design approach allows OEMs to easily partner with Advantech on customized versions of commercial-off-the-shelf products, a framework we call Customized COTS. The advantage of Customized COTS is its "best of both worlds" approach enabling OEMs to differentiate with unique premium solutions that leverage the cost benefits of full custom ODM designs and offer a significantly faster time to market. In addition, we are open to engage on full custom designs supported by our world-class team of video architects and engineers.

Commercial-off-the- Shelf (COTS)	Customized COTS	Joint Development Model	Original Design Manufacturing (ODM)			
Standard Full Cust						
Based on Advantech standard	 Strategic partnership 	• Cus	Customer-driven design			

- product & technology roadmap with Co-architected design based on optional minor changes
- - common IP from converging product & technology roadmaps
- Based on customer's product and technology roadmaps



Contribution Encoding & Live Streaming

Live is an important driving force of today's video-centric networks. Reduced power and size, or easiness of deployment are some of the features that differentiate field solutions from those in central studios. Advantech efficient encoding technology perfectly matches these requirements without jeopardizing video quality.

VEGA-2000 Series Small HD/UHD Live Encode & Streaming Modules

The Advantech VEGA-2000 Series extends HEVC benefits to portable video solutions such as wireless broadcast cameras and self streaming devices by creating an embedded module that makes best use of limited 3G/4G or Wi-Fi uplinks bandwidth and local storage capacity. Their rich I/O comes in an ultra-compact format that can be integrated into lightweight acquisition and encoding solutions for anywhere live broadcasting.





VEGA-2000M

- 1-ch 1080p60 real-time HEVC or AVC encode
- 1-ch 3G-SDI or 1-ch HDMI 1.4 video inputs
- 1x GbE & 1x USB 2.0 ports
 - Input video monitoringWeb-based CGI interface
 - Web-based CGI Interface
 Compact size 100 x 110mm
 - Less than 7W power consumption
- 1x GbE & 1x USB 2.0 ports
 Web-based CGI interface
 Compact size 90 x 100mm

VEGA-2001

video inputs

Less than 15W power consumption

NEW

- 1-ch 4Kp60 AVC or 4Kp30 HEVC real-time encode

1-ch 12G-SDI, 4-ch 3G-SDI or 1-ch HDMI 2.0

VEGA-6000 Series Compact UHD Contribution Encode & Decode Appliances

Advantech's VEGA-6000 Series of all-in-one encode appliances are compact and efficient platforms that enable 4K live video contribution in space and power constrained applications. The family supports the latest HEVC codec to optimize high-resolution video transmission over satellite or mobile networks. The VEGA-6301 & VEGA-6311 appliances can be deployed as part of a flexible, 4K IP-based field production requiring up to four times less cabling than a traditional SDI-based deployment. They are both 1U high, less than 290mm deep, and two can fit side by side in a standard 19" rack.



VEGA-6301



- 1-ch 4Kp60 or 4-ch 1080p60 real-time HEVC 4:2:2 10-bit encode
- 1-ch 12G-SDI, 4-ch 3G-SDI or HDMI 2.0 video inputs
 SMPTE 2022-5/-6/-7, SMPTE 2059 & optional Sony
- LLVC or intoPIX TICO compression
- 2x 10GbE, 2x GbE & 2x USB 3.0 ports
- Linux & Windows SDK with FFmpeg plug-in

VEGA-6311

- 1-ch 4Kp60 or 4-ch 1080p60 real-time 4:2:2 10-bit HEVC, AVC & MPEG-2 encode & decode
- 1-ch 12G-SDI, 4-ch 3G-SDI or DVB-ASI video inputs
 SMPTE 2110, SMPTE 2022, SMPTE 2059 & optional Sony LLVC or intoPIX TICO compression
- 2x 10GbE, 2x GbE & 2x USB 3.0 ports
- Linux & Windows SDK with FFmpeg plug-in
 - 2018 China Broadcasting and Television Technology Innovation Award!!

Accelerating the Video Innovations

IP Media Transport and Video Intelligence

Advantech accompanies customers on their migration to IP based media by offering a wide range of products that can be used in the construction of the new IP video infrastructure. Advantech supports industry standards through ecosystem alliances such as AIMS or IP Live to help solve the technical and interoperability challenges of 4K IP media.

VEGA-3000 Series Low Latency IP Media Adapters

SDI-to-IP Bridging

A key requirement for the transition to IP media is a way to connect existing SDI-based equipment to the new IP infrastructure. The VEGA-3000 adapter implements the SMPTE 2022-5/6 standards to create up to three "virtual SDI" channels within a 10GbE link and bridge each channel either to a physical SDI connection or to a logical server port across the PCIe bus.



VEGA-3000

 SMPTE 2022-6 interfacing for transporting uncompressed video signals over IP w/ SMPTE 2022-5 FEC

- 3-ch 3G-SDI, 1x 10GbE & 1x GbE

- 16ms latency
- Half-length PCIe card

Universal Media-over-IP Adapter

The VEGA-3002 is a PCI Express interface card supporting low latency transmission of uncompressed or lightly compressed video over standard IP networks according to industry agreed standards. As a software-configurable card, the VEGA-3002 can support multiple application scenarios and can be firmware-upgraded to support future standard enhancements, which allows users to move their server-based video applications confidently into an IP future with minimum risk.



