

運用AI和邊緣運算開創ESG新視野

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Advantech & AMD



Product Development

Advantech have very deep cooperation with AMD since 30 years ago. We have over hundreds of product based on AMD platform. Including all kinds of industrial products.



ADVANTECH

Marketing Campaign



Advantech also have co-marketing with AMD in various of marketing campaign. Including all kinds of PR, News, Exhibition and Events.

Roadmap Planning



We exchange marketing and development information together. So we will plan the product based on each other's demand and strategy.

AMD

AMD Benefit For AI Development



Great GPU performance

Many AMD series CPU are with great graphics performance. Ex. V1000, V2000



Latest CPU Processing

AMD now have the latest 5nm CPU in the market which is with great performance



Powerful FPGA AI module

Combine with Xilinx's powerful AI FPGA modules, the AI Edge server can have great AI computing power



Development support

For the past 30 years ago, AMD always provide great and in-time support which are very helpful for the product development.

Smart AI Applications



**Facial
recognition**



Mask detection



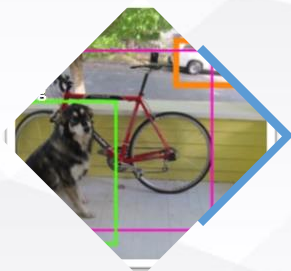
Virtual fence



**Helmet
detection**



**Object
classification**



**People
counting**



**Traffic
monitoring**



**Parking
violation**

AI Modules Form Factors



MXM

Large space for high performance design

Not easy to design two modules



PCIe

Common interface

Not suitable for small and fanless system



M.2 2280



Common interface

No enough space for high performance design



EDSFF E1.S



Large space and can easily design two modules

No common form factor

Edge Server With AMD / Xilinx AI Solution



Edge computing for AMD / Xilinx AI EDSFF module

EBC-V001 is customized project designed for AMD / Xilinx for AI computing for signage application. The system basically is modified from current DS-082 main board to support EDSFF E1.S module x 2 pcs and two 10Gb Ethernet ports.



10 GbE LAN



Xilinx AI



AMD R2000

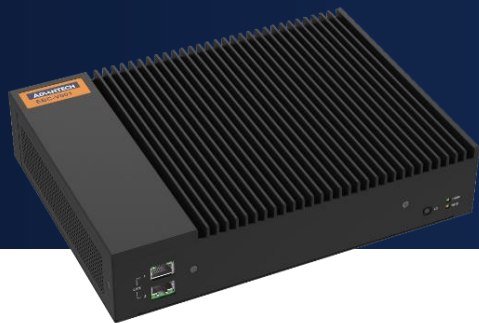


EDSFF 1.S form factor

The project is for famous world wide retail chain store. And the application is for customer to install in various location for different kinds of AI computing. The detail function shall include Artificial Intelligence, Machine Learning and AI Analytics.

DS-621

32 channels Edge AI server



32 channels Edge AI server with EDSFF AI module x 2



Compact design for edge application

- Size : 312 X 209 X 51 mm
- Weight : 4 kg

Fanless system for wide temperature operation

- 0~50 degree operation temperature

32 channels FHD at 30 FPS AI recognition capability

- Support EDSFF E1.S AI modules by two pcs
- Adopt with 10G LAN x 2 for 32 channel video streaming

Support DASH for low level net work management

- Remote OS installation & recovery
- Remote power on/off/restart

PVT

2023, Q4

MP

2024, Q1

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DS-621 Smart Edge Server for Video Analytics



Edge-able

- A server in the edge box size (312 x 208 x 50 mm)
- Total power less than 75 W, operating at 0 – 55 degree
- Wi-Fi connection, 2x 10 Gb Ethernet MAC + 1G for out-of-band mgmt (DASH)
- 4x USB 3.1, 2x USB2.0, 2x HDMI support up to 4k display
- Fanless design and Wall-mountable



Scalable

- Accelerators in scalable and modular add-on cards (EDSFF E1.S***) provide video and machine learning acceleration. Two different modules are available:
 - Gen 1 module: MPSoC ZU5EV (many video streams + light ML)
 - Gen 2 module: Versal AIE VE2302 (small # of video streams + heavy ML)



Adaptable

- Adaptable configurations to meet application use-case requirements and optimize TCO
- Powerful AMD x86 CPU (Ryzen R2514) enables server level applications and remote managements



DASH for System Management in DS-621



Introduction

DASH is a low level network device management function. It basically provides a OS which is at the same level with BIOS to manage the system.



