# Advantech

## Edge Computing & Edge AI Software Solutions

**ADVANTECH**

*Enabling an Intelligent Planet*

# Domain-Driven Software and Service Blueprint

Advantech, in collaboration with our partners, integrates three foundational modules—value-enhanced OS, edge applications, and scalable cloud services—to empower next-generation edge AI and IoT ecosystems. Advantech also emphasizes cybersecurity to ensure the reliability and safety of integrated solutions.
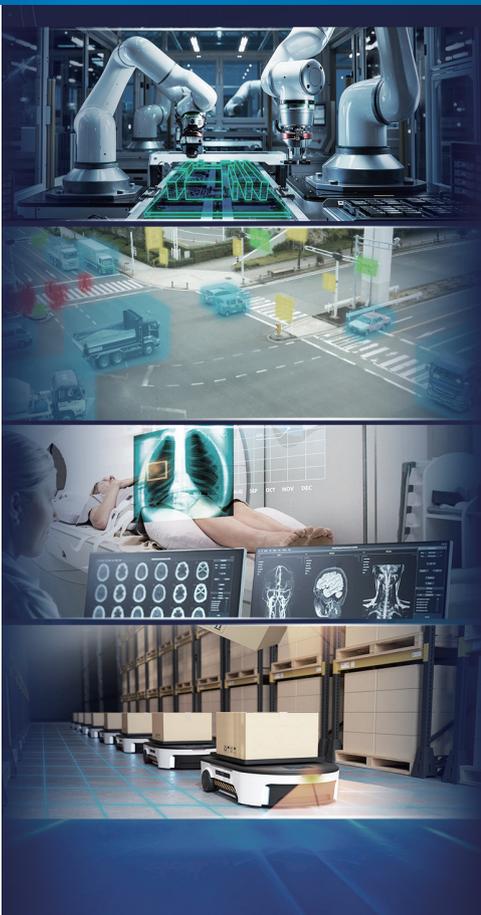
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# Customer-Centric Support and Services

With a global team of over 1,000 software and technical design experts, Advantech excels in delivering customized solutions for BIOS, OS, and APIs, ensuring seamless integration and optimized system performance. Supported by a global network of 90 distribution services and R&D sites, Advantech provides efficient and innovative services.
By fostering early engagement and leveraging ecosystem partnerships, Advantech strengthens customer collaboration, enabling agile deployment, streamlined workflows, and scalable solutions tailored to the most demanding edge-to-cloud applications.

## Experienced Experts
**1,000+**
Software and Technical Design Experts

## Worldwide Network
**90**
Distribution Services and R&D Sites

## Design-in Services
BIOS
OS
API
**1,000+**
Customized Software-Firmware-Hardware

## Global Customer Base
**$10** Million+
Software Sales Accumulated

## Ecosystem Partnerships
Early Engagement and Backend Support

Microsoft · Canonical · EDGE IMPULSE · SOTI · Acronis · Trellix · SEC eDGE · ONEKEY · BUREAU VERITAS · DEKRA · SGS

AMD · AXELERA ARTIFICIAL INTELLIGENCE · HAILO · intel · MEDIATEK · NVIDIA · NXP · Qualcomm · Rockchip · PHISON

# Edge Computing & Edge AI Software Solutions

Advantech's embedded software integrates foundational software development, device management, and cloud services to address the growing demands of edge AI and diverse industries.

## Value Enhanced OS

| | | | | | |
|---|---|---|---|---|---|
| **Application** | **PowerSuite** OS Operation Enhancement | | **DeviceOn** Deployment and Management | | |
| **Application Programming Interface (API)** | **SUSI API** Hardware Monitoring and Control | **NVIDIA® CUDA®** | **Qualcomm AI Engine Direct** | **Intel OpenVINO** | **AMD ROCm** |
| **Device Driver** | Advantech Peripheral I/O | | SoC | | AI Chip |
| **Operating System** | Windows | | Windows on Arm | | Linux |
| **Firmware/BIOS** | x86 UEFI | | Arm U-Boot | | Arm UEFI |

Advantech provides a range of operating systems to cater to diverse customer needs, including Windows LTSC, Windows on Arm, Linux, Ubuntu Pro, and Android. Advantech adds value through device drivers, APIs, and application software, enabling out-of-the-box functionality.

## IEC 62443 Certification Solution

| | | |
|---|---|---|
| Recognized by Certification Body | Acronis Backup and Recovery | Authenticity of Software and Information |
| Secure Boot & Secure Flash Update by Default | Trellix Data and Application Protection | SecEdge Firmware TPM |

# Edge Application

## Scalable Cloud Services

| GenAI | Robotic | Medical | Smart Retail | Smart Manufacturing |
|---|---|---|---|---|
| **EdgeAI SDK** Edge AI Toolkit | **Robotic Suite** Robot Function Enabler | **EdgeAI SDK** Edge AI Toolkit | **iVision Suite** Vision AI Platform | **WISE-IoT** Edge-to-Cloud Solutions |
| NVIDIA AI Enterprise (NVIDIA NeMo™) | | | **SignageCMS** Interactive Signage and Analytics Platform | NVIDIA AI Enterprise (OCRNet Model) |
| NVIDIA AI Enterprise (NVIDIA Riva) | NVIDIA AI Enterprise (NVIDIA Isaac™) | NVIDIA AI Enterprise (NVIDIA Clara™) | NVIDIA AI Enterprise (NVIDIA Metropolis) | NVIDIA AI Enterprise (NVIDIA Metropolis) |
| Qualcomm Neural Processing SDK for AI | | | NVIDIA AI Enterprise (NVIDIA Merlin™) | Intel Geti |
| Hugging Face | Qualcomm Intelligent Robotics Product SDK | Qualcomm HexagonSDK | Intel SceneScape | |
| | | | Qualcomm MediaPipe Face Detection Quantized | Qualcomm PPE Detection Quantized |

| Microsoft Azure | Canonical MicroCloud |
|---|---|
| Azure OpenAI | MicroK8s |
| Azure Migration Service | Auto-healing on Instances |
| Azure DevOps | Scalable and Low-latency HA Cluster |

By integrating Edge AI resources, Advantech accelerates industry-specific model development and implementation. These Edge AI resources include self-developed applications such as Edge AI SDK and the Robotic Suite, as well as authorized software offerings such as NVIDIA AI Enterprise for comprehensive AI project development.

Additionally, scalable cloud services bridge edge and cloud computing, offering robust tools for AI model deployment, migration, and system scalability.

## Industry Standards Compliance Security Solutions

### Industry Standard Compliant

Foundation

| Energy | Medical | Manufacturing | Semiconductor |
|---|---|---|---|
| IEC 62351 ISO/IEC 27019 | IEC 80001 IEC 60601 IEC 81001-5-1 | IEC 62443-4-1/ 4-2 NIST SP 800-82 | SEMI E187 |

### Subscription−based Cloud Protection

| Trellix ePo Cloud | Acronis Cyber Protect Cloud |
|---|---|

Advantech prioritizes cybersecurity, addressing increased data flow in Edge AI applications and compliance with international regulations like the Cyber Resilience Act (CRA). Its one-stop security certification services make the integrated solutions secure and reliable.

