Advantech Video Solution SDVoE Technology eBook

October 2024

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INTRODUCTION

Advantech's video solutions, with SDVoE functionality, are designed to optimize infrastructure performance from acquisition to distribution. Video over IP transceivers support lossless UHD video, multi-view, video walls, and picture-in-picture with almost zero latency.

With Advantech's comprehensive product portfolio and professional integration capabilities, we offer customers seamless transitions from traditional matrix solutions to cutting-edge AI video management.

Advantech also provides a one-stop-shop service. Our low-latency 4K video solution can be applied in various industries such as healthcare, e-sports, education, live events, and so on.
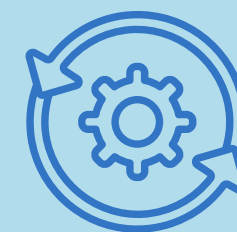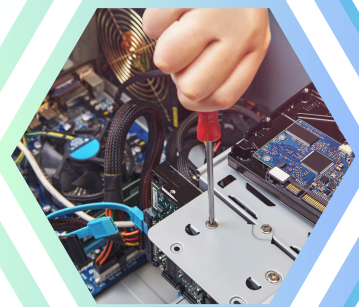

INTEROPERABILITY   **FLEXIBILITY**   **PROFITABILITY**

Why the Advantech SDVoE VEGA Series?

Full-Range Product Portfolio

The Advantech SDVoE ecosystem provides products from standard endpoint, bridge type endpoint, video capture card type endpoint to video servers and displays.

Easy Installation & Upgrades

Designed for easy operation, the system provides simple installation and upgrades of existing instruments.

Inventory Management

The Advantech VEGA series comprises highly integrated products that help reduce the set-up footprint and benefit your inventory management.

What We Offer

Clean Installation

An All-In-One Design

Compact Size

- The integration of transmitter, receiver, and transceiver
- Built-in connectivity for fiber & copper

- PoE design for a single-cable solution
- The discreet SDM design supports full SDVoE functionality

- A compact, credit-card-sized SDVoE encoder/decoder minimizes installation space requirements

VEGA SDVoE Video Extender

HDMI 2.0 Dual Mode Extender

Medical Grade

VEGA-1000

- Supports HDR and up to 4K@60 4:4:4
- Supports mode transmitter and receiver
- Slide switch to select transmission over copper or SFP+ (Fiber)
- Medical grade with fan-less design

HDMI 2.0 over IP Multicast Transceiver System

Medical Grade

VEGA-1100

- Supports HDR and up to 4K@60 4:4:4
- Supports full duplex transmitter and receiver
- Slide switch to select transmission over copper or SFP+ (Fiber)
- Medical grade with fan-less design

SDVoE 4K POE AV over IP Transceiver

PoE

VEGA-1101

- Supports HDR and up to 4K@60 4:4:4
- Supports full duplex transmitter and receiver
- Slide switch to select transmission over copper or SFP+ (Fiber)
- Medical grade with fan-less design
- Supports POE

HDMI 2.0 4K Signal Extender
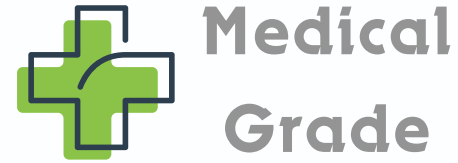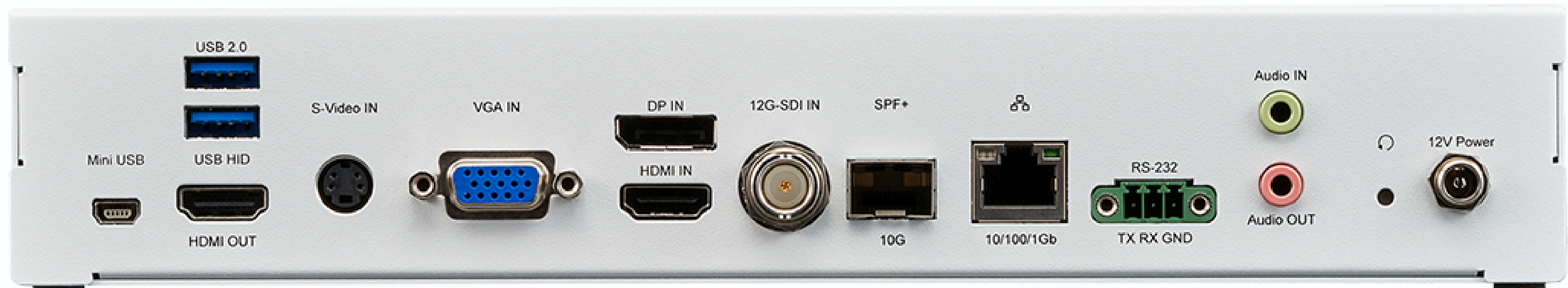
Compact Design

