Advantech SKY Series Industrial Server Solutions

High-Performance, Reliable, and Flexible with Product Longevity Support

- GPU Server
- IoT Server
- Carrier-grade Server
- Multi-node Server
- Server Board
- Server Chassis
- Application Case
- Solution Ready Platform

ADVANTECH

Enabling an Intelligent Planet

intel IoT Solutions Alliance Premier

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Table of **Contents**

Star and **New Product Highlights**

GPU Server

NEW

SKY-6420

High-Density GPU Training Server (4U 10C)

- Dual Intel® Xeon® scalable/2nd gen. scalable family processor, up to 24 DIMM slots, Intel Optane DCPMM
- Dual 10G-RJ45
- 11 x PCIE x16 slots, up to 10 double deck GPU cards, peer-to-peer support
- 12 x 3.5"/2.5" SAS/SATA drive bays
- System fan with hot-swappable feature

GPU Server

SKY-6100

High-Density GPU Inference Server (1U 5C)

- Dual Intel® Xeon® scalable/2nd gen. scalable family processor, up to 8 DIMM slots, Intel Optane DCPMM
- 5 x PCI-E x16 add-on cards
- NVIDIA Tesla P4/T4 optimized
- Unified front bezel design
- 2 x2.5" SAS/SATA drive bays

Multi-node Server

NEW

SKY-5240

Multi-Node, High-Density & Flexible Storage Server (2U 4 Node)

- Cutting edge technology with Intel® Xeon® scalable/2nd gen. scalable family processor, up to 24 DIMMs per node, Intel Optane DCPMM
- Flexible IO option
- NVMe and SAS3 12G supports onboard RAID
- Supports two on-board M.2 2280 slots per node
- 2 x PCIe x 16 expansion slots per node

Carrier-grade Server

NEW

SKY-8101

High-Performance 5G Edge Computing Server

- 1U 20" rackmount server
- Add-on card support: up to 2 x FH/FL PCIe x8 gen3 slots, (optional: 1 FH/FL PCIe x16 gen3 slot) 1 x LP PCIe x8 gen3 slot, 1 x PCIe x4 gen3 slot
- Operating temperature -5 ~ up to 55°C (23 ~ 131 °F)
- Robust design with redundant PSU, fan, BIOS, BMC

Carrier-grade Server

NEW

SKY-8201

High-Performance NFVi Server

- 1U 20" rackmount server
- Add-on card support: Up to 4 FH/FL+ 2 FH/HL PCIe x8 gen3 slots, (optional: 4 x FH/FL PCIe x16 gen3 slots) plus 2 x LP PCIe x8 gen3 slots
- Operating temperature -5 ~ up to 55 °C (23 ~ 131 °F)
- Robust design with redundant PSU, fan, BIOS, BMC
- EMC class-B barebone design
- Dust filter support

IoT Server

NEW

SKY-7221

Hyperconverge Storage Server

- Dual socket P 2nd gen. Intel® Xeon® scalable processors with up to 24 x DIMM slots
- Up to 12/16 bay 3.5", or 24 bay 2.5" hot-swap SATA/SAS/NVMe drives
- Up to 4 FHHL PCIe gen3 x 8 and 1 x FHHL PCIe gen3 x16
- 2 x M.2 2280 SATA SSD boot drives
- 1 x OCP 2.0 PCIe Gen3 x16 NIC support

Workstation and Storage Workstation

NEW

HPC-7484+ASMB-935

WorkStation for Machine Builders (4U Tower Server)

- Dual Xeon® Scalable processors
- DDR4 2666 MHz RDIMM up to 1.5 TB (24 DIMMs)
- 5 x PCIe x16 (gen3) and 1 x PCIe x 8 (gen3)
- Dual 10GbE ports,10 x SATA3 and 6 USB 3.0 ports
- 8 hot-swap 3.5"/2.5"SAS3/SATA3 and 1 x 2.5 internal drive

Workstation and Storage Workstation

NEW

HPC-8108+ASMB-925

Storage Server (1U Rackmount Server)

- Dual Xeon® scalable processors
- DDR4 2933 MHz RDIMM up to 768 GB (12 DIMMs)
- 8 hot-swap 2.5"SAS3/SATA3 drive bays with slim ODD
- Dual 10GbE ports
- 1 x PCIe x16 (gen3) expansion slot

Workstation Motherboard

NEW

ASMB-805

High Performance Workstation Motherboard

- ATX orkstation otherboard with Xeon® processors
- DDR4 2666 MHz RDIMM up to 512 GB
- 3 x PCIe x16 (or 1 x16 and 4 x8)
- Workstation 1S up to 4.00 GHz
- 7 x SATA3 and 1 x M.2 22110/2280/2242 connector (PCIe interface)

Advantech SKY Series: **Industrial-grade Servers**

Advantech, a global leading provider of industrial intelligent system solutions, is known for its dedicated industrial hardware design, product reliability, and integration services for more than 30 years. Now, Advantech has evolved from an embedded systems providers into an industrial IoT solution provider. All our products and services offer smart, secure, energy efficient features, with remote manageability and Configure-to-Order Services (CTOS) and Design-to Order Services (DTOS).

Advantech SKY series industrial-grade server products include open standard server products: server chassis (HPC) and server boards (ASMB), and proprietary server products for critical applications: GPU Servers, IoT storage servers, carrier-grade servers, and multi-node servers. From components to systems, Advantech solutions offer long longevity support, revision control, design flexibility, and industrial-grade reliable operation. Advantech cooperates closely with our partners to help provide a multitude of solutions for a wide array of applications, such as AI solutions for smart city applications in transportation, medical, 5G communication, networking and security, IoT edge and private clouds.

Assured reliability and performance - failure is not an option

Maintaining Equipment Longevity

- Eliminates yearly system upgrades
- Low total cost of ownership, including system certification costs and RMA service preparation

Strict Revision Control for Consistency

- Reduces product validation during product lifecycle
- Avoids compatibility issues resulting from engineering changes

Industrial-grade Designs for Critical Applications

- Wide temperature tolerance
- Anti-vibration capability
- Dust prevention
- Redundant design
- Remote control

Customization to Meet Flexible Needs

- Configure-To-Order and Design-To Order services
- Professional AE support shortens development times

Worldwide Support and Local Services

- System engineering expert group
- 24/7 hotline AE and global RMA system
- Certified quality assurance systems

Designed for Industrial and Critical Business and Environments

Advantech industrial-grade servers have better endurance and redundancy in critical application environments which commercial servers could not operate in. Advantech servers have wider ambient temperature validation for greater reliability. They successfully reduce system shut downs caused by high ambient temperatures. Strict vibration tests make our servers more durable, especially in higher shock and vibration environments like factory automation. Advantech servers feature filters in the front panel that blocks external dust ingress while easy filter installation and replacement ensures smooth continuous operation.

Characteristic	Advantech industrial-grade servers	Commercial servers
Temperature Tolerance	-0°C ~ 40C (Carrier-grade -5°C ~ 55°C)	10°C ~ 35°C
Vibration Duration	0.25~1G	0.25~0.5G
Dust Prevention	Dust Filter Support	-
Technical Support	High	Medium to Low
Longevity	5-7 years	2-3 years

SKY Series-**Full Product Lineup**

ASMB and HPC– Standard Industrial Servers

Advantech aims to provide the best solutions and fulfill the most complex requests from different industries. Our ASMB server boards and HPC server chassis enable various system configurations and diverse module options to help fulfill a variety of field applications.

SKY Server – Designed for Critical Applications

SKY Servers are industrial server products with high reliability and performance designed for critical applications. We offer servers for high-density GPU, 5G infrastructure, and IoT private cloud applications. SKY Servers tightly integrate hardware, software, operating systems, databases, and other components needed for critical applications.

Build Your Dream System in 30 Days

With an increasingly diverse market and multiple vertical applications, the needs of customized systems for specific applications are in high demand. With customization, integration, validation, and certification, we are committed to providing a one-stop solution to worldwide customers who require a trusted partner to maximize their applications.

Alliance Partners

NVIDIA PREFERRED PARTNER

intel IoT Solutions Alliance Premier

Stratus

AMD

vmware READY

SKY

GPU Server

Empowering AI and Visualization Computing

Advantech GPUServers-SKY-6000 series are high-density GPU AI training platforms designed to meet the growing trend toward big data and analysis. The SKY-6000 series are powered by dual Intel® Xeon® scalable processors and each of these highly scalable GPU-optimized servers support up to 10 NVIDIA® GPUs. Featuring IPMI management functions and smart fan control, leads to better acoustic and the thermal management. Every GPU includes one Peripheral Component Interconnect (PCIe) slot for high-speed connection, which maximizes the acceleration of highly parallel applications like artificial intelligence (AI), deep learning, self-driving cars, smart cities, medical technology, big data, high performance computing (HPC), virtual reality, and more.

Key Features

Thermal Management

A specially designed fan increases air flow and pressure for cooling the numerous GPU cards.

High Density GPU Cards

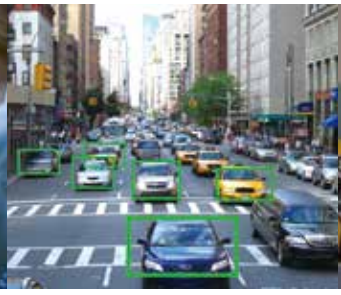
Supports up to 5 GPUs in a 1U server and 10 GPUs in 4U server, making it efficient both in space and performance.

Remote Management

An intelligent platform management interface enables users to monitor sensors and receive alerts in the event of failure.

Applications

Visualization Computing



AI Training and Inference

Automated Optical Inspection

Big Data Analytics

Key Products

SKY-6420

4U 10 GPU cards high density AI training server

SKY-6400

4U 4 GPU cards AI hybrid server

SKY-6200

2U 4 GPU cards AI hybrid server

SKY-6100

1U 5 GPU cards AI inference server

SKY

IoT Server

Flexible and Scalable for Increasing Complexity

Advantech IoT server series are high-performance, high capacity, cost-effective storage solutions that fulfill the requirements of industrial environments and mission-critical applications with security, connectivity, and availability. They have comprehensive fault-tolerant capabilities with H/W RAID and online expansion capability via JBOD to ensure the highest possible data availability. Redundant power supplies, the ability to withstand fan failures, redundant firmware images with failsafe upgrades, and hot swappable field-replaceable units all make this server solution the platform of choice for your critical applications with zero downtime. Interoperability is performed with a wide selection of PCIe cards in order to accelerate integration and shorten time to deployment. The power and cooling options along with the streamlined mechanical design make them ideal for demanding applications requiring acceleration technologies such as GPU and FPGA cards.

Key Features

Seamless Integration

One-stop shopping solution from server board, chassis, server and storage. Wide storage portfolio, including JBOD.

Interoperable and Optimized I/O

Maximum I/O connectivity design with industry leading offloading and acceleration technology from GPU and FPGA cards.

Interchangeable with NVMe

The NVMe interface overcomes data bottlenecks in flash drives and upgrades the IOPS so I/O performance can be up to 10 x greater.

Applications

Enterprise Data Center

IoT Private Cloud

NVR/DVR Storage

Industrial Equipment Storage

Key Products

SKY-7221

2U 16-bay hyper-converge storage enterprise server

SKY-7210

2U 12-bay high end enterprise server

SKY-8101L

Compact 1U high capacity storage server

ASR-3100

1U 16-bay high I/O performance storage server

SKY-4311

1U 8-bay optimal NVR/ DVR storage

SKY

Carrier-grade Server

Optimized Design for Superior Reliability in Critical Use

Advantech SKY-8000 series server is highly configurable carrier-grade server designed to balance the best in x86 server-class processing performance with maximum I/O and offload density in a 20" depth chassis. This system is a highly available platform optimized to meet next generation networking application needs in virtualization network functions, NFV infrastructure, and private cloud services. SKY-8000 series server caters to higher power and cooling requirements, it combines cutting edge performance with the rugged requirements of networking equipment providers. The power and cooling options with the streamlined mechanical design make it ideal for demanding applications operating in -20 ˚C to 70 ˚C environments.

Key Features

Ruggedized Designed

Optimized for high availability and carrier grade usage. Safe and reliable both in exterior and interior environments.

NEBS Level 3 Compliant

Designed for NEBS Level 3 carrier-grade environments with limited rack space. Uses +55 ˚C air filter for acoustic noise reduction.

Interoperable and Optimized I/O

Specifically designed for high density PCIe cards for the integration of leading offloading and acceleration technology.

Applications

Telecommunication Infrastructure

Private Mobile Network

Virtualization Platform for Communication

Network Functions Virtualization Infrastructure

Key Products

Edge 5G

SKY-8101
Compact 1U high-performance server

SKY-8100
1U Carrier-grade server

SKY-8211
2U vRouter

Core

SKY-8200
2U Carrier-grade server

SKY-8201
Compact 2U carrier-grade, high performance server

SKY-8201L
Compact 2U high capacity telecom storage server

SKY

Multi-node Server

Reaching for Performance Effectivity and Efficiency

Advantech multi-node server is designed for hyper-converged infrastructures and high performance computing in markets demanding enhanced solutions for applications, such as hyper-converged secondary storage and computing-intensive clouds. The system delivers the highest performance and efficiency in a 2U 4-node design — creating the flexibility to deploy independent workloads on a shared chassis infrastructure, including cooling and power. This significantly lowers the total cost of ownership (TCO) to less than the cost of four regular 1U or 2U servers.

Key Features

Space-Efficiency

Four nodes share the same chassis infrastructure. Two PCIe slots with PCIex16 bandwidth per node enables a broader choice of I/O, offloading, and acceleration.

High Performance

Each node supports up to two 28-core CPUs. 6-channel memory design supports up to 768GB RAM per node.

Quick Maintenance

Hot-swappable design for nodes, hard drives, and fan, providing quick maintenance.

Applications

High-Performance Computing

Hyper-converged Infrastructure

High Density Storage

Virtualization

Key Products

SKY-5240

2U 4-node hybrid server, designed for high-performance computing applications

SKY-9240

2U 4-node rackmount server, designed for hyper-converged infrastructure and storage

HPC

Industrial Server Chassis

Reliable and Durable for Machine and Equipment Builder

From 1U to 4U rackmount server chassis, Advantech HPC server chassis aim to provide the best solutions for the most complex tasks for different industrial applications. Advantech Industrial server chassis give equipment developers high performance, efficient, and redundant solutions for industrial environments and critical applications. This product line provides customers with a total solution and value-added services rather than just a regular server product.

Key Features

High-availability and Redundancy

Redundant power supply and hot swappable design for hard drives and fan

Industrial-grade Design

Excellent thermal ability, anti-vibration, and wide temperature operation

Product Life Cycle Management

Supports revision control, longevity management, and easy-maintenance for non-stop operation

HPC-7000 Series-Industrial Server-grade IPC Chassis

Advantech server-grade IPC chassis are targeted in a variety of applications such as AOI, medical equipment, and industrial equipment as a high-end workstation server. HPC-7000 series supports multiple configurations that fulfill server-grade IPC standards to deliver non-stop operation.

Key Products

1U Rackmount	*2U Rackmount*	*3U Rackmount*	*4U Rackmount*	*Tower*
				
HPC-7120S	**HPC-7242**	**HPC-7320**	**HPC-7483**	**HPC-7000**

HPC-8000 Series-Industrial Storage Server Chassis

Advantech HPC-8000 series storage chassis are targeted at Industrial 4.0 demands. It can support NVMe interface and fulfills a variety of application demands in surveillance, network security, broadcasting, and factory automation.

Key Products

1U Rackmount	*2U Rackmount*	*3U Rackmount*	*4U Rackmount*
			
HPC-8104	**HPC-8212**	**HPC-8316**	**HPC-8424**

ASMB

Industrial Server Board

Enhance Your Scalability

Advantech ASMB are industrial server boards based on Intel® Xeon® technology and Intelligent Platform Management Interface (IPMI) technology, which are ideal for performance-demanding applications such as Automatic Optical Inspection (AOI), Vision Inspection, Video Transcoding, Supervisory Control and Data Acquisition (SCADA). Aimed at diverse industrial applications, Advantech ASMB server boards are designed to provide turnkey solutions that accelerate deployment, ease management, and enhance virtualization to facilitate cloud computing. Advantech separates ASMB products into three categories based on their computing power: Work Station Server Board, Mainstream Server Board, and High-end Server Board.

Key Features

Industrial-grade Design

Designed for harsh environments, they perform with wide temperature tolerance and anti-vibration capabilities

Interoperable and Optimized I/O

Specifically designed for high density PCIe cards for the integration of leading offloading and acceleration technology

High Network Bandwidth

The increase in bandwidth improves uptimes and adds DDOS mitigation technology to the security arsenal

ASMB-200/500/700 Series-Work Station Server Board

ASMB work station server board with single processor socket H4 design that features the Intel® C200 series chipset which supports 8th Generation Intel® Core™ i7 Processors, and Intel® Xeon® Processor E-2100 series.

ASMB-800 Series- Mainstream Server Board

ASMB mainstream server board with single processor socket R, socket P0 design features the Intel® C600 series chipset which supports the Intel® Xeon® Processor E-5, and Intel® Xeon® scalable series.

ASMB-900 Series- High-end Server Board

ASMB high-end Server server board with dual processor socket R, socket P0 design features the Intel® C612,C620 chipset which supports the Intel® Xeon® Processor E-5, and Intel® Xeon® Scalable Series.