# Windows IoT
## Customizable OS for Embedded Computers

As an authorized Windows IoT distributor, Advantech brings deep expertise in Windows IoT development, helping businesses create secure, connected, and intelligent solutions. Windows IoT provides up to 10 years of long-term support , enterprise-grade security, and seamless Azure IoT integration, ensuring reliable and future-proof deployments across industries such as industrial automation, healthcare, and retail. Whether you require optimized hardware, secure device management, or cloud connectivity, Advantech delivers the expertise and solutions to drive IoT innovation and digital transformation.

OS Customization Service

10-Year Long-Term Support

Licensing Consultation

Global Distribution

Value-Added Tools

**Power Suite**

Windows 11 Pro

Office LTSC Embedded

Windows IoT

SQL Server IoT

Windows Server IoT

Windows Professional (Digital Key)

Office LTSC 2024 Embedded

Office LTSC 2021 Embedded

Windows 11 IoT Enterprise LTSC

Windows 10 IoT Enterprise LTSC

SQL Server IoT 2025

SQL Server IoT 2022

Windows Server IoT 2025

Windows Server IoT 2022

*Note: The image is for illustration only

## Key Benefits

- Delivers powerful, efficient, highly secure digital operations.
- Provides up to 10 years of Windows IoT updates and enhancements for your devices.

- Simplifies and optimizes edge environment management.
- Leverages IoT innovation and AI-driven analytics.
- Supports environmentally and financially sustainable operations.

**Windows**

# Power Suite
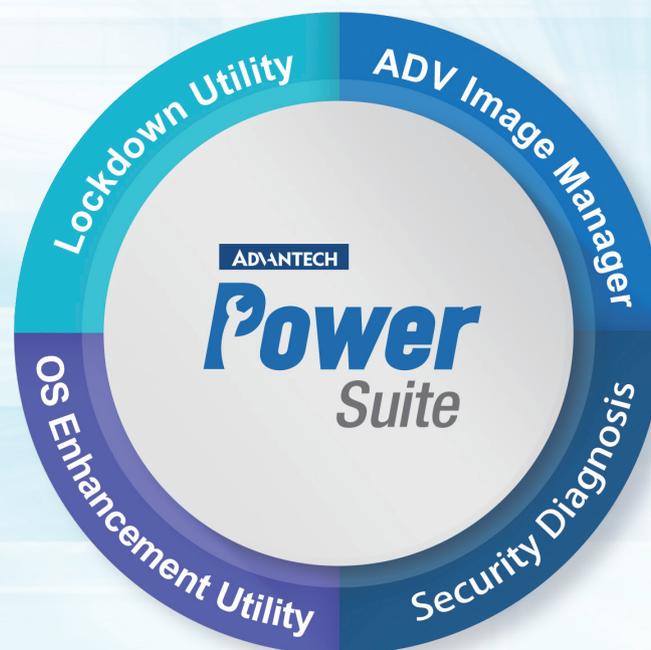## Exclusive OS Enhancement Tools and Value-Added Services

To optimize Windows IoT deployments, Advantech Power Suite—a specialized toolset—provides advanced features for OS customization, security, and management. It includes three key tools: Windows 10/11 IoT Lockdown Utility, ADV Image Manager, the OS Enhancement Utility, and Security Diagnosis. These tools enable fast, hassle-free deployment, system optimization, and seamless backup and recovery, helping businesses improve efficiency and safeguard their devices with ease. Additionally, its energy-saving technology reduces costs while enhancing system performance and sustainability.

### Windows 10/11 IoT lockdown

- Starup Manager
- Unified Write Filter
- Keyboard Filter
- Embedded Logon

### OS Image Backup & Recovery

- Environment Setting
- Encrypted OS Backup/Recovery

### OS Enhancement Utility

- System Setting
- Windows Update Setting
- Device Permissions Control
- Kiosk Mode
- Energy Saving

### Security Diagnosis

- IEC Configurator
- Attack Surface Reduction

**Lockdown Utility** · **ADV Image Manager** · **OS Enhancement Utility** · **Security Diagnosis**

ADVANTECH
**Power** *Suite*

Windows

# Ubuntu
## Open Source Operating System on Linux

Ubuntu is the leading Linux OS, known for its stability, security, and strong developer support. As an IoT leader, Advantech offers Ubuntu Desktop for development and Ubuntu Core for secure edge computing, enabling AIoT applications with long-term security and seamless cloud integration.

## Power Suite

Advantech Power Suite is also compatible with Ubuntu OS, providing a streamlined experience for Linux users.

### Ubuntu
Full-blown graphic UI OS,
Rich application support

### Ubuntu Pro
10-year support,
Advanced features and more protection

### Ubuntu Core
Light-weight command-line OS,
Optimized for IoT sensor devices

| 500+ | 30+ | 1 Stop | 10 Years | 200+ | 3 Weeks |
|---|---|---|---|---|---|
| Compatibility test between the device and OS | HW control features deliver by SUSI API | Design-in service to get integrated HW & SW | Long-term HW & SW support | IoT Snapcraft Apps | Tri-weekly of security |

# Ubuntu Total Solutions

## Best Environment for AI Development and Computing Management

Ubuntu Pro for Devices provides 10 years of support, over 23,000 CVE patches, and hardware compatibility for robotics and gateways, ensuring security, compliance, and streamlined AI workflows. Canonical MicroCloud offers scalable, high-performance computing in a compact cluster, ideal for edge applications. Together, Advantech and Canonical deliver Ubuntu OS, Canonical MicroCloud, and Canonical AI Consulting Services to reduce AI development challenges and enhance market accuracy.

### Canonical MicroCloud

- Resource Scalability
- Automation Simplicity
- Rapid Provisioning

### Ubuntu Pro for Devices

- 10-Year Support
- Security Maintenance
- ROS & Real-Time Kernel

### Canonical AI Consulting Services

- Outcome-Based PoC
- End-to-End Consulting
- Fully-Managed MLOps
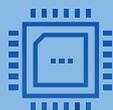
**Broader Support**
Supports x86 and Arm architectures