VEGA-1000L

- Supports HDR and up to 4K@60 4:4:4
- Light compression with <100μs latency for 4K@60 4:4:4
- Extends the transmission over multi-mode fiber-optic cable up to 400m (1320ft)
- Supports multi-view and video wall

4K SDVoE Hybrid Encoder/Recorder

Medical Grade

VEGA-1200

- Supports HDR and up to 4K@60 4:4:4
- Supports multiple video input interface from analog to digital
- Multiple streaming protocol support (NDI/SRT/ZIXI)
- Built-in SDVoE control server
- High-quality HEVC/AVC streaming and recording
- Medical grade with fan-less design

| Mini USB | USB 2.0 / USB HID | S-Video IN | VGA IN | DP IN / HDMI IN | 12G-SDI IN | SPF+ 10G | 10/100/1Gb | RS-232 TX RX GND | Audio IN / Audio OUT | 12V Power |

4K SDVoE Fiber Receiver Smart Display Module

SDM-S/L
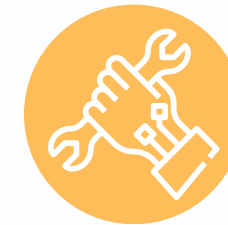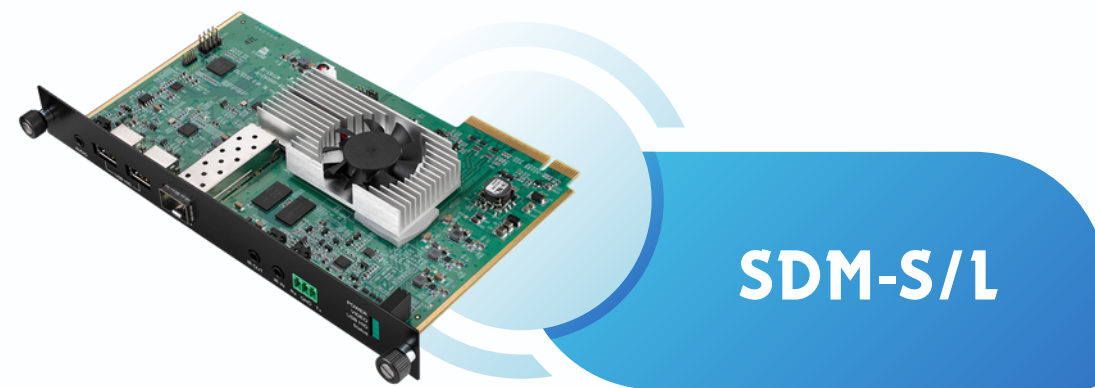
CLEAN INSTALLATION