NEW **VEGA-3002**

- AIMS roadmap support including SMPTE 2022-5/-6/-7, SMPTE 2110 & SMPTE 2059
- Optional intoPIX TICO or Sony LLVC compression
- 1-ch 12G/3G-SDI, 3-ch 3G-SDI w/ tri-sync &
- 2x 10GbE - Half-length PCIe card

VFGA-4000 Series

Reconfigurable Video Intelligence Accelerators



NEW **VEGA-4000**

- Xilinx Virtex UltraScale+ XCVU9P FPGA
- 4-ch of 4GB DDR4-2400 64b w/ ECC
- PCIe Gen-3 x16 Low-Profile form-factor - Up to 75W power consumption with







- 2 x Xilinx Virtex UltraScale+ XCVU9P FPGA
- 4-ch of 4GB DDR4-2400 64b w/ ECC per device
- · PCIe Gen-3 x16 Full height, GPU length form-factor · Up to 225W power consumption with fanless or fan-assisted heatsinks



UHD Encoding, Decoding & Transcoding

The new High Efficiency Video Coding (HEVC) significantly reduces bit rates when compared to AVC. It is particularly relevant for live UHD services which require much higher capacity. But these improvements come at high computational cost with up to 48 server-class cores typically required to perform 1-ch real-time software-based 4K HEVC broadcast encoding.

VFGA-3300 Series Ultra-Low Power UHD Video Accelerators

Advantech VEGA-33xx encoding, decoding & transcoding accelerators enable real-time HEVC video processing at up to 20x less power consumption than a software-only solution. Traditional server hardware is not well suited to video processing, especially when multiple high bit rate channels require manipulation. Advantech's compact plug-in PCI Express accelerators provide video equipment manufacturers with the technology to accelerate this part of the workflow without otherwise losing capacity or adding more servers, helping them successfully address the challenges of real-time UHD media processing in a cost-effective manner. These low power add-on cards can deliver unrivaled video processing capability to IT-based infrastructure platforms, allowing servers to do more of what they are good at, and significantly improving density, scalability and costs of live UHD video solutions.



4K HEVC Encode in <15W



VEGA-3310

- 1-ch 4Kp120, 2-ch 4Kp60 or 8-ch 1080p60 real-time 4:2:2 10-bit HEVC, AVC & MPEG-2 encode, transcode & decode
- Ultra-low latency encode mode (<10ms)
- Less than 35W power consumption



VEGA-3311

- 1-ch 4Kp60 or 4-ch 1080p60 real-time 4:2:2 10-bit HEVC, AVC & MPEG-2 encode & decode
- Ultra-low latency encode mode (<10ms)
- 1-ch 12G-SDI or 4-ch 3G-SDI w/ tri-sync
 SMPTE 2110, SMPTE 2059 & optional or
- intoPIX TICO compression
- Less than 35W power consumption
- · Half-length PCIe card

The VEGA-3300 Series comes with a user-space Linux or Windows SDK package supported by Advantech software engineering team that features a RESTful API and includes an FFmpeg plug-in to streamline new product development and the integration into existing applications.

8K, Virtual Reality & 360° Video

Live UHD services are outstripping the processing capability of many infrastructure elements, being the load of 8K HEVC encoding more than 40X that of Full HD AVC. But it is not only about resolution. New formats such as VR or 360 degree video multiply the amount of video data that needs to be processed at any given time. The new VEGA-3304 plans for these new requirements being capable of performing 8Kp60 acquisition and real-time HEVC encoding in one single PCIe card that accelerates next-generation viewing experiences.





- 1-ch 8Kp60, 4-ch 4Kp60 or 16-ch 1080p60 real-time 4:2:2 10-bit HEVC encode
- · Up to 8K capture over built-in 16-ch 3G-SDI
- Less than 70W power consumption
- 3/4-length full-height PCIe card, compatible with GPU slots





High-Density Video Processing

With low-power PCIe offloading and standard IP technologies, here comes the potential of adopting more efficient cloudbased architectures within live video workflows. Advantech application-ready platforms combine best video and IT practices to create scalable and cost-efficient media solutions with better time-to-market.

VEGA-7000 Series High-Density Video Processing and IP Media Server

The VEGA-7000 is a highly-configurable, application-ready server with optimized density, power consumption, and functionality that integrates multiple PCI Express expansion slots within a 1U, off-the-shelf IT platform to efficiently offload heavy-lifting video processing tasks in live workflows. Compute-intensive media processing applications can leverage the density, open system architecture and time-to-market advantages of the VEGA-7000 to build more scalable and cost efficient cloud media solutions.



Transcodes per

RU



Cloud Media Processing

With the growing demand for OTT delivered content, service providers and media companies are looking to cloudbased architectures to optimize their operations. The new VEGA-3318 brings unprecedented density to large-scale cloud deployments being able to handle up to 32 real-time UHD transcodes per rack unit. It provides the acceleration required to efficiently scale media processing across a wide range of cloud applications from broadcast encoding and OTT transcoding to gaming and mobile video. The impressive performance of the new VEGA-3318 comes in a low power PCI Express format that can be integrated into standard IT servers and data center racks significantly improving efficiency and capability of live cloud media services.



VEGA-3318

- 8-ch 4Kp60 real-time 4:2:2 10-bit HEVC/AVC/MPEG-2 encode, decode & transcode
- Ultra-low latency encode mode (<10ms)
- Less than 75W power consumption
- 10.5" length full-height PCIe card, compatible with server GPU slots
- Linux & Windows SDK with FFmpeg plug-in





Regional Service & Customization Centers

China Kunshan 86-512-5777-5666	Taiwan	Taipei 886-2-2792-7818	Netherlan	nds Eindhoven 31-40-267-7000	Poland Warsaw	426-8080	USA Milpitas, CA 1-408-519-3898
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