ADVANTECH
Enabling an Intelligent Planet

AMD

ADVANTECH AMD SOLUTIONS EBOOK

Your Guide to Advantech's E-IoT Computing Platforms based on the Latest AMD CPUs Designed Specifically for High Performance Edge Computing

Table of Contents

WHY ADVANTECH

Advantech is a leading provider of innovative products, services, and solutions. We offer comprehensive system integration, hardware, software, customer-centric design services, embedded systems, and global logistics support. We work closely with our partners to provide complete solutions for a wide range of applications in different vertical segments.

ADVANTECH

Enabling an Intelligent Planet

Est. **1983**

Founder and CEO: K.C Liu
Headquarter: Taipei, Taiwan

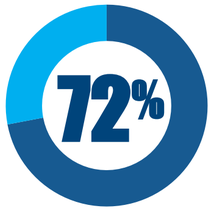
INDUSTRY SERVED

Telecom, Industry 4.0, IoT, Gaming, Retail, iLogistics, Mil/Aero, Broadcasting, Agriculture, Healthcare
(We work with 27 of the top 30 healthcare companies worldwide)

2000+
STANDARD PRODUCT OFFERINGS

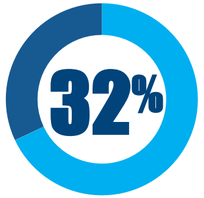
CUSTOM PRODUCT CAPABILITY

72% of what we build is “the brand behind the brand” for our partners



WORLDS LARGEST IPC COMPANY

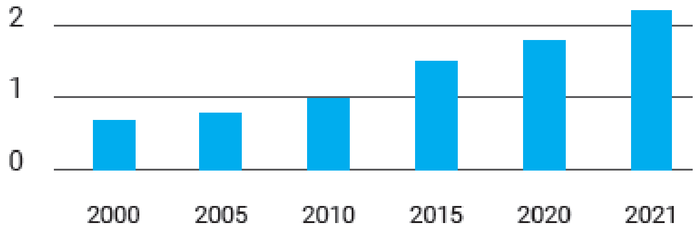
32% market share



Advantech Companies
Other IPC

$2.09B

2021 REVENUE



KEY ECO-SYSTEM PARTNERS

Microsoft Partner Gold Cloud Platform
AMD Embedded Solutions Partner Program Elite
NXP Gold Partner
ubuntu Delivered by Canonical
NVIDIA Elite Partner

QUALITY SYSTEMS IN PLACE

- OHSAS 81001
- ISO-170256
- IECQ QC 080000
- Sony GP
- IECEx QAR
- FDA

1MILLION+ sq. ft.

In-house manufacturing Kunshan, China, Ten SMT Lines

Linkou, Taiwan

Kunshan, China

MANUFACTURING PLANTS

- Vertically Integrated manufacturing (Self contained)
- Full Manufacturing redundancy (Risk Mitigation)
- Full BOM and lifecycle control (End-to-End control over quality)

$9.1B

MARKET CAP

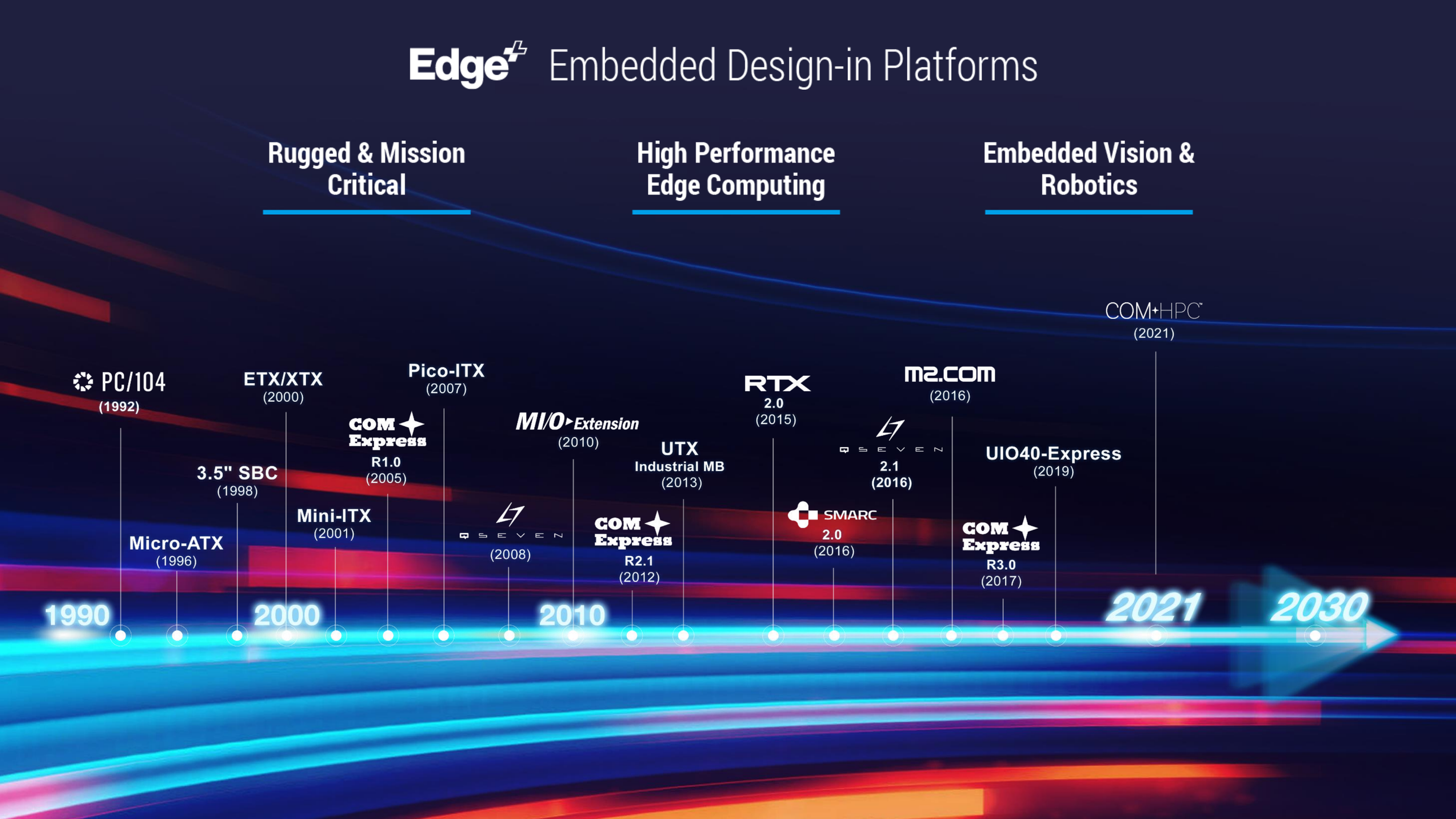
2022

WORLDWIDE OFFICES

Design Centers	6
Manufacturing Centers	3
CTOS Centers	13
Logistics Centers	4
On-Site Service	2
Repair Centers	14
Sales Offices	19

8500+
EMPLOYEES

Edge+ Embedded Design-in Platforms



Embedded AIoT Design-in Services

Embedded Software Services

- Embedded BIOS
- Embedded LTS OS (Long-Term Support OS)
- SUSI Software API and OS Lockdown Utility
- iManager: Intelligent Self-management on Chip

Edge AI

- IE Aggregation for NVIDIA and Intel Accelerators
- Cross-platform Support for Windows and Ubuntu
- Vision AI Turnkey Repository
- Instant AI Experience OOB

Device Management

- Remote Management
- Update Management
- Data Visualization
- Monitor and Control
- Alert and Action
- IT/OT Total Security

Software and Cloud Integration

- Acronis Backup and Recovery
- McAfee IoT Security Solution
- Windows IoT Add on Utility and Customization
- Global Distribution
- Azure Migration and Consulting Services

Why Advantech & AMD for Embedded

Advantech, a leading IPC company, leverages the latest AMD platform technology to deliver superior business value. Accelerating the adoption of IoT edge applications requires technology breakthroughs that support diverse mission critical applications. AMD platform technology provides excellent performance, graphics, embedded features, and design-in services.

5G & Networking

High performance computing for 5G and communication infrastructure

64-CORE

Machine Vision

Empower precision and expandability to upgrade productivity

4 PCIe x16

Medical Imaging

Deliver stable computing power for high-definition image analys

QFCS

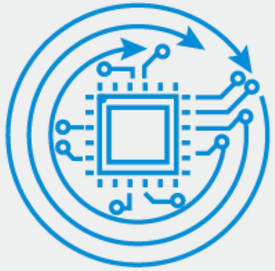
Infotainment

AMD Radeon graphics and integration of 4 x 4K independent displays

Radeon GFX

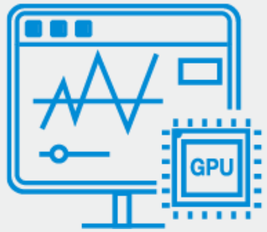
How Advantech & AMD Benefit Industrial Applications

Leading Computing



- AMD Zen 3 architecture
- Advanced 7nm process
- Up to 64 cores
- PCIe Gen 4 and USB 3.2 Gen 2
- Best performance per Watt

Excellent Graphics



- AMD Radeon graphics up to 8 x GPU cores
- 4 x Display pipes up to 4K resolution
- HVEC and H.264 (10-bit) codec, VP9 decode

Software Utility & OS

- DeviceOn / iManager
- Redhat RHEL 8.3
- CentOS 8.3
- Windows Server 2019 & 10 Enterprise LTSC
- Ubuntu 20.04

Embedded Features & Service

- 5 and 10 years Longevity
- BIOS customization services
- Advanced thermal solutions
- Intelligent management (IPMI 2.0)
- Design-in services

Advantech Product Roadmap – Embedded Boards

EPYC EMBEDDED

High-performance

SOM-E780 Q4'22

- EPYC™ 7003 Series
- COM HPC SERVER E

AIMB-592 Q1'23

- EPYC™ 7003 Series
- MicroATX MB

Zen 4
GENOA
SP5

RYZEN EMBEDDED

Mainstream

AIMB-522 Q3'22

- Ryzen™ 5000 (AM4)
- Micro ATX MB

Zen 4
Raphael
AM5

RYZEN EMBEDDED

Low Power

SOM-6872

- Ryzen™ V2000 Zen 2
- COM Express Compact, T6

AIMB-229

- Ryzen™ V2000 Zen 2
- Mini ITX

MIO-5376 Q4'22

- Ryzen™ R2000 Zen 2
- 3.5" SBC

Available Developing

2022 ——— 2023

Advantech Product Roadmap – System Solutions

Embedded System

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

Zen 4
Raphael
AM5

Gaming

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

Digital Signage

DS-082

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

Zen +
R2000

Available Developing

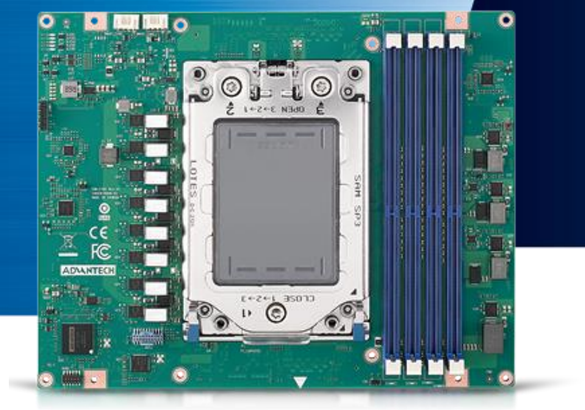
2022 — 2023

COM-HPC

SOM-E780

EPYC™ 7003 Series

EMBEDDED



The Most Powerful COM HPC Server Module With 64-Core AMD EPYC CPU

Accelerating the Edge Server Revolution

Learn More

Phase In	December 2022	Longevity	June 2031

Beyond High-performance COM

- COM-HPC Proprietary Pinout – Size E (200 x 160 mm)
- Proprietary pinout for higher TDP & support for more PCIe
- EYPC 7003 REAL server grade CPU (64C/128T/225W) and socket type CPU