Key Products

Work Station Server Board

ASMB-785

Mainstream Server Board

ASMB-813

High-end Server Board

ASMB-923

AI Smart City

Accelerating Smart City with Advantech GPU Server

China

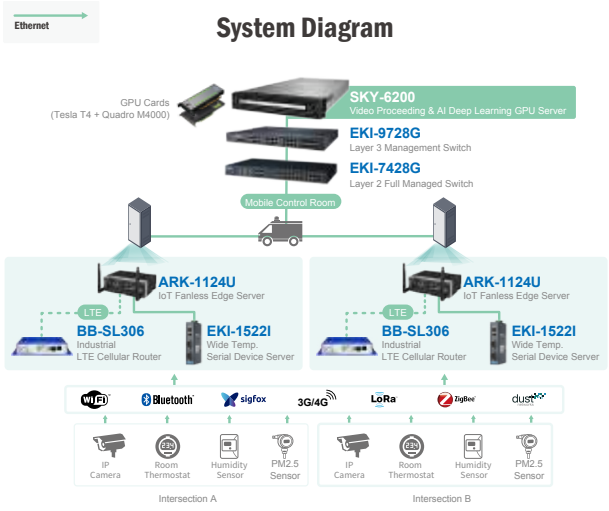
Background

In China, recent economic growth and more open policies have led to rapidly increasing levels of urbanization. At the end of 2017, approximately 60% of the total population resided in urban areas. This mass urbanization has led to numerous problems in terms of transport, social security, energy consumption, and the environment. To address these challenges, Beijing city officials needed an intelligent IoT solution for conducting real-time monitoring of local conditions, such as air quality, road traffic, and video surveillance data. The collected data would be then used for subsequent analysis to provide actionable feedback and insights for optimizing the city's smart capabilities.

System Requirements

The smart city transformation impacts every aspect of the city infrastructure. In Beijing, because temperatures can reach up to 40 °C (104 °F) in the summer and drop to -15 °C in the winter, the entire IoT solution - including edge sensing devices, edge computers, network routers, gateways, and back-end servers - must be rugged enough to withstand extreme environments. Therefore, a wide operating temperature range, zero downtime, and high stability were essential hardware requirements. And because accurate data is crucial for smart city applications, the solution also needed multiple open I/O interface types to enable diverse data to be collected and seamlessly integrated for management and analysis. Additionally, in order to transform the data into actionable insights, a powerful GPU server with deep-learning capabilities was also required.

System Diagram



System Description

Advantech provided a comprehensive IoT solution for an integrated city environment monitoring system, which included its BB-SL306 wireless router, EKI-1522I serial device server, ARK-1124U edge computer, EKI-7428G industrial GbE switch, and SKY-6200 high-performance GPU server. The SKY-6200 server enables all recorded video and environment data, such as humidity, temperature, and PM2.5 levels, to be uploaded to edge computers for instant inference and analysis. Using intelligent connectivity, the data is transferred to a deep learning GPU server for integrating big data and optimizing device productivity and intelligence. SKY-6200 is a 2U 4 GPU card server installed to facilitate machine learning and video processing.

Why Advantech

- Provides all-in-one IoT solution with edge sensing, computing, connectivity, and server storage
- SKY-6200 server offers industrial-grade vibration tolerance for enhanced reliability
- High-quality products and technical expertise in industrial level system design

Key Products

SKY-6200
2U 4 x GPU card AI training GPU server

EKI-9728G
Combo L3 managed Ethernet switch

EKI-7428G
Combo L2 managed Ethernet switch

Intelligent Transportation

AI for Moving Freight Car Fault Detection System

China

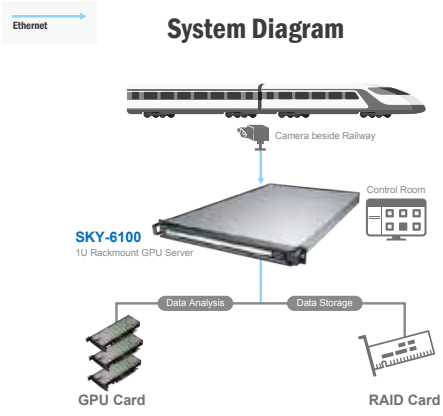
Background

Vehicle safety monitoring systems automatically identify faulty moving parts, and are essential for the safe operation of trucks, vehicles, and trains. Faced with mounting problems stemming from overloaded passenger trains and freight traffic, a Chinese state railway operator decided to take urgent action. A system was needed that could perform real time advanced data analysis and diagnosis with communication technologies that detected over stressed parts on trains while they were moving. The vehicle safety monitoring system included the following: Train Hotbox Detection System (THDS), Trackside Acoustic Detector System (TADS), Train Braking Performance Detection System (TBDS), Truck Performance Detection System (TPDS), and Trouble of Moving Freight Car Detection System (TFDS).

System Requirements

TFDS are high speed intelligent image analysis systems for moving trains that identify and evaluate the condition of critical moving parts at high speed. The system helps determine whether parts are likely to fail so that action can be taken before they do. TFDS helps identify fractures and loss of vehicle bogies, brakes, coupling buffers, and other critical components on moving trains. The TFDS systems include multiple high speed CCD digital cameras that simultaneously capture and transfer images, perform digital image processing, and identify locations of stressed parts. The systems are installed under trains and at rail sides for dynamic image capture and analysis. Processed data is used for effective intelligent early-warning to prevent accidents and assure the safe and efficient operation of high-speed passenger and freight trains.

System Diagram



System Description

The TFDS system consists of a SKY-6100 server with NVIDIA Tesla P4 GPU and a firmware RAID card. The image processing capability of the GPU server is defined by the video channel that can be processed by this server. The flexibility of the card selection allowed the customer to use fewer cards in the beginning, and then add more GPU cards as required. A firmware RAID card was added and the dual front accessible 2.5" hard drive bay allowed the user to build a RAID 0/1 configuration for better throughput and security for the drive bay. An internal M.2 2242 SATA interface device was reserved for OS installation.

Why Advantech

- High-quality products and technical expertise in industrial level system design
- Advantech GPU server supports up to five NVIDIA Tesla P4 GPUs for computing efficiency
- Smart fan controls of GPU monitor temperature ensures thermal integrity

Key Products

SKY-6100
1U 5 x GPU card AI inference GPU server

Intelligent Transportation

AI Platform Incident Detector and Video Surveillance System

Taiwan

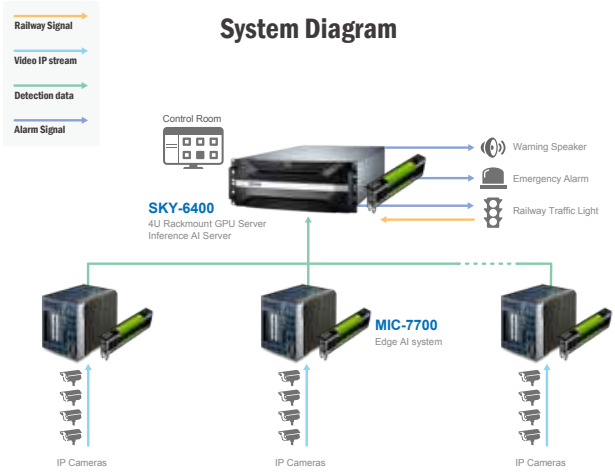
Background

Cameras are used in railway stations for monitoring passengers to keep passenger safe and to protect secure areas. If an emergency occurs, station operators need to identify incidents and take action immediately. However, traditional video surveillance systems suffer from relatively low quality video and accurate analytics. It takes too much time and effort for station operators to recognize and acknowledge false alarms. By using AI trained models, passengers can be easily detected and tracked, and most false alarms caused by non-human artifacts and objects can be distinguished and eliminated from the data. AI can raise video detection accuracy and improves passenger safety.

System Requirements

Train stations need multiple cameras to cover the entire length of track along the platform. The edge AI systems that leveraged GPU cards were deployed along the platform. Each camera conducts surveillance in its own preset monitoring area to detect whether objects have fallen from the platform onto the track. The AI inference system needed to handle several cameras and be able to detect people from inanimate objects using AI deep learning and training methods in the control room. Related backend systems need to trigger alarm messages to notify station staff, train drivers and the whole station. The system also has to control related systems like railway signaling, and warning alarms.

System Diagram



System Description

The AI video detector took advantage of deep learning technology to not only detect but also recognize objects precisely. An edge AI system with GPU cards required high computational complexity. MIC-7700 was used to grab four video streams from four IP cameras and recognize objects based on AI inference. It can work flexibly with MIC-7000 i-Modules series to support a variety of NVIDIA GPU cards and railway operators can choose appropriate system combinations to meet their needs. In the central control room, the AI inference server monitors all cameras in the station and processes all data with multiple NVIDIA GPU cards integrated into a single server.

Why Advantech

- Full range of end-to-end solutions from AI servers to edge AI systems
- Industrial edge AI systems and AI inference servers support a variety of NVIDIA GPU cards
- Provides a reliable AI video monitoring system

Key Products

SKY-6400
2U 4 x GPU card AI training GPU server

MIC-7700
Intel® 6th/7th generation Core i desktop compact system

Intelligent Transportation

Traffic Monitoring for Self-Adaptive Traffic Signal Control System

Taiwan

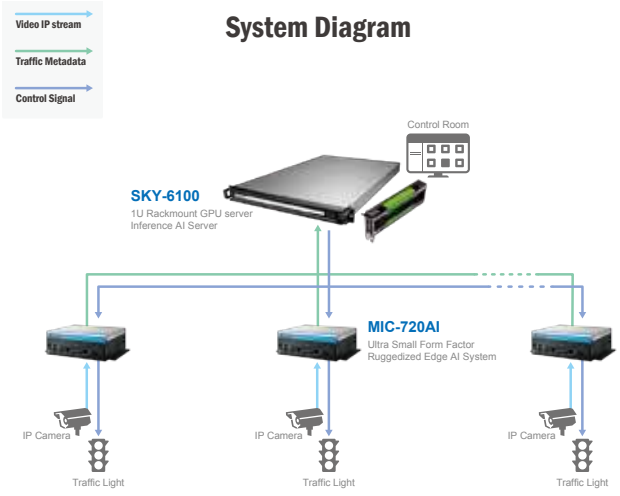
Background

Traffic signal controls at intersections highly impact vehicle activity, conflicting movement and capacity. To achieve an effective transportation solution that maintains safety but also permits better traffic throughput, accurate traffic monitoring is needed to understand vehicle movements and flows throughout the city. Traditional detection methods like ultrasonic, microwave radar, or infrared sensors either expensive to deploy or lack the necessary recording detail. Video detection systems can overcome these disadvantages and generate essential traffic metadata with AI. Information such as vehicle numbers, direction, waiting times etc. can all easily be acquired using video equipped with edge-based AI systems.

System Requirements

The AI traffic monitoring solution included a self-adaptive traffic light system, edge AI system, and a backend AI inference server; all integrated into a carefully designed dataflow. The edge AI system grabs video streams from the IP cameras and analyzes data by inference. Low power consumption, fanless design, and wide-temperature functions were necessary to meet robust requirements for a road-side system since equipment would be hung on overhead gantries to control traffic lights. Raw traffic data will be transmitted back to the control room and an AI inference server will analyze sets of metadata via pre-trained deep learning models. Finally, the self-adaptive traffic monitoring system can automatically manage all traffic signals from the central control room.

System Diagram



System Description

The MIC-720AI edge AI system leverages AI inference technology to perform traffic monitoring on the massive amounts of collected data; surpassing traditional vehicle recognition methods used for object tracking. MIC-720AI provides multiple interfaces to integrate with traffic equipment and fulfills deep learning computing requirements at the road-side. SKY-6100 AI inference server in the control room receives metadata from all devices through deep learning models. Through SKY-6100, the self-adaptive traffic signal control system makes the traffic in the city flow smoothly and efficiently. All Traffic data needs to constantly assess current and past performance to predict future performance. This helps pro-active transportation planning such as traffic impact assessments, public transportation, and road system design.

Why Advantech

- Provides AI traffic monitoring solution with a well-designed end-to-end dataflow
- Industrial design empowers AI computing at the road-side with minimum deployment effort
- Deep learning computing at the backend permits self-adaptive traffic light control

Key Products

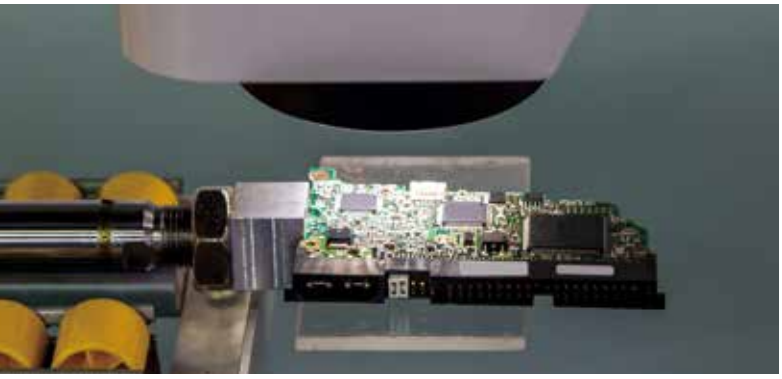
SKY-6100
1U 5 x GPU card inference server

MIC-720AI
AI inference system based on NVIDIA Jetson® Tegra X2

Industrial Equipment

AOI Systems for PCB Manufacturing

Israel



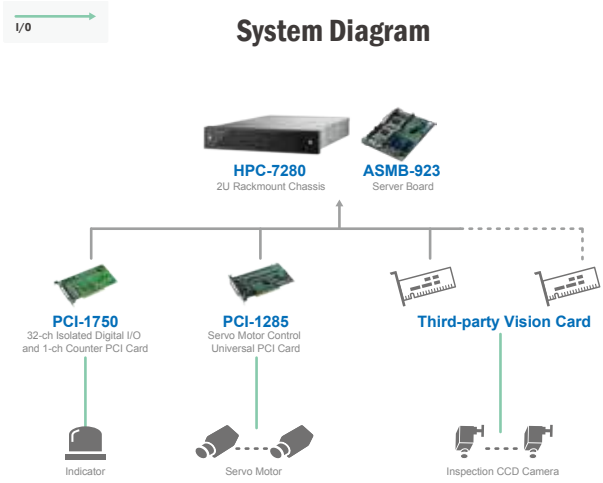
Background

Automated optical inspection (AOI) systems perform visual inspections of printed circuit boards (PCB) during manufacturing in which a camera is used to scan the board in extremely fine detail to check for any defects or failures. AOI is the integration of optics, mechanics, electronic control, and software to replace the human eye. In the real world, PCBs are getting smaller and more complex; even a relatively simple board can be made up of literally thousands of soldered components. AOI monitors the quality of PCB production and corrects them in the process flow, which is a key to success in today's competitive PCB production environment.

System Requirements

AOI systems are commonly used in the production of all kinds of products but are especially important for monitoring PCBs for defects and accurate measurements beyond the capabilities of a human inspector. They are able to detect a variety of surface feature defects, such as nodules, scratches, stains, open circuits, and the thinning of soldered joints. However, the development of an AOI system for PCBs is unlike an AOI general purpose system. There are some specific features that are only for the development of an AOI system used for PCB manufacturing. To provide truer co-planarity inspection capabilities and volumetric inspection data, an AOI system requires different types of cards to connect to devices such as robotic arms and CCD cameras. For the AOI system to keep pace with increasing manufacturing speeds, a powerful GPU card is needed.

System Diagram



System Description

Because of technological improvements, AOI systems can now very accurately detect defects with only a small number of failures. The Advantech ASMB-923 motherboard provided a powerful computing solution to fulfill the customer's needs. When comparing the speed, efficiency, and flexibility of other test and inspection methods, the benefits of AOI are clear; using a powerful GPU card was key to speeding up the inspection process. The Advantech ASMB-923 server motherboard supports multiple expansion cards such as GPU cards and other PCIe cards such as COM and NIC cards. The Advantech HPC-7280 2U rackmount server chassis was used as it can support ATX/CEB/EATX motherboards with eight hot swap SAS/SATA drive bays.

Why Advantech

- Provides 7-years product longevity product support
- Advantech ASMB-923 supports multiple expansion cards for high-end critical use
- Advantech HPC-7280 chassis supports 0 ~ 40°C ambient operating temperature ranges

Key Products

ASMB-923

Dual LGA 2011-R3 Intel® Xeon® E5-2600 v3/v4 EATX server board with DDR4, 4 PCIe x16+ 2 PCIe x8(Gen 3.0)

HPC-7280

2U rackmount chassis for EATX server board with 8 x hot-swappable hard drive cages

Industrial Equipment

Airport Baggage Inspection System and Hold Baggage Screening

Europe

Background

With the volume of air passengers and cargo constantly increasing, concerns over airport safety and security have grown significantly. New regulations demand airports provide intelligent systems that detect a wide range of substances and dangerous goods in order to prevent terrorism and the movement of illicit materials. Additionally, the entire hold baggage screening (HBS) process is set to be transformed as airports across Europe upgrade to European Civil Aviation Conference (ECAC) Standard 3-certifed explosive detection systems (EDS). The deadline for ECAC Standard 3 compliance was 2018 in the UK and 2020 for the rest of Europe, with a possible extension until 2022 under specific circumstances.

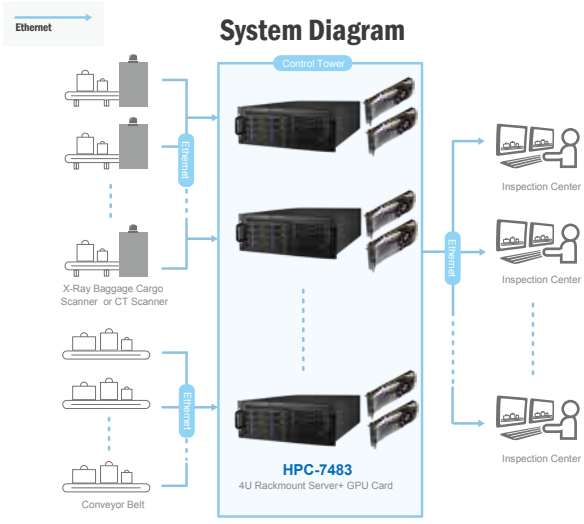
System Requirements

The European Commission recently passed legislation requiring that all hold baggage screening in Europe be conducted using ECAC Standard 3-certified EDS. To support the new scanning systems, the airport back-end servers needed to be upgraded to be faster, more powerful, and easier to maintain. Advantech HPC-7483 is a 4U power efficient chassis that supports a dual-processor motherboard with up to 10 expansion slots. To comply with the ECAC Standard 3 and new EDS requirements, the new scanner server needed the following features:

1.Dual processors for increased computing power

2.High memory capacity for data scanning and image buffering

3.Multiple I/O, Ethernet, and system expansion slots that can support high-power graphics cards for integrating equipment controllers and peripheral devices



System Description

After passenger check-in, luggage is placed on the conveyor belt and passed through the X-ray or CT scanner detection zone. The real-time scanned images are then transmitted to a centralized control room via Ethernet cable. If any illegal items (such as lithium-ion batteries, lighters, weapons, or narcotics) are detected, the baggage handlers simply click a button and the server sends out a signal to divert the flagged luggage into a restricted inspection room. There, the luggage is opened and checked in greater detail to prevent dangerous objects from being carried onboard a plane.