Functions

- Remote re-flash BIOS in BIOS level.
- Remote install OS in BIOS level.
- Out of band function. (Power on / off / restart)



Benefits

With DASH support, users can turn on/off/restart their system even when the system is crashed. Then management center can remote re-flash the BIOS and even install the OS via network.

Chain Store Self-check



Intro

There are more and more demands for self-check applications in chain stores. Because it can save a lot of labor cost and also shorten a lot of check time. So we can see more and more similar demand and application from all kinds of stores.

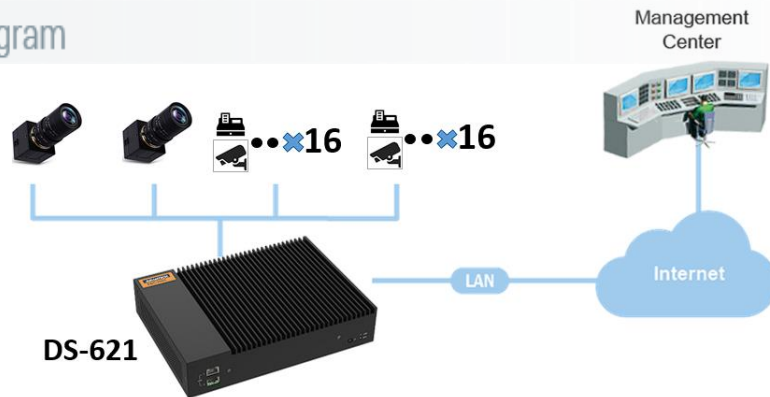
Challenges

- Cost per-camera is too high
- LAN connection speed is not enough for too many web cameras
- AI system dimensions are too big and also normally not possible for fanless system.

Solutions and Technologies

- 2 x powerful AI module in EDSFF E1.S form factor
- 2 x 10Gbp LAN port
- HDMI x2, USB x 6, LAN x 3, Wi-Fi x 1

Diagram



Benefits

- Support up to 32 pcs web camera & 2 USB high speed camera
- Cost per camera can be very beneficial
- Slim and compact system design with fanless thermal solution

Advantech Product Roadmap – Embedded Boards

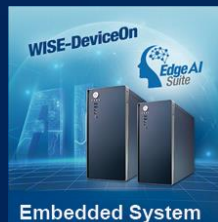


■ Available ■ Developing

2022 ● ————— ● 2023

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Advantech Product Roadmap – System Solutions



EPC-T3229 Q3'22

- Ryzen™ V2000
- 1U Thin Embedded PC



EPC-B5592 Q3'23

- EPYC™ 7003 Series
- 4U System, 1200W PSU



EBC-B3522 Q3'22

- Ryzen™ 5000 (AM4)
- 3U System, 500W PSU



DPX®-E140

- Ryzen™ V1000/R1000
- Radeon GFX9, 4 x DP out



DPX®-J100

- Ryzen™ V1000/R1000
- 72 + 20 Pin JAMMA Harness Connectors



DPX®-S451 Q4'22

- Ryzen™ R2000 Zen 2
- Radeon GFX9, 4 DP out



DS-082

- Ryzen™ V1000/R1000
- 4/3 x HDMI 2.0, 1 x LAN, 1 x COM & 4 x USB



Available Developing

2022 ● — ● 2023

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AI-Centered Sustainable Business Policy

AI Transformation

AI Optimization

AI Assistant

■ iFactory

- ✓ Prognostic Health Management(PHM)
- ✓ Predictive Quality Analytics (PQA)
- ✓ Automatic Optical Inspection (AOI)
- ✓ Total Productive Maintenance (TPM)