Cost & Energy Efficient Performance

- Supports more VM per server
- Parallelized cores ideal for NFV & SDN
- High performance-per-watt reduces energy & operation cost

Maximum CPU Cores, High Speed I/O, & RAM

- Single CPU with headroom for the most enterprise workloads
- 512GB large memory size with 4 x DDR4 long DIMM
- 79 x PCIe Gen 4.0 lanes for various add-on cards — NIC, GPU, and FPGA

Advanced Network Solution with Security & Service

- Supports IPMB for BMC remote control
- TPM support for advanced security
- Supports security boot or fast boot by customized BIOS

Application

Data Center

High End Test Equipment

Networking

Micro-ATX

AIMB-592

EPYC™ 7003 Series

EMBEDDED

64-Core AMD EPYC Industrial MicroATX Motherboard

Driving Next-Generation Workloads at Edge

Phase In	January 2023	Longevity	January 2026

Maximize AI Computing with Latest High-speed Technology

- 4 x PCIe Gen 4.0 x16 slots empower Machine Learning & Deep Learning
- Supporting 2 x double-deck AI-accelerated PCIe x16 card by steel & durable slot
- High-speed PCIe 4.0 onboard SSD by M.2 M-Key connector

High Throughput Connectivity to Cloud

- Dual 10GbE LAN high-bandwidth connectivity empowers big data cloud services
- Dual 1GbE LAN simplifies private cloud deployment

Ultimate Performance Powers Workloads at the Edge

- 64 Core AMD Milan EPYC 7003, Zen 3 core 7nm CPU
- Up to 768GB DDR4-3200, 6 x channel memory

Remote Management

- WISE-DeviceOn features remote access and efficient OTA operations
- IPMI 2.0 centralized management

Application

Precise Diagnostic

Intelligent Video Surveillance

Edge AI & Analytics

4U Edge Computer

EPC-B5592

EPYC™ 7003 Series

EMBEDDED

Server Grade Edge Computer

For Power-hungry Graphic AI Applications

Phase In March 2023

Longevity January 2026

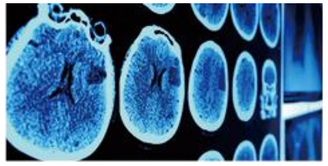
Superior Computing Power for AI Applications

- AMD EPYC 7003 Milan Server Grade CPU
- 6-channel DDR4 up to 3200MHz for heavy computing workloads
- Dual 10G LAN for smooth data stream
- Integrated with NVIDIA Quadro RTX A6000

Industrial Grade System Design

- ESD protection is designed to sustain IEC Level 4 discharge
- EMC protection is designed for both industrial & residential environments
- 1200W 80+ GOLD power supply to support up to two NVIDIA Quadro GPU cards

Application



PACS Workstation

Surgical Robotics

Hyper-converged Infrastructure - VMmark®3.1.x vSAN

2 x AMD EPYC TM 7713 280% — 280%

2 x Intel® Platinum 8268

VSI - Login VSI™ Pro v4.1.40.1 average

2 x AMD EPYC TM 7763 214% — 214%

2 x Intel® Gold 6258R

Database - TPC Benchmark™ Express HS

1 x AMD EPYC TM 75F3 227% — 227%

2 x Intel® Gold 6262V

High Performance Computing - ANSYS® LS-DYNA® carss

2 x AMD EPYC TM 75F3 181% — 181%

2 x Intel® Gold 6258V

Integer Performance - SPECrate® 2017_ int_base

2 x AMD EPYC TM 7763 206% — 206%

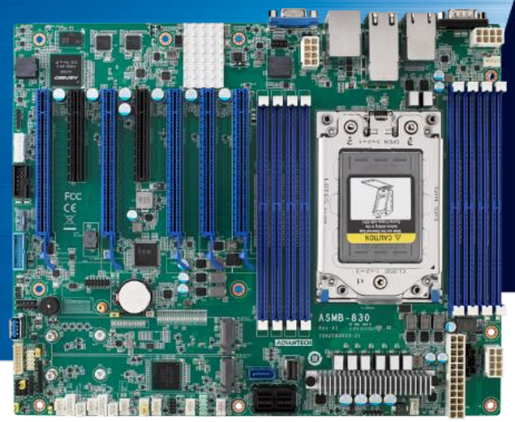
2 x Intel® Gold 6258R

Server Board

ASMB-830

EPYC™ 7003 Series

EMBEDDED



Single Socket Motherboard

Best Choice for High-density
GPU-based AI Accelerators

Learn More

Phase In March 2022

Longevity March 2027

Excellent Performance

- AMD EPYC™ 7003 Series—the world's fastest x86 server processors
- 9 x SATA3 (8 via Mini SAS HD + 1 SATA 7P)
- 2 x M.2 connectors (SATA / PCIe 4.0 compatible)
- Field-proven high-reliability features from Advantech

High Availability and Serviceability

- 8 x DDR4 memory RDIMM/LRDIMM for up to 2TB capacity
- 5 x PCIe 4.0 x16 + 2 x PCIe 4.0 x8 expansion slots
- Support up to 4 Double-Deck GPU cards

Cost & Energy Efficient Performance

- EPYC CPUs help minimize environmental impacts from data center operations while advancing your company's sustainability objectives.
- High performance-per-watt reduces energy & operation cost

Advanced Network Solution with Security & Service

- Support dual 10GbE ports
- Support IPMI for BMC remote control

AMD Infinity Guard offer the advanced capabilities required to help defend against internal and external threats and keep your data safe with virtually zero impact to system performance.

Application

AOI

IEM

Data Center

Edge Computing

2U SKY Server

SKY-7260S

EPYC™ 7003 Series

2U High Performance Rackmount Server

Learn More

Phase In	Oct, 2022	Longevity	March 2027

Extreme Computing Performance

- Up to 64 Cores
- Single Socket, AMD EPYC™ 7003 Series
- Up to 2TB memory capacity

Flexible PCIe Configuration

- Up to 8 x PCIe slots
- 2 x double deck PCIe for GPGPU and FPGA accelerator
- OPC 3.0 for PCIe 4.0 expansion

Variety of Storage Offering

- Up to 200TB storage capacity
- Hybrid storage (NVMe + SAS/SATA)
- 2x on-board M.2

Highly Availability and Serviceability

- Redundant BIOS and BWC F/W image
- Redundant PSU
- Modular Design
- Tool-less Design

Application

Smart City

Healthcare

Retail

COM-HPC

SKY-8260S

EPYC™ 7003 Series

Compact 2U Carrier Grade, High Performance Server

Accelerating the Edge Server Revolution

Learn More

Phase In	Production Ready	Longevity	December 2029

Beyond High-performance

- Single AMD EPYC™ 7003/7002 Series Processors
- High-speed networking capacity

High Reliability

- High ESD immunity
- EMC class-B barebone design
- Dust filter support

Maximize Flexibility & Expansibility

- Up to 5 x PCIe Gen 4 x 16 expansion slots
- Mix Storage (NVMe U.2 + M.2 + SATA)
- 2U 20.4” deep rackmount server

Advanced Network Solution with Security & Service

- Supports IPMI for BMC remote control
- TPM support for advanced security
- Supports security boot or fast boot by customized BIOS

Application

High Computing

NFVi

Genomics analytics

AI assisted video analytics

2U Network Appliance

FWA-6080

EPYC™ 7003 Series

EMBEDDED

High Throughput Network Appliance

To Streamline your Network Deployments

Learn More

Phase In	Q3 2022	Longevity	January 2032

Single EPYC 7003 processor

- 8 to 64 physical cores with up to 3.7GHz frequency
- 32MB of L3 cache in new Zen 3 core minimizes the latency
- Built-in AMD Infinity Guard to secure your physical and virtualized data

Varity of Expansion Slots

- All in PCIe gen4 bandwidth
- Optional 1G, 10G, 25G, 40G, 100G Ethernet interfaces PoE connectivity
- Optional 3 PCIe x16 for FPGA or Acceleration Card

High Availability and Serviceability

- Secured out-of-band management to analyze failure faster
- Enhance system reliability sub-components
  - Hot-swappable redundant AC or DC power supply
  - Hot-swappable system FAN

Network-focused Developer Tools

- DPDK L2/L3 forwarding
- OPENSSL with Advantech PCIe QAT card
- IPSec gateway
- Advantech Server iManager for diagnostics

Application

Network Security

Intrusion Detection

Virtual Private Network

Network Edge Computing

Micro-ATX

AIMB-522

Ryzen™ Embedded 5000 Series

High Expandability MicroATX Motherboard

Empower the Performance Graphic Computing

Learn More

Phase In	September 2022	Longevity	January 2026

AMD Zen3 Ryzen™ Embedded 5000 Series Desktop CPU

Supports the latest AMD Ryzen™ Embedded 5000 Series desktop CPU for embedded market applications requiring enterprise reliability. The Instructions Per Clock of the Zen 3 core is 19% higher than Zen 2. In addition, the 2X L3 cache enables faster responsiveness with lower latency. The 8 Cores/16 Threads AMD Zen 3 CPU delivers best-in-class power efficiency with outstanding performance per watt. These features make the Ryzen™ Embedded 5000 a perfect solution for multitasking applications in smart manufacturing, automated visual inspection, and intelligent surveillance.

Made for Camera-based Applications

Four built in Gigabit Ethernet ports and 8 x USB 3.2 10Gbps interfaces deliver connectivity to high data throughput cameras. Customers can integrate more than 10 x high video quality cameras without additional peripherals cards.

Adaptable to Industrial Applications

Supports 1 x PCI-Express x16 Gen4 technology for graphics demanding applications. Furthermore, dual PCI-Express x4 slots offer the expandability to integrate robotic (arm) controller cards for industrial applications. The onboard M.2 M-Key socket supports high-speed SSD for real-time OS operations.