Why Advantech

- Advantech provided a customized solution that was co-validated with the customer's products with customized BIOS, logo, label, or EMC and safety tests
- Provides product longevity product support, worldwide logistics, and an extendable warranty for certain key components

Key Products

HPC-7483

4U rackmount / tower chassis with support for dual processor motherboard and 10 x expansion cards

ASMB-923

Dual LGA 2011-R3 Intel® Xeon® E5-2600 v3/v4 EATX server board with DDR4, 4 PCIe x16+ 2 PCIe x8(Gen 3.0)

Industrial Equipment

High-Performance Computing System for Simulator Training System

Taiwan

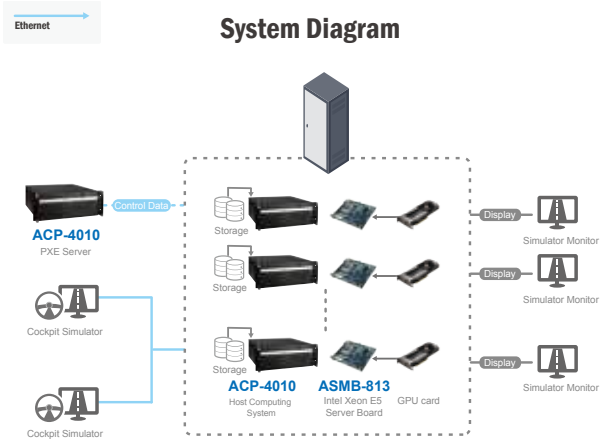
Background

Mission-critical military operations have long been an important application for industrial-grade servers. Training simulator systems require workstations that offer stable real-time environments to accurately replicate diverse simulations for helicopters, armored vehicles, aircraft, weapons, and other battlefield systems. Advantech provided an integrated hardware solution to one of the largest system integrators specializing in aerospace and military applications. Through close collaboration on hardware and software development, high-performance computing systems were built for a fully functional training simulator.

System Requirements

The host computing system for the training simulator included: a PXE server and a so-called “mission system”. The PXE server featured a six-core processor, solid-state and hard drives. These drives needed to be expandable to satisfy the project requirements. To perform flight control, avionics, and weapons training, the system needed to be super reliable and stable. Thus, 80-plus power supplies were integrated and a Linux-based operation system was selected to provide the OS platform for real-time simulation and remote control of mission functions. The system required similar hardware as the PXE server, but operating on a Windows-based OS. Moreover, to accelerate accurate symbol and image rendering, the system needed to be equipped with a GPU card for dedicated image processing instead of an onboard graphics controller.

System Diagram



System Description

The simulator training system comprised of a host system and actual simulators. The PXE server offered real-time simulation capabilities and could be used to remotely control multiple simulation workstations. The mission system was built into a 19" inch rack and consisted of several Intel® Xeon® processor-based workstations. The processor gave the blazing performance required to power this military simulator. ECC registered memory ensured stability and reduced the likelihood of system crashes by identifying and correcting single-bit memory errors. Each workstation was configured for a single mission according to the specific terrain and weather. A dedicated GPU card was used for image processing and connected to multiple monitors. The system was directly connected to the actual simulator hardware, such as actuators, cockpits, and instructor stations. All collected simulations video and audio data was stored in the various sub-systems.

Why Advantech

- 7-years longevity commitment with FAE and early stage AE technical support
- Specification consultation and pre-test support
- Tested for reliability in harsh environmental conditions

Key Products

ASMB-813
LGA 2011-R3 Intel® Xeon® E5-2600 v3/v4 ATX server board

ACP-4010
4U rackmount chassis for ATX/ CEB/EEB motherboard

Medical Equipment

Intelligent Data Server for Hospital Surgery Solution

USA

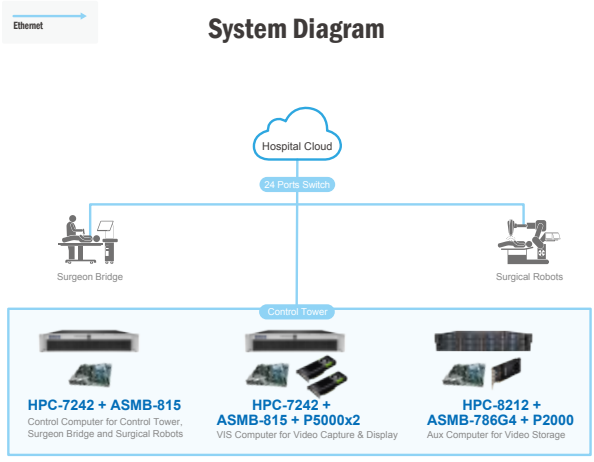
Background

In the near future, medical techniques will combine with industrial technologies to provide comprehensive and advanced services for patients. Surgeons will have end-to-end platforms for surgery, including pre-operative planning, intra-operative decision making, and post-operative care. To meet this vision, hospitals must equip themselves with comprehensive data centers to collect and analyze data directly from all medical equipment, robots, and smart environments.

System Requirements

Most of the data in the surgery was video and images taken from surgical robots. Control towers provide analysis and deliver video data to the surgeon's control center for doctors to make accurate decisions. The control tower dispatches assignments to different servers to complete complex analysis and data visualization. This includes three systems: a control computer, a video analysis system, and a video storage system. The control computer delivers high performance processing while Ethernet is used to communicate between sub systems. The video analysis system needed to capture video and visualize information so the video storage system needed to have plenty of storage to capture the massive amounts of video data so a RAID system was integrated to add total reliability.

System Diagram



System Description

The control tower incorporated an Advantech HPC-7242 + ASMB-815 2U server with high performance Intel Xeon® scalable processor. Its multiple PCIe expansion slots, dual 10GbE Ethernet support, and multiple I/O features fulfilled all their communication and coordination requirements. The video analysis system was based on Advantech HPC-7400 + ASMB-815 + NVIDIA Quadro P5000. The video analysis system dealt with massive amounts of collected data captured from surgical robots and displayed on the surgeon's bridge. The system used was a 4U server with high performance Intel Xeon® scalable processor and GPU cards that dynamically allocate resources for compute intensive tasks. Advantech HPC-8212 + ASMB-786G4 + NVIDIA Quadro P2000 was the 2U video storage server with 12 x 3.5" drives. It used an LGA 1151 Intel® 8th Generation Core™ Xeon platform with a NVIDIA Quadro P2000 that increased bandwidth by up to 20%, and reduced the amount of data fetched from memory for each frame.

Why Advantech

- 5-year extended warranty and product longevity up to 7 years
- High performance CPU and GPU processing for intensive tasks and scalability from multiple expansion slots
- Easy configuration with flexible chassis dimensions and server-board options

Key Products

HPC-8212
2U storage chassis for EATX/ATX/micro ATX server boards

HPC-7242
2U rackmount chassis for ATX motherboards

HPC-7400
4U compact rackmount/ tower chassis for EATX/ ATX motherboards

ASMB-815
LGA 3647-P0 Intel® Xeon® scalable ATX server board

ASMB-786
LGA 1151 8th generation Intel® Core™/Xeon® ATX server board

Medical Equipment

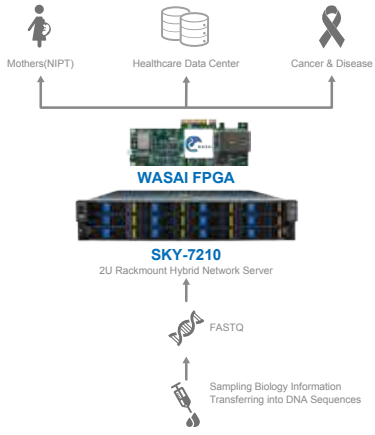
All-in-One DNA Sequence Accelerated Solution

Background

Next-Generation Sequencing (NGS) is leading us toward a new era of precision medicine. The goal is to precisely customize treatment and prescribe medication for different patients based on the human genome database, especially for cancer, heredity tumors, and rare diseases. More and more countries are willing to build human genome datacenters for cancer treatment and managing genome libraries of their own. However, there are 6.4 billion DNA sequences in a person's genome, so the challenge will be processing large volumes of data in the most efficient way.

Solution

Advantech Lighting solution helps researchers save time in scientific studies. It can be applied to Whole Genome Sequencing (WGS), Whole Exome Sequencing (WES), cancer diagnosis, and more. Lightning solution provides a seamless upgrade path with native BWA-MEM and GATK genome software toolkits for secondary analysis of the Germline pipeline. Users can complete the analysis without changing their workflow. With the acceleration in native algorithms, the overall accuracy of SNPs and INDELs are 99.9%, the same as the original software. Moreover, the lightning pipeline provides exactly the same output files as the original software does. By combining Advantech's SKY-7210 server with WASAI's FPGA card, a superfast solution was devised: a genetic sequencing all-in-one server that optimizes and accelerates data processing, specifically designed for the precision medical industry.



System Description

Advantech's Lightning solution saves time in scientific studies and research. It can be applied to the Whole Genome Sequencing (WGS), Whole Exome Sequencing (WES), cancer diagnosis, and more. Lightning solution integrates an Intel Arria 10 FPGA (Field Programmable Gate Array) card with Advantech's SKY-7210 2U rackmount system, supported by up to 3TB DDR4 memory, 3 x NMC (Network Mezzanine Card), and 2 x 300W GPUs or 6 x 150W GPUs, which helps reduce latency of data transfers from the HDD to the FPGA.

Why Advantech

- Overall SNPs and INDELs precision, variants' recall and accuracy are consistent.
- Lightning solution uses the optimized BWA+GATK algorithm that can be applied to multiple applications
- Provides an all-in-one solution that integrates FPGA card with the server
- Calling time can be reduced from 33 hours to less than 8 hours

Key Products

SKY-7210
2U rackmount hybrid network server

Smart Factory

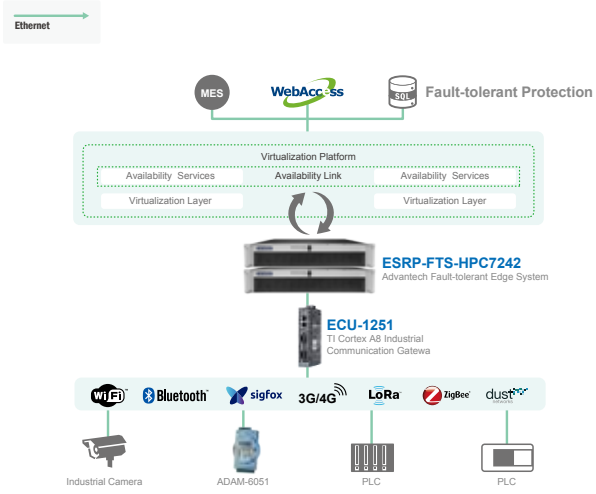
Always on- Advantech Fault-tolerant System in Manufacturing

Background

Edge computing offers transformative potential for automation manufacturers. Numerous sensing devices in factories collect real-time data to optimize manufacturing processes and prevent poor quality. In order to generate more revenue, production lines work 24 hours a day, 365 days a year. If a production system fails, the loss of manufacturing data will cause significant losses. For manufacturers, deploying edge computing is not just about bringing IT to the edge. Manufactures need fault-tolerant solutions offering simplicity, availability, and security.

Solution

Advantech provides a fault-tolerant system installed in a pair of servers which synchronize data to each other, if one part fails, the other one switches all services in a millisecond without any manual intervention and interruption. Data collection applications are processed in parallel to deliver a software-based fault-tolerant system. If one of the physical devices should fail, applications can continue to run on the other device without missing a beat. If something goes wrong with a hardware component, fault-tolerant systems simply substitute the healthy component from the second system until the failed component is repaired or replaced. Two-way mirroring protects both replicated and in-flight data against loss or corruption.



System Description

Fault-tolerant systems replicate the entire application environment, including data in memory, to ensure that WebAccess SCADA continues to run without interruption or data loss. Apart from data protection, fault-tolerant systems use virtualization technology to create multiple OS installed on a pair of devices. Built-in functions with monitoring and communications, as well as unified platform management help optimize resource utilization while saving space and reducing energy consumption. The project team achieved application virtualization and continuous availability without failover scripts or application modifications for faster, easier deployment.

Why Advantech

- No unplanned downtime. Each pair of servers synchronizes with each other.
- Increased operational efficiency. Built-in virtualization technology supports up to three virtual machines.
- Easy and fast installation without modifying software or coding.

Key Products

ESRP-FTS-MIC7700
Tower model with 1-socket /3-VM for FT solution

ESRP-FTS-HPC7120S
1U model with 1-socket /3-VM for FT solution

ESRP-FTS-HPC7242
2U model with 2-socket /3-VM for FT solution

Smart Factory

Hyper-converged Infrastructure (HCI) platform for AI

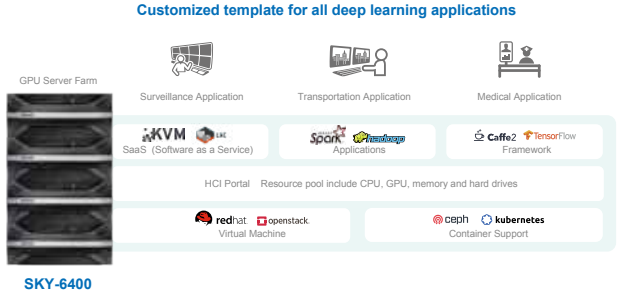
Background

Managing AI systems is always a struggle because it is hard to estimate the system scope. Enterprises continually have new system requirements as their business grows. These projects are usually expensive and large, and often enterprises will find out that their existing infrastructure is not compatible with the newer one. This incompatibility requires new hardware purchases and results in additional downtime and unplanned integration. System upgrades and integration are huge challenges for businesses with limited budgets so they are looking for cost effective and flexible solutions.

Solution

When enterprises start looking for solutions to replace existing infrastructure, they keep coming back to the same conclusion that their ideal AI system is too difficult and expensive to implement. Advantech now provides a resource pool that aggregates GPUs, processors, memory, and storage. We offer a variety of AI environments that are flexible enough for different AI project requirements within a single centralized management portal.

The platform can be scaled up and expanded if needs be to add more devices into the resource pool as there are no strict specification requirements for expansion nodes. This solution not only provides customers with a hyper-converged platform but also a full AI ready environment. Enterprises can be left to focus on data analysis without extra effort installing frameworks and libraries for AI data training.



System Description

Advantech hyper-converged infrastructure (HCI) for AI requires three nodes of SKY-6400 server to provide virtual machines and containers for different kinds of AI applications. We combine a virtual machine and container technology on three servers with an intuitive user interface and you can install virtual machines for conventional IT technology environments. The Linux-based HCI container is for light weight applications and deep learning frameworks. There are built-in OS templates, frameworks, and libraries on our HCI platform to help users take on AI projects with the minimum of fuss. Our HCI platforms are very easy to operate, even for IT beginners and do not need coding.

Why Advantech

- Pass-through capability for Intel GVT-g and NVIDIA GPU scale up
- Offer comprehensive GPU-accelerated containers and virtual machines with deep-learning software
- Skips infrastructure complexities with built-in workflows and templates

Key Products

SKY-6200
2U rackmount GPU Server supports 4 Double-deck GPUs

SKY-6400
4U rackmount GPU Server supports 4 Double-deck GPUs

SKY-6420
4U rackmount GPU server Supports 10 double-deck GPUs

Enterprise Security

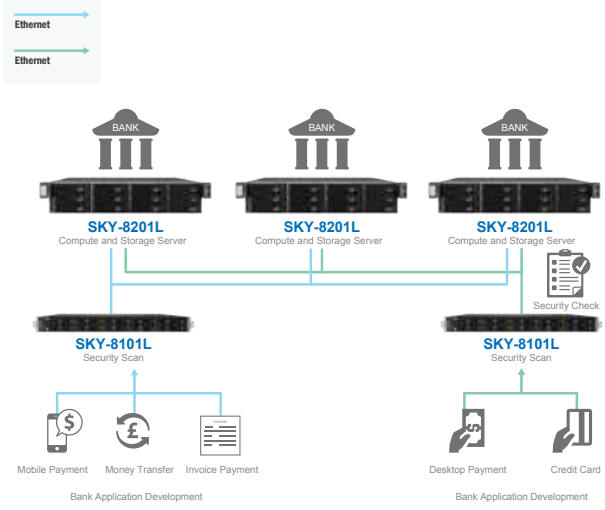
Security Monitoring and Control for Banking Transactions

Background

Consumer banking expectations are constantly shifting as the flow of new technologies bring simpler and more secure payment methods in tempo with enhanced online banking interfaces. Traditional banks are under pressure to transform their complex legacy infrastructures and implement new technologies at an increasing rate. With fierce competition from new banking entrants, traditional banks will need to enhance services to make mobile banking more frictionless, adopt AI technology to improve customer experience, and as security concerns increase, provide more robust biometric identification.