■ iServices

- ✓ Intelligent Fleet Management
- ✓ Smart Logistics and Warehouse
- ✓ Smart Retail

■ iHealthCare

- ✓ AI-Assisted Healthcare
- ✓ AI Integrated Operational
- ✓ Performance Indicators



CSR 天下企業公民
Excellence in Corporate Social Responsibility



ISO 50001 / ISO 14000



Assistive Intelligence → Augmented Intelligence

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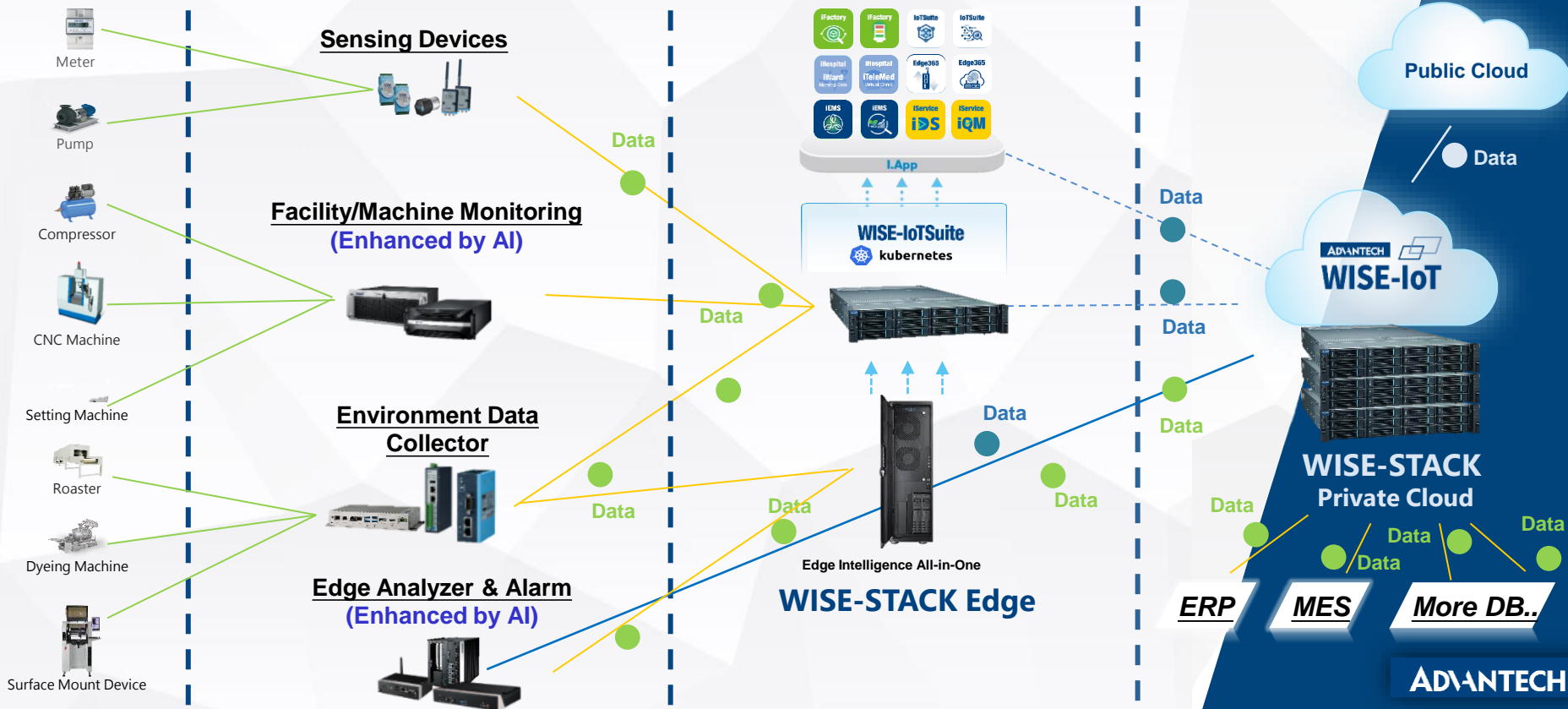
Data Fabric Integration of Disparate Data Sources