Application

Intelligent Surveillance

Machine Vision

Smart Manufacturing

3U Edge Computer

EPC-B3522

Ryzen™ Embedded 5000 Series

Machine Vision Edge Computer

For AI Applications in Industrial Automation

Phase In September 2022 | Longevity January 2026

Desktop Level Computing Platform

- RYZEN™ 9 performance up-to 1.92 x better than Intel Comet lake i9
- RYZEN™ 9 (105W) TDP 17% lower than Alder lake i9 (125W)
- RYZEN™ 9 is 16C/32T for multiple application
- Integrated with NVIDIA Quadro RTX A4500

Industrial Grade System Design

- ESD level 4 (8kV/ 15kV)
- Safety IEC-62368 CB / UL
- Comprehensive EMC protection for both residential and industrial environments

Value-added Software Support

- Windows 10 & Linux Ubuntu Support
- WISE-DeviceOn
- Value-added Software Support

WISE-DeviceOn

Windows 10

ubuntu Certified Hardware

Application

Automated Optical Inspection

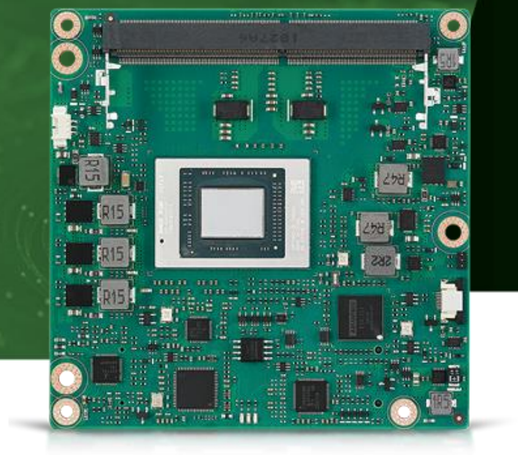
Visual Inspection AI

COMe Compact

SOM-6872

Ryzen™ Embedded V2000

RYZEN EMBEDDED



High Performance 8-Cores COMe Compact Module

Unlock The Hidden Gem For Edge Evolution

Learn More

Phase In	November 2021	Longevity	January 2026

The Most Powerful COMe Compact Module

- COMe Compact, 8 Core/35 ~ 54W, 6Core/12 ~ 25W SoC
- Scalable with energy efficiency: lower TDP per core
- Up to 64GB dual channel ECC/non-ECC DDR4-3200 RAM
- Support 4 x 4K displays (DP++, HDMI, VGA, LVDS)

BGA SoC with Desktop Performance for Industrial Applications

- 7nm technology with double performance per watt
- 54W low power with desktop 95W level performance
- +40% graphic performance to save the cost on the external graphic card

Application

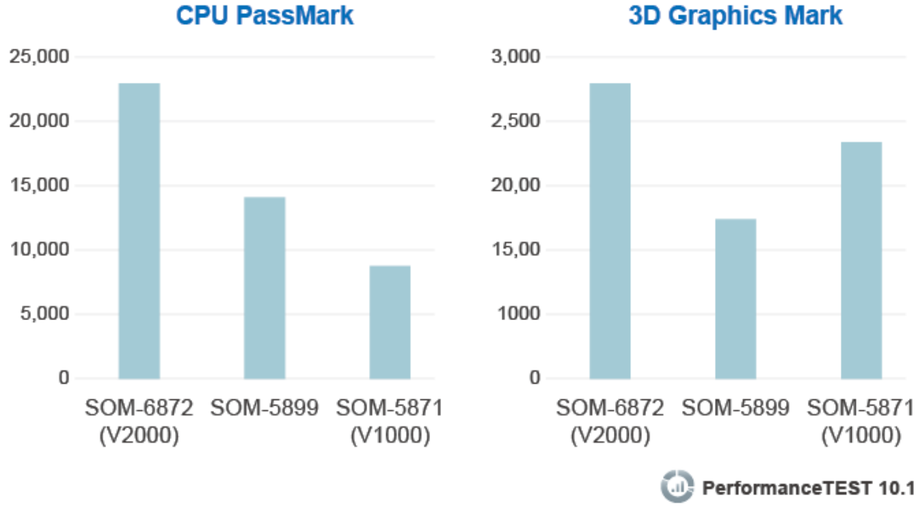
Ultrasound

Test Equipment

Video Streaming Equipment

Advantech Design-in Service

- No throttling with QFCS compact thermal design @ 60 ˚C
- iManager + WISE-DeviceOn for easy maintain, device monitoring, I/O control, and remote management
- Ubuntu OS is ready

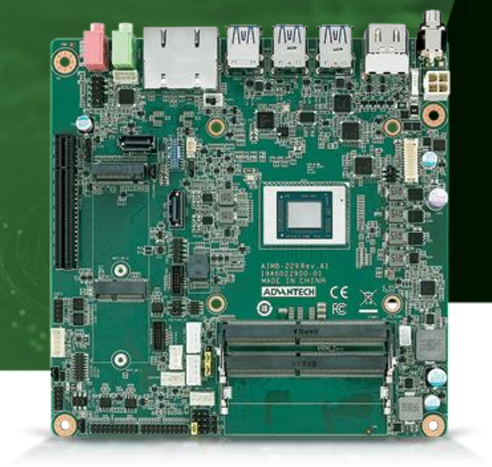


Mini-ITX

AIMB-229

Ryzen™ Embedded V2000

RYZEN EMBEDDED



THIN Mini-ITX Motherboard

Upgrading Edge Applications with Breakthrough Performance

Learn More

Phase In	April 2022	Longevity	January 2030

Powerful Computing Empowers Graphics-driven Embedded Devices

Advantech's AIMB-229 increases graphic processing capabilities by 40% using a powerful embedded Radeon™ GPU with up to 7 Cores. It also supports 4 x independent displays with up to 4K60 UHD resolution via 2 x HDMI and 2 x DP++. AIMB-229 provides 6 x USB 3.2 and 1 x PCIe x8 to facilitate high-speed modular add-on cards and diverse peripherals on a compact motherboard designed for medical imaging and machine vision applications.

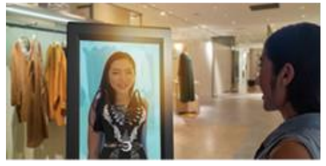
Slim, Powerful, and Efficient Solution for Mobile Imaging Equipment

AIMB-229 is powered by AMD Ryzen™ Embedded V2000 processors and supports 8-core ZEN 2 CPU cores up to 16 threads. It boasts 64GB DDR4 3200 memory, and M.2 NVMe x4 SSD with 4.2 GHz turbo boost — doubling the computing performance and I/O bandwidth when compared to the previous generation solutions.

Enables Remote Control and Management at the Edge

WISE-DeviceOn provides real-time hardware, software, and peripheral monitoring solutions that deliver real-time alert notifications. It also provides an over-the-air (OTA) BIOS system that facilitates remote BIOS updates and backup recovery mechanisms that prevent unexpected interruptions and boot up failures.

Application



Smart Retail

Gaming

Medical

Embedded PCs

EPC-T3229

Ryzen™ Embedded V2000

1U Slim Edge PC with Expansions

For kiosks that require multi-tasking capacity

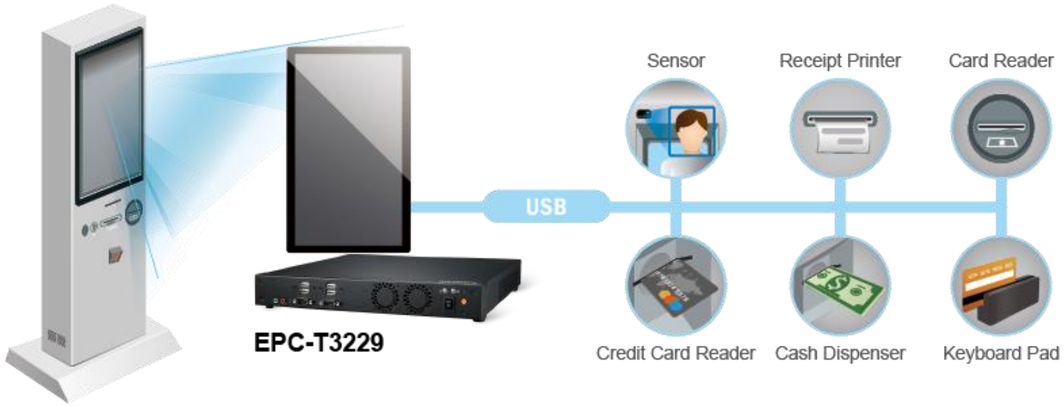
Phase In	October 2022	Longevity	January 2032

Optimal Platform for Slim and Compact Scenarios

- AMD V2718 with 2 x 260-pin SO-DIMM up to 64GB DDR4 3200 SDRAM
- Supporting up to 4 x displays, 2 x DP ports & 2 x HDMI ports
- 1 x M-Key (support 2242/3042/2280), 1 x E-Key (support 2230)

Slim Mechanical Design with Expansion Capabilities

- 1 x Full-height PCIe expansion slot
- Thin design (44.2 mm)
- Compact form factor (330 x 44 x 270 mm)



Application

Interactive KIOSK

Self check-in system

3.5” Single Board Computer

MIO-5376

Ryzen™ Embedded R2000

Rugged Single Board Computer

Ultra Fine Display-out and Camera-in for Indoor & Outdoor Applications

Phase In	December 2022	Longevity	September 2032

For Kiosks, EV Charging Stations, & Passenger Information Systems

- 3 x Simultaneously displays up to 4K@60Hz via HDMI 2.0, DP1.4, and LVDS
- Integrated CANBus for Critical Control Loop in EV charging and Transportations
- High-speed UARTs and I2C cover huge sensor interfaces requirements

Easy High-resolution Camera Connection

- Equips 3 x 2.5GbE with up to 2 x PoE at 100 m distance
- Provides 4 x USB 3.2 with 10Gbps & 5Gbps bandwidth for higher resolution

State-of-the-Art Expansion Ability

- 3 x Simultaneous M.2 expansions for WLAN, WWAN, and storage
- 5G/LTE Capable via M.2 B-key 3052/3042
- High-Speed PCI Express Gen.4 NVMe Storages

Indoor, outdoor, and adopts everywhere

- Support extended temperature operation variants from -40 ~ 85 ˚C
- Wide-Range Power 12~24V +/- 10% reduce additional size and cost
- IPC-A-610 Class 3 Assembly ensure higher reliability

Application

Access Control System/ Speed Gate

Passenger Information System

Onboard Information & Surveillance

Gaming Platform

DPX®-S451

Ryzen™ Embedded R2000

Multimedia Gaming Engine

Highly integrated gaming motherboard features unrivaled performance and PCIe Graphics Expansion

Phase In	November 2022	Longevity	November 2030

Features

- High-performance AMD Embedded R2000 SOC APUs
- Quad and dual core APUs up to 3.35 (3.7) GHz
- Radeon™ VEGA GPU with up to 8 x compute units
- Four independent 4k monitors supported
- Comprehensive gaming features
- 12V DC single input or ATX power
- Full featured driver API for I/O and security

Digital I/O
32/32

Expansion
I²C, PCIe x 16 and Golden Fingers

DPX® Security suite: Secureboot, TPM support, DPX® security features, & BIOS customization

Battery Backed SRAM
8MB

8 x USB 2.0
3 x USB 3.0

DPX®-Software: Embedded OS, DPX® Diagnostics, & DPX®-Connector DPX®-SAS

Displays
4 x DP++ 1.2

10 x COMs: ccTalk, RS232, ID003, RS485, TTL, & 3 x DP++ 1.2

Enclosure
S2000

Graphics Cards
PCIe x 16 Format

M.2, SATA DOM, HDD, SSD, CFast, & USB

On-board Micro Controller PuC

Application

Slot Machines

VLTs

GLI compliant

Gaming Platform

DPX®-E265

Ryzen™ Embedded V1000/R1000

RYZEN EMBEDDED

Modular Multimedia Gaming Platform

Learn More

Gaming platform allowing cust om features and functions to be added for specific mark ets / applications