SEAMLESS INTEGRATION

- Supports HDR and up to 4K@60 4:4:4
- Supports HDMI 2.0 / HDCP 2.2/1.4
- Uses LC fiber connectors, supporting up to 10 km on single mode fiber or 400m (1320ft) on multi-mode fiber
- Programmable to scale up or down any resolutions between VGA and 4K
- Supports UHD RGB/4:4:4 8-bit, 4:2:0 10-bit and 12-bit HDR
- Supports CEC pass-through
- Supports up to 8 channels of audio, including PCM, DolbyTrue-HD and DTS Master Audio
- Supports RS-232
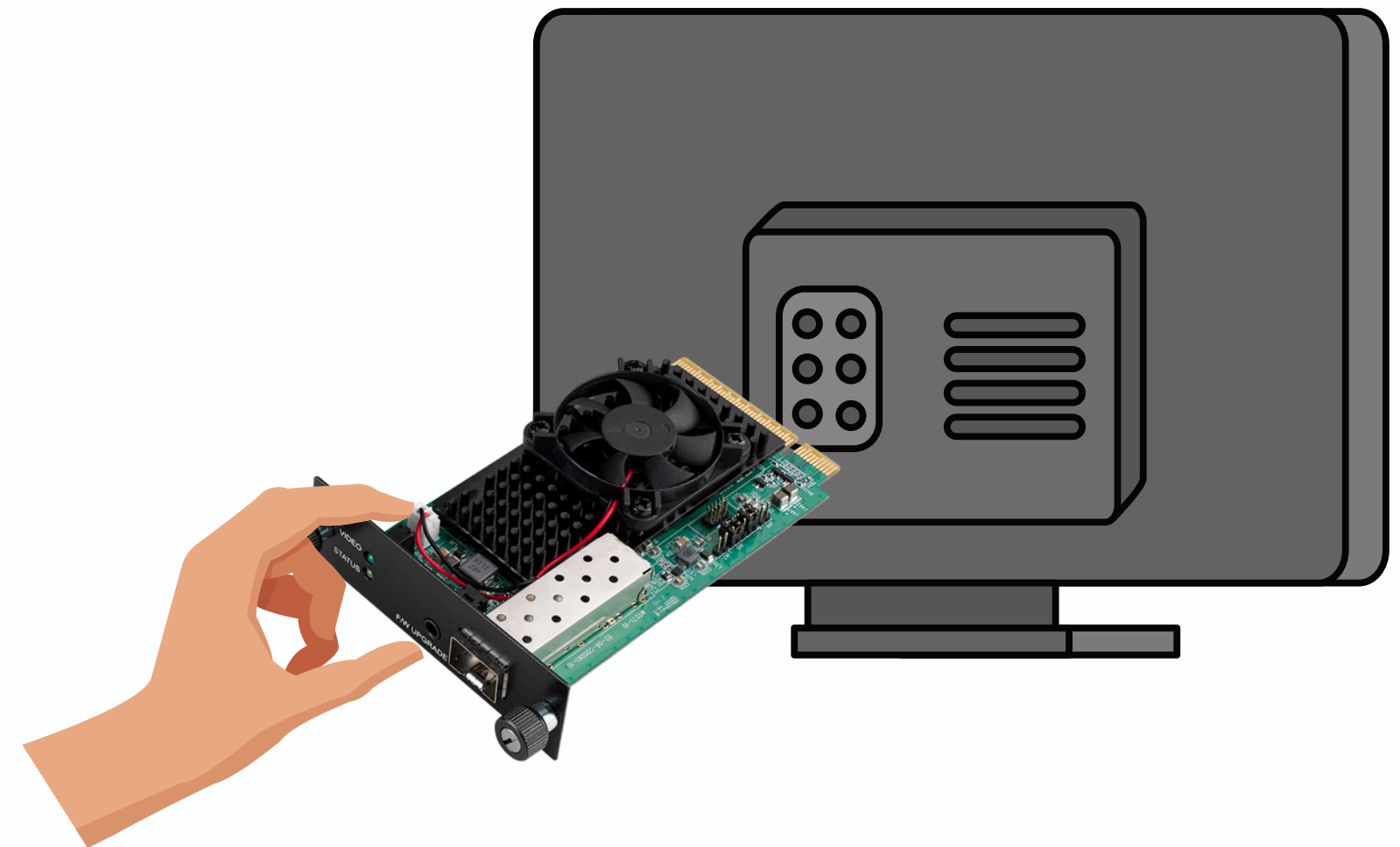
4K SDVoE Video Capture Card
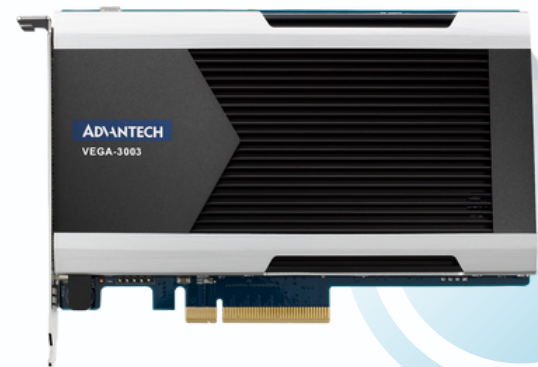
VEGA-3003