Endpoints

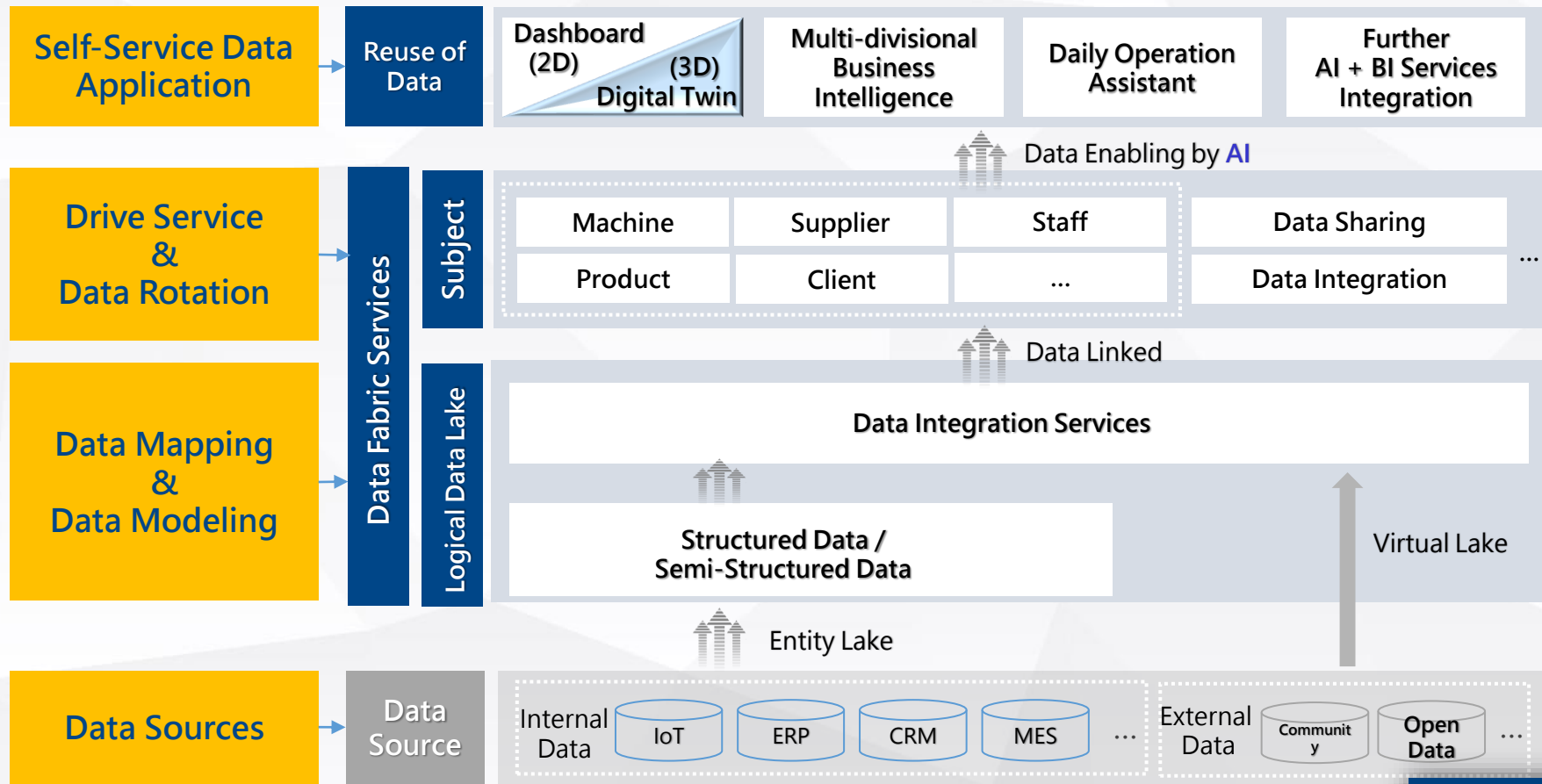
Device & Edge Computing

On Premise Edge Cloud

Centralized Data Center



AI-ignited Business Intelligence



Meeting the Needs of Managers at All Levels

Personalized Dashboard

Providing independent personalized Dashboards for different users. Users can present the metrics they care about on their personal homepage, making the management interface more aligned with each individual's specific needs.