Phase In September 2019

Longevity January 2028

Features

- Supports 4 x DP++ 1.2
- Supports PCIe x8 (PCIe x16 connector, Gen 3.0)
- 2 x 260-pin SO-DIMM up to 32 GB DDR4 3200 MHz ECC/Non-ECC SDRAM
- Removable gaming BIOS module for field verification
- Side expansion port for application specific scenarios expansion modules
- Supports 2 x SATA/2 x CFast/1 x M.2
- AMD Ryzen Embedded V1000/R1000 Processors
- Secureboot support

Digital I/O
2 x DI

Onboard: 4 x USB 2.0 / 3 x USB 3.1
Via Golden Fingers: 2 x USB 2.0

DPX® Security suite: Secureboot, TPM support, DPX® security features, & BIOS customization

Displays 4x DP++ v1.2 (3 w R series)

6 x COMs: ccTalk, RS232, ID003,RS485, & TTL

DPX®-Software: Embedded OS , DPX® Diagnostics, & DPX®-Connector DPX®-SAS

Graphics Cards PCIe x 16 Format

M.2, SATA DOM, HDD, SSD, CFast, & USB

Enclosure M1000/M2000

Expansion I²C, PCIe x 16 and Sidebus modular expansion

On-board Micro Controller PucLite

Application

Arcade

Sports Betting

Gaming

Gaming Platform

DPX®-E140

Ryzen™ Embedded V1000/R1000

RYZEN EMBEDDED

Investment Optimized Gaming Platform

Learn More

Completely integrated system,designed specifically for regulated gaming markets

Phase In January 2019

Longevity January 2028

Features

- AMD Ryzen™ Embedded V1000/R1000 Processors
- High-performance Radeon™ VEGA series graphics
- 4 x 4k monitor support
- Comprehensive gaming features
- Passive cooling system for up to 25W or 54W with fan cooler
- 12V DC single input or ATX power

Digital I/O
32/32

7 x USB 2.0
2 x USB 3.0

DPX®-Software:
Embedded OS, DPX® Diagnostics, and DPX®-Connector DPX®-SAS

Battery Backed
SRAM 8MB

9 x COMs:
ccTalk, RS232,
ID003,RS485, & TTL

Enclosure Metalwork
Optional

4 x DP++ 1.2
(3 with R series)

M.2, SATA DOM,
HDD, SSD, CFast,
& USB

On-board Micro
Controller PuC

Expansion
I²C

DPX® Security suite: Secureboot, TPM support, DPX® security features, & BIOS customization

Application

Slot Machine

VLTs

GLI Compliant

Gaming Platform

DPX®-S450

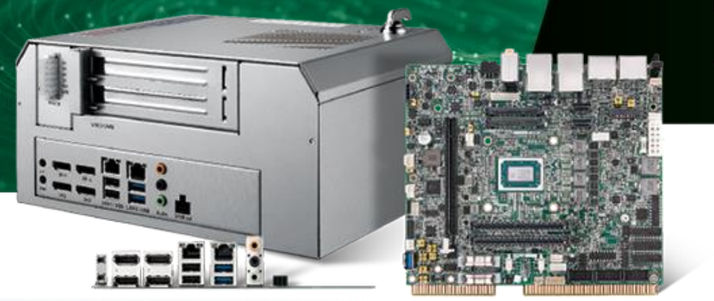
Ryzen™ Embedded V1000/R1000

RYZEN EMBEDDED

Eye Catching Multimedia Powerhouse

Highly integrated gaming motherboard features unrivaled performance and PCIe graphics expansion

Learn More



Phase In January 2021

Longevity January 2028

Features

- AMD Ryzen™ Embedded V1000/R1000 Processors
- Quad and dual core APUs up to 3.35 (3.8) GHz
- Radeon™ VEGA GPU with up to 11 compute units
- Four independent 4k monitors supported
- Comprehensive gaming features
- 12V DC single input or ATX power
- Full featured driver API for I/O and security

Digital I/O
32/32

Expansion
I²C, PCIe x 16 and Golden Fingers

DPX® Security suite: Secureboot, TPM support, DPX® security features, & BIOS customization

Battery backed SRAM 8MB

8 x USB 2.0
3 x USB 3.0

DPX®-Software: Embedded OS , DPX® Diagnostics, & DPX®-Connector DPX®-SAS

Displays
4 x DP++ 1.2
(3 with R Series)

10 x COMs:
ccTalk, RS232, ID003,RS485, TTL
3 x DP++ 1.2

Enclosure
S2000

Graphics Cards
PCIe x 16 Format

M.2, SATA DOM, HDD, SSD, & CFast, USB

On-board Micro Controller PuC

Application

Slot Machine

VLTs

GLI compliant

Gaming Platform

DPX®-J100

Ryzen™ Embedded V & R Series

RYZEN EMBEDDED

JAMMA Gaming Platform

A full set of I/O, COMs and security features designed specifically for JAMMA applications and street gaming markets

Learn More

Phase In	February 2022	Longevity	January 2029

Features

- AMD Ryzen™ Embedded V1000/R1000 Processors
- Quad and dual core APUs
- Radeon™ VEGA GPU with up to 8 compute units
- Supports up to 3 x independent monitors
- Comprehensive gaming features
- 72 + 20 Pin JAMMA harness connectors
- Optional Enclosure

Digital I/O 24/29

Expansion I2C & Mini PCI

DPX® Security suite (as below) +iButton

Up to 2MB of battery backed FRAM

6 x USB 4 x 2.0 - 2 x 3.1/2.0

DPX®-Software: Embedded OS , DPX® Diagnostics, & DPX®-Connector DPX®-SAS

1 x DP++, 1 x HDMI and 1 x VGA

6 x Coms – RS232/ 485 Tx/Rx

Optional Enclosure

ExOnboard audio amplifier, line out, & digital SPDIF out I²C

SATA DOM, SSD, HDD, M.2, USB, & CFast

On board Micro Controller

Application

Street Gaming

Regulated Gaming

Gaming Platform

DS-082

Ryzen™ Embedded V1000/R1000

The Slimmest 4Kx4 Signage Player

For Edge Visualization Solution

Learn More

Phase In	February 2022	Longevity	January 26

4 x Independent 4K Outputs via HDMI 2.0

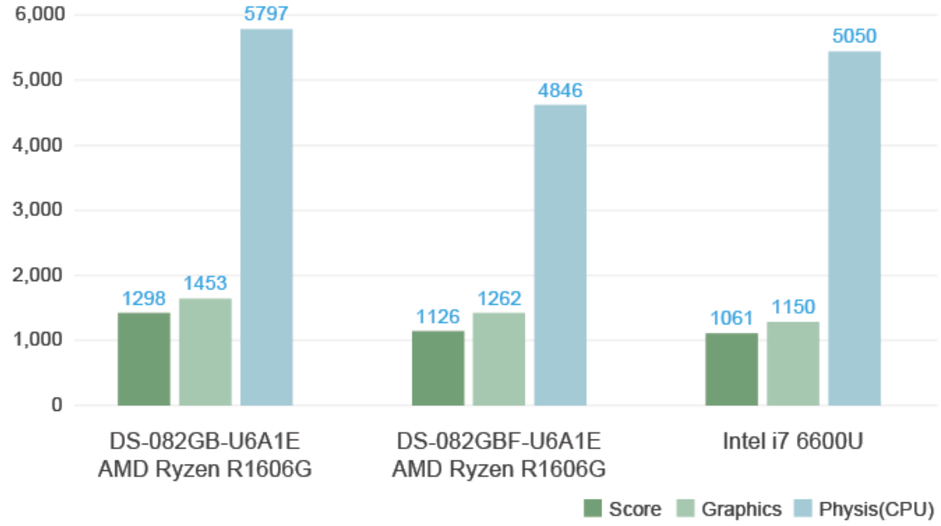
Using 4 x independent HDMI 2.0 output enables users to implement 8K TV wall with ease.

Slim Design (only 19 mm)

System design with only 19 mm thickness is presently the world's slimmest signage player

WISE-PaaS/SignageCMS Bundle

Bundled with WISE-PaaS/SignageCMS software, enabling customers to develop their signage system cost effectively and easily.



Application

Kiosks

QSR

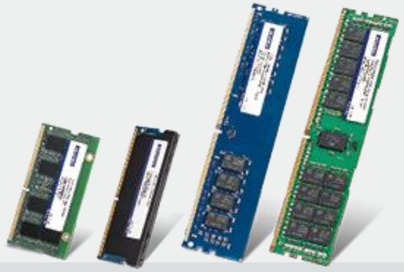
Retail (Supermarket)

Industrial-grade Peripherals

SQFlash

- AMD EPYC 7003 Milan Server Grade CPU
- 6-channel DDR4 up to 3200MHz for heavy computing workload
- Dual 10G LAN for smooth data stream

SQRAM



- Comprehensive DRAM series includes pioneer DDR5 and DDR4
- Extended temperature support (-20~ 85 ºC /-40 ~ 85 ºC)
- Intelligent software for real time monitoring

Industrial Wireless

- Full coverage wireless technology — 5G/Wi-Fi 6/BLE5.2/ LPWA
- Ruggedized industrial solution -40 ~ 85 ºC
- Open, agile, certifificate-ready wireless kits

Ubuntu Desktop 20.04

ubuntu
Delivered by Canonical

- Full-blown graphic UI OS
- Preferred platform for AI, ML, and DL applications
- Consistent OS experience across platforms with long-term support

Embedded Software Services

Embedded Software Services

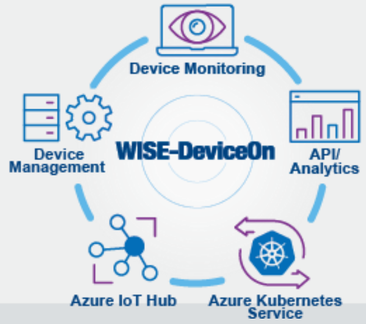
Windows 10 IoT

ubuntu

yocto PROJECT

- Embedded BIOS & LTS OS
- SUSI software API & OS lockdown utility
- iManager: Intelligent self-management on chip

Device Management

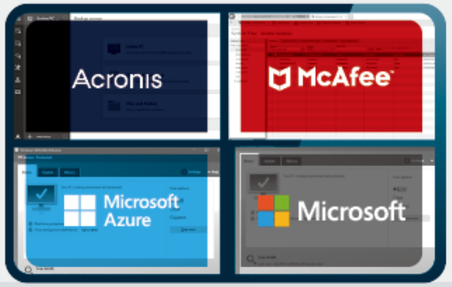


- Remote management
- Update management
- Data visualization
- Monitor & control
- Alert & action
- IT/OT total security

Edge AI

- Visual AI turnkey repository
- Embedded BIOS & LTS OS
- Instant AI experience OOB
- Cross-platform support for Windows & Ubuntu

Software & Cloud Integration



- Global distribution
- Monitor & control
- Alert & action
- Azure migration & consulting services
- Windows IoT add-on utility & customization

Use Cases

Boosting Retail Sales with Digital Advertising Signage

Intro

Retailers are increasingly using enhanced digital signage in their stores. This customer is a famous health and beauty retailer and pharmacy chain in Europe. They recently added more LCD digital signage systems to their stores in an effort to reduce print & POS requirements, and deliver dynamic content aimed at attracting customers and increasing sales.