- Supports HDR and up to 4K@60 4:4:4
- PCIe Gen3 x8 interface
- SDVoE zero latency video capture & loop-out by HDMI 2.0
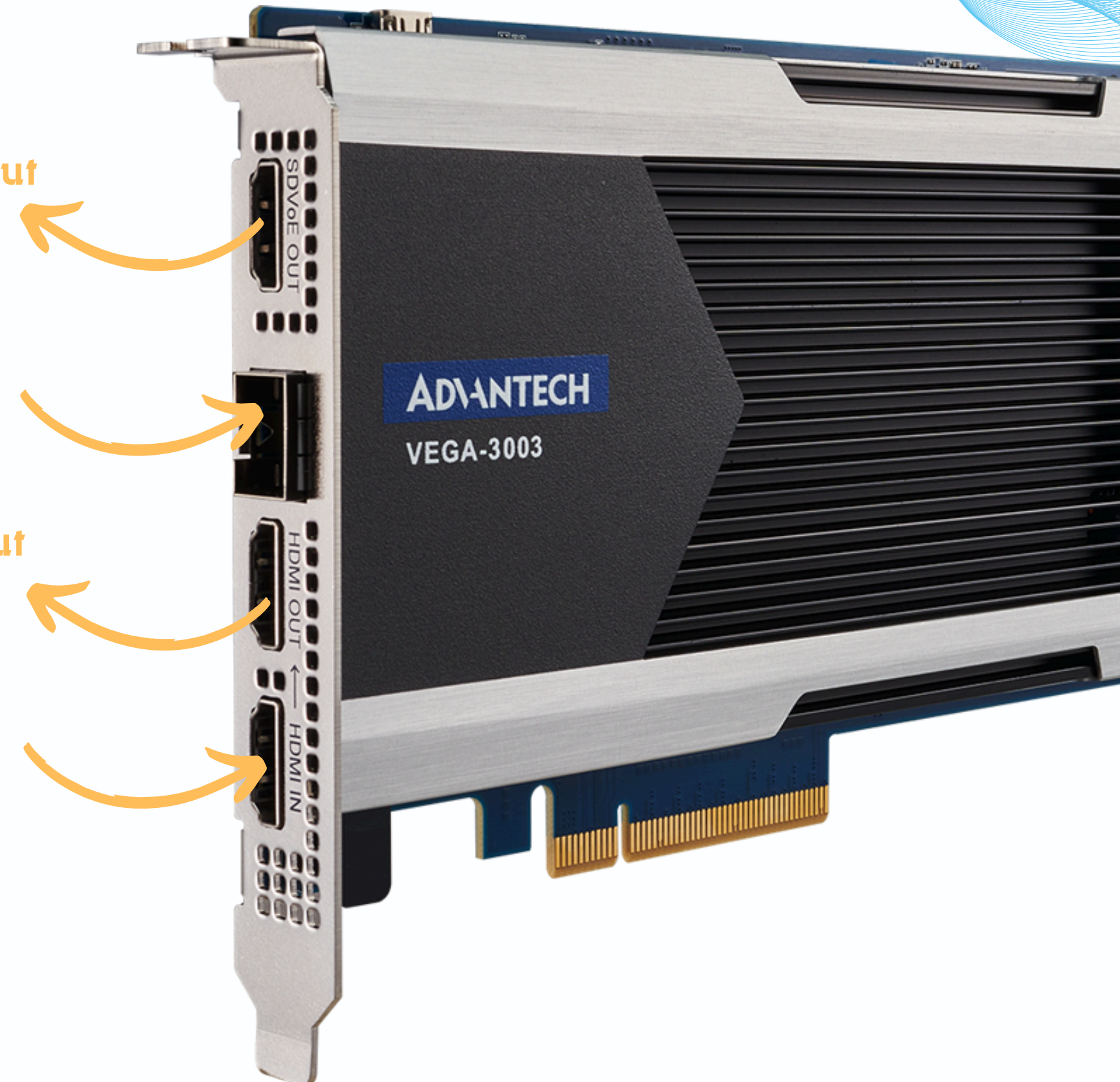- Linux and Windows SDK including simple-to-use API and example code
- Supports SDVoE thumbnail service restful API for preview