Solution

Replacing legacy infrastructure is no easy task due to intricate interdepencies between generations of software and hardware models. As with many industries trying to implement their digital transformation, building a fresh virtual infrastructure and slowly migrating to newer systems will be the key process to full digital transformation. Advantech, with its strong global ecosystem building next generation private clouds and IoT solutions, is an ideal partner to accompany this transformation. Advantech's SKY server portfolio offers the latest generation of compute, storage, encryption and AI-enabled servers coupled with key device-to-cloud building blocks that can connect ATMs, biometric readers, sensors, surveillance cameras, and more in a robust and reliable range of solution ready platforms.



System Description

The Advantech SKY-8101L and SKY-8201L high performance servers are designed to balance the best in x86 server-class processing with maximum storage, I/O, and offload density in a 20" depth chassis. They are specifically designed for high availability needs with redundant and hot-swappable power supplies and fans, redundant BIOS and BMC firmware, and an enhanced lights-out management framework offering a range of key features to reduce downtime. Both servers enable maximum compute scalability and are verified with processors from the Intel® Xeon® Scalable series. The single-socket SKY-8101L and dual-socket SKY- 8201L, combine cutting-edge performance with the ruggedness, reliability, and long system lifecycles required by the industry. With integrated crypto acceleration based on Intel® QuickAssist Technology and abundant PCIe adapter support they are the ideal building blocks for next generation fintech solutions.

Why Advantech

- Expertise in secure communications, AI-enablement, and IoT device-to-cloud connectivity
- Proven, robust, and reliable server designs for business critical applications
- High availability and enhanced lights-out management feature-sets

Key Products

SKY-8101L

Compact 1U server based on Intel® Xeon® Scalable with high-capacity storage and PCIe slot density

SKY-8201L

Carrier-grade 2U server based on Intel® Xeon® Scalable with NUMA-balanced I/O and high-capacity storage

On-premise Private Cloud

WISE-STACK— A Fully Integrated IoT Edge Intelligence Experience

Background

Industrial IoT solutions need to connect to on-premise application servers or on-premise private clouds. Clouds where there is close proximity to gateways and other IoT devices. Latency, connectivity, security, and reliability are among the key reasons for on-premises deployment. Thanks to the latest server technologies based on hyper-converged infrastructures, the costs of on-premise clouds are no longer prohibitive, and offer greater scalability than previous generation servers. Cloud software solutions have also become simpler and faster to implement thanks to cloud operating systems such as Openstack and other migration technologies.

Solution

To meet increased customer demand for a comprehensive private cloud offering for on-premise deployment, Advantech has worked closely with key customers to help define and deploy a fully integrated system that offers a complete cloud experience and development toolset. Key system requirements such as end-to-end security features and a user defined access pathway are specified to ensure security and privacy of data and AI models. WISE-STACK is designed and tested to host AIoT applications with high availability, elastic expansion, and high data throughput characteristics. It provides full WISE-PaaS service capabilities and offers seamless integration with Advantech edge devices allowing customers to easily complete their IoT initiatives by combining Advantech's edge computing products with WISE-STACK.

System Description

Advantech offers standardized, on-premise cloud configurations to satisfy large computation and high availability needs. Starting configuration consists of six server nodes and one optional analytic node with GPUs. The cloud configuration consists of controller nodes which governs operation and coordination of servers to achieve load balancing and high data throughput. Three controller nodes guarantee high availability for operational continuity, even when a server goes down. Users can hot-swap drives to maintain operation and ensure the performance of their private cloud. HCI Nodes provide high computation power and storage space. The configuration allows businesses to setup their private clouds with a reduced number of servers in the initial stage. Analytic Nodes harness the power of NVDIA Tesla P4 graphic cards to shorten the training period for deep model learning.

Why Advantech

- Complete edge-to-cloud solution for industrial IoT
- Focus on value-add AIoT solutions
- Move freely between public and private cloud

Key Products

SKY-7221
2U high performance rackmount server

SKY-8101L
Compact 1U high capacity storage server

Telecom and Networking

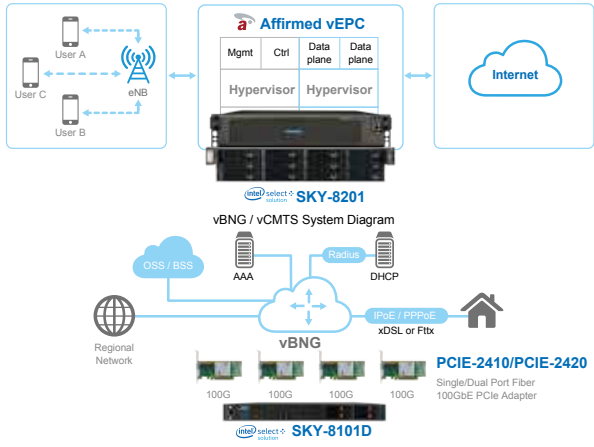
Virtualization Network Functions & Next Generation Central Office (NGCO)

Background

NGCO are fibre-rich central offices re-architected as data centers that support fixed and mobile Virtual Network Functions (VNFs) and are capable of serving tens of thousands of subscribers. Intel's NCGO reference design achieves this in a mini data center configuration featuring a half-populated server rack hosting edge network functions such as vBNG, vEPC, vCMTS, vSecGW or vPE routers. The SKY carrier-grade servers running them and have been designed for high performance packet processing while fulfilling the harsher requirements of network edge locations that range from remote rural sites to old buildings in the center of large cities.

Solution

An NGCO based on Advantech SKY-8000 servers integrating an Intel® architecture provides an agnostic NFVI that delivers hardware-software decoupling, full provisioning flexibility and excellent scalability—all key to meeting system requirements at the virtual edge. Advantech has taken communication service provider requirements into account in the design of its NGCO demonstrator that makes better use of hardware resources for a direct impact on cost per 10Gbps. It offers more efficient redundancy schemes in a compact, short-depth design for reduced size and power footprint per 10Gbps. In addition, the use of commercial off-the-shelf servers avoids NFV vendor lock-ins, allows for new network functions-as-a-service models and opens the network edge to third parties and OTT vendors generating new business opportunities for communication service providers. The NGCO demonstrator provides a means for developers to accelerate design cycles using an application ready platform that can be deployed with all the NGCO hardware and software building blocks needed for deployment.



System Description

Advantech's high-performance SKY-8000 servers are verified as Intel® Select Solutions for NFVI v2 support with dual CPUs up to 165W TDP, high-density PCIe card payloads up to 200Gbps per 1RU, and advanced packet processing technologies such as the open source Data Plane Development Kit (DPDK) and Intel® QuickAssist. The demonstrator, a 2U telecom rack integrates 3 controller nodes (SKY-8101) configured in a traditional HA controller setup , 6 cloud compute nodes (SKY-8101D) offering 100Gbps duplex per socket load balanced through 2 switches using quad 25GbE adapt-ers or optionally dual 100GbE NICs in a 1+1 redundancy configuration, and 3 cloud storage nodes (SKY-8201L) set up as a CEPH cluster.

Why Advantech

- Solid global networking and compute supplier to the telecom Industry
- Verified Intel Selection Solutions for NFVI—above all performance thresholds
- Interoperability tested with key mainstream VNFI partners

Key Products

SKY-8101
Compact 1U high-performance server

SKY-8101L
Compact 1U high capacity storage server

KY-8201L
Compact 2U high capacity storage server

Telecom and Networking

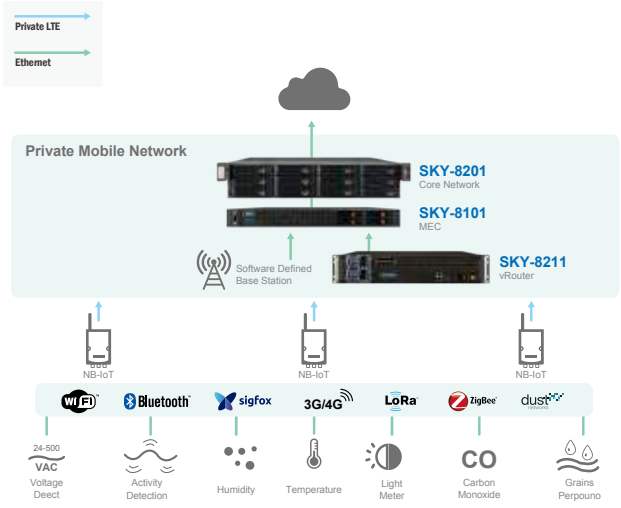
Private Mobile Networks Enable New Services at the 5G Network Edge

Background

As we enter the 5G era, the convergence of IT with communications and operations technology will happen at an accelerated pace. Cross-industry experts agree that an increasing number of services will be pushed from the cloud to the edge of the network where data processing can ensure better response times and higher reliability. The new paradigm is the shift of billions of IoT and mobile devices from a principally data consumer role to one of producer or consumer, resulting in bottlenecks on backhaul networks and increased latency between edge devices and cloud data centers. Edge computing must be able to connect to a mix of on-premises, private clouds, and third party public cloud services, whilst enabling distributed cloud capabilities to cater for future needs.

Solution

The challenge for the industry however, is to offer developers the same cloud computing capabilities as an IT service environment at the edge of a network while catering for applications that require ultra-reliable low latency communication (URLLC), high availability (HA), edge security, scalability and high throughput in smaller footprints. A new approach is needed that builds on existing services using components such as Ceph, OpenStack and Kubernetes and complementing them with new edge management services for HA, quality of service (QoS), and URLLC. Applications include Multi-access Edge Computing (MEC), 5G and Industrial IoT (IIoT) as well as high bandwidth, large volume apps such as mobile HD video and medical imaging. A solution ready platform is required that integrates all the components needed to accelerate deployment cycles.



System Description

Advantech offers a turnkey demonstrator for Private LTE and distributed edge cloud. Based on open-sourced StarlingX code, the demonstrator serves as a solid base for edge implementations in a compact package. It includes StarlingX and additional software downloads from key partners enabling a self-contained virtual RAN and a virtual EPC. The system is available as a Network-in-a-box housed in a rugged shipping container.

Why Advantech

- Broad Edge Compute portfolio based on Intel Select Solutions for NFVI
- Fully-tested ready to deploy platforms
- Supported by a vibrant ecosystem of open source and commercial software suppliers

Key Products

SKY-8101D
Compact 1U high-performance server

SKY-8201
Compact 2U carrier-grade, high performance server

SKY-8211
2U vRouter

HPC and AI

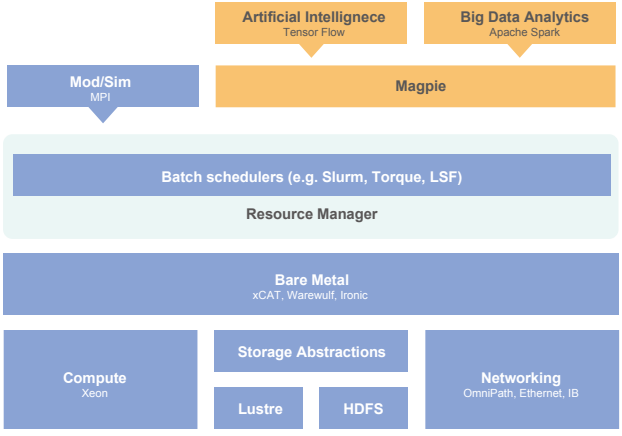
Intel Select Solution - HPC and AI Converged Clustered

Background

Enterprises believe simulation and modeling, artificial intelligence (AI), and big data analytics can help them achieve breakthrough discoveries and innovation. Enterprises increasingly seek a new approach to deliver the compute infrastructure needed by AI workloads, with high levels of performance and cost-effectiveness, without adding the complexity of managing separate, dedicated systems. However, this is not a simple task as Big Data Analytics and High-performance computing (HPC) utilize different runtimes, resource managers, and application environments. Also with limited commercial support for AI and HPC, the seamless coexistence of these two vital technologies presents a huge challenge for the convergence of AI in HPC.

Solution

Advantech and Intel have worked together to give an ingenious solution through a hyper-converged cluster approach with virtualization and containers as the underlining technology to converge HPC and AI into one homogenous harmonized software, and a hardware framework using Intel Select Solution for HPC and AI converged clusters on Magpie. Therefore AI is being used to both to augment and supplant traditional HPC workloads. By using AI methods with traditional HPC workflows, scientific discovery and innovation processes can be driven faster. Intel and Advantech created a deployable HPC solution with Intel Select Solutions HPC + AI Magpie framework in a compact 2U hyper-converged high compute density low footprint and scalable platform -SKY-5240. Magpie greatly simplifies running Big Data and AI frameworks on HPC.



System Description

The Advantech SKY-5240 server is a highly configurable and high performance server designed to balance server-class processing with flexible I/O and offload density in a 20" depth chassis. The system is a cost effective, robust platform optimized for high reliability in network, edge and industrial computing. Intel Select Solution performance requirements have been established using HPL, HPCG, DGEMM, STREAM, IMB PingPong, OSPRay, and ParaView benchmarks. Intel Select Solutions consists of select hardware, various 2nd Generation Intel® Xeon® processor technologies, Intel® Omni-Path interconnect along with optimized software and firmware configurations.

Why Advantech

- Specified HW and SW components to simplify evaluation
- Integrating with Magpie is fast and easy to deploy
- Verified as an Intel Select Solution for HPC and AI converged clusters with 2nd generation Intel® Xeon® processors

Key Products

SKY-5240

2U 4-node hybrid server with high density and flexible storage

Telecom and Networking

Intel Select Solution-NFV Infrastructure (NFVI)

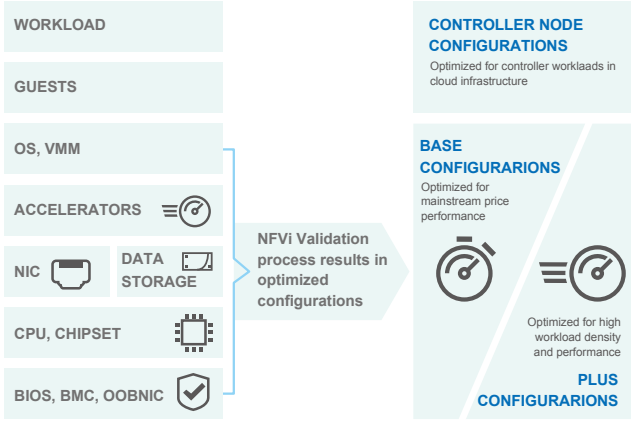
Background

Communications service providers (CoSPs) are seeking to change the economics and service deployment agility of their networks by embracing network functions virtualization (NFV)-based services. This network revolution provides the agility and flexibility to support new high-bandwidth applications like 5G and new high device-count services such as the Internet of Things. NFV replaces fixed-function appliances with virtual network functions (VNFs) that run on general-purpose Intel® architecture-based servers. With an NFV server in place, a CoSP can remotely turn up or turn down services in a very short time. Networks can be lower cost through the general-purpose nature of the server as well as the ability to use the server for multiple services.

Solution

With workloads shifting across platforms that span from entry-level to extreme performance, finding the right balance of compute, offload, networking and storage to cost effectively run an application at any location in the network needs more agile solutions; solutions that meet the challenges of next generation networking and computing, that have greater elasticity and scalability across common platforms.

Intel® Select Solutions for NFVI address the complexity that CoSPs face in choosing the right infrastructure for NFVI by providing a verified hardware and software stack that meets the system requirements for cloud and controller nodes in a typical NFVI deployment. They enable a fast path for CoSPs to efficiently deploy network function virtualization infrastructure (NFVI) and achieve reliable, more secure, and workload-optimized deterministic performance on a balanced platform.



System Description

Advantech's SKY-8201L and SKY-8101D are verified Intel® Select Solutions for NFVI that benefit communications service providers by providing their developers with faster access to optimized and stable platform configurations to accelerate NFVI development. Ready to ship as preconfigured platforms and also available for benchmarking in Advantech's remote evaluation service labs, communications service providers can utilize these platforms to conduct testing and modelling of solutions that will define next generation services.