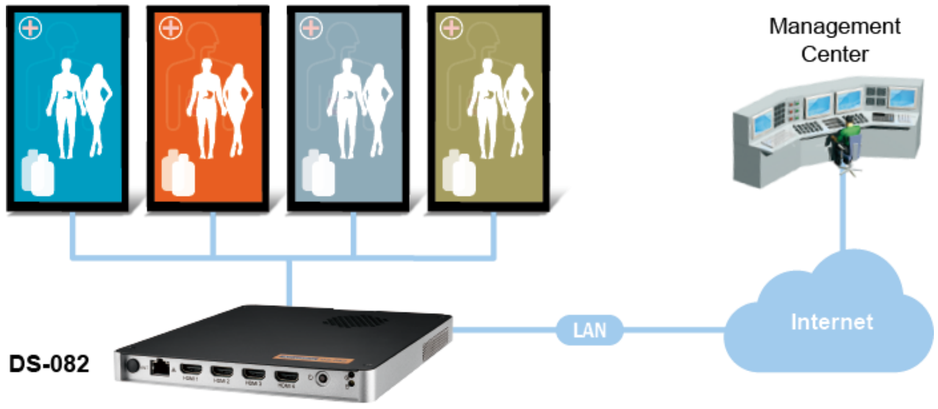
Challenges

- Supports multiple simultaneous displays
- Fanless industrial grade design delivers stable long lifespan maintenance
- Slim for easy installation

Solutions and Technologies

- Supports 4 x displays at 4K UHD resolutions
- An ultra-slim profile of just 19 mm with fanless, cable-free design

Diagram



Benefits

- Zero-cost Advantech WISE-PaaS/SignageCMS content management software available
- Slim system design is easily installed into limited space enclosures
- Fanless thermal solution prevents issues caused by dust during long operation periods

Use Cases

Digital Transformation in Medical Imaging Analysis

Intro

Medical imaging systems — such as CT, MRI, X-ray, and ultrasound machines — are important tools for diagnosis prior to intervention. Consequently, imaging analysis accuracy is a matter of life and death.

Challenges

There is a shortage of medical imaging analysis specialists. Indeed, some studies indicate that by 2023, the world will need 31% more specialists than traditional manpower. Medical organizations are expected to fill such jobs. This could result in analysis mistakes, and be exacerbated by shortened working times.

Solutions and Technologies

Graphic AI based edge computers have the potential to tackle this problem. AI algorithms operating with powerful graphics processing capacities can deliver analytic results that help medical professionals diagnose patients accurately faster. The Advantech EPC-B5592 leverages the AMD EPYC 7003 Milan CPU and the NVIDIA Quadro A6000 CPU to deliver server-grade computing power to complex AI tasks.

Diagram

Benefits

- Superior computing power designed for graphic AI applications
- Industrial system design endures harsh EMC environments
- 1200W 80+ GOLD power supply to support up to 2 x NVIDIA Quadro GPU cards

Use Cases

Machine Learning Assisted Computing Upgrade for Automated Visual Inspection Equipment

Intro

Deploying Advanced Visual Inspection solutions in smart manufacturing necessitates high computing power and machine learning capabilities that maximize productivity.

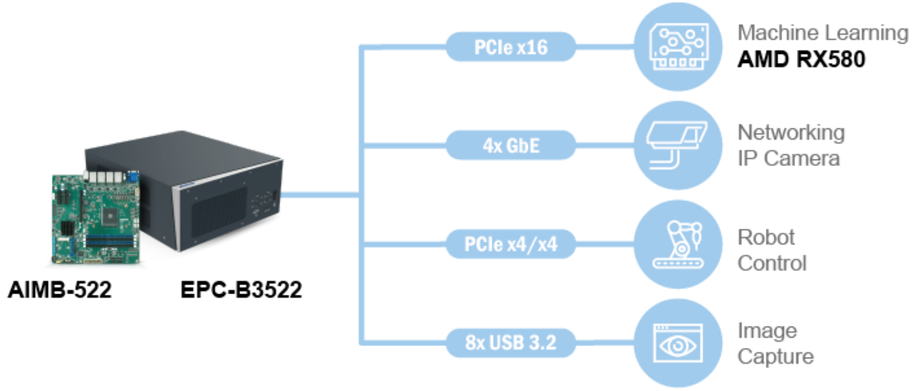
Challenges

Seeking to to improve production efficiency, the customer in this case required multiple high-speed digital cameras run with an embedded computer featuring additional machine learning capabilities

Solutions and Technologies

Advantech AIMB-522 and EPC-B3522 leverage high-performance AMD Ryzen Embedded 5000 CPUs with 16 cores. These CPU are capable of managing manufacturing data processing workloads. The high-expandability provided by onboard PCIe x16/x4 slots and the M.2 socket provide the interfaces needed to install add-on cards that engender AI acceleration and/or robot control. In addition, high-speed I/O connectivity with 8 x USB 3.2 Gen 2 (10Gbps) ports and 4 x 1GbE Ethernet ports simplify the adoption of mainstream industrial cameras and help customers build visual inspection machines with ease.

Diagram



Benefits

- Capable of managing multiple high-speed cameras
- Improve manufacturing accuracy and productivity
- Fast deployment and resilience

Use Cases

The Regulated Gaming Industry Requires High Performance Hardware with Specialized Hardware & Software Features

Intro

An OEM slot machine manufacturer was looking for a long term, reliable platform with features that meet the requirements of the Regulated Gaming industry. Their latest gaming content required high-performance hardware.

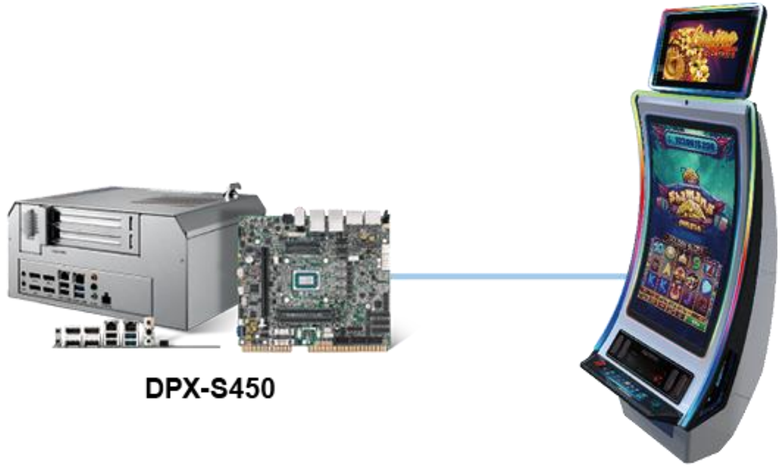
Challenges

High-performance, long-lifecycle hardware with necessary industry features.

Solutions and Technologies

- DPX-S450 specialized gaming platform
- AMD Ryzen™ Embedded V1000 SOC, Quad core APU at 3.35 GHz (3.8 GHz turbo)
- Integrated Radeon™ “Vega” Graphics Core up to 11 CU (GFX9)
- Supports 4 x independent 4k monitors
- Comprehensive gaming features meet the requirements of GLI-11
- Sophisticated battery backed intrusion logging
- Full featured driver API for I/O and security

Diagram



Benefits

- Reliable, field-proven platform with track record of regulatory approvals reduces risk and time to market
- High-performance capabilities support the running of up-to-date gaming content on high-resolution screens
- 7 years product lifecycle
- DPX-S450 is the 10th generation of DPX-S and boasts a strong roadmap for upcoming products. This protects customer investment in both hardware and software using cross generational mechanical and API compatibilities

Use Cases

SOM-E780, Most Powerful COM HPC Module to Enable Fast & Flexible Deployment on 5G Edge AI Server

Intro

Edge AI Servers are used in visualized data collection applications. They are often used to monitor, collect, and analyze big data and thus provide valuable business insights and opportunities.

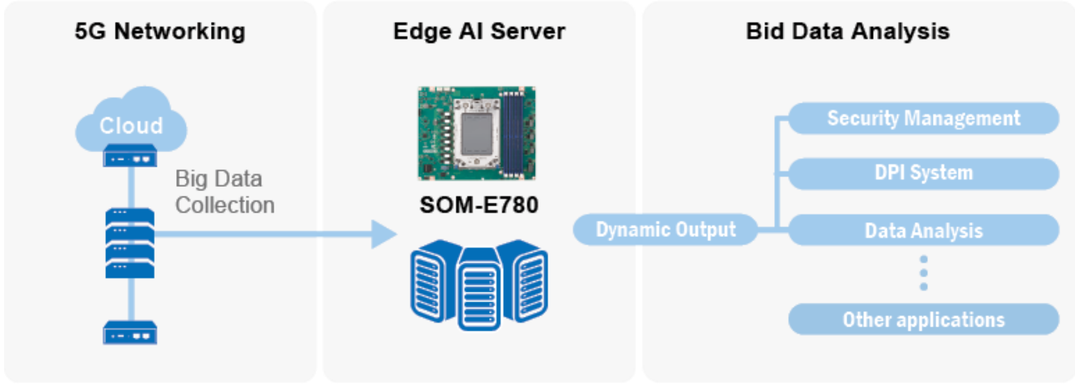
Challenges

Upgrading traditional 13U servers requires too much time and money.

Solutions and Technologies

The Advantech SOM-E780 is equipped with an AMD EPYC 7003 socket CPU with up to 64 cores for superior computing power. It features a 512GB ECC RAM and 79 pairs of PCIe Gen 4.0 within a COM HPC Server module. This reduces edge AI server time to market and corresponding development costs. It is also easily upgraded & maintained, and fulfills a variety of demands in different platforms or 5G server applications. When paired with Advantech's prompt and professional local design in services, it facilitates the rapid exploitation of business opportunities.

Diagram



Benefits

• Featuring a COM-HPC proprietary pinout for EYPC 7003 REAL Server-grade socket CPU, up to 64 Cores to save energy & costs by supporting more VM per server. Producing a solution with high-performance-per-watt
• 79 x PCIe Gen4.0 lanes for various add-on cards, like NIC, GPU, and FPGA
• On-board TPM chipset for Advanced Security
• Active and Passive Thermal Solutions for 60 ˚C environments

Use Cases

Fastest way to integrate a EV Charging System within a Rugged 3.5” Single Board Computer

Intro

Electric vehicles (EV) and their charging infrastructures are a rapid growth market. Market size is projected reach USD$ 25.5 billion by 2027. These solutions boast a 26.8% CAGR since 2020.

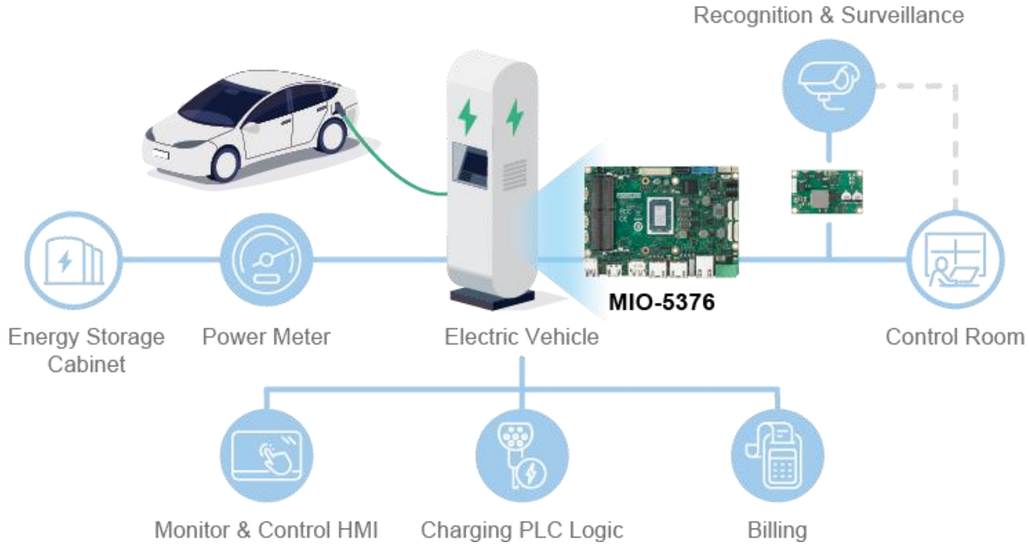
Challenges

EV charging systems require multiple sub-systems with different control buses according to domain preference. These solutions must connect to watt meters, battery controller logic, external management devices, payment systems, HMI, and displays. Integrating systems with this level of complexity takes time and money.