**Long-Term Support**
Starting from 16.04, every version receives 10-year support

**Secure**
Provides security maintenance for 25,000+ packages

**Ubuntu Management**
Easily manage, deploy, monitor, and scale your devices using Landscape

**Training and Workshops**
Training is offered covering MLOps and AI architectures

# Edge AI Software Architecture
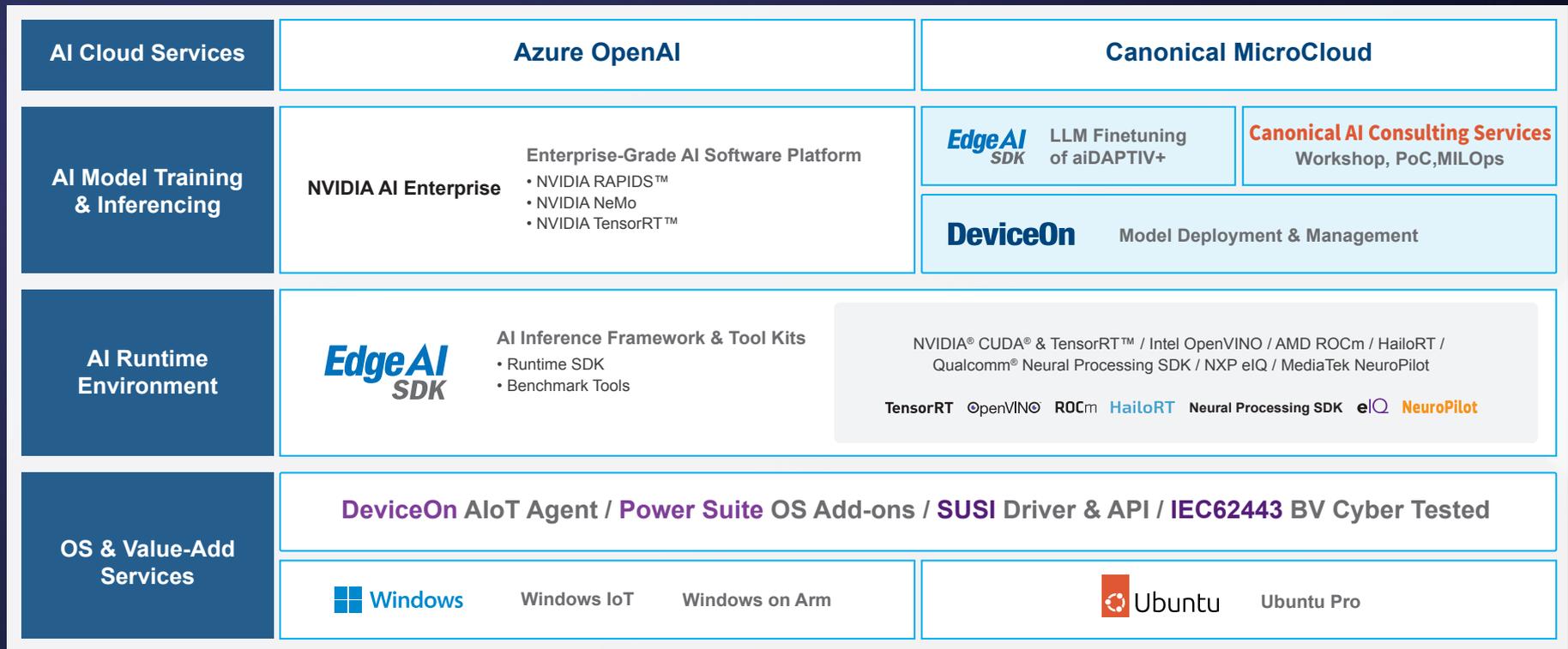
Advantech's Edge AI platform provides comprehensive software and services, including OS, AI inference, model optimization, Azure OpenAI, and MicroCloud AI management. In addition to providing the platform, Advantech delivers expert technical support, collaborating with Microsoft, Canonical, NVIDIA, Qualcomm, and Intel to resolve challenges and optimize solutions—helping developers accelerate AI application development more efficiently.

| | | |
|---|---|---|
| **AI Cloud Services** | **Azure OpenAI** | **Canonical MicroCloud** |
| **AI Model Training & Inferencing** | **NVIDIA AI Enterprise** — Enterprise-Grade AI Software Platform<br>• NVIDIA RAPIDS™<br>• NVIDIA NeMo<br>• NVIDIA TensorRT™ | **EdgeAI SDK** LLM Finetuning of aiDAPTIV+ / **Canonical AI Consulting Services** Workshop, PoC, MILOps<br>**DeviceOn** Model Deployment & Management |
| **AI Runtime Environment** | **Edge AI SDK** — AI Inference Framework & Tool Kits<br>• Runtime SDK<br>• Benchmark Tools | NVIDIA® CUDA® & TensorRT™ / Intel OpenVINO / AMD ROCm / HailoRT / Qualcomm® Neural Processing SDK / NXP eIQ / MediaTek NeuroPilot<br>TensorRT   OpenVINO   ROCm   HailoRT   Neural Processing SDK   eIQ   NeuroPilot |
| **OS & Value-Add Services** | **DeviceOn** AIoT Agent / **Power Suite** OS Add-ons / **SUSI** Driver & API / **IEC62443** BV Cyber Tested | |
| | **Windows**  Windows IoT  Windows on Arm | **Ubuntu**  Ubuntu Pro |

Microsoft   Canonical   AMD   AXELERA ARTIFICIAL INTELLIGENCE   HAILO   intel.   MEDIATEK   NVIDIA   NXP   Qualcomm   Rockchip   PHISON

# Edge AI SDK

## Rapid AI SDK Development Toolkit

The Advantech Edge AI SDK provides a comprehensive toolset designed for seamless edge AI development. With pre-configured hardware and optimally tuned software, it delivers a plug-and-play experience, enabling cost-effective LLM customization, seamless toolkit compatibility, and effortless management of large-scale edge deployments. Designed with reliability, scalability, and user-friendliness in mind, the Advantech Edge AI SDK simplifies the path to AI innovation.

### GenAI Studio

Cost-effectively build, evaluate, and integrate custom LLMs on-premises.
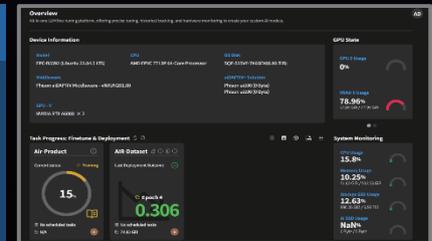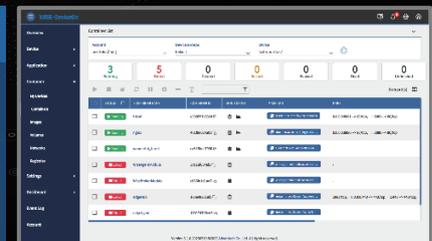
### Inference Kit

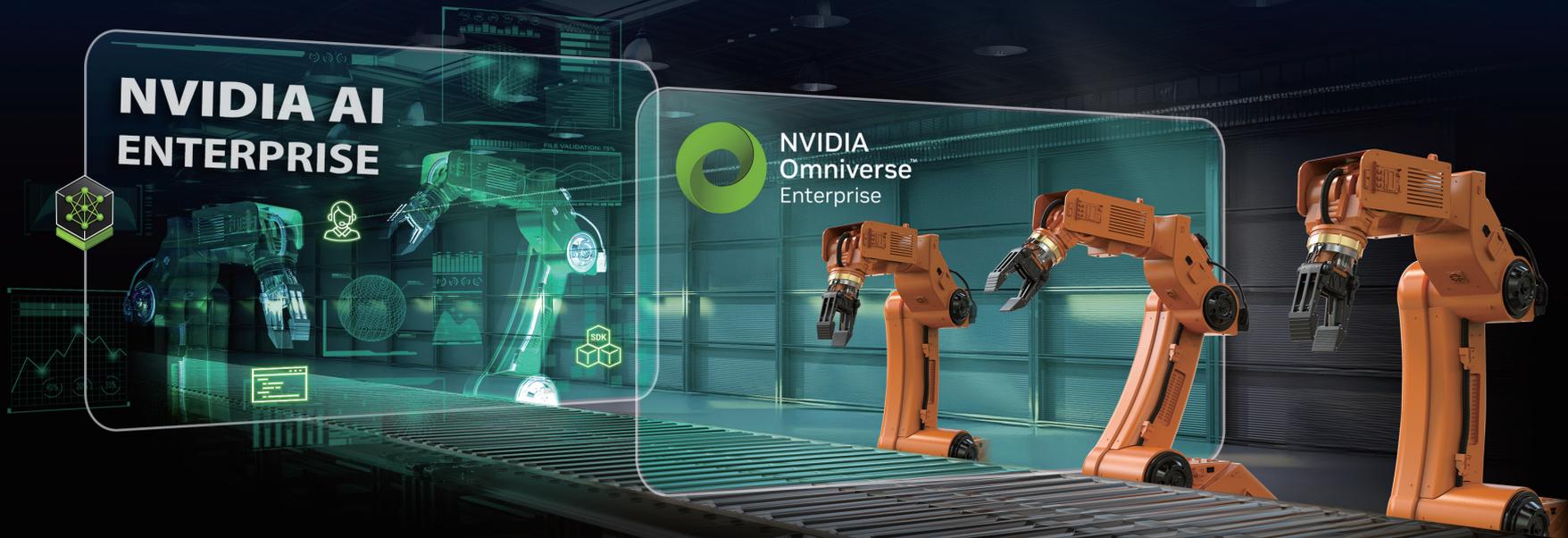Quickly create and assess efficient, compatible AI runtimes on embedded OS.