Why Advantech

- NFV-Ready high performance dual-socket NUMA balanced servers
- Fully certified with Red Hat Enterprise Linux and Openstack Platform
- Verified as Intel® Select Solutions for NFVI Cloud and Controller nodes with 2nd Generation Intel® Xeon® processors

Key Products

SKY-8201
Compact 2U carrier-grade, high performance server

SKY-8101D
Compact 1U high-performance server

SKY-8201L
Compact 2U high capacity storage server

Product **Selection Guide**

GPU Server




Specification	SKY-6100	SKY-6200	SKY-6400	SKY-6420
Key Applications	• Cloud Computing • IoT Edge Computing • Big Data Analytics	• Cloud Computing • HPC / Data Analytics • DataCenter Applications	• Cloud Computing • Big Data Analytics • High End Enterprise Server	• Cloud Computing • Big Data Analytics • Research lab/National Lab
Features	• 2 2.5" Hot-swap SAS/SATA drive bay • 8 DIMM slots, Intel Optane DCPMM • NVIDIA Tesla P4/T4 Optimized • Unify front bezel design	• 8 2.5" Hot-swap SAS/SATA support • 24 DIMM slots, Intel Optane DCPMM • 4 double deck PCI-E cards or 8 single deck PCI-E cards. • Unify front bezel design	• 8 2.5"/3.5" hot-Swap SAS/SATA support • 12 DIMM slot, Intel Optane DCPMM • 205W CPU support • 6 PCI-E cards support • Unify front bezel design	• 12 2.5"/3.5" Hot-swap SAS/SATA support • 24 DIMM slots • Hot-Swappable system fan design • 11 PCI-E cards support • Pear to Pear support.
Processor Support	Dual Intel® Xeon® Scalable/2nd Gen. Scalable Family Processor(Cascadelake/Skylake) with UPI up to 10.4 GT/s, TDP up to 140W	Dual Intel® Xeon® Scalable/2nd Gen. Scalable Family Processor (Cascadelake/Skylake) with UPI up to 10.4 GT/s, TDP up to 140W	Dual Intel® Xeon® Scalable/2nd Gen. Scalable Family Processor (Cascadelake/Skylake) with UPI up to 10.4 GT/s, TDP up to 205W	Dual Intel® Xeon® Scalable/2nd Gen. Scalable Family Processor (Cascadelake/Skylake) with UPI up to 10.4 GT/s, TDP up to 160W
Serverboard	SKY-6100	SKY-6200	ASMB-975I	SKY-6420
Chipset	Intel® C622 chipset	Intel® C622 chipset	Intel® C622 chipset	Intel® C622 chipset
System Memory (Max.)	8 DIMM slots, Up to 1TB ECC LRDIMM, Up to 2666 MHz, Intel Optane DCPMM	24 DIMM slots, Up to 3TB ECC 3DS LRDIMM, Up to 2666 MHz, Intel Optane DCPMM	12 DIMM slots, Up to 768GB ECC LRDIMM, Up to 2666 MHz, Intel Optane DCPMM	24 DIMM slots, Up to 3TB ECC 3DS LRDIMM, Up to 2666 MHz, Intel Optane DCPMM
Expansion Slots	5 PCIE 3.0 x 16 (FH, HL)	4 PCIE 3.0 x 16 (FH, 10.5"L, double deck) or 8 PCIE 3.0 x 8 (FH, 10.5"L, single deck); 1 PCIE 3.0 x 8 (FH, HL)	4 PCIE 3.0 x 16 (FH, 10.5", double deck); 1 PCIE 3.0 x 8 (FH single deck); 1 PCIE 3.0 x 4 (FH, single deck)	10 PCIE 3.0 x 16 (FH, 10.5"L, double deck); 1 PCIE 3.0 x 16 (FH, single deck)
Onboard Storage Controller	Intel® C622 SATA3 (6Gb/s) controller	Intel® C622 SATA3 (6Gb/s) controller	Intel® C621 SATA3 (6Gb/s) controller	Intel® C622 SATA3 (6Gb/s) controller
Connectivity	2 Intel® X557 10GBase-T + 1 Intel® I210 Gigabit Ethernet ports; VGA ports; 3 USB 3.0 (2 in rear, 1 internal); 2 USB 2.0 at front	2 Intel® X557 10GBase-T + 2 Intel® I210 Gigabit Ethernet ports; VGA ports; 4 USB 3.0 ports (rear); 2 USB 2.0 at front; 1 Serial port optional	2 Intel® I210 Gigabit Ethernet ports; VGA ports; 7 USB 3.0 ports (4 in rear, 2 at front, 1 type A);1 Serial port	2 Intel® X557 10GBase-T + 1x Realtek RTL8201EL-VC PHY (dedicated IPMI); VGA ports; 6 USB 3.0 ports (4 in rear, 2 at front); 2 Serial port optional
Management Controller	Aspeed AST2500 BMC	Aspeed AST2500 BMC	Aspeed AST2500 BMC	Aspeed AST2500 BMC
Management	IPMI2.0; KVM with share NIC	IPMI2.0; KVM with with share NIC	IPMI2.0; KVM with share NIC LAN; SUSI API; WISE-PaaS RMM	IPMI2.0; KVM with dedicated LAN
Peripheral Bays	2 hot-swap 2.5" drive support; 2 SAS/SATA3 ports; on board 1 M.2 2242 SATA	8 hot-swap 2.5" drive support; 8 SAS/SATA3 ports; optional ODD; on board 1 M.2 2280 SATA	8 hot-swap 2.5" drive support; 8 SAS/SATA3 ports;2 internal 2.5" drive support; on board 2 M.2 2242(SATA) for OS mirror	12 hot-swap 2.5"/3.5" SAS/SATA3 ports; on board 1 M.2 2280 (SATA+PCIE)
Power Supply	1200W 1+1 platinum level redundant power supply	2000W 1+1 platinum level redundant power supply	2000W 1+1 platinum level redundant power supply	4800W 3+1 platinum level redundant power supply
Cooling System	6 high speed 4056 system fan; 1 internal 4028 system fan; 1 optional 4028 external fan	6 high speed 8038 fan; 2 for CPU, 4 for riser card cage	2 CPU fan; 3 high speed 12038 internal system fan; 2 high speed external 8038 system fan	6 high speed 12038 system fan; 4 optional external 8038 fan
Form Factor	1U chassis; enclosure: 438 x 44 x 650 mm (17.2" x 1.7" x 25.6")	2U chassis; enclosure: 438 x 88 x 760 (17.24" x 3.46" x 29.92")	4U chassis; enclosure: 435 x 177 x 673 mm (17.12" x 6.96" x 26.49")	4U chassis; enclosure: 438 x 176 x 770 mm (17.24" x 6.93" x 30.31")
Operating Temperature	0 ~ 35° C (32 ~ 95° F)	0 ~ 35 °C (32 ~ 95 °F)	0 ~ 35° C (32 ~ 85° F) *0 ~ 30° C (32 ~ 85.9° F) for NVidia Tesla P100/V100	0 ~ 35° C (32 ~ 85° F) *0 ~ 30° C (32 ~ 85.9° F) for NVidia Tesla V100

IoT Server

Specification	SKY-7210	SKY-7221	SKY-4311
Key Applications	• Virtualization • Cloud Computing • High End Enterprise Server	• Hyperconverge Storage • Software-defined Storage • High End Enterprise Server • Flexible Networking Options	• Cache/Hot Data Machine • 3D Rendering • Broadcasting & Editing • Financial Market and eCommerce OLTP
Features	• Dual socket Intel® Xeon® Scalable/2nd Gen. Scalable Family Processor, CPU TDP up to 205W • 24 DIMM slots, up to 3TB ECC RDIMM/ LRDIMM support • 12 Hot-swap 3.5/2.5 SATA/SAS drive bay, up to 10 NVME (6 from NMC's slot) • Flexible networking I/O options via PCIe card or NMC modules • Up to 6 PCIE x 8 (FH/HL) or 3 PCIE x 16 (FH/FL) slots by SKUs option	• Dual socket P Intel® Xeon® Scalable/2nd Gen. Scalable Family Processor with up to 24 DIMM slots • Up to 12/16 bays 3.5" or 24 bays 2.5" hot-swap SATA/SAS/NVMe drives support • Up to 4 FHHL PCIe Gen3 x 8 and 1 FHHL PCIe Gen3 x 16 • 2 M.2 2280 SATA SSD support for boot drive • 1 OCP 2.0 PCIe Gen3 x 16 NIC support	• Up to 8 NVMe/SATAIII and optional up to 8 SAS drives • Dual SATA M.2 2242 for OS mirror • 2 Intel® Gb LAN
Processor Support	Intel® Xeon® Scalable/2nd Gen. Scalable Family Processor	Intel® Xeon® Scalable/2nd Gen. Scalable Family Processor	Intel® Haswell-EP/Broadwell-EP Processor (Socket 2011)
Serverboard	SKY-7210L/F	SKY-7221	SKY-4311
Chipset	Intel® C621/C622 chipset	Intel® C621/C622/C624 chipset	Intel® C612 chipset
System Memory (Max.)	24 DIMM slots, Up to 3TB ECC 3DS LRDIMM, Up to 2933 MHz	24 DIMM slots, Up to 3TB ECC 3DS LRDIMM, Up to 2666 MHz	16 DIMM DDR4 RDIMM Max. 512 GB
Expansion Slots	2 PCIe 3.0 x 8 FH/FL, 2 PCIe 3.0 x 8 HH/HL, 1 x PCIe 3.0 x 16 FH/FL, 3 x NMCs	1 PCI-E Gen3 x 16 (FH, 10.5" L), 4 PCI-E Gen3 x 8 (LP), 1 PCI-E Gen3 x 16 OCP 2.0 mezzanine slot	2 PCIe x 8 slots, and one slot supports FHHL card, the other one supports HHHL card
Onboard Storage Controller	Intel® C621/C622 SATA3 (6Gb/s) controller	Intel®C621/C622/C624 chipset	Intel® C612 chipset
Connectivity	2 USB3.0 port, 1 Dedicated GbE RJ45 for IPMI, 2 GbE RJ45 ports, 1 VGA port, 1 RS-232 serial port	2 USB3.0, 1 Dedicated GbE RJ45 for IPMI, 2 GbE RJ45 ports, 1 VGA port, 1 RS232 serial port, 1 ID button	2 Intel® Gb LAN
Management Controller	Aspeed AST2500 BMC	Aspeed AST2500 BMC	Aspeed AST2400 BMC
Management	Industry standard BMC, IPMI v2.0 compliant, with web interface, iKVM on request (AMI MegaRAC SP-X)	Industry standard BMC, IPMI v2.0 compliant, with web interface, iKVM on request (AMI MegaRAC SP-X)	Industry standard BMC, IPMI v2.0 compliant, with web interface, iKVM on request
Drive Bays	-	2 x 2280 M.2	8 hot-swap 2.5" NVMe/SATA3 drive
Peripheral Bays	12 3.5"/2.5" SATA/SAS/NVMe drive support, up to 4 NVMe 1 M.2 2280 SSD	up to 16 hot-swap 3.5" drive support; 4 NVMe/SATA3 ports Up to 24 hot-swap 2.5" drive support; 4 NVMe/SATA3 ports	-
Power Supply	850W/1200W CRPS redundant Power Supply	850W/1200W CRPS redundant Power Supply	1100W 1 + 1 Redundant Power Supply
Cooling System	6 heavy duty fans w/ Optimal Fan Speed Control	4 heavy duty fans w/ Optimal Fan Speed Control	5 heavy duty fans w/ Optimal Fan Speed Control
Form Factor	2U Chassis; Enclosure: 438 x 88 x 730 mm (17.24" x 3.46" x 28.74")	2U Chassis; Enclosure: 438 x 88 x 755 mm (17.24" x 3.46" x 29.72")	1U Chassis; Enclosure: 430 x 44 x 626 mm (16.9" x 1.7" x 24.6")
Operating Temperature	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 40 °C (32 ~ 104 °F)

IoT Server

Specification	ASR-3100	SKY-8101L1	SKY-8101L3
Key Applications	• Cache/Hot Data Machine • 3D Rendering • Broadcasting & Editing • Financial Market and eCommerce OLTP	• Virtualization • Storage Server	• Virtualization • Storage Server
Features	• Up to 16 NVMe/SATAIII and optional up to 8 SAS drives • Dual SATA M.2 2242 for OS mirror • 2 Intel® Gb LAN	• 8 Hot-swappable 2.5" SATA/SAS drive bay and 2 2.5" NVMe • Up to 2 PCIe x 8 (FH/HL) or 1 PCIe x16 (FH/FL) slot, 1 PCIe x8 (LP), and 1 PCIe x4 (PersCard) in 1U server • Redundant BIOS, BMC, PSU, fan modules for mission critical application	• 4 Hot-swap 3.5" SATA/SAS drive bay • Up to 2 PCIe x8 (FH/HL) or 1 x PCIe x16 (FH/FL) slot, 1 PCIe x8 (LP), and 1 PCIe x4 (PersCard) in 1U server • Redundant BIOS, BMC, PSU, fan modules for mission critical application
Processor Support	Intel® Haswell-EP/Broadwell-EP Processor (Socket 2011)	Intel® Xeon® Processor Scalable Family, up to 28C, 165W	Intel® Xeon® Processor Scalable Family, up to 28C, 165W
Serverboard	ASR-3100	GSMB-8101MB	GSMB-8101MB
Chipset	Intel® C612 chipset	Intel® C622 (optional C625/ C626/ C627)	Intel® C622 (optional C625/ C626/ C627)
System Memory (Max.)	16 DIMM DDR4 RDIMM Max. 512 GB	6 DDR4 DIMMs, ECC/REG/RDIMM/LRDIMM, up to 2666MHz	6 DDR4 DIMMs, ECC/REG/RDIMM/LRDIMM, up to 2666MHz
Expansion Slots	2 PCIe x 8 slots, and one slot supports FHHL card, the other one supports HHHL card	2 PCI-E 3.0 x 8 (FH/FL) or 1 PCI-E 3.0 x 16 (FH/FL); 1 PCI-E 3.0 x 8 (LP/HL) 1 PCI-E 3.0 x4 expansion slot for Advantech Personalization card	2 PCI-E 3.0 x 8 (FH/FL) or 1 PCI-E 3.0 x 16 (FH/FL); 1 PCI-E 3.0 x 8 (LP/HL) 1 PCI-E 3.0 x4 expansion slot for Advantech Personalization card
Onboard Storage Controller	Intel® C612 chipset	Intel® C622/C625/C626/C627 SATA3 (6Gb/s) controller Intel®	Intel® C622/C625/C626/C627 SATA3 (6Gb/s) controller Intel®
Connectivity	2 Intel® Gb LAN	1 microUSB console (front); 1 USB3.0/2.0 Type A port (front); 2 USB3.0/2.0 Type A port (rear); 1 Display port (rear); 2 GbE RJ45 (rear); 2 10GbE SFP+ (rear)	1 RS232 D-sub console (front); 1 USB3.0/2.0 Type A port (front); 2 USB3.0/2.0 Type A port (rear); 1 Display port (rear); 2 GbE RJ45 (rear); 2 10GbE SFP+ (rear)
Management Controller	Aspeed AST2400 BMC	Aspeed AST2500 BMC	Aspeed AST2500 BMC
Management	Industry standard BMC, IPMI v2.0 compliant, with web interface, iKVM on request	1. Aspeed AST2500 BMC 2. Advanced Lights Out Management compliant to IPMI2.0 with security and availability enhancements 3. iKVM support Advantech WeB GUI style node 4. Configurable shared or dedicated NIC support	1. Aspeed AST2500 BMC 2. Advanced Lights Out Management compliant to IPMI2.0 with security and availability enhancements 3. iKVM support Advantech WeB GUI style node 4. Configurable shared or dedicated NIC support
Drive Bays	ASR-3100PP : 8 hot-swap 2.5" NVMe drive + 8 hot-swap 2.5" NVMe/SATA3 ASR-3100PT : 8 hot-swap 2.5" NVMe drive + 8 hot-swap 2.5" /SATA3 ASR-3100SS : 16 hot-swap 2.5" SAS/SATA3 drive	8 2.5" hot-swappable SAS/SATA HDD/SSD drives, 2 2.5" hot-swappable NVMe SSD	4 3.5" hot-swappable SAS/SATA HDD/SSD drives
Peripheral Bays	-	8 2.5" hot-swappable SAS/SATA HDD/SSD drives, 2 2.5" hot-swappable NVMe SSD, 1 internal SATA/NVMe M.2 2280 SSD	4 3.5" hot-swappable SAS/SATA HDD/SSD drives, 1 internal SATA/NVMe M.2 2280 SSD
Power Supply	1100W 1 + 1 Redundant Power Supply	850W 1+1 redundant power supply	850W 1+1 redundant power supply
Cooling System	7 heavy duty fans w/ optimal fan speed control	Six redundant 40 x 56mm fan w/ optimal fan speed control	Six redundant 40 x 56mm fan w/ optimal fan speed control
Form Factor	1U Chassis; Enclosure: 430 x 44 x 806 mm (16.9" x 1.7" x 31.7")	438.40 x 696.15 x 44.20mm (17.26" x 27.41" x 1.74") with ear handle	438.40 x 696.15 x 44.20mm (17.26" x 27.41" x 1.74") with ear handle
Operating Temperature	0 ~ 40 °C (32 ~104 °F)	0 ~ 40°C (32 ~ 104°F)	0 ~ 40°C (32 ~104°F)

Multi-node Server

Specification	SKY-5240	SKY-9240
Key Applications	• High performance computing • Distributed computing/storage • Optimized for space efficiency & performance-per-watt	• Hyper-converged • HPC Application • Backup storage • 3.5" SATA/SAS drive bay
Features	• 8 2.5" Hot-swappable NVMe and 16 2.5" hot-swappable SAS3 drive bays • Onboard RAID support RAID 0, 1, 5, 10 • 4 Hot-swappable computing node • Each Node supports: • Dual 140W CPU • 24 DDR4 DIMM sockets • 2 M.2 2280 • 2 PCIex16 (HH/HL) add-on cards • Full system (4 nodes) supports: • 8 140 CPU • 96 DDR4 DIMM sockets • 8 M.2 2280 • 8 PCIex16 (HH/HL) add-on cards	• 4 Hot-Swappable CPU node boards, each node supports : • 4 3.5" SATA 6G/SAS 12G drive bays • 16 DIMM Sockets, support Intel Optane NVDIMM • 2 PCIe Slot + 1 OCP Mazz or 1 PCIe Slot + 1 OCP Mazz + 1 U.2 NVMe • 2 SATA 6Gb/s or PCIe Gen3 + 2 M.2 SSD (2280) slots
Processor Support	Dual Intel® Xeon® Scalable/2nd Gen. Scalable Family Processor (Cascadelake/Skylake) with UPI up to 10.4 GT/s per node, total support 8 CPU	Dual Intel® Xeon® Processor Scalable Family (Skylake-SP/CascadeLake-SP) with UPI up to 10.4 GT/s
Serverboard		MIC-8312
Chipset	Intel® C622 chipset	Intel® C622 chipset
System Memory (Max.)	96 DIMM slots, Up to 3TB ECC 3DS LRDIMM, Up to 2666 MHz	16 DIMM slots/node (DDR4 2666MHz RDIMM/LRDIMM 3DS) up to 2666MHz
Expansion Slots	8 PCI-E 3.0 x 16, Low Profile	SKU A: 2 PCIe Gen3 x16 slots (half length, low profile); 1 PCIe Gen3 x 8 OCP mezz SKU B: 1 PCIe Gen3 x16 slots(half length, low profile); 1 PCIe Gen3 x8 OCP mezz
Onboard Storage Controller	Microsemi PM8222 SASIII 12Gb/s	Intel® C622 SATA3 (6Gb/s) or Microsemi PM8222B-F3EI SAS 12G
Connectivity	8 10GBase-T Ethernet ports (Intel® X557); 4 VGA ports; 8 USB 3.0 ports (Type A); 4 dedicate IPMI LAN	(Contact with Advantech for the detail.)
Management Controller	Aspeed AST2500 BMC	Aspeed AST2500 BMC
Management	IPMI2.0; KVM with dedicated LAN	Redfish API; IPMI2.0; KVM with dedicated LAN
Drive Bays	24 2.5" drive bays	4 Hot-swap 2.5" drive support (SAS/SATA HDD/SSD); 1 SATA3/PCIE 2280 M.2 SSD
Peripheral Bays	SKU A: 2 2280 M.4 (SATA3/PCIe x 4) SKU B: 2 2280 M.4 (SATA3/PCIe x 4) + 1 PCIe x 4 U.2	SKU A: 2 2280 M.4 (SATA3/PCIe x 4) SKU B: 2 2280 M.4 (SATA3/PCIe x 4) + 1 PCIe x 4 U.2
Power Supply	1+1 2200W platinum redundant power supply	1+1 2000W level redundant power supply
Cooling System	4 Heavy duty fans w/ optimal fan speed control, 4 air shroud	4 Heavy duty dual counter rotating fans w/ optimal fan speed control
Form Factor	2U chassis; 446 x 88 x 830 mm (17.56" x 3.46" x 32.68")	2U Rackmount, 438 x 88 x 774mm (W x H x D)
Operating Temperature	0 ~ 35 °C (32 ~ 95 °F)	0 ~ 35 °C (32 ~ 95 °F)