Solutions and Technologies

The Advantech MIO-5376 is a 3.5” compact single board computer (SBC). It features an AMD 2000 series CPU and provides extraordinary computing and graphics performance, better user experiences, and content displays. MIO-5376 integrates 3 x 2.5GbE ports — including 2 x optional PoE, CANBus, high speed UARTs, and I2C Bus to simplify the integration of power meters, battery controllers, payment systems, HMI, and displays on one board on EV charging stations.

Diagram



Benefits

- AMD R2000 series provides extraordinary computing & graphics capabilities
- Integrated LAN, PoE, CANBus, UARTs, and I2C
- DC-in 12~24V, 0 ~ 60 ˚C & -40 ~ 85 ˚C operating temperature

Use Cases

AOI Computer Vision for Smart SMD Resistor Inspection

Intro

Surface-mount devices (SMD) resistors, are dependent on board requirements—crystal or coil as an example. However, they have become smaller and smaller over the years. Some SMD resistors may be as small as 0.6mm x 0.30mm. The benefits of using SMDs are an incredibly large improvement over past technology, improving not only the cost and reliability of circuit boards but also performance.

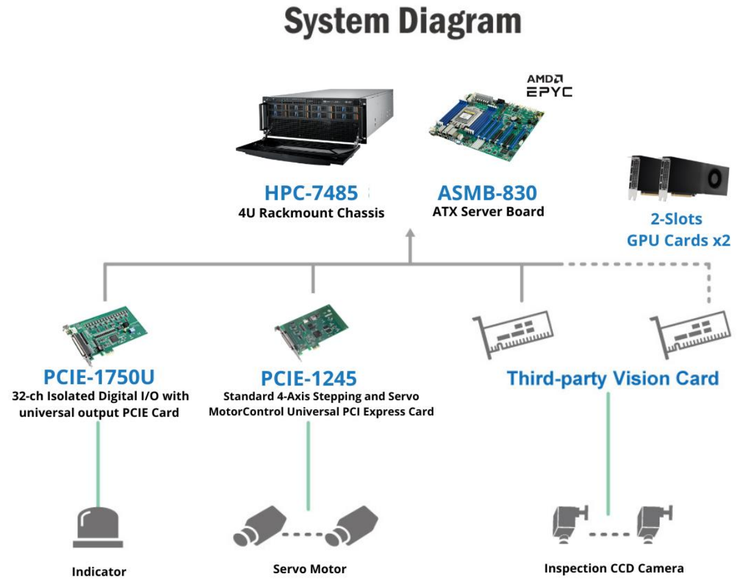
Challenges

In a particular case with a Chinese manufacturer, their market demand for SMD resistors continued to grow. To meet the demand, they needed to increase production, which, in turn, required greater measures for quality control.

Solutions and Technologies

Advantech ASMB-830+HPC-7485 provides a faster, more accurate, and more economical method than manual inspection, and can effectively inspect small SMD resistors at an overall maximum processing speed of more than 12,000 pieces/min.

Diagram

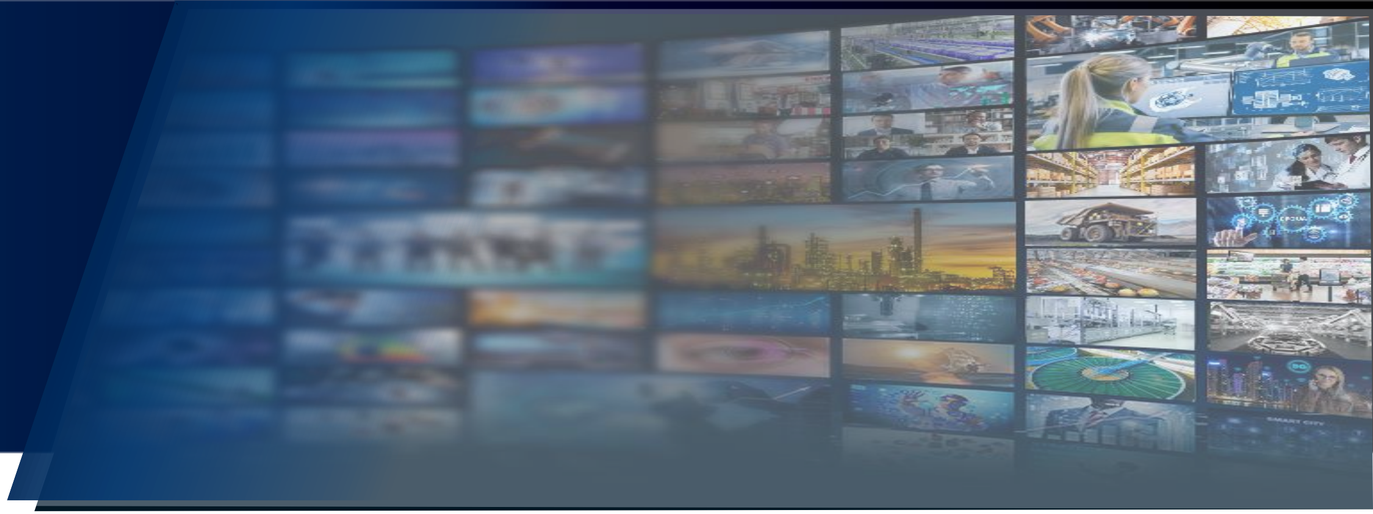


Benefits

- 4U system equipped with ASMB-830 with high scalability, including 8-Bay 2.5”/3.5”, two M.2 NVMe, seven PCIe 4.0 expansion slots and dual 10GbE Ethernet ports
- AMD CPU supports from 8 cores to 64 cores, providing powerful computing power to meet various needs
- System cooling design can support CPU up to TDP 225W
- Expandable RAID card and fiber network card, hardware crypto card

Use Cases

AMD EPYC NVR for Video Analysis and Surveillance



Intro

The video analysis server is an intelligent video analysis and alarm product designed and produced. It adopts video alarm technology and can realize intelligent analysis of 8-32 channels. Large-scale intelligent analysis requirements can be achieved through device stacking to meet the needs of large-scale application scenarios. Including face recognition, crowd counting, people tracking, virtual fence, car tracking and recognition and video anomaly detection, etc.

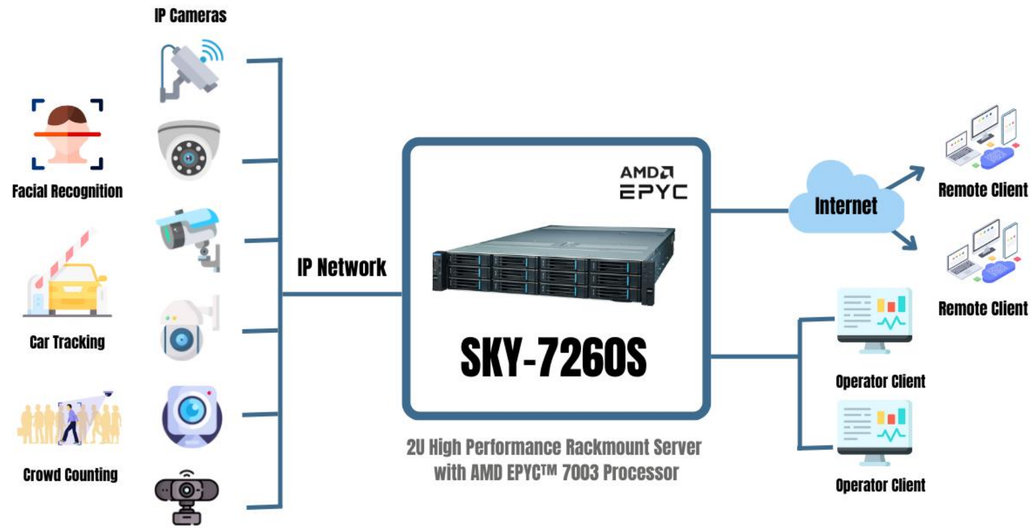
Challenges

AI models and deep learning are key technologies for gaining insights from video-enabled applications. With the exponential increase in video streaming and the growing number of deployed cameras, the use of general-purpose CPUs that do all processing entirely in software has become a serious bottleneck.

Solutions and Technologies

Advantech SKY-7260S is a single AMD EPYC server solution provides the maximum PCIe expansion capability and storage, consider about the utilized efficiency of system, AMD EPYC benefits and balanced the performance between CPU, GPU or FPGA, and storage, also it can scale out for more video analysis from load balancing perspectives. Single AMD can do a dual processor job also means to help on energy saving.

Diagram



Benefits

- 2U system equipped AMD EPYC MB in high scalability, including 12-Bay 3.5” or 24-Bay 2.5” storage , two M.2 NVMe, two dual-width PCIe 4.0 x16 card slots and four to six full height or half height PCIe X8 slots.
- Support single AMD EPCY Rome/Milan 8 cores to 64 cores, CPU TDP up to 225W.
- Excellent system cooling design with robust and user-friendly mechanism.
- Expandable RAID card and fiber network card, GPU card, or FPGA card,

Use Cases

64-core Density & Acceleration Ready for Network Innovation

Intro

As enterprises become more distributed and move to a less data-center-centric architecture, it is necessary to have a powerful, reliable and secured system to run multiple workloads with high bandwidth to allow simultaneous accesses from every branches with maximum throughput in minimized latency.
Finding such kind of optimized solution to handle workloads like virtualization, NFVi and data analytics against threats but also agile to scale up and down is more important.

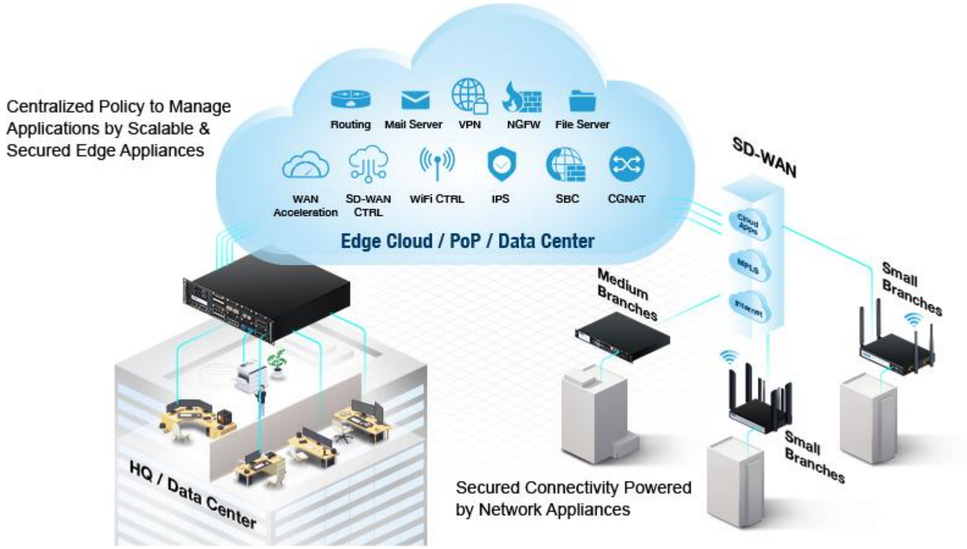
Challenges

Every IT department in the enterprises need to find the balance according to their infrastructure. Off-the-shelf platforms as baremetal are surely the smartest choice to accelerate network transformations with minimized service interruptions to eliminate the supply issue before and after pandemic period.