### Orchestration Platform

Streamline AI model /app updates across large-scale edge deployments and integrate MLOps.

# Complete AI and Simulation Software Platform

NVIDIA Enterprise delivers unified, secure AI and immersive virtual environments designed to accelerate your digital transformation. Seamlessly deploy optimized AI workflows and real-time digital twins across industries like healthcare, manufacturing, smart cities, and more. Backed by dedicated enterprise support to ensure reliability, robust security, and future-ready operations.



## NVIDIA AI Enterprise
**AI Development, Deployment & Inferencing**

- Streamlined AI workflows
- Secure, scalable IT environments
- Ready-pretrained AI models
- Enterprise-grade support & security

## NVIDIA Omniverse™ Enterprise
**Digital Twins, Simulation & 3D Content**

- Real-time, photorealistic 3D worlds
- Unified industrial digital twins
- Collaborative 3D workflows
- Physically accurate simulation

## NVIDIA Elite Partner, Empowering AI with Expert Solution Design and End-to-End Expertise

### ✓ Comprehensive AI Development Suite

- Data preparation and training
- AI inference library and services
- NVIDIA RAPIDS™, NVIDIA TAO, NVIDIA TensorRT™, NVIDIA Triton Inference Server

### ✓ Expert Services and Integrated AI Toolkit

- Advantech tier 1 services for AI dev infra: OS, drivers and AI SDKs
- Direct access to NVIDIA AI experts
- Integrated tools: Advantech Edge AI SDK, Power Suite, Robotics Suite, and more

### AI-Ready Edge Platform

**NEW**

**NVIDIA CERTIFIED**
**AIR-510**
NVIDIA RTX™ 6000 Ada Generation

**NVIDIA CERTIFIED**
**AIR-520**
2 x NVIDIA RTX 6000 Ada Generation

**AIR-420**
2 x NVIDIA RTX PRO™ 6000 Blackwell Max-Q Workstation Edition

### Annual Subscription

- ✓ 1/3/5-year subscription license
- ✓ Standard support included

- Per GPU Licensing
- Optional Upgrade for Business Critical Support

Enterprise eligibility subject to compliance with NVIDIA-Certified process

### ✓ Complete Simulation & Collaboration Platform

- Unified 3D design and real-time simulation
- AI-enhanced digital twin development and collaboration
- NVIDIA Isaac™, NVIDIA Isaac™ GR00T, NVIDIA Cosmos™, Omniverse Replicator, etc

### ✓ Lifecycle Management & Security Update

- 2 production branches/ year with 9-month lifetime
- Monthly CVE patches and bug fixes

# Edge Impulse

## Frictionless Machine Learning Platform for Edge AI

Develop edge and physical AI solutions with Edge Impulse, the trusted platform for streamlining and accelerating the MLOps process. Build, train, optimize and deploy models for vision, audio, or predictive insights with low latency, high security, and no cloud reliance. Paired with Advantech industrial hardware, your devices become autonomous, context-aware systems that reduce downtime, protect data privacy, cut cloud costs, and deliver real-time intelligence across factory floors, remote sites, and customer touchpoints.

### Development Kit and Platform

- NVIDIA Jetson™ – Digital signage, AI inference box
- Qualcomm Dragonwing™ QCS6490 – Camera, Signage Player, Drone Controller
- Qualcomm Dragonwing™ IQ9 Series – Edge AI System, AMR Control System
- Qualcomm Dragonwing™ IQ-X Series – Embedded Board, Edge AI System

### Edge Impulse Built-in

- Pre-verified Advantech Devices
- Pre-installed Edge Impulse Tools for AI Inference
- Exclusive 3-month Starter Bundled Package

### Market-Driven Adoption

- Robotics & AMR – Safety in Factories
- Smart Manufacturing – Anomaly Detection
- Smart Retail – Product Identification

**EDGE IMPULSE**

#### EON™ Tuner

Automatically optimize ML models, maximizing accuracy, minimizing memory and latency.

#### EON™ Compiler

Deploy AI across your edge fleet without rewriting a single line of code.

#### AI Labeling

Accelerate dataset creation with collaborative sensor labeling - 70% faster prep.

# DeviceOn
## AIoT Device Management and Edge Orchestration

DeviceOn is an AIoT device management and edge orchestration platform enabling rapid deployment, flexibility, and secure AI runtime. It provides Edge Cloud Intelligence, Remote Access Services, and Application Orchestration for container management and OTA updates. With features like endpoint protection, system recovery, and ISA/IEC 62443 compliance, DeviceOn ensures 24/7 operation, OOB recovery, zero-touch enrollment, and advanced AI capabilities, enhancing edge computing efficiency and reliability.

### Edge Cloud Intelligence
- Azure Open AI Integration
- Edge AI Deployment
- Nvidia Edge Support

### Remote Access Services
- Remote Monitoring
- Remote Troubleshooting
- Out-of-Band Control

### Application Orchestrator
- Container Management
- OTA Updates
- Batch Maintenance

### Endpoint Protection
- Whitelist Protection
- System Recovery
- ISA/IEC 62443 Compliance

**DeviceOn+**

**AI Prediction**

**Service Chatbot**

**24/7 Operation**

**OOB Recovery**

**Zero-Touch Enrollment**

# SOTI EMM Solutions
## Advantech + SOTI: Powering the Future of Connected Industries

SOTI Enterprise Mobility Management simplifies and secures the control of mobile devices, apps, and content across any OS or device type. Available through Advantech, SOTI MobiControl and SOTI XSight empower customers to securely manage, monitor, and analyze devices across Android, iOS, Windows, macOS, and Linux environments—all from a single platform.

SOTI's intelligent mobility software to create unified solutions that maximize efficiency, security, and scalability across critical industries.