Carrier-grade Server

Specification	SKY-8100	SKY-8101	SKY-8101D
Key Applications	• IoT Edge Computing • Cloud Computing/Virtualization platform for business critical applications (Communication/Video Infrastructure/ Industrial Edge Computing)	• BNG & EPC • Industrial 5G Edge Computing: - Private LTE - Intelligent Manufacturing	• High Performance Computing • Virtualization platform • NFVi • Cloud Computing • vBNG
Features	• 1U Compact design form factor with 20" Depth Chassis • NEBS design • Operating temperature -5 ~ up to 55 °C (23 ~ 131 °F) • EMC class-B barebone design • Dust filter support	• 1U 20" deep rackmount server • Single Intel® Xeon® Platinum, Gold, Silver or Bronze Processor • Rich Add-In Card Support: Up to 2 FH/FL PCIe x 8 Gen3 slots (optional: 1 FH/FL PCIe x 16 Gen3 slot), 1 LP PCIe x8 Gen3 slot, 1 PCIex 4 Gen3 slot for Advantech personalization card • Optimized platform design for industrial and carrier-grade robustness (with redundant PSU, fan, BIOS, BMC design)	• 1U 29.5" deep rackmount server • Dual Intel® Xeon® Platinum, Gold, Silver or Bronze Processor • Rich add-in card support: up to 4 FH/¾L PCIe x16 Gen3 slots • 24 DIMM sockets • Optimized platform design for industrial and carrier-grade robustness (with redundant PSU,fan, BIOS, BMC design)
Processor Support	Single Intel® Xeon® Processor D 1500 Series with up to 16 cores	Single Intel® Xeon® Scalable/2nd Gen. Scalable Family Processor (Cascadelake/Skylake) with up to 28 cores	Dual Intel® Xeon® Scalable/2nd Gen. Scalable Family Processor (Cascadelake/Skylake) with up to 28 cores
Serverboard			
Chipset	Intel® Xeon® Processor D SoC	Intel® C622/ C625/ C626/ C627 chipset	Intel® C622/ C625/ C626/ C627 chipset
System Memory (Max.)	4 DIMM slots, up to 128GB ECC/REG/RDIMM/ LRDIMM, up to 2400MHz	6 DIMM slots, up to 384GB ECC/REG/RDIMM/LRDIMM, up to 2666MHz	24 DIMM slots, up to 1.5TB ECC/REG/RDIMM/LRDIMM, up to 2666MHz
Expansion Slots	2 PCI-E 3.0 x 8 (FH, FL) (or 1 PCI-E 3.0 x 16 (FH, FL)	2 PCI-E 3.0 x 8 (FH, FL) (or 1 PCI-E 3.0 x 16 (FH, FL) 1 PCI-E 3.0 x 8 (LP, HL) 1 PCI-E 3.0 x 4 (Advantech personalization card)	4 PCI-E 3.0 x16 (FH, ¾L)
Onboard Storage Controller	Intel® Xeon-D SoC	Intel® C622/ C625/ C626/ C627 SATA3 (6Gb/s)	Intel® C622/C625/C626/C627 SATA3 (6Gb/s)
Connectivity	4 1GbE RJ45 LAN ports via Intel® i210-AT; 2 10GbE SFP+ ports; 2 RJ45 console ports; 4 USB3.0/2.0 Type A port (2 rear, 2 front); (Optional:1 VGA port)	2 1GbE RJ45 LAN ports via Intel® i210-AT; 2 10GbE SFP+ ports with SRIOV and RDMA support; 1 microUSB console port; 3 USB3.0/2.0 Type A port (2 rear, 1 front); 1 Display port	2 1GbE RJ45 LAN ports via Intel® i210-AT; 2 10GbE SFP+ ports with SRIOV and RDMA support; 1 RJ45 console port; 2 USB3.0/2.0 Type A port; 1 VGA port
Management Controller	Aspeed AST2400 BMC	Aspeed AST2500 BMC	Aspeed AST2500 BMC
Management	Supports IPMI 2.0; iKVM; dedicated NIC via NC-SI on management LAN ports	Support IPMI2.0 with security and availability enhancements; support iKVM with Advantech Web GUI style node; support configurable shared or dedicated NIC	Support IPMI2.0 with security and availability enhancements; support iKVM with Advantech Web GUI style node; support configurable shared or dedicated NIC
Peripheral Bays	2 Hot-swap 2.5" drive support; 2 SAS/SATA3 ports; onboard 1 M.2 2242 SATA	4 Hot-swap 2.5" drive support (SAS/SATA HDD/SSD); 1 SATA3/PCIE 2280 M.2 SSD	4 Hot-swap 2.5" drive support (SAS/SATA HDD/SSD or NVMe SSD); 2 M.2 2280 SATA/ PCIe
Power Supply	(AC) 1+1 redundant 650W platinum level power supply (DC) 1+1 redundant 650W platinum level power supply	(AC) 1+1 redundant 700W platinum level power supply (DC) 1+1 redundant 600W platinum level power supply	(AC) 1+1 redundant 1200W platinum level power supply
Cooling System	4 x 40 x 56mm replaceable fans, w/ optimal fan speed control, 1 air shroud	5 x 40 x 56mm front replaceable, hot-swappable fans, w/ optimal fan speed control (optional: air shroud)	6 x 40 x 56mm replaceable fans, w/ optimal fan speed control, 1 air shroud
Form Factor	1U chassis; enclosure: 430 x 44 x 493mm (16.9" x 1.7" x 19.4")	1U chassis; enclosure: 438 x 44 x 506mm (17.2" x 1.7" x 19.9")	1U chassis; enclosure: 438 x 44 x 749mm (17.2" x 1.7" x 29.5")
Operating Temperature	-5 ~ 55°C (23 ~ 131°F)	-5 ~ 55°C (23 ~ 131°F)	0 ~ 40°C (32 ~ 104°F)

Carrier-grade Server

Specification	SKY-8200	SKY-8201	SKY-8201L1
Key Applications	• IoT Edge Computing • Cloud Computing/Virtualization platform for business critical applications (Communication/Video Infrasturcture/Industrial Edge Computing)	• NFVi • Cloud Computing/Virtualization platform for business critical applications (Communication/Science calculations/ Industrial Edge Computing)	• Enterprise Storage • NFVi with storage expansion • Cloud Computing/Virtualization platform for Communication / Enterprise
Features	• 2U Compact design form factor with 20" Depth Chassis • NEBS certificate • Operating temperature -5 ~ up to 55 °C (23 ~ 131 °F) • EMC class-B barebone design • Dust filter support	• Compact design form factor with 20" Depth Chassis • Operating temperature -5 ~ up to 55 °C (23 ~ 131 °F) • Up to 8 PCI-E Add-on cards • EMC class-B barebone design • Dust filter support	• 4 Hot-swap NVMe Support • Up to 12 3.5" drive bays • Intel Select Soltuion for NFVi program certified • Up to 8 PCI-E Add-on cards • 205W CPU support
Processor Support	Dual Intel® Xeon® Processor E5-2600 v3/ v4 Series with up to 14 cores	Dual Intel® Xeon® Scalable/2nd Gen. Scalable Family Processor (Cascadelake/Skylake) with up to 28 cores	Dual Intel® Xeon® Scalable/2nd Gen. Scalable Family Processor (Cascadelake/Skylake) with up to 28 cores
Serverboard			
Chipset	Intel® DH8900/ DH8925 chipset	Intel® C622/ C625/ C626/ C627 chipset	Intel® C622/ C625/ C626/ C627 chipset
System Memory (Max.)	16 DIMM slots, up to 1024GB ECC/REG/RDIMM/LRDIMM, up to 2400MHz	16 DIMM slots, up to 1024GB ECC/REG/ RDIMM/LRDIMM, up to 2666MHz	16 DIMM slots, up to 1024GB ECC/REG/RDIMM/ LRDIMM, up to 2666MHz
Expansion Slots	4 PCI-E 3.0 x 8 (FH, FL); 2 PCI-E 3.0 x 8 (FH, HL); 1 PCI-E 3.0 x 8 (LP) (Or 2 PCI-E 3.0 x 16 (FH, FL)	4 PCI-E 3.0 x 8 (FH, FL) + 2 PCI-E 3.0 x 8 (FH, HL); (Or 4 PCI-E 3.0 x 16 (FH, FL); 2 PCI-E 3.0 x 8 (LP)	4 PCI-E 3.0 x 8 (FH, FL) + 2 PCI-E 3.0 x 8 (FH, HL); (Or 4 PCI-E 3.0 x 16 (FH, FL); 2 PCI-E 3.0 x 8 (LP)
Onboard Storage Controller	Intel® Cave Creek 8900 & Coleto Creek 8925 chipset	Intel® C622/ C625/ C626/ C627 SATA3 (6Gb/s)	Intel® C622/ C625/ C626/ C627 SATA3 (6Gb/s)
Connectivity	2 1GbE RJ45 LAN ports via Intel® i210-AT; 2 RJ45 console port; 4 USB3.0/2.0 Type A port (2 front, 2 rear); 1 VGA port; 1 External mini SAS port	2 1GbE RJ45 LAN ports via Intel® i210-AT; 2 10GbE SFP+ ports with SRIOV and RDMA support; 1 RJ45 console port; 4 USB3.0/2.0 Type A port (2 front, 2 rear); 1 VGA port; 1 Display port	2 1GbE RJ45 LAN ports via Intel® i210-AT; 2 10GbE SFP+ ports with SRIOV and RDMA support; 1 RJ45 console port; 4 USB3.0/2.0 Type A port (2 front, 2 rear); 1 VGA port; 1 Display port
Management Controller	Aspeed AST2400 BMC with AMI- MegaRAC firmware	Aspeed AST2500 BMC	Aspeed AST2500 BMC
Management	Supports IPMI 2.0; supports iKVM; dedicated NIC via NC-SI on management LAN ports	Support IPMI2.0 with security and availability enhancements; support iKVM with Advantech Web GUI style node; support configurable shared or dedicated NIC	Support IPMI2.0 with security and availability enhancements; support iKVM with Advantech Web GUI style node; support configurable shared or dedicated NIC
Peripheral Bays	4 Hot-swap 2.5" drive support (SAS/SATA HDD/ SSD); 2 mSATA	4 Hot-swap 2.5" drive support (SAS/SATA HDD/ SSD); 1 SATA3/PCIE 2280 M.2 SSD	4 hot-swap 2.5" drive support (SAS/SATA HDD/SSD); 12 hot-swap 3.5" drive support (SAS/SATA HDD/SSD); 1 SATA3/PCIE 2280 M.2 SSD; (Optional) 4 hot-swap 2.5" NVMe drive support (SSD)
Power Supply	(AC) 1+1 redundant 1400W platinum level power supply (DC) 1+1 redundant 1400W platinum level power supply	(AC) 1+1 redundant 1400W platinum level power supply (DC) 1+1 redundant 1400W platinum level power supply	(AC) 1+1 redundant 1200W platinum level power supply
Cooling System	6 x 80 x 38mm replaceable fans, w/ optimal fan speed control, 1 air shroud	6 x 80 x 38mm replaceable fans, w/ optimal fan speed control, 1 air shroud	4 x 80 x 38mm replaceable fans, w/ optimal fan speed control, 1 air shroud
Form Factor	2U chassis; enclosure: 430 x 88 x 500mm (16.9" x 3.4" x 19.6")	2U chassis; enclosure: 430 x 88 x 508mm (16.9" x 3.4" x 19.6")	2U chassis; enclosure: 438 x 88 x 699mm (17.2" x 3.4" x 27.5")
Operating Temperature	-5 ~ 55°C (23 ~ 131°F)	-5 ~ 55°C (23 ~ 131°F)	0 ~ 40°C (32 ~ 104°F)

Carrier-grade Server

Specification	SKY-8201L2	SKY-8211B	SKY-8211F
Key Applications	• Enterprise Storage • NFVi with storage expansion • Cloud Computing/Virtualization platform for Communication / Enterprise	• Virtualization • vRouter	• Virtualization • vRouter
Features	• 4 Hot-swap NVMe Support • Up to 24 2.5" drive bays • Intel Select Soltuion for NFVi program certified • Up to 8 PCI-E Add-on cards • 205W CPU support	• 2U 430mm deep rackmount server with an operating temperature of -20 to 70 °C • Single Intel® Xeon® Platinum, Gold, Silver or Bronze Processor • EMC Class B • IPMI 2.0-compliant management with reliability and security enhancements • Optimized platform design for industrial and carrier-grade robustness (with redundant PSU, fan, BIOS, BMC design)	• 2U 430mm deep rackmoun server with an operating temperature of -20 to 70 °C • Single Intel® Xeon® Platinum, Gold, Silver or Bronze Processor • EMC Class B • IPMI 2.0-compliant management with reliability and security enhancements • Optimized platform design for industrial and carrier-grade robustness (with redundant PSU, fan, BIOS, BMC design)
Processor Support	Dual Intel® Xeon® Scalable/2nd Gen. Scalable Family Processor (Cascadelake/Skylake) with up to 28 cores	Dual Intel® Xeon® Scalable/2nd Gen. Scalable Family Processor (Cascadelake/Skylake) with up to 28 cores	Dual Intel® Xeon® Scalable/2nd Gen. Scalable Family Processor (Cascadelake/Skylake) with up to 28 cores
Serverboard			
Chipset	Intel® C622/ C625/ C626/ C627 chipset	Intel® C621/C622/ C625/ C626/ C627 chipset	Intel® C621/C622/ C625/ C626/ C627 chipset
System Memory (Max.)	16 DIMM slots, up to 1024GB ECC/REG/RDIMM/ LRDIMM, up to 2666MHz	6 DIMM slots, up to 384GB ECC/REG/RDIMM/ LRDIMM, up to 2666MHz	6 DIMM slots, up to 384GB ECC/REG/RDIMM/ LRDIMM, up to 2666MHz
Expansion Slots	4 PCI-E 3.0 x 8 (FH, FL) + 2 PCI-E 3.0 x 8 (FH, HL); (Or 4 PCI-E 3.0 x16 (FH, FL); 2 PCI-E 3.0 x 8 (LP)	-	-
Onboard Storage Controller	Intel® C622/C625/C626/C627 SATA3 (6Gb/s)	Intel® C621/ C622/ C625/ C626/ C627 SATA3 (6Gb/s)	Intel® C621/ C622/ C625/ C626/ C627 SATA3 (6Gb/s)
Connectivity	2 1GbE RJ45 LAN ports via Intel® i210-AT; 2 10GbE SFP+ ports with SRIOV and RDMA support; 1 RJ45 console port; 4 USB3.0/2.0 Type A port (2 front, 2 rear); 1 VGA port; 1 Display port	2 1GbE RJ45 LAN ports via Intel® i210-AT; 24 1GbE SFP LAN ports via Intel® i350; 8 10GbE SFP+ LAN ports via Intel® XL710; 1 RJ45 console port; 2 USB3.0/2.0 Type A port (2 front); 1 Display port	2 1GbE RJ45 LAN ports via Intel® i210-AT; 8 1GbE SFP LAN ports via Intel® i350; 16 10GbE SFP+ LAN ports via Intel® XL710; 1 RJ45 console port; 2 USB3.0/2.0 Type A port (2 front); 1 Display port
Management Controller	Aspeed AST2500 BMC	Aspeed AST2500 BMC	Aspeed AST2500 BMC
Management	Support IPMI2.0 with security and availability enhancements; support iKVM with Advantech Web GUI style node; support configurable shared or dedicated NIC	Support IPMI2.0 with security and availability enhancements; support iKVM with Advantech Web GUI style node; support configurable shared or dedicated NIC	Support IPMI2.0 with security and availability enhancements; support iKVM with Advantech Web GUI style node; support configurable shared or dedicated NIC
Peripheral Bays	24 hot-swap 2.5" drive support (SAS/SATA HDD/ SSD); 1 SATA3 2280 M.2 SSD; (Optional) 4 hot-swap 2.5" NVMe drive SSD support	1 SATA3 2280 M.2 SSD	1 SATA3 2280 M.2 SSD
Power Supply	(AC) 1+1 redundant 1200W platinum level power supply	(AC) 1+1 redundant 550W platinum level power supply (DC) 1+1 redundant 800W platinum level power supply	((AC) 1+1 redundant 550W platinum level power supply (DC) 1+1 redundant 800W platinum level power supply
Cooling System	4 x 80 x 38mm replaceable fans, w/ optimal fan speed control, 1 air shroud	4 heavy duty fans w/ optimal fan speed control	4 heavy duty fans w/ optimal fan speed control
Form Factor	2U chassis; enclosure: 438 x 88 x 699mm (17.2" x 3.4" x 27.5")	2U chassis; enclosure: 430 x 88 x 430mm (16.9" x 3.4" x 16.9")	2U chassis; enclosure: 430 x 88 x 430mm (16.9" x 3.4" x 16.9")
Operating Temperature	0 ~ 40°C (32 ~ 104°F)	-20 ~ 70°C (-4 ~ 158°F)	-20 ~ 70°C (-4 ~ 158°F)