Solutions and Technologies

Advantech's FWA-6080 2U system is specifically designed to accelerate the innovations that can be deployed and seamlessly scaled according to usage needs. It is built with the 3rd generation AMD EPYC 7003 series processor, offers the agility to scale from 8 to 64 physical CPU cores. FWA-6080 can also extend multiple types of Ethernet interfaces from 1GbE RJ45 to 100GbE QSFP28 ports by Advantech defined mezzanine modules to suit different environment in attractive price points. Incoupled with Advantech in-house S/W design IP, FWA-6080 has its own developer tools like DPDK L2/L3 forwarding and Secured Out-Of-Band Management to assist your application enablement in less time.

Diagram



Benefits

- Compatible with key technologies such as DPDK and Intel® QuickAssist (QAT) for easy expansion
- Features 3 x PCIe x16 slots for integrating PCIe cards to maximize CPU resources by shifting some operations to the FPGA-based hardware engine
- Equipped with 8 x network mezzanine card slots that support PCIe Gen4 connectivity to maximize bandwidth
- All the components are field serviceable for cost-effective maintenance and increased availability

Use Cases

Open RAN Enable 5G Radio Access Network Architecture Transformation

Intro

Open RAN is an ongoing shift in mobile network architectures that enables service providers the use of non-proprietary subcomponents from a variety of vendors. An Open RAN, or open radio access network, is made possible by a set of industry-wide standards equipment, which was disaggregated to radio units (RUs), distributed units (DUs), and centralized units (CUs), many of which can be virtualized or containerized. Now DUs and CUs functionality could be performed by CTOS white-box servers.

Challenges

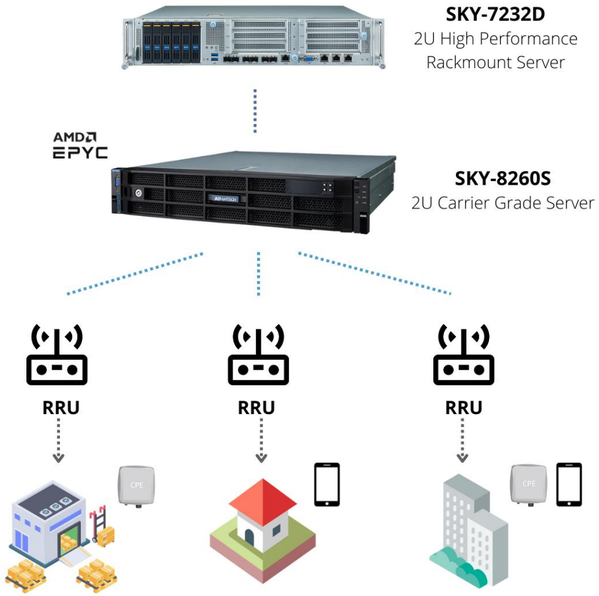
DUs and CUs servers are normally deployed at the Telcom edge environment. They have to accommodate several challenges, such as

- Computation wise, to support a variety of telecom accelerators with different form factors and computing power.
- Environment wise, limited deployment space and unstable cooling condition.
- Management wise, remote server management and maintenance challenges.

Solutions and Technologies

SKY-8260S is designed to aim for DUs and CUs server market. It's able to provide plenty of PCIe expansion capability for telecom accelerators and accommodate a wider range of temperature, dust, and humidity to deal with the application system running in any harsh environmental conditions. Redundant and field-replaceable PSU, Fan modules, and Management firmware minimize costly downtime, service interruptions, and onsite interventions.

Diagram



Benefits

- The SKY-8260S, equipped with AMD EPYC™ 7003/7002 Series Processor, is designed and optimized to meet the high availability and for business-critical use cases.
- By pairing with multiple Network Interface Cards or Acceleration Cards (e.g. FPGA or GPU card), SKY-8260S offers a stable carrier-grade service of network and computing acceleration.
- SKY-8260S provides highly flexible PCIe and IO expansion capability.

EPYC EMBEDDED

	SOM-E780	AIMB-592	EPC-B5592
	Computer on Module COM-HPC	Industrial Motherboard Micro-ATX	Embedded PC
AMD Processor	EPYC™ 7003 Series	EPYC™ 7003 Series	EPYC™ 7003 Series
Memory	4 x Channel 288-pin DDR4 RDIMM up to 3200MHz, both ECC and Non-ECC supported 4 x RDIMM slots, Max. 512GB (128GB per RDIMM)	6 x Channel 288-pin DDR4 RDIMM up to 3200MHz 6 x DIMM slots, Max. 768GB (128GB per DIMM)	6 x Channel 288-pin DDR4 RDIMM up to 3200MHz 6 x DIMM slots, Max. 768GB (128GB per DIMM)
Display	N/A	VGA	VGA
Expansion	79 x PCIe Gen 4 lanes	4 x PCIe x16 slots	4 x PCIe x16 slots
Power Input	Vin: 11.4-12.6V VSB: 4.75-5.25V	ATX input	ATX input
I/O Ports	1 x 2.5 Gigabit LAN 4x USB 3.2 Gen1 & 4x USB2.0 2 x serial (RS-232) 12 x GPIO 1 x IPMB	2 x 2.5GbE 2 x 10GbE 1 x 1GbE for BMC Management 4 x USB 3.2 Gen1 1 x RS-232	2 x 2.5GbE 2 x 10GbE 1 x 1GbE for BMC Management 4 x USB 3.2 Gen1 1 x RS-232
Thermal (Fan or Fanless)	1U Heatsink 2U Heatsink	CPU cooler	CPU cooler and system fan
Operating Temperature	0 ~ 60°C	0 ~ 40 °C (Depends on CPU)	0 ~ 40 °C (Depends on CPU)
Dimensions	200 x 160 mm (7.87" x 6.30")	244 x 244 mm	380 x 454 x 176 mm
Software	WISE-DeviceOn Windows Linux	WISE-DeviceOn	WISE-DeviceOn

EPYC EMBEDDED

	ASMB-830	SKY-7260S	SKY-8260S	FWA-6080
	Single socket motherboard	2U Rack Mount Server	2U Carrier Grade Rack Mount Server	2U Rackmount Network Appliance
AMD Processor	EPYC™ 7002/7003 Series	EPYC™ 7002/7003 Series	EPYC™ 7003/7002 Series	EPYC™ 7002/7003 Series
Core	up to 64 cores	up to 64 cores	32 cores	16C – 64C
Memory	8 x DDR4 RDIMM up to 3200MHz, ECC/RDIMM/LRDIMM supported	16 x DDR4 RDIMM up to 3200MHz, RDIMM/LRDIMM supported	16 x DDR4 RDIMM up to 3200MHz, ECC/RDIMM/LRDIMM supported	16 x DDR4 RDIMM up to 3200/2933MHz 6 x DIMM slots, Max. 4TB ECC Support
Networking Controller	2 x Intel® I210AT / Intel® X550-AT2 (dual 10GbE ports)	2 x Intel i210-AT, 1 x Realtek PHY	GbE LAN 1/2: Intel® i210-AT	2 x Intel i210-AT, 1 x Realtek PHY
Expansion	5 x PCIe x16 slots 2 x PCIe x8 slots	1 x PCIe Gen3 x16, 2 x PCIe Gen3 x8 1 x PCIe Gen4 x16, 2 x PCIe Gen4 x8 2 x PCIe Gen4 x8 1x OCP3.0 PCIe 4.0 x16	4 x FH/FL PCIe Gen4 x16 + 2 LP Gen4 x8 2 x FH/FL PCIe Gen4 x16 + 2 x FH/FL PCIe Gen4 x8 + 2 x FH/HL PCIe Gen4 x8 + 2 x LP Gen4x8	2 x HH/HL Gen4 x16; 1 x 10.5" Gen4 x16
Storage	2 x M.2 2280/22110 9 x SATA3 (8 via Mini SAS HD + 1 SATA 7P)	12 x 3.5" HDD12 (front) 2 x 2.5" HDD/SSD2 (rear, optional) 2 x M.2 SSD	2 x 2.5” SATA SSD (Internal) 2 x 2.5” SATA/PCIe SSD (Rear)	2 x hot-swappable 2.5" HDD/SSD 2 x NVMe (Optional) 2 x 2280 SATA CF (by Project)
I/O Ports	2 x 1GbE , 2 x 10GbE 1 x GbE for BMC Management, 5 x USB 3.2 Gen1, 1 x RS-232	2 x 1GbE , 1 x GbE BMC Management 2 x USB 3.0, 1 x VGA, 1x COM port	1 x USB 3.0 & 1 x USB2.0VGA port, PWR, Alarm LEDs 2 x Gigabit LAN RJ45,1 x Management 1 x VGA, 2 x USB3.0,1 x Console ,1 x OCP3.0	1 x Console 2 x USB 3.0
Power Input	ATX Input	800W AC PSU / 1200W AC PSU (optional)	1200W AC/ 800W DC PSU	(AC) 100 V ~ 240 V, (DC) -72 V ~ -40 V
Operating Temperature	0 ~ 60 ˚C (32 ~ 140 ˚F)	0 ~ 40 ˚C (32 ~ 104 ˚F)	-5 ~ 40 ˚C (23 ~ 104 ˚F)	0 ~ 40 ˚C (32 ~ 104 ˚F)
Dimensions	304 x 244mm	438 x 88 x 797 mm	438 x 518 x 87 mm (20.4“ depth)	438 x 88 x 600 mm
Software	Windows Linux	Windows Linux (CentOS, Red Hat, Ubuntu)	Windows Linux	Linux (CentOS, Red Hat, Ubuntu)