SDVoE Loop Out

SDVoE In

HDMI Loop Out

HDMI In

Success Case

Revolutioning Endoscopy Surgical Systems with AI-Driven Real-Time Detection
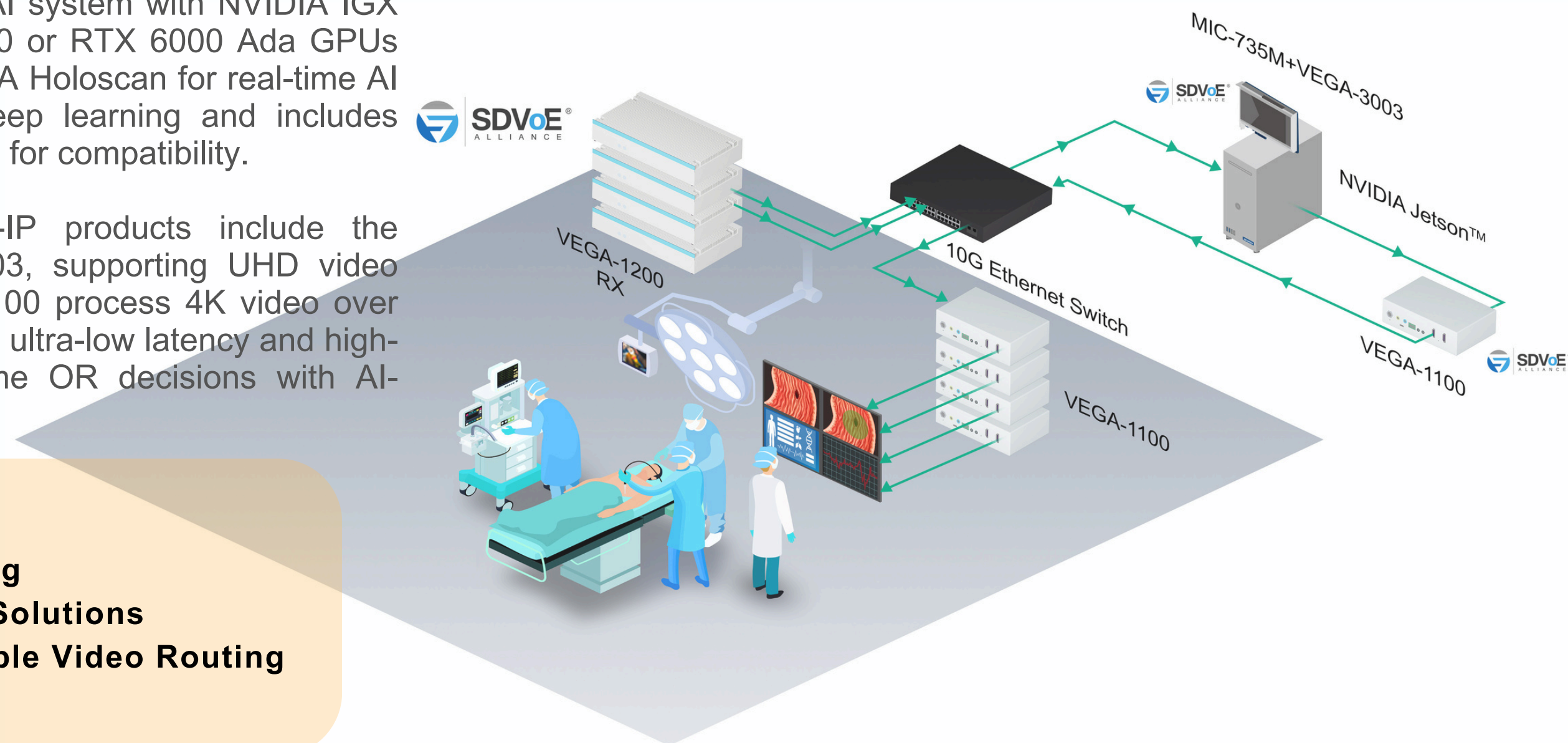
Background Information