Multiple Indicator Management Templates

Providing redefined management dashboard templates for decision-making departments, offering more rational and intuitive data views based on the Characteristics of Presented Data Indicators.



Organizational Topology Management

Granting Permissions Based on Job Levels and Departments to Ensure Data Security Segmentation and Align Management Dashboards with Core Business and Management Tasks.



Mobile Management

Support for mobile browsing with Responsive App Design, creating an optimal navigation experience, compatible with Android/iOS Dual Systems.



AI Application Framework

Feature Analysis Model Development After Data Preprocessing, Model Retraining, Deployment Version Management, Feedback to Operations Center, and Multi-Department Decision Support System Construction.



Edge Data Management

Handling edge data collection and format transformation through data integration platform modules. Supports multiple data formats and customization of data sources, endpoints, routing and projects.



Custom Thresholds and Alerts

Predefined thresholds for indicators with alert notifications via e-mail, SMS, etc.



Data Middleware Integration

Building an Optimized Operational Interface and Enabling a Smart Operations Center Using WISE-IoTSuite and Data Fabric Software Services.

WISE-IoTSuite

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Integrated Operational Key Performance Indicators (KPIs)

– A Hospital Example



Real-time Monitoring of Outpatient Clinic Status



Real-time Monitoring of Inpatient Ward Condition



Monitoring of Medical Quality Indicators



Analysis of ICU Occupancy Rate



Profit Forecast



Real-time Status of Medical Service Counters.

Integrating trends of various operational Key Performance Indicators (KPIs) to support Top-level decision-making. This concept Can also apply to other industries to increase operational and management efficiency.

ESG Carbon Management: Path to Sustainable Development (1-5 Years)

	Short-term	Mid-term	Long-term
Management and objectives	✓ Developing energy-saving and carbon reduction plans	✓ Task force on climate-related financial disclosures	✓ Collaborating with Suppliers/Clients for Carbon Management
Risk and opportunity	✓ Identifying, assessing, and managing climate risks	✓ ISO 50001 Energy Management	✓ Offering Low Carbon Products
Carbon management data	✓ Greenhouse Gas Inventory Expansion ✓ Verification of Greenhouse Gas Inventory	✓ Greenhouse Gas Inventory Expansion ✓ Verification of Greenhouse Gas Inventory ✓ Purchasing Renewable Energy	✓ Greenhouse Gas Inventory Expansion ✓ Verification of Greenhouse Gas Inventory ✓ Conducting Product Life Cycle Assessment

Cloud-native Plug-and-play Carbon Emissions Management Service: iEMS

Service
Enterprises



High-Energy Intensive
Factories



Green Supply Chain Upstream
and Downstream Enterprises



Green Park



ESG Disclosing Enterprises



ECO Enterprise
Applications

Real-time Carbon Emissions Monitoring

Carbon Footprint

- Carbon emissions data collection
- Emission factor management
- Carbon emissions reporting
- Carbon emissions analysis

Carbon emission reduction

- Real-time carbon emissions monitoring
- Energy efficiency assessment and analysis
- Emission reduction process management

Carbon neutrality

- CCER Management
- Carbon trading
- Carbon decision-making

Cloud Platform



Data Acquisition

Intelligent Edge Gateway



Enterprise System Integration



Standardized template-based data
reporting/uploading



Emission
Endpoints

BTU meter



Electric meter



Flow meter



Gas meter



Photovoltaic
equipment



Energy
storage device



Production
equipment



Power supply
equipment

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Edge Computing ATX Motherboards