HPC-7000s Server-grade IPC Chassis

Height (1U = 1.75")		Tower			1U		2U
Model Name		**HPC-2040**	**HPC-5000**	**HPC-7000**	**HPC-7120S**	**HPC-7140**	**HPC-7242**
Form Factor Support		Mini iTX	Micro ATX	Micro ATX, ATX, EATX	Micro ATX, ATX	Micro ATX, ATX	Micro ATX, ATX
No. of slots / No. of full-height cards		1/0	4/2 (11.73" Length)	7/6	1/0	1/0	3/3
Drive Bay	Slim ODD Bay	1	1	1	-	1	1
	5.25" (front-accessible)	-	-	-	-	-	-
	3.5" (hot-swappable)	4 (3.5" / 2.5")	-	-	-	4	4 (3.5" / 2.5")
	3.5" (internal)	-	2 x 3.5" or 1 x 3.5" + 1 x 2.5"	3 (External)	-	-	-
	2.5" (hot-swappable)	-	-	-	2 (HPC-7120S-35ZXE only)	Optional	-
	2.5" (internal)	1	-	-	2	-	2
Cooling	Chassis Fan	1 (12cm / 57.2CFM)	1 (12cm / 82CFM)	2 (12cm/150CFM)	3 (4 cm/23.1 CFM)	4 (4cm / 24CFM)	1 (8 cm/47CFM) + 2 (6 cm/28CFM)
	Air Filter	-	Yes	-	-	-	Yes
Front I/O Interface	USB 3.0	2	2	2	2	-	2
	USB 2.0	-	2	-	-	2	-
Power Supply	Single Power Supply	250W	300W/500W	500W/1200W	350W/700W	250W/400W/680W	350W/500W/550W/ 700W/800W
	Redudant Power Supply	-	-	-	-	-	-
Miscellaneous	LED Indicators	Power, LAN 1, LAN 2, HDD, System Information	System: Power	System: Power	System: Power, HDD, LAN1, LAN2, System Information. HDD Tray: HDD Power and Activity LED	System: Power, HDD, LAN1, LAN2, System Information. HDD Tray: HDD Power and Activity LED	System: Power, HDD, LAN1, LAN2, temperature, fan. HDD Tray: HDD Power and Activity LED
	Rear Panel	One reserved DB-9 ports	Two reserved DB-9 ports	Two USB reserved ports	-	-	Two reserved DB-9 ports
Environment	Operating Temperature	0 ~ 40 °C (32 ~ 122 °F)	0 ~ 40 °C (32 ~ 122 °F)	0 ~ 40 °C (32 ~ 122 °F)	0 ~ 40 °C (32 ~ 122 °F)	0 ~ 40 °C (32 ~ 122 °F)	0 ~ 40 °C (32 ~ 122 °F)
	Non-Operating Temperature	-40 ~ 70 °C (-40 ~ 158 °F)	-40 ~ 70 °C (-40 ~ 158 °F)	-40 ~ 70 °C (-40 ~ 158 °F)	-40 ~ 70 °C (-40 ~ 158 °F)	-40 ~ 70 °C (-40 ~ 158 °F)	-40 ~ 70 °C (-40 ~ 158 °F)
	Operating Humidity	10 ~ 95% @ 40 °C, non-condensing	10 ~ 95% @ 40 °C, non-condensing	10 ~ 95% @ 40 °C, non-condensing	10 ~ 95% @ 40 °C, non-condensing	10 ~ 95% @ 40 °C, non-condensing	10 ~ 95% @ 40 °C, non-condensing
	Non-operating Humidity	10 ~ 95% @ 60 °C, non-condensing	10 ~ 95% @ 60 °C, non-condensing	10 ~ 95% @ 60 °C, non-condensing	10 ~ 95% @ 60 °C, non-condensing	10 ~ 95% @ 60 °C, non-condensing	10 ~ 95% @ 60 °C, non-condensing
Physical Characteristics	Dimensions (W x H x D)	210 x 230 x 275 mm (8.3" x 9.1" x 10.8")	192 x 376.7 x 338.5 mm (7.56" x 14.83" x 13.33")	267.1 x 458 x 500 mm (10.52" x 18.03" x 19.69")	438 x 43 x 381 mm (17.24" x 1.7" x 15")	437 x 43.5 x 504 mm (17.2" x 1.7" x 19.85")	426.4 x 88 x 525 mm (16.79" x 3.46" x 20.67")

HPC-7000s Server-grade IPC Chassis

Height (1U = 1.75")		2U	3U/Tower	4U/Tower			
Model Name		**HPC-7282**	**HPC-7320**	**HPC-7400**	**HPC-7442**	**HPC-7483**	**HPC-7484**
Form Factor Support		Micro ATX, ATX	Micro ATX, ATX, EATX	Micro ATX, ATX, EATX	Micro ATX, ATX, EATX	Micro ATX, ATX, EATX	Micro ATX, ATX, EATX
No. of slots / No. of full-height cards		7/0	7/6	12/12	7/7	10/10	7/7
Drive Bay	Slim ODD Bay	1	1	-	1	-	1
	5.25" (front-accessible)	-	-	2	-	3	-
	3.5" (hot-swappable)	8	2 (3.5" / 2.5")	-	4 can upgrade to 8 (3.5" / 2.5")	8 (3.5" / 2.5")	8 (3.5" / 2.5")
	3.5" (internal)	2	2	2 rear-accessible (3.5" / 2.5")	1	-	-
	2.5" (hot-swappable)	Optional	-	-	-	-	-
	2.5" (internal)	-	-	-	-	2	1
Cooling	Chassis Fan	3 (8cm / 52.6 CFM)	2 (8cm/57CFM) + 1 (6cm/27.72CFM)	3 (8cm/57CFM)	1 (12cm /114 CFM) + 1 (8cm/55 CFM)	3 (12cm /226.5 CFM)	2 (12cm /150.33 CFM)
	Air Filter	-	Yes	Yes	Yes	-	Yes
Front I/O Interface	USB 3.0	-	2	2	2	2	2
	USB 2.0	2	-	-	-	-	-
Power Supply	Single Power Supply	500W/680W/700W	350W/500W/550W/ 700W/800W	700W/1400W	400W/500W/700W/ 750W/1200W	1200W/2000W	700W/1200W
	Redudant Power Supply	-	-	-	-	-	-
Miscellaneous	LED Indicators	System: Power, HDD, LAN1, LAN2, temperature, fan. HDD Tray: HDD Power and Activity LED	System: Power, HDD, LAN1, LAN2, temperature, fan. HDD Tray: HDD Power and Activity LED	System: Power, HDD, LAN1, LAN2	System: Power, HDD, LAN1, LAN2, temperature, fan. HDD Tray: HDD Power and Activity LED	System: Power, HDD, LAN1, LAN2, temperature, fan. HDD Tray: HDD Power and Activity LED	System: Power, HDD, LAN1, LAN2, temperature, fan. HDD Tray: HDD Power and Activity LED
	Rear Panel	-	Two reserved DB-9 ports	-	Five DB-9 ports and one 68-pin SCSI openings	Two DB-9 ports and two PS2 and two USB	Five DB-9 ports and one 68-pin SCSI openings
Environment	Operating Temperature	0 ~ 40 °C (32 ~ 122 °F)	0 ~ 40 °C (32 ~ 122 °F)	0 ~ 40 °C (32 ~ 122 °F)	0 ~ 40 °C (32 ~ 122 °F)	0 ~ 40 °C (32 ~ 122 °F)	0 ~ 40 °C (32 ~ 122 °F)
	Non-Operating Temperature	-40 ~ 70 °C (-40 ~ 158 °F)	-40 ~ 70 °C (-40 ~ 158 °F)	-40 ~ 70 °C (-40 ~ 158 °F)	-40 ~ 70 °C (-40 ~ 158 °F)	-40 ~ 70 °C (-40 ~ 158 °F)	-40 ~ 70 °C (-40 ~ 158 °F)
	Operating Humidity	10 ~ 85% @ 40 °C, non-condensing	10 ~ 95% @ 40 °C, non-condensing	10 ~ 95% @ 40 °C, non-condensing	10 ~ 95% @ 40 °C, non-condensing	10 ~ 95% @ 40 °C, non-condensing	10 ~ 95% @ 40 °C, non-condensing
	Non-operating Humidity	10 ~ 95% @ 60 °C, non-condensing	10 ~ 95% @ 60 °C, non-condensing	10 ~ 95% @ 60 °C, non-condensing	10 ~ 95% @ 60 °C, non-condensing	10 ~ 95% @ 60 °C, non-condensing	10 ~ 95% @ 60 °C, non-condensing
Physical Characteristics	Dimensions (W x H x D)	437 x 88.9 x 533.4 mm (17.2" x 3.5" x 21")	426.4 x 132.2 x 480 mm (16.79" x 5.2" x 18.9")	426 x 177 x 448 mm (16.7" x 7.0" x 17.6")	426 x 177 x 600 mm (16.7" x 7.0" x 23.6")	435 x 177 x 658 mm (19" x 7.0" x 26.5")	426 x 177 x 630mm (16.7" x 7.0" x 24.8")

HPC-8000s Storage Server Chassis

Height (1U = 1.75")		1U		2U		3U	4U
Model Name		**HPC-8104**	**HPC-8108**	**HPC-8212**	**HPC-8224**	**HPC-8316**	**HPC-8424**
Form Factor Support		Mico ATX, ATX	ATX, EATX	Mico ATX, ATX, EATX	Mico ATX, ATX, EATX	Mico ATX, ATX, EATX	Mico ATX, ATX, EATX
No. of slots / No. of full-height cards		1/0	1/0	7/0, 3/3 (1 for Raid Card)	7/0, 3/3 (1 for Raid Card)	7/7 (1 for Raid Card)	7/7 (1 for Raid Card)
Drive Bay	Slim ODD Bay	1 (Ultra Slim)	1	-	-	-	-
	5.25" (front-accessible)	-	-	-	-	-	-
	3.5" (hot-swappable)	4 x SAS3 or SATA	-	12 x SAS3/SATA	-	16 x SAS3 or SATA	24 x SAS3/SATA
	3.5" (internal)	-	-	-	-	-	-
	2.5" (hot-swappable)	-	8 x SAS3 or SATA	2 (Rear) only HPC-8212SE-R6A1E	24 x SAS3/SATA	2 (Rear)	2 (Rear)
	2.5" (internal)	2 or 3(optional)	-	-	-	-	-
	NVMe Support	-	-	4 in 12 Hot-Swap-pable Drive Bays	4 in 24 Hot-Swap-pable Drive Bays	-	4 in 24 Hot-Swap-pable Drive Bays
Cooling	Chassis Fan	4 (4cm)	4 (4cm)	4 (8cm)	4 (8cm)	4 (8cm)	4 (8cm)
	Air Filter	-	-	-	-	-	-
Front I/O Interface	USB 3.0	2	-	-	-	2	-
	USB 2.0	-	1	2	2	-	2
Power Supply	Single Power Supply	500W	800W	-	-	-	-
	Redudant Power Supply	650W	650W	550W, 650W, 800W	800W	550W	800W
Miscellaneous	LED Indicators	LAN1, LAN2,HDD, Power and Information LED	LAN1, LAN2,HDD, Power and Information LED	LAN1, LAN2,HDD, Power and Information LED	LAN1, LAN2,HDD, Power and Information LED	LAN1, LAN2,HDD, Power and Information LED	LAN1, LAN2,HDD, Power and Information LED
	Rear Panel	-	-	-	-	-	-
Environment	Operating Temperature	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 35 °C (32 ~ 95 °F)	0 ~ 35 °C (32 ~ 95 °F)	0 ~ 35 °C (32 ~ 95 °F)	0 ~ 35 °C (32 ~ 95 °F)	0 ~ 35 °C (32 ~ 95 °F)
	Non-Operating Temperature	-40 ~ 60 °C (-40 ~ 140 °F)	-40 ~ 60 °C (-40 ~140 °F)	-40 ~ 60 °C (-40 ~140 °F)	-40 ~ 60 °C (-40 ~140 °F)	-40 ~ 60 °C (-40 ~140 °F)	-40 ~ 60 °C (-40 ~140 °F)
	Operating Humidity	10 ~ 95% @ 40 °C non-condensing	10 ~ 95% @ 35 °C non-condensing	10 ~ 95% @ 35 °C non-condensing	10 ~ 95% @ 35 °C non-condensing	10 ~ 95% @ 35 °C non-condensing	10 ~ 95% @ 35 °C non-condensing
	Non-operating Humidity	10 ~ 95% @ 60 °C non-condensing	10 ~ 95% @ 60 °C non-condensing	10 ~ 95% @ 60 °C non-condensing	10 ~ 95% @ 60 °C non-condensing	10 ~ 95% @ 60 °C non-condensing	10 ~ 95% @ 60 °C non-condensing
Physical Characteristics	Dimensions (W x H x D)	438 x 43.9 x 530mm (17.24" x 1.73" x 20.9")	438 x 43.9 x 597mm (17.24" x 1.73" x 23.5")	438 x 88.4 x 540 mm (17.24" x 3.48" x 21.26") / 438 x 88.4 x 620 mm (17.24" x 3.48" x 24.41")	438 x 88.4 x 620 mm (17.24" x 3.48" x 24.41")	435 x 132 x 540 mm (17.13 x 5.2 x 21.26")	438 x 176 x 620 mm (17.24" x 6.93" x 24.41")

ASMB-200s/500s/700s Workstation Server Board





Model Name		ASMB-260	ASMB-585	ASMB-586	ASMB-785	ASMB-786
Form Factor		Mini-ITX	Micro ATX	MicroATX	ATX	ATX
Processor System	CPU	Intel® Atom® C3000 Series	Intel® Xeon® E3 v5/ v6 and 6th/7th Gen. Core™ i3/i5/i7 Series	Intel® Xeon® E & 8th/9th Gen. Core™ i3/i5/i7 Series	Intel® Xeon® E3 v5/ v6 and 6th/7th Gen. Core™ i3/i5/i7 Series	Intel® Xeon® E & 8th/9th Gen. Core™ i3/i5/i7 Series
	Socket	-	1 x socket LGA 1151	1 x socket LGA1151	1 x socket LGA 1151	1 x socket LGA 1151
	Max. Speed	2.2 GHz	3.9 GHz	3.7 GHz	3.9 GHz	3.7 GHz
	Front Side Bus	-	-	-	-	-
	L3 Cache	2 MB (based on CPU sku)	8 MB	13.5 MB	8 MB	13.5 MB
	Chipset	-	Intel® C236	Intel® C246	Intel® C236	Intel® C246
	BIOS	AMI 128 Mbit, SPI	AMI 128Mbit, SPI	AMI 256Mbit, SPI	AMI 128Mbit, SPI	AMI 256Mbit, SPI
Expansion Slot	PCI	-	-	-	3	-
	PCIe x16	-	1 (Gen3 x16 link)	1	1(switchable to two x 8)	1(switchable to two x 8)
	PCIe x8	-	-	-	2 (switchable to one x 16)	2 (switchable to one x 16)
	PCIe x4	1 (1 Gen3 x 4 link)	3 (2 Gen3 x 4 link, 1 Gen3 x 1 link)	2	2	2
	PCIe x1	-	-	1	-	3
	M.2	-	-	-	-	-
Memory	Technology	DDR4 Reg/unbuffered 2400/2133/1866/1600 Mhz DIMM	DDR4 ECC/non-ECC Unbuffer 1600/1866/2133/2400 MHz	DDR4 ECC/non-ECC Unbuffer 2133/2400/2666 MHz	DDR4 ECC/non-ECC Unbuffer 1600/1866/2133/2400 MHz	DDR4 ECC/non-ECC Unbuffer 2133/2400/2666 MHz
	Max. Capacity	128 GB for RDIMM/ 64GB for UDIMM	64 GB	64 GB	64 GB	64 GB
	Socket	4 x 288-pin DIMM	4 x 288-pin DIMM	4 x 288-pin DIMM	4 x 288-pin DIMM	4 x 288-pin DIMM
Graphics	Controller	AST2500	Intel® GT2-HD Graphics	Intel® GT2-HD Graphics	Intel® GT2-HD Graphics	Intel® GT2-HD Graphics
	VRAM	DDR3 64MB	1 GB maximum shared memory with 2 GB and above system memory installed	1 GB maximum shared memory with 2 GB and above system memory installed	1 GB maximum shared memory with 2 GB and above system memory installed	1 GB maximum shared memory with 2 GB and above system memory installed
Ethernet	Interface	10/100/1000 Mbps Gigabit & 10GBase-T Ethernet	10/100/1000 Mbps Gigabit Ethernet	10/100/1000 Mbps Gigabit Ethernet	10/100/1000 Mbps Gigabit Ethernet	10/100/1000 Mbps Gigabit Ethernet
	Controller	2 x Intel® I210AT + 1 x Intel® X557-AT2	1 x Intel® I219LM, 3 x Intel® I210AT (G4 SKU only)	1 x Intel® I219LM, 3 x Intel® I210AT (G4 SKU only)	1 x Intel® I219LM + 3 x Intel® I210AT (G4 SKU only)	1 x Intel® I219LM + 3 x Intel® I210AT (G4 SKU only)
	Connector	RJ-45 x 3 (1 sharing IPMI function)	RJ-45 x 2 (G2 SKU) / RJ-45 x 4 (G4 SKU)	RJ-45 x 2 (G2 SKU) / RJ-45 x 4 (G4 SKU)	RJ-45 x 2 (G2 SKU) / RJ-45 x 4 (G4 SKU)	RJ-45 x 2 (G2 SKU) / RJ-45 x 4 (G4 SKU)
TPM		Optional	Optional	Optional	Optional	Optional
SATA	Max. Data Transfer Rate	600MB/s	600 MB/s	600 MB/s	600 MB/s	600 MB/s
	Channel	Up to 8	7	8	6	8
SAS	Max. Data Transfer Rate	-	-	-	-	-
	Channel	-	-	-	-	-
Rear I/O	VGA/DVI/HDMI/DP	1 / - / - / -	1 / 2 / - / -	1 / 1 / 1 / -	1 / 2 / - / -	1 / 1 / 1 / -
	Ethernet	3	2 for G2 SKU and 4 for G4 SKU	2 for G2 SKU and 4 for G4 SKU	2 for G2 SKU and 4 for G4 SKU	2 for G2 SKU and 4 for G4 SKU
	USB	2 (USB 3.0)	4 (USB 3.0)	4 (USB 3.1 gen2)	4 (USB 3.0)	4 (USB 3.1 gen2)
	Audio	-	Mic-in, Line-out	Mic-in, Line-out	Mic-in, Line-out	Mic-in, Line-out
	Parallel	-	-	-	-	-
	Serial	1 (RS-232)	1 (RS-232)	1 (RS-232 onboard via cable)	1 (RS-232)	1 (RS-232 onboard via cable)
	PS/2	-	-	-	-	-
Onboard I/O	USB	2 (2 USB3.0)	9 (2 USB 3.0; 6 USB 2.0; 1 USB 2.0 Type A)	9 (2 USB 3.0; 6 USB 2.0;1 USB 2.0 Type A)	9 (2 USB 3.0; 6 USB 2.0;1 USB 2.0 Type A)	9 (2 USB 3.0; 6 USB 2.0;1 USB 2.0 Type A)
	Audio	-	1	1	1	1
	Serial	1	6	1	6	1
	Parallel	-	-	-	1	1
	SATA	8	7	8	6	8
	SAS	-	-	-	-	-
Watchdog Timer	Output	System reset	System reset	System reset	System reset	System reset
	Interval	Programmable, 1~255 sec	Programmable, 1~255 sec/min	Programmable, 1~255 sec/min	Programmable, 1~255 sec/min	Programmable, 1~255 sec/min