RYZEN EMBEDDED






	AIMB-522	EPC-B3522	SOM-6872	AIMB-229	EPC-T3229	MIO-5376
	Industrial Motherboard Micro-ATX	Embedded PC	Computer on Module COMe Compact	Industrial Motherboard Mini-ITX	Embedded PC	3.5” Single Board Computer
AMD Processor	Ryzen™ Embedded 5000 Series	Ryzen™ Embedded 5000 Series	Ryzen™ Embedded V2000	Ryzen™ Embedded V2000	Ryzen™ Embedded V2000	Ryzen™ Embedded R2000
Memory	4 x Channel 288-pin DDR4 UDIMM up to 3200MHz 4 x DIMM slots, Max. 128GB (32GB per DIMM)	4 x Channel 288-pin DDR4 UDIMM up to 3200MHz 4 x DIMM slots, Max. 128GB (32GB per DIMM)	2-CH 260-pin DDR4, 3200MHz Up to 64 GB (32 GB per SO-DIMM; ECC/non-ECC)	2-CH 260-pin DDR4, 3200MHz Up to 64 GB/ 32 GB per SO-DIMM (ECC/non-ECC)	2-CH 260-pin DDR4, 3200MHz Up to 64 GB/ 32 GB per SO-DIMM (ECC/non-ECC)	2 x channel 260-pin DDR4 SODIMM up to 3200MHz 2 x SODIMM slots, Max. 32GB (16GB per SODIMM)
Display	HDMI, VGA, DP	HDMI, VGA, DP	1 x VGA (optional to DDI) 1 x LVDS (optional to eDP) 2 x DDI	2 x HDMI, 2 x DP (Type-C)	2 x HDMI, 2 x DP (Type-C)	1 x HDMI 2.0b 4K@60 Hz 2 x DP1.4b 4K@60 Hz 1 x LVDS Dual-Channel 18/24-bit WUXGA
Expansion	1 x PCIe x16, 2 x PCIe x4, 1 x M.2 M key & 1 x M.2 E key	1 x PCIe x16, 2 x PCIe x4, 1 x M.2 M key	16 PCIe Gen3 lanes	1 x PCIe x8 1 x M.2 M key & 1 x M.2 E key	1 x PCIe x8 1 x M.2 M key & 1 x M.2 E key	M.2 E-key 2230 M.2 B-key 3052/3042 w/ SIM M.2 M-key 2280 NVMe
Power Input	ATX input	ATX input	Vin: 8.5-20V VSB: 4.75-5.25V	12V DC-in	12V DC-in	DC-in 12-24V +/- 10% AT/ATX Mode
I/O Ports	4 x GbE 8 x External USB 3.2 Gen2 4 x Internal USB 3.0 3 x Internal USB 2.0 2 x Internal RS-232/422/485 4 x internal RS-232	4 x GbE 8 x External USB 3.2 Gen2	1 x Gigabit LAN 4x USB 3.2 Gen2 & 8x USB2.0 2 x serial (RS-232) 8 x GPIO 1 x HD Audio	2 x GbE 4 x USB Gen 2 2 x USB Type-C 6 x internal RS-232	2 x GbE 4 x USB Gen 2 2x USB Type-C	3 x 2.5GbE (2 PoE Optional) 4 x USB 3.2, 2 x USB 2.0 2 x RS-232/422/485, 2 x RS-232 (4-wire) 1 x CAN 2.0 Audio (Line-in/out/MIC), I2C/SMBus Smart Fan Control, 1 x SATA Port Invertor Power, HDD Power
Thermal (Fan or Fanless)	CPU Cooler	CPU cooler and system fan	Heat spreader Semi-cooler	CPU cooler	CPU Heat sink and system fan	Fanless for CPU TDP 15W Cooler for CPU TDP 25W
Operating Temperature	0 ~ 40 ˚C (Depends on CPU)	0 ~ 40 ˚C (Depends on CPU)	0 ~ 60 ˚C	0 ~ 60 ˚C	0 ~ 60 ˚C (Depends on CPU)	Standard: 0 ~ 60 ˚C Extended: -40 ~ 85 ˚C
Dimensions	244 x 244 mm	310 x 360 x 134 mm	95 x 95 mm	170 x 170 mm	330 x 270 x 44 mm	146 x 102 mm
Software	WISE-DeviceOn	WISE-DeviceOn	WISE-DeviceOn Windows Ubuntu 20.04	WISE-DeviceOn	WISE-DeviceOn	Windows 10 IoT Ubuntu 20.04 WISE-DeviceOn

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	DPX®-S451	DPX®-E265	DPX®-E140	DPX®-S450	DPX®-J100	DS-082
	Gaming Platform	Gaming Platform	Gaming Platform	Gaming Platform	Gaming Platform	Digital Signage
AMD Processor	Ryzen™ Embedded R2000	Ryzen™ Embedded V1000/R1000	Ryzen™ Embedded V1000/R1000	Ryzen™ Embedded V1000/R1000	Ryzen™ Embedded V1000/R1000	Ryzen™ Embedded V1000/R1000
Memory	2 x channel 260-pin DDR4 SODIMM up to 3200MHz 2 x SODIMM slots, Max. 32GB (16GB per SODIMM)	2 x channel 260-pin DDR4 SODIMM up to 3200MHz 2 x SODIMM slots, Max. 32GB (16GB per SODIMM)	2 x channel 260-pin DDR4 SODIMM up to 3200MHz 2 x SODIMM slots, Max. 32GB (16GB per SODIMM)	2 x channel 260-pin DDR4 SODIMM up to 3200MHz 2 x SODIMM slots, Max. 32GB (16GB per SODIMM)	2 x Channel DDR4 SODIMM up to 2400MHz	Dual channel DDRR4 2400MHz SODIMM
Display	4 x Display Port	4 x Display Port (V1000) 3 x Display Port (R1000)	x4 Display Port (V1000) x3 Display Port (R1000)	4 x Display Port (V1000) 3 x Display Port (R1000)	3 xmonitor 1 x DP++ 1 x HDMI 1 x VGA (2 x with R1102)	AMD Radeon HD graphics
Expansion	One PCIe x 16 slot	One PCIe x 16 slot	NA	One PCIe x 16 slot	Half length mini-PCI card	M.2 2230 E Key
Power Input	12VDC and ATX input	12VDC and ATX input	12VDC and ATX input	12VDC and ATX input	AT12V (V1605) 5V/ 12V Jamma 20pins (R series)	19V DC-in (ATX/AT mode)
I/O Ports	2 x Gigabit LAN 11 x USB (8 x USB 2.0, 3 x USB 3.0/2.0) 12 x serial (RS232/CCTalk/TTL/RS485) 2 x I2C ports 1 x Line out 5.1	2 x Gigabit LAN 7 x USB (1 x USB 3.0) 5 x Serial (RS-232/CCTalk/ID003/RS485) 1 x Line out	2 x Gigabit LAN 9 x USB (2x USB 3.0) 11 x serial (RS232/CCTalk/ TTL/RS485) 2 x I2C port 1 x Line out 5.1	2 x Gigabit LAN 11 x USB (8 x USB 2.0, 3 x USB 3.0/2.0) 12 x serial (RS232/CCTalk/TTL/RS485) 2 x I2C ports 1 x Line out 5.1	1 x Gigabit LAN 6 x RS232 4 x USB 2.0 2 x USB 3.1/2.0 1 x Line out 5.1 1 x SPDIF out (Option)	1 x 1Gbe 2 x USB 3.0 2 x USB 2.0 1 x RS-232
Thermal (Fan or Fanless)	Fan	Fan	Fan/Fanless	Fan	Fanless (R1102) Fan (others)	Fanless
Operating Temperature	Board 0 ~ 60 ˚C System 0 ~ 50 ˚C	Board 0 ~ 60 ˚C System 0 ~ 50 ˚C	Board 0 ~ 60 ˚C System 0 ~ 50 ˚C	Board 0 ~ 60 ˚C System 0 ~ 50 ˚C	Board 0 ~ 60 ˚C System 0 ~ 50 ˚C	0 ~ 40 ˚C
Dimensions	200 x 170 mm	170 x 185 mm	200 x 270 mm	200 x 170 mm	190 x 190 mm	180 x 190 x 19 mm
Software	DirectPCI API, DPX® Connector SDK, DPX®-SAS Engine	WinPuC serial protocol	DirectPCI API, DPX® Connector SDK, DPX®-SAS Engine	DirectPCI API, DPX® Connector SDK, DPX®-SAS Engin	WinJIOC serial protocol	WISE-DeviceOn

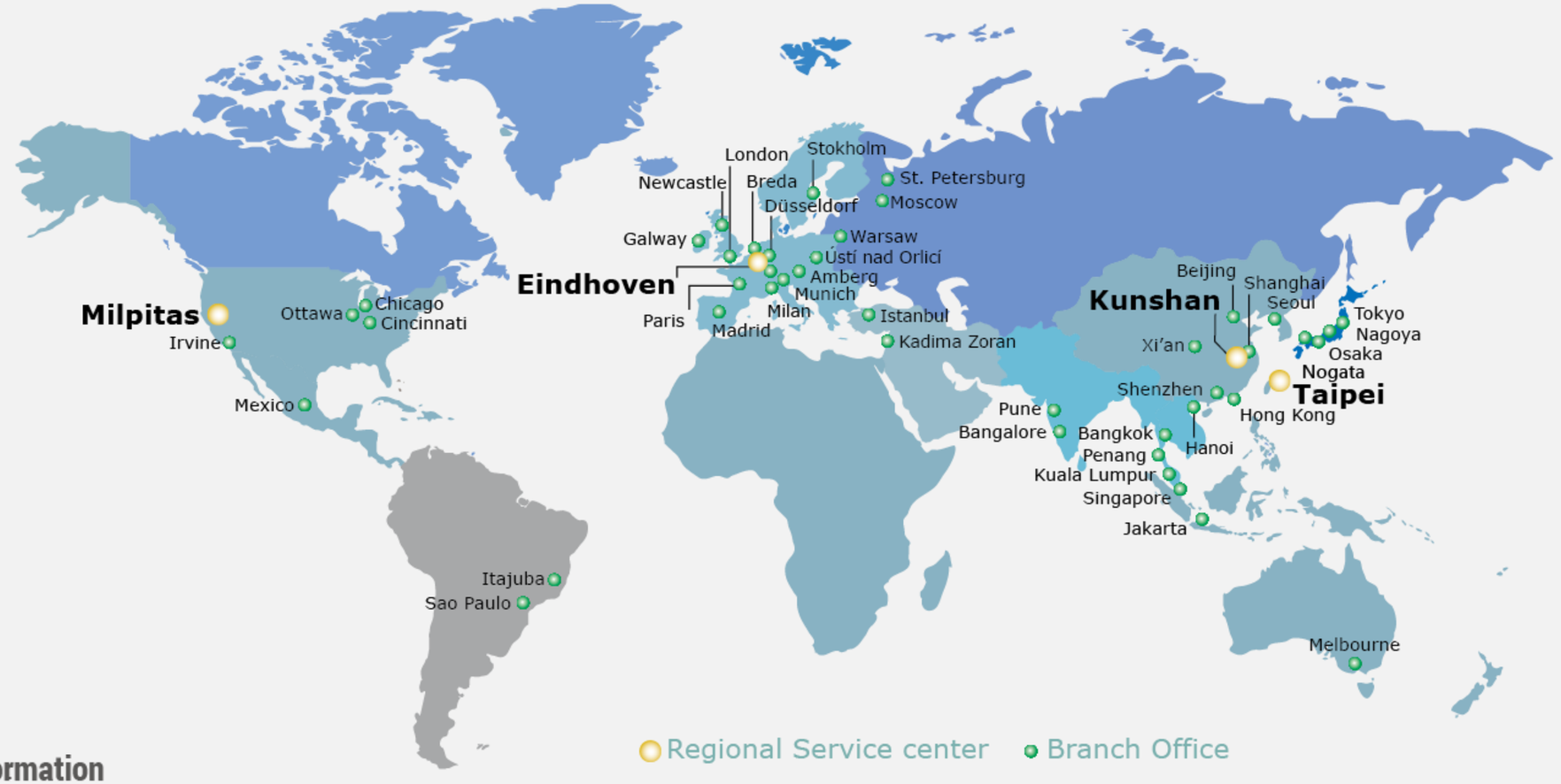
Worldwide Presence

3 Manufacturing Sites

14 Service Centers

4 Logistics Center

28 Countries



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