This case aims to enhance real-time AI processing and video transmission in ORs. Advantech MIC-735M-IO, integrated with NVIDIA AI technology, offers ultra-low-latency visualization and automated anomaly detection for endoscopic surgeries. The VEGA series ensures reliable, high-quality IP video transmission with minimal latency, enabling precise, real-time decisions. This solution improves digital OR workflow accuracy, efficiency, and safety.

System Description

- MIC-735M-IO is a medical-grade edge AI system with NVIDIA IGX Orin™, supporting NVIDIA RTX™ A6000 or RTX 6000 Ada GPUs for up to 1705 TOPS. It integrates NVIDIA Holoscan for real-time AI processing and MONAI for medical deep learning and includes medical certifications (IEC 60601, 62304) for compatibility.

- Advantech's SDVoE-based video-over-IP products include the VEGA 1000 series and the VEGA-3003, supporting UHD video transmission. VEGA-1200 and VEGA-1100 process 4K video over 10G Ethernet, while VEGA-3003 ensures ultra-low latency and high-quality video, enabling precise, real-time OR decisions with AI-enhanced data.

Key Features

- **Ultra-Low Latency AI Processing**
- **Comprehensive Video-Over-IP Solutions**
- **Seamless Integration and Flexible Video Routing and Composition**

Success Case

The Implementation of an Integrated Video Transmission System in a Healthcare Facility

Background Information

This use case aims to optimize video transmission workflow in a healthcare setting. The VEGA-1100's bidirectional capabilities eliminate the need for separate encoders and decoders, creating a lightweight IP-based video system, while the VEGA-1200 enables SDVoE signal reception and recording for capturing medical imaging data.

System Description

- Advantech's VEGA-1100 and VEGA-1200 offer advanced video transmission solutions for the healthcare industry. The VEGA-1200, a hybrid encoder/decoder, supports analog, digital, and IP video sources for real-time recording and streaming in the OR. VEGA-1100 ensures efficient UHD 4K2K @60 (4:4:4) video distribution.

- As a bridge-type SDVoE endpoint, VEGA-1200 integrates SDVoE and HEVC encoding, facilitating seamless UHD video transmission to medical PCs and servers. Together, these VEGA solutions provide reliable streaming for modern OR video transmission.