	ASMB-831	ASMB-830	AIMB-723
Form factor	ATX (12" x 9.6")	ATX (12" x 9.6")	ATX (12" x 9.6")
Life Time	5 Years	5 Years	5 Years
Processor	EPYC™ 9004 Series, SP5 Socket	EPYC™ 7003 Series, SP3 Socket	Ryzen™ 7000 Series, AM5 Socket
Memory	6 x DDR5 Memory slot, 1DPC	8 x DDR4 Memory slot, 1DPC	4 x DDR5 Memory slot, 1DPC
Expansion slot	5 x PCIe 5.0 X16 2 x PCIe 5.0 X8	5 x PCIe 4.0 X16 2 x PCIe 4.0 X8	1 x PCIe 4.0 X16, 1 x PCIe 4.0 x2, 3 x PCIe 4.0 X4, 1x PCI
M.2	2 x 2280/22110 (SATA/PCIe 4.0 x4)	2 x 2280/22110 (SATA/PCIe 4.0 x4)	1 x 2280 (SATA/PCIe 4.0 x4)
Storage	9 x SATA3	9 x SATA3	4 x SATA3
10GbE LAN	2 x 10GbE (RJ45)	2 x 10GbE (RJ45)	X
1GbE LAN	X	2 x 1GbE (Intel I210AT)	2 x 2.5GbE
BMC/VGA	AST2600 (1 x dedicated IPMI LAN port)	AST2500 (1 x dedicated IPMI LAN port)	X
USB	7 x USB 3.2 Gen1	5 x USB 3.2 Gen1	4 x USB 3.2, 2 x USB 3.0, 2 x USB 2.0
Operating temp.	0° ~ 60°C	0° ~ 60°C	0° ~ 60°C
MBTF	300K Hours	300K Hours	390K Hours

Accelerator Card Combinations For Edge AI Computing



AOI



IEM



Data Center



Edge Computing

Accelerator Card	Recommended form factor and PSU			
No card or Less than 70W Installed	2U HPC-8208	2U HPC-7242	3U HPC-7320	Tower HPC-7000
	4U HPC-7420	4U HPC-7442	4U HPC-7484	4U HPC-7485
1 ~ 2 x 150W card Installed	Tower HPC-7000-50ZB	3 x front-accessible 3.5" HDD	500W Single PSU	
	3U HPC-7320MB-00XE	2 x front-accessible 3.5" HDD	500W Single PSU / 850W RPSU	
	4U HPC-7420-85ZX	2 x 2.5" hot-swap SATA/SAS	850W Single PSU	
2 x 250W card Installed	Tower HPC-7000-12ZB	3 x front-accessible 3.5" HDD	1200W Single PSU	
3 x 250W card Installed	4U HPC-7420-12ZX	2 x 2.5" hot-swap SATA/SAS	850W / 1200W Single PSU	
	4U HPC-7484-12ZB	HPC-7484 8 x 3.5"/2.5" hot-swap SATA/SAS	1200W Single PSU	
4 x 250W card Installed	4U HPC-7485-20RX	HPC-7485 8 x 3.5"/2.5" hot-swap SATA/SAS	2000W Redundant PSU	



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Mission Critical Server

Industrial-grade withstands higher and lower temperatures and vibrations, combining reliability and long lifespan



Data Fabric



Modern IT Infra.



5G MEC



SDN & NFV

Application	Form factor and PSU		
Hyper Converged Infra.	2U SKY-7260S3-12A1R	12 x front-accessible 3.5" HDD	800W RPSU
	2U SKY-8260SV2-A0000	Internal: 2 x 2.5" SATA SSD Rear: 2 x 2.5" SATA/PCIe SSD	1200W RPSU
5G MEC	2U SKY-8260SV2-D0000	Internal: 2 x 2.5" SATA SSD Rear: 2 x 2.5" SATA/PCIe SSD	800W DC PSU
	2U FWA-6080-01A1R	2 x front-accessible 2.5" HDD (U.2 PCIe NVMe by inquiry)	850W RPSU (Optional 1300W DC PSU)



Co-Creating the Future of the IoT World