## SOTI

**Enterprise Mobility Management**

Enable organizations to track, manage and secure devices remotely with intelligence

Android, chromeOS, iOS, macOS, Windows, Ubuntu, Linux

SOTI MOBICONTROL    SOTI XSIGHT    SOTI MOBICONTROL XS
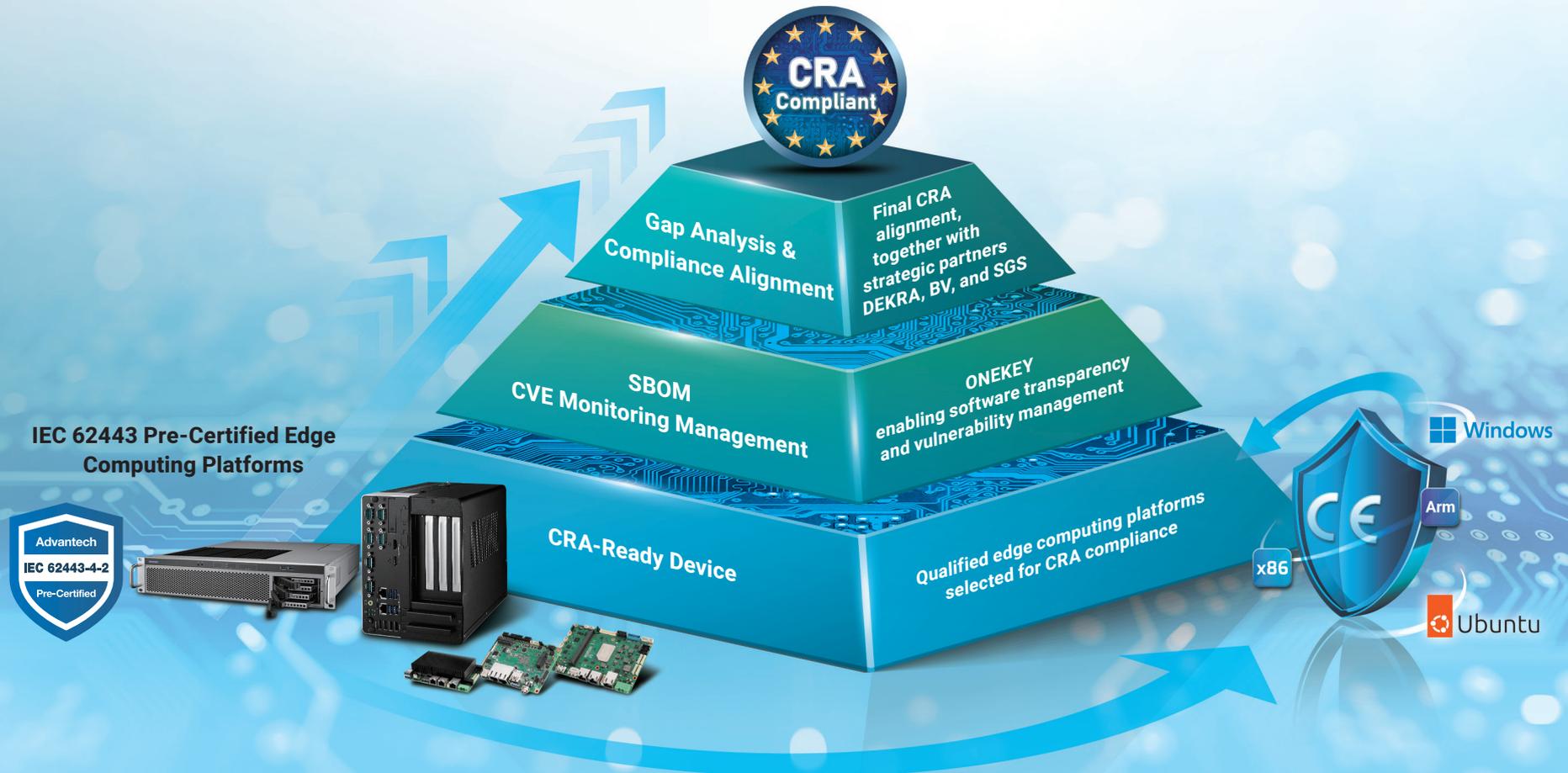
| MANAGE APPS | GEOFENCING | DEPLOYMENT | VISIBILITY |
| SECURITY | REMOTE CONTROL | LOCKDOWN | OS UPDATES |
| ADVANCED TROUBLESHOOTING TOOLS | INCIDENT MANAGEMENT WITH INTEGRATIONS | OPERATIONAL INTELLIGENCE | REAL-TIME WORKFORCE VISUALIZATION | PROACTIVE ALERTING & VISIBILITY DASHBOARD |

# CRA Compliance Solution
## Your Roadmap to CRA Readiness

While IEC 62443 is a versatile security foundation for diverse OT sectors, it currently serves as a critical bridge to EU CRA. Advantech streamlines this transition by utilizing IEC 62443-4-2 pre-certified hardware as a trusted foundation. To further empower our customers, Advantech provides ONEKEY, an advanced tool for automated SBOM transparency and CVE monitoring. By combining our certified hardware with the ONEKEY platform and expert validation from partners like DEKRA, Bureau Veritas (BV), and SGS, we offer a complete solution to efficiently close the compliance gap and ensure global market access.