Key Features
- **Flexible Video Composition**
- **Ultra-low Latency Video Transmission**
- **Seamless SDVoE and HEVC Encoding**
- **SDVoE RESTful API for Easy Integration**
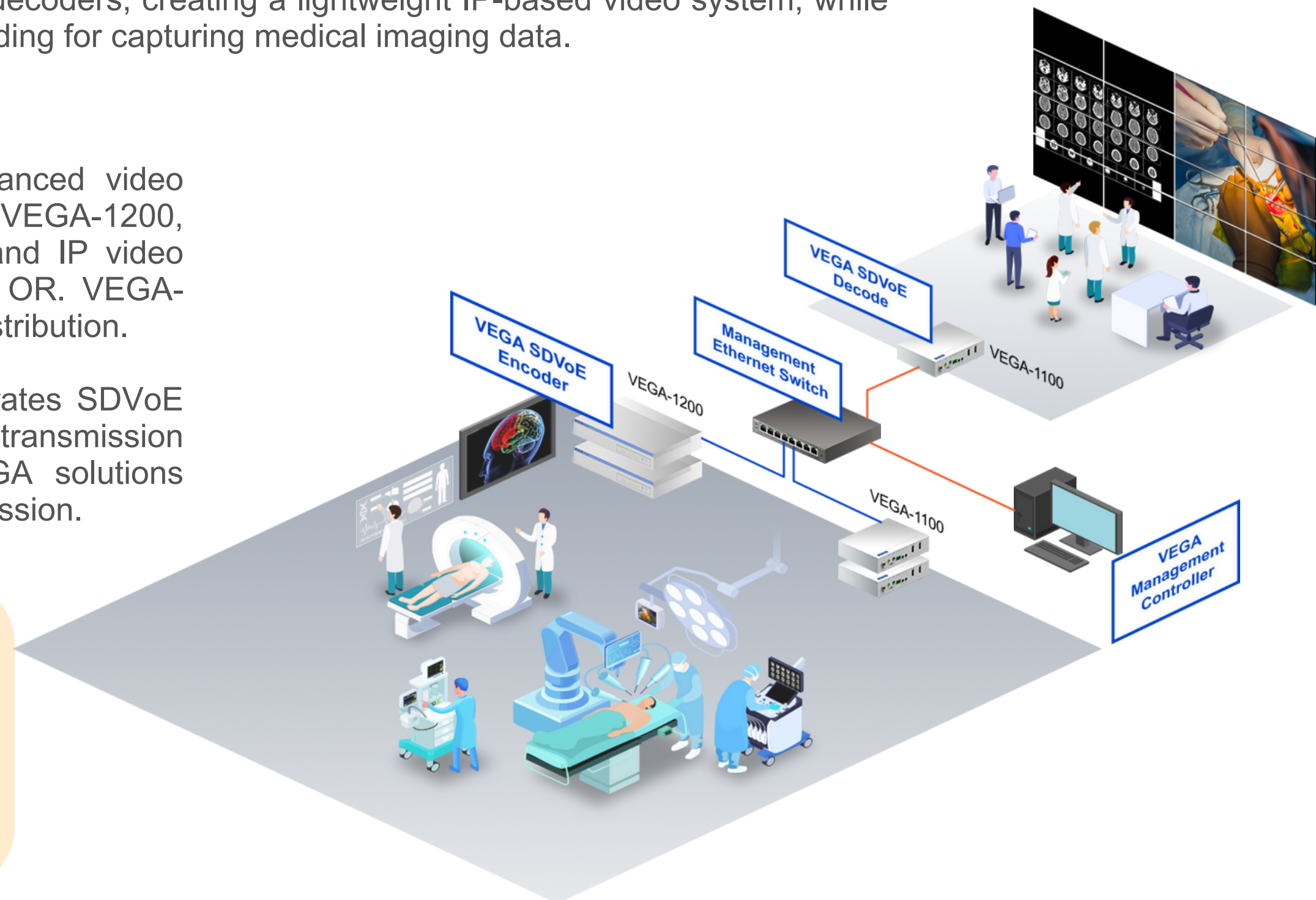
Product Selection