ASMB-800s Mainstream Server Board

NEW





Model Name		ASMB-813	ASMB-823	ASMB-815	ASMB-825	ASMB-805
Form Factor		ATX	ATX	ATX	ATX	ATX
Processor System	CPU	Intel® Xeon® E5-1600 v3/v4 and 2600 v3/v4 Series	Intel® Xeon® E5-2600 v3/v4 Series	Intel® Xeon® Scalable/2nd Gen Scalable Series	Intel® Xeon® Scalable/2nd Gen Scalable Series	Intel® Xeon® W Series
	Socket	1 x socket LGA 2011-R3	2 x socket LGA 2011-R3	1 x socket LGA 3647-P0	2 x socket LGA 3647-P0	1 x socket LGA 2066
	Max. Speed	3.7 GHz	3.5 GHz	3.6 GHz	3.6 GHz	4.0GHz
	Front Side Bus	QPI 9.6GT/s	QPI 9.6GT/s	UPI 10.4 GT/s	UPI 10.4 GT/s	-
	L3 Cache	30 MB	30 MB	38.5 MB	38.5 MB	24.75 MB
	Chipset	Intel® C612	Intel® C612	Intel® C620	Intel® C620	Intel® C422
	BIOS	AMI 128 Mbit, SPI	AMI 128 Mbit, SPI	AMI 256 Mbit, SPI	AMI 256 Mbit, SPI	AMI 256 Mbit, SPI
Expansion Slot	PCI	-	-	-	-	-
	PCIe x16	2 (switchable to four x8)	4	2 (switchable to four x 8)	4	3 (switchable to four x 8 and one x16)
	PCIe x8	1	2	1	2	-
	PCIe x4	1	1 (x 8 slot with x 4 link)	1	-	2
	PCIe x1	1	-	1	-	-
	M.2	-	-	1 x M.2 2280 (PCIe/SATA)	1 x M.2 2280 (PCIe/SATA)	1 x M.2 22110/2280/2242 (PCIe)
Memory	Technology	DDR4 REG 2400/2133/1866/1600 MHz DIMM	DDR4 REG 2400/2133/1866/1600 MHz DIMM	DDR4 2933/2666/2400/2133 MHz RDIMM, Intel Optane DCPMM	DDR4 2933/2666/2400/2133 MHz RDIMM, Intel Optane DCPMM	DDR4 2666/2400/2133 MHz RDIMM
	Max. Capacity	256 GB REG DIMM	192 GB REG DIMM	384 GB REG DIMM	384 GB REG DIMM	512 GB REG DIMM
	Socket	8 x 288-pin DIMM	6 x 288-pin DIMM	6 x 288-pin DIMM	6 x 288-pin DIMM	8 x 288-pin DIMM
Graphics	Controller	AST1400/AST2400	AST1400/AST2400	AST2510/AST2500	AST2510/AST2500	-
	VRAM	DDR3 64MB	DDR3 64MB	DDR3 64MB	DDR3 64MB	-
	LCD	-	-	-	-	-
	TV-Out	-	-	-	-	-
	HDMI	-	-	-	-	-
	DVI	-	-	-	-	-
	Dual Display	-	-	-	-	-
Ethernet	Interface	10/100/1000 Mbps Gigabit Ethernet	10/100/1000 Mbps Gigabit Ethernet	10/100/1000 Mbps Gigabit & 10GBase-T Ethernet	10/100/1000 Mbps Gigabit & 10GBase-T Ethernet	10/100/1000 Mbps Gigabit Ethernet
	Controller	2 x Intel® I210AT	2 x Intel® I210AT	2 x Intel® I210AT +1 x Intel® X557-AT2 + 1 x Realtek 8201EL(ASMB-815I/815T2 SKUs)	2 x Intel® I210AT + 1 x Intel® X557-AT2	2 x Intel® I210AT
	Connector	RJ-45 x 3 (1 for IPMI function)	RJ-45 x 3 (1 sharing IPMI function)	RJ-45 x 5 (1 for IPMI function)	RJ-45 x 4 (1 sharing IPMI function)	RJ-45 x 2
TPM		Optional	Optional	Optional	Optional	Optional
SATA	Max. Data Transfer Rate	600 MB/s	600 MB/s	600 MB/s	600 MB/s	600 MB/s
	Channel	8	9	9	9	7
SAS	Max. Data Transfer Rate	-	-	-	-	-
	Channel	-	-	-	-	-
Rear I/O	VGA/DVI/HDMI/DP	1 / - / - / -	1 / - / - / -	1 / - / - / -	1 / - / - / -	-
	Ethernet	2	2	4 (T2 SKU)	4 (T2 SKU)	2
	USB	4 (USB 3.0), 2 (USB 2.0)	4 (USB 3.0)	4 (USB 3.0), 2 (USB 2.0)	2 (USB 3.0)	6 (USB 3.0)
	Audio	-	-	-	-	-
	Parallel	-	-	-	-	-
	Serial	1 (RS-232)	-	1 (RS-232)	1 (RS-232)	1 (RS-232)
	PS/2	2	-	-	-	-
Onboard I/O	USB	5 (2 USB3.0, 2 USB2.0, 1 USB 2.0 Type-A)	5 (2 USB3.0, 2 USB2.0, 1 USB 2.0 Type-A)	5 (2 USB3.0, 4 USB2.0, 1 USB 2.0 Type-A)	5 (4 USB3.0, 4 USB2.0, 1 USB 2.0 Type-A)	5 (2 USB3.0, 4 USB2.0, 1 USB 2.0 Type-A)
	Audio	1	1	1	1	1
	Serial	1	1	1	1	1
	Parallel	-	-	-	-	-
	SATA	8	9	8	8	7
	SAS	-	-	-	-	-
Watchdog Timer	Output	System reset	System reset	System reset	System reset	System reset
	Interval	Programmable, 1 ~ 255 sec/min	Programmable, 1 ~ 255 sec/min	Programmable, 1 ~ 255 sec	Programmable, 1 ~ 255 sec	Programmable, 1 ~ 255 sec

ASMB-900s High-end Server Board





Model Name		ASMB-913	ASMB-923	ASMB-925	ASMB-935	ASMB-975
Form Factor		EATX	EATX	EATX	EATX	Proprietary
Processor System	CPU	Intel® Xeon® E5-2600 v3/v4 Series	Intel® Xeon® E5-2600 v3/v4 Series	Intel® Xeon® Scalable/2nd Gen Scalable Series	Intel® Xeon® Scalable/2nd Gen Scalable Series	Intel® Xeon® Scalable/2nd Gen Scalable Series
	Socket	2 x socket LGA 2011-R3	2 x socket LGA 2011-R3	2 x socket LGA 3647-P0	2 x socket LGA 3647-P0	2 x socket LGA 3647-P0
	Max. Speed	3.5 GHz	3.5 GHz	3.6 GHz	3.6 GHz	3.6 GHz
	Front Side Bus	QPI 9.6GT/s	QPI 9.6GT/s	UPI 10.4 GT/s	UPI 10.4 GT/s	UPI 10.4 GT/s
	L3 Cache	30 MB	30 MB	38.5 MB	38.5 MB	38.5 MB
	Chipset	Intel® C612	Intel® C612	Intel® C620	Intel® C620	Intel® C620
	BIOS	AMI 128 Mbit, SPI	AMI 128 Mbit, SPI	AMI 256 Mbit, SPI	AMI 256 Mbit, SPI	AMI 256 Mbit, SPI
Expansion Slot	PCI	-	-	1	-	-
	PCIe x 16	4 (1 for PME)	4	5	5	4
	PCIe x 8	-	2	1	1	1
	PCIe x 4	-	1	-	-	4
	PCIe x 1	-	-	-	-	-
	M.2	-	-	-	1 x M.2 2280 (PCIe/SATA)	2 x M.2 2242 (SATA)
Memory	Technology	DDR4 REG 2400/2133/1866/ 1600/1333 MHz DIMM	DDR4 REG 2400/2133/1866/ 1600/1333 MHz DIMM	DDR4 2933/2666/2400/2133 MHz RDIMM, Intel Optane DCPMM	DDR4 2933/2666/2400/2133 MHz RDIMM, Intel Optane DCPMM	DDR4 2933/2666/2400/2133 MHz RDIMM, Intel Optane DCPMM
	Max. Capacity	512 GB REG DIMM	256 GB REG DIMM	768 GB REG DIMM	1.5 TB REG DIMM	768 GB REG DIMM
	Socket	16 x 288-pin DIMM	8 x 288-pin DIMM	12 x 288-pin DIMM	24 x 288-pin DIMM	12 x 288-pin DIMM
Graphics	Controller	AST1400/AST2400	AST1400/AST2400	AST2510/AST2500	AST2510/AST2500	AST2510/AST2500
	VRAM	DDR3 64MB	DDR3 64MB	DDR3 64MB	DDR3 64MB	DDR3 64MB
	LCD	-	-	-	-	-
	TV-Out	-	-	-	-	-
	HDMI	-	-	-	-	-
	DVI	-	-	-	-	-
	Dual Display	-	-	-	-	-
Ethernet	Interface	10/100/1000 Mbps Gigabit Ethernet	10/100/1000 Mbps Gigabit Ethernet	10/100/1000 Mbps Gigabit & 10GBase-T Ethernet	10/100/1000 Mbps Gigabit & 10GBase-T Ethernet	10/100/1000 Mbps Gigabit & 10GBase-T Ethernet
	Controller	4 x Intel® I210AT	2 x Intel® I210AT	2 x Intel® I210AT + 1 x Intel® X557-AT2	2 x Intel® I210AT + 1 x Intel® X557-AT2	2 x Intel® I210AT + 1 x Intel® X557-AT2
	Connector	RJ-45 x 4 (1 sharing IPMI function)	RJ-45 x 3 (1 for IPMI function)	RJ-45 x 4 (1 sharing IPMI function)	RJ-45 x 4 (1 sharing IPMI function)	RJ-45 x 4 (1 sharing IPMI function)
TPM		Optional	Optional	Optional	Optional	Optional
SATA	Max. Data Transfer Rate	600 MB/s	600 MB/s	600 MB/s	600 MB/s	600 MB/s
	Channel	8	10	8	10	14
SAS	Max. Data Transfer Rate	-	-	-	-	-
	Channel	-	-	-	-	-
Rear I/O	VGA/DVI/HDMI/DP	1 / - / - / -	1 / - / - / -	1 / - / - / -	1 / - / - / -	1 / - / - / -
	Ethernet	4	2	4 (T2 SKU)	4 (T2 SKU)	4 (T2 SKU)
	USB	7 (4 USB3.0,2 USB2.0, 1 USB 2.0 Type-A)	7 (2 USB3.0,4 USB2.0, 1 USB 2.0 Type-A)	7 (2 USB3.0, 4 USB2.0,	7 (2 USB3.0, 4 USB2.0, 1 USB 2.0 Type-A)	11(8 USB3.0, 2 USB2.0, 1 USB 2.0 Type-A)
	Audio	-	-	-	-	-
	Parallel	-	-	-	-	-
	Serial	1 (RS-232)	1 (RS-232)	1 (RS-232)	1 (RS-232)	1 (RS-232)
	PS/2	-	2	-	-	-
	USB	5 (2 USB3.0, 2 USB2.0, 1 USB 2.0 Type-A)	5 (2 USB3.0, 2 USB2.0, 1 USB 2.0 Type-A)	5 (2 USB3.0, 4 USB2.0, 1 USB 2.0 Type-A)	5 (4 USB3.0, 4 USB2.0, 1 USB 2.0 Type-A)	5 (2 USB3.0, 4 USB2.0, 1 USB 2.0 Type-A)
	Audio	1	1	1	1	1
	Serial	1	1	1	1	1
	Parallel	-	-	-	-	-
	SATA	8	10	8	10	12
	SAS	-	-	-	-	-
Watchdog Timer	Output	System reset	System reset	System reset	System reset	System reset
	Interval	Programmable, 1 ~ 255 sec/min	Programmable, 1 ~ 255 sec/min	Programmable, 1 ~ 255 sec	Programmable, 1 ~ 255 sec	Programmable, 1 ~ 255 sec

Compatible GPU/Xeon Phi

GPU Card Vendor \ Advantech Product Model			1U	2U			3U chassis HPC-7320 4U chassis HPC-7483 & HPC-7400			4U				
			SKY-6100	SKY-6200	SKY-7210	SKY-7221	ASMB-813	ASMB-913	ASMB-923	HPC-7400-S813	HPC-7400-S923	HPC-7483-S923	SKY-6400	SKY-6420
NVIDIA	Tesla	V100	Ve	V									Vb	Va,b
		T4 (70W)		V									V	V
		P100	Vb	V	Vb	Vb	V	V	V	Ve	Ve	V	Vb	Ve
		P40	V	Ve			V	V	V	Ve	Ve	V	Ve	Ve
		P4	V	Ve									Ve	Ve
		M60					V	V	V	V	Ve	Ve		
		M40					V	V	V	Ve	V	V		
		K80					V	V	V	V	V	Ve		
		K40					V	V	V	Ve	Ve	Ve		
AMD	Workstation	W9000	V	V			V	V	V	V	V	V	V	
		W9100	V	V			V	V	V	V	V	V	V	
	Server	S9000	V	V			V	V	V	V	V	V	V	
		S9150	V	V			V	V	V	V	V	V	V	

Note:
a. add 1 x 1700024753-01 for 1 GPU
b. the system must working under 30°C with full GPU card populated
c. the system must working under 25°C with full GPU card populate
e. Passed Advantech Internal validation - NVQual in process

GPU P/N

Cat.	Part Number	Description
Quadro series GPU cards	SKY-QUAD-GV100	Quadro GV100 32GB PCI-E x16 DP*4 FS
	SKY-QUAD-P400	Quadro P400 2GB PCI-E x16 MDP*3 FS
	SKY-QUAD-P620	Quadro P620 2GB PCI-E x16 MDP*4 FS
	SKY-QUAD-P1000	Quadro P1000 4GB PCI-E x16 MDP*4 FS
	SKY-QUAD-P2200	Quadro P2200 5GB PCI-Ex16 DP*4 FS
	SKY-QUAD-P4000	Quadro P4000 8GB PCI-E x16 DP*4 FS
	SKY-QUAD-P5000E	Quadro P5000 16GB PCI-E x16 DVI-D*1 DP*4 FS
	SKY-QUAD-P6000E	Quadro P6000 24GB PCI-E x16 DVI-D*1 DP*4 FS
	SKY-QUAD-SYNC2-PE	Quadro Sync 2 for P4000/P5000/P6000/GV100/GP100
	SKY-QUAD-RTX4000	Quadro RTX4000 8GB PCI-E x16 DP*3 FS
	SKY-QUAD-RTX5000	Quadro RTX5000 16GB PCI-E x16 DP*4 FS
	SKY-QUAD-RTX6000	Quadro RTX6000 24GB PCI-E x16 DP*4 FS
	SKY-QUAD-RTX8000	Quadro RTX8000 48GB PCI-E x16 DP*4 FS
Tesla series GPU cards	SKY-TESL-P100-PE	Tesla P100 12GB PCI-E x16 HS
	SKY-TESL-P40-PE	Tesla P40 24GB PCI-E x16 HS
	SKY-TESL-V100-P	Tesla V100 16GB PCI-E x16 HS
	SKY-TESL-V100-32P	Tesla V100 32GB PCI-E x16 HS
	SKY-TESL-T4-16P	Tesla T4 16GB PCI-E x16 70W ATX&LP HS

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