CRA
Compliant

**Gap Analysis & Compliance Alignment** — Final CRA alignment, together with strategic partners DEKRA, BV, and SGS

**SBOM CVE Monitoring Management** — ONEKEY enabling software transparency and vulnerability management

**CRA-Ready Device** — Qualified edge computing platforms selected for CRA compliance

**IEC 62443 Pre-Certified Edge Computing Platforms**

Advantech IEC 62443-4-2 Pre-Certified

Windows

CE

Arm

x86
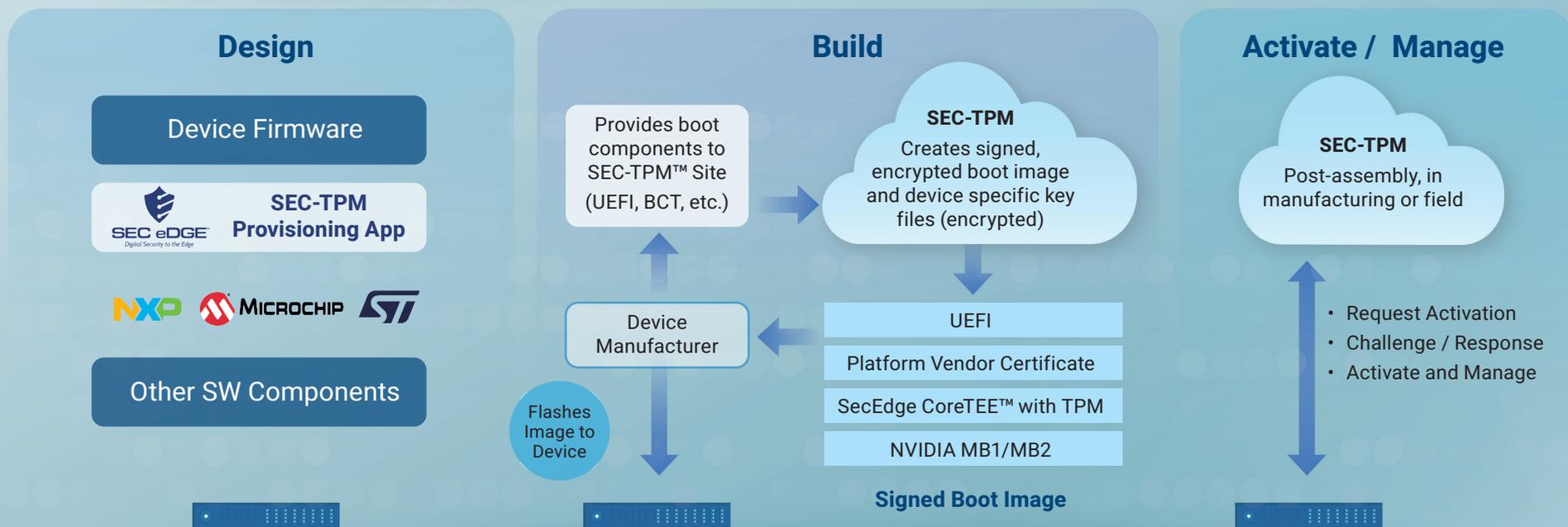
Ubuntu

# SecEdge Firmware TPM
## TPM 2.0 Security for Embedded Systems

SecEdge Firmware TPM is a TCG-compliant, firmware-based TPM that runs in secure environments such as SoC TrustZone, TEE, or HSM on platforms including NXP, NVIDIA, and Qualcomm. It delivers full TPM 2.0 API compatibility equivalent to hardware TPM, without requiring extra chips or hardware interfaces, making it ideal for space- and cost-sensitive devices.

## SEC-TPM: Trust Provisioning Overview

### Core Features

- Secure Boot / Measured Boot
- Key generation & secure storage
- Device identity (AIoT Identity / Attestation)
- Firmware integrity validation
- Runtime integrity protection
- Encryption, decryption & key sealing
- Remote attestation for IoT fleets / cloud

### Design

- Device Firmware
- SEC-TPM Provisioning App
- SEC eDGE™ *Digital Security to the Edge*
- NXP  MICROCHIP  ST
- Other SW Components

### Build

Provides boot components to SEC-TPM™ Site (UEFI, BCT, etc.)

**SEC-TPM** Creates signed, encrypted boot image and device specific key files (encrypted)

Device Manufacturer

Flashes Image to Device

- UEFI
- Platform Vendor Certificate
- SecEdge CoreTEE™ with TPM
- NVIDIA MB1/MB2

**Signed Boot Image**

### Activate / Manage

**SEC-TPM** Post-assembly, in manufacturing or field

- Request Activation
- Challenge / Response
- Activate and Manage

# ONEKEY – Product Cybersecurity & Compliance Platform
## Automated Product Cybersecurity, Vulnerability & CRA Compliance Management

The ONEKEY platform enables to automatically generate SBOMs, detect known and zero-day vulnerabilities, assess risk exposure, and manage remediation activities in alignment with international cybersecurity standards such as IEC 62443 and upcoming EU Cyber Resilience Act (CRA) requirements. By continuously monitoring product components and software dependencies, ONEKEY helps organizations in transforming existing product security capabilities into verifiable compliance evidence, enabling efficient preparation of CRA documentation, vulnerability handling processes, and lifecycle security management.
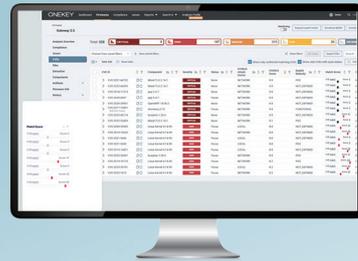
*Directly addressing the urgent need for CRA 2026 vulnerability reporting obligations.*
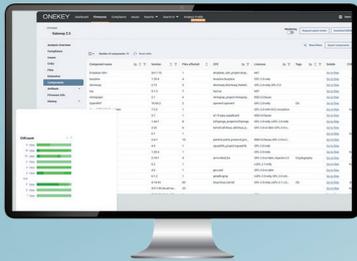


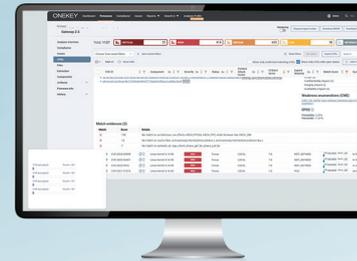### SBOM
**Automated software composition analysis**

- Detailed overview of software bill of materials (SBOM) with one click.
- No source code or network access required.

### VULNERABILITY ANALYSIS
**Find known & unknown weaknesses faster**

- Detect and prioritize firmware vulnerabilities.
- Maintain an overview with CVE* and Zero-Day impact assessments.

### IMPACT ASSESSMENT
**Faster, cost efficient risk assessments**

- Automated scans cover certificates, cloud storage, attack vectors, exploitability, and dependencies.
- Severity reports with mitigation strategies.
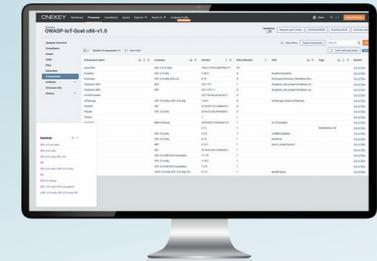
### CYBERSECURITY COMPLIANCE
**Simplify compliance assessments**

- Includes a virtual assistant for regulations.
- Navigate standards: EU Cyber Resilience Act, IEC 62443, ETSI 303 645.

\* CVE: Common Vulnerabilities and Exposures

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# Trellix Embedded Control
## Intelligent Security for Embedded Systems

Trellix Embedded Control delivers advanced protection for IoT devices, fixed-function systems, and critical infrastructure with whitelisting and change control technology. By allowing only authorized applications to run, it blocks malware, zero-day attacks, and unauthorized changes, ensuring system integrity with near-zero performance impact. Designed for industries like healthcare, industrial automation, and retail, it helps organizations meet regulatory standards while maintaining seamless operations.

**Unknown Binary is Unauthorized**

**Solidified Production Mode**

**Authorized Update Mode**

**Return to Solidified Mode**

**Whitelist**

- Authorized Admin.
- Authorized Updaters
- Secure Signed Updates
- Windows Updates

**Trellix**

- Proactive protection reduces the required maintenance
- Prevents unauthorized app installation
- Automatic protection against zero-day attacks

- Access Right – who, when, what
- Prevent out-of-policy changes
- File integrity monitoring for compliance

## Application Control

## Change Control

# Acronis Cyber Protect Backup
## Next-Generation Data Protection

Acronis Cyber Protect Backup provides seamless, cross-platform backup and recovery, all managed through a centralized dashboard. Customers can easily create, apply, and monitor backup plans via the Web Console, while local administrators efficiently manage Edge Site machines. This simplifies backup and recovery operations. With integrated cybersecurity and an intuitive interface, it ensures business continuity with minimal effort.