Model	VEGA-1101	VEGA-1100	VEGA-1000
Processor System	BlueRiver AVP2000T	BlueRiver AVP2000T	BlueRiver AVP2000
Channels (Max.)	1 (up to 4Kp60)	1 (up to 4Kp60)	1 (up to 4Kp60)
VoIP Connectivity	1 x 10 GbE (SFP+ cages), 1 x 10 GbE copper (POE), 1 GbE copper	1 x 10 GbE (SFP+ cages), 1 x 10 GbE copper, 1 GbE copper	1 x 10 GbE (SFP+ cages), 1 x 10 GbE copper, 1 GbE copper
AVoIP Solutions	SDVoE	SDVoE	SDVoE
Video I/O	HDMI	HDMI	HDMI
System Mode	Transceiver	Transceiver	Transmitter, Receiver

Product Selection

Model	VEGA-1000L TX	VEGA-1000L RX	VEGA-1200
Processor System	BlueRiver AVP2000	BlueRiver AVP2000	BlueRiver AVP2000
Channels (Max.)	1 (up to 4Kp60)	1 (up to 4Kp60)	1 (up to 4Kp60)
VoIP Connectivity	1 x 10 GbE (SFP+ cages)	1 x 10 GbE (SFP+ cages)	1 x 10 GbE (SFP+ cages), 1 GbE copper
AVoIP Solutions	SDVoE	SDVoE	SDVoE, NDI, SRT
Video I/O	HDMI	HDMI	HDMI, SDI, DP, VGA, S-Video
System Mode	Transmitter	Receiver	Transmitter, Receiver

Product Selection
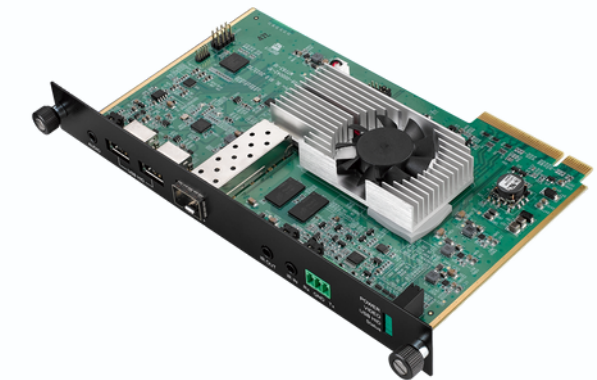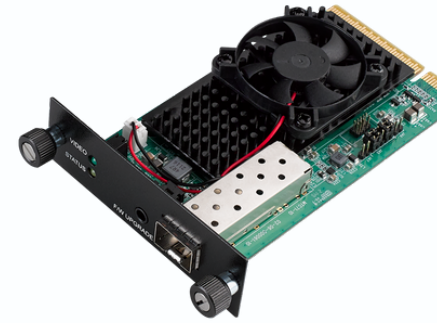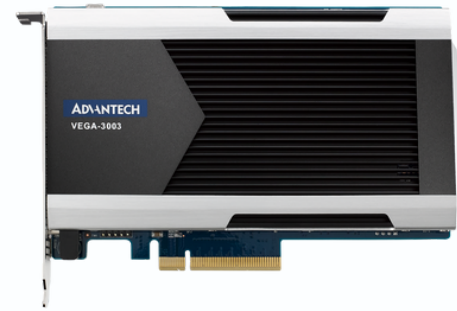
Model	VEGA-3003	SDM-S	SDM-L
Processor System	BlueRiver AVP2000	BlueRiver AVP1000	BlueRiver AVP2000
Channels (Max.)	2 (up to 4Kp60)	1 (up to 4Kp60)	1 (up to 4Kp60)
VoIP Connectivity	1 x 10 GbE (SFP+ cages), HDMI 2.0	1 x 10 GbE (SFP+ cages)	1 x 10 GbE (SFP+ cages)
Video Loopout	Support	-	-
AVoIP Solutions	SDVoE	SDVoE	SDVoE
System	Linux / Windows	SDM	SDM

Worldwide Presence

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- Amberg
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- Milan
- Munich
- Bursa
- Madrid
- Kadima Zoran

- Toronto
- Chicago
- Boston
- Ottawa
- Cincinnati
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- Mexico

- Itajuba
- Sao Paulo

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- Seoul
- Incheon
- Beijing
- Chungbuk
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