## Acronis

- Seamless backup and recovery across platforms
- Centralized and Remote Management for easy control
- Disk health monitoring to prevent failures
- OS and application vulnerability scanning
- Proactive ransomware protection



**Cloud Storage**

**Local Storage / NAS**

**Device Storage**

**Web Console**

**Centralized Remote Management**

**Local Site**

**Edge Site**
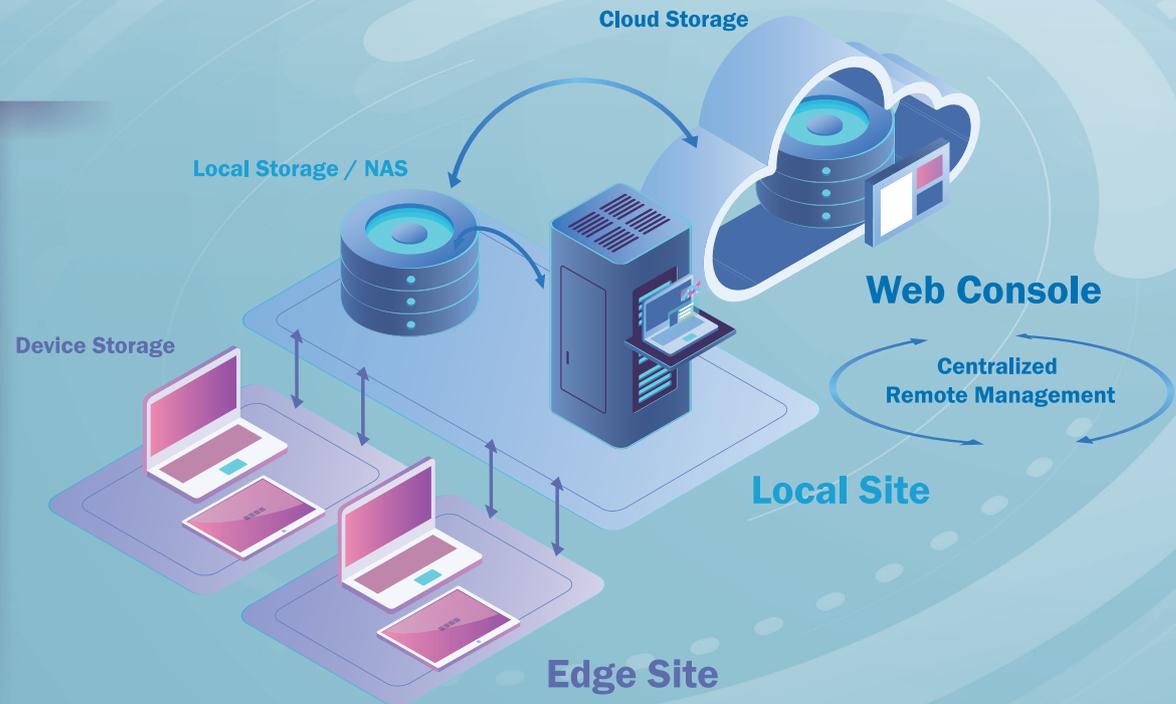
# Edge AI Software Portfolio & Services

Advantech delivers End-to-End Edge AI solutions covering the full lifecycle, from a secure system setup to AI deployment and remote management. Designed for compliance, scalability, and resilience, these solutions integrate platforms, frameworks, and partners to create flexible, AI-ready edge environments for diverse industries. Driving adoption, real-time insights, and operational efficiency, enabling smarter applications and future-ready ecosystems.

| Edge Operation | Edge Security | Edge AI Development | Edge Management | Edge Deployment Infrastructure | Edge Integration & Service |
|---|---|---|---|---|---|
| **Operating Systems** | **Security Conformity Services** | **Generative & Inference AI SDK** | **Industrial Edge Device Remote Management** | **Cloud-to-Edge Platform** | **System Integration Ecosystem Partners** |
| Canonical Ubuntu Pro / Windows — Windows IoT Enterprise LTSC/ Windows Server IoT | Advantech IEC 62443-4-2 Pre-Certified | Edge AI SDK | DeviceOn | Microsoft Azure | nagarro |
| **Drivers & API Utility Tools** | **Security & Protection Software** | **Edge AI Modeling Optimization Platform** — EDGE IMPULSE | **Retail, Logistics, Healthcare Mobility Management** | **Edge Virtualization & Container** | |
| Power Suite / SUSI API | ONEKEY / Trellix / Acronis / SEC eDGE | **Large Scale AI Framework** — NVIDIA Elite Partner — NVIDIA AI Enterprise | SOTI | Canonical MicroCloud | |

# Accelerating Productivity with AI Modeling

A medical pills factory production, where there is large dependency on human inspection operations. Being inspectors fatigue one of the main concerns that could affect quality, throughput, compliance of risk meeting industry standards, ramping up to production risks.
With Edge Impulse AI Modeling Optimization for automation, inspects directly broken pills detecting non-conforming quality standards while a high accuracy and consistency in production is delivered. Capable from improving real-time inspection, detecting micro-defects.

## Customer Pain Points

- Adoption concerns in vision AI as where to start.

- Requiring a thorough understanding of costs for development.

- A need from having initial assessment on return on investments.

## Solutions
- Edge Impulse AI platform's guided capture-train-deploy pipeline, starting from data annotation to model training and fine tuning.
- Advantech AOM-2721 Development Kit with Yocto delivers real-time AI acceleration for reliable performance during development.
- DeviceOn enables easy, scalable deployment and updates using containerization.
- Microsoft Azure ensures future cloud management hosting.

## Benefits
- Full ecosystem from hardware, software up to deployment.
- A secure deployment with IEC 62443 Pre-certified, protected and permissible access.
- Make the deployment with ease based on Windows or Ubuntu OS supported edge boards such as the MIO-5355.
- Rapid results for validation on technological proof of concept.

| Edge Operation | Edge Security | Edge AI Development | Edge Management | Edge Deployment Infrastructure | Edge Integration & Service |
|---|---|---|---|---|---|
| AOM-2721 Development Kit | Advantech IEC 62443-4-2 Pre-Certified / Acronis / Trellix | EDGE IMPULSE | DeviceOn | Microsoft Azure | Integrate to backbone ERP systems with SI partner |

# Secure and Scalable Deployment of EV Charging Systems

Networked electric vehicle (EV) chargers are part of the rapidly growing Internet of Things (IoT), connected to electricity grid infrastructure and the banking system through payment applications that handle sensitive personal and financial information. Targets for cybercriminals seeking theft, fraud, or large-scale disruption.
Adoption of IEC 62443 and ISO 15118 ensures robust security for operational technology and authentication processes. Advantech's cyber-tested and cyber-verified" edge computers streamline CRA and certification, reducing time and cost for compliance.

## Customer Pain Points

- EV chargers are prime targets for hacking, fraud, and sabotage during financial transactions.

- Data privacy and compliance challenges.

- Operational vulnerability, a single exploit could disable thousands of chargers.

- Complex authentication and standards integration implemention is technically demanding and costly.

## Solutions
- IEC 62443-aligned products and services accelerates time-to-market resolutions.
- AFE-E350 purpose-built secure EV Edge Solution.
- DeviceOn centralized container management, maximized by over-the-air remote updates, scales-up for deployments, while future use of Edge AI SDK for patterns build-up on AI developments for performance benchmarking.
- Microsoft Azure ensures future cloud management hosting.

## Benefits
- Advantech's full lifecycle starting from hardware devices, software to device management delivers a complete scale of security and protection.
- Secure deployments accompanies both growth and functionality.
- Working directly with certification bodies ensures compliance to meet industry demands.

| Edge Operation | Edge Security | Edge AI Development | Edge Management | Edge Deployment Infrastructure | Edge Integration & Service |
|---|---|---|---|---|---|
| Windows 10 | Advantech IEC 62443-4-2 Pre-Certified | Edge AI SDK | DeviceOn | Microsoft Azure | BUREAU VERITAS 1828 — Shaping a World of Trust |
| AFE-E350 | Acronis / Trellix / ONEKEY | | | | |

# Optimizing PCB Production with AI Quality Inspection

Traditional PCB manufacturers typically rely on rule-based machine vision algorithms for defect inspection, which still require manual rechecks by skilled inspectors. A leading PCB manufacturer is optimizing its production process by leveraging AI for more accurate quality inspections. By implementing AI, the company aims to increase DIP and SMT yield rates, addressing the 70-80% underkill rate caused by low contrast in traditional automated visual inspections.

## Customer Pain Points

- Transitioning to Deep Learning – Moving from rule-based AOI to a deep learning CNN approach requires significant development time.

- Implementing AI Systems – Incorporating AI into existing workflows is challenging, requiring process changes and staff training.

- Continuous Model Retraining – Continuous retraining of AI models on the production line is essential to maintain and enhance inspection accuracy.

## Solutions

- AIR-030 with NVIDIA Jetson Orin™ – A powerful edge inference system designed for the application, featuring vertical I/O, and the Advantech Edge AI SDK.
- AIR-520 with BMC Server-Grade Manageability – Equipped with dual GPU cards for model retraining by using open-source PyTorch and TensorFlow, plus remote AI model/container updates via DeviceOn.
- Canonical's AI Consulting Services – Provides support at every stage of the AI development journey, helping customers maximize the potential of their AI solutions.

## Benefits

- AI Model Deployment and Updates – Enables easy over-the-air (OTA) updates for hassle-free AI model management.
- Fully-managed MLOps – Accelerates model deployment while handling the complexities of MLOps architecture, ensuring efficient production workflows.

| Edge Operation | Edge Security | Edge AI Development | Edge Management | Edge Deployment Infrastructure | Edge Integration & Service |
|---|---|---|---|---|---|

**EdgeAI SDK**  **DeviceOn**  Canonical **MicroCloud**

NVIDIA Elite Partner

AIR-030    AIR-520

# Optimizing Cold Storage Energy Use in Dairy Production

Dairy facilities must manage temperature and humidity for quality and safety, but inefficient energy use arises from overcompensating cooling units and siloed data. The facility plans to implement an integrated solution with edge AI, industrial motherboards, and AI software to optimize energy and maintain controls.

### Customer Pain Points

• Inefficient Energy Usage – Overcooling, undercooling, and lack of real-time adjustments lead to wasted energy.

• Data Silos – Disconnected systems prevent unified monitoring and control of temperature, humidity, and energy consumption.

• Maintaining Quality and Compliance – Struggles to consistently maintain product quality and meet food safety standards.

### Solutions
• Advantech AIR-101 Edge AI System with NVIDIA GPUs for real-time data processing and AI inference.
• Advantech AIMB-289 Industrial Motherboard for collecting and transmitting sensor data from cooling units.
• NVIDIA AI Enterprise software for deploying and running robust AI models to optimize energy usage.
• Advantech DeviceOn for centralized management, monitoring, and predictive maintenance alerts.

### Benefits
• AI-Driven Optimization – Reduces unnecessary cooling, resulting in significant energy savings.
• Consistent Conditions – Maintains stable temperature and humidity, minimizing product spoilage and ensuring compliance with food safety standards.
• Centralized Data Management – DeviceOn consolidates all data into a single platform, eliminating silos and providing facility managers with a comprehensive view of environmental and energy metrics.
• Proactive Maintenance – DeviceOn alerts all maintenance teams to address issues before they cause downtime, ensuring continuous, efficient operations.

| Edge Operation | Edge Security | Edge AI Development | Edge Management | Edge Deployment Infrastructure | Edge Integration & Service |

**NVIDIA** Elite Partner

**DeviceOn**

AIR-101

# Edge AI in Autonomous Mobile Robots

A smart logistics provider sought to modernize their delivery operations in public spaces using AI-enabled service robots. By implementing autonomous robots, they enhanced traditional delivery methods, ensuring secure and efficient item delivery while navigating crowded environments. The provider required a comprehensive AI solution that could be remotely managed to optimize operational efficiency and delivery performance.

## Customer Pain Points

- Complex AI Integration – Difficulty integrating AI systems for autonomous navigation in dynamic, crowded public spaces.

- Real-Time Processing – Need for reliable real-time processing of data from multiple sensors.

- 
  Remote Management – Challenges effectively managing and monitoring of a fleet of robots remotely.
- Ongoing Optimization – Requirement for continuous updates to AI models and performance optimization.

## Solutions

- AIR-520 with NVIDIA RTX 6000 Ada Generation (x2) – A high-performance AI model training server, utilizing NVIDIA TAO from NVIDIA AI Enterprise for model development and Advantech DeviceOn for central deployment and management.
- AIMB-289 – Equipped with essential PCIe slots and multiple 2.5G LAN ports, paired with the EAI-3100 featuring an Intel® Arc™ A370M GPU for complex AI inferencing, supported by the Edge AI SDK for rapid, compatible runtimes.
- NVIDIA TAO toolkit from NVIDIA AI Enterprise - Quickly adapt pre-trained models using efficient transfer learning, enabling developers to quickly adapt pre-trained models for vision tasks, saving time and resources.

## Benefits

- Remote Fleet Management - Provides centralized control and monitoring.
- Flexible AI Development - Supports multiple sensors and AI applications.
- Secure Operations - Ensures reliable and safe delivery services.
- Streamlined MLOps - Facilitates continuous AI model improvements.

Edge Operation → Edge Security → Edge AI Development → Edge Management → Edge Deployment Infrastructure → Edge Integration & Service

**Edge AI SDK**     **DeviceOn**

EAI-3100  AIMB-289  AIR-520

# Transforming Traffic Management with AI Insights

AI-assisted traffic management is key to building smarter, safer cities. Advantech's EAI-3100 AI module, combined with the AIMB-289 motherboard powered by 14th Gen Intel® Core™ desktop processors and the NVIDIA TAO toolkit, delivers real-time monitoring at 750 intersections across multiple cities. This AI-powered solution tracks vehicle count, density, and speed, providing valuable insights that help optimize urban traffic flow and enhance road safety.

**Customer Pain Points**

• Limited Video Processing Capabilities – Traditional video processing units struggle to deliver detailed road monitoring and analytics, especially in low-light conditions.

• Real-Time Traffic Analysis – Accurate traffic flow analysis requires advanced image processing, recognition, and analytics capabilities.

• Frequent Device Updates – A large number of AIoT edge devices deployed across multiple locations require regular updates to ensure consistent performance.

**Solutions**

• AIR-520 with NVIDIA RTX 6000 Ada Generation (x2) – A powerful AI model training server using NVIDIA TAO from NVIDIA AI Enterprise, also serving as a central deployment management platform with Advantech DeviceOn.

• AIMB-289 – Equipped with essential PCIe slots and multiple 2.5G LAN ports, paired with the EAI-3100 featuring an Intel® Arc™ A370M GPU for complex AI inferencing, supported by the Edge AI SDK for rapid and efficient runtimes.

• NVIDIA TAO toolkit from NVIDIA AI Enterprise – A no-code toolkit for transfer learning that allows developers to quickly adapt pre-trained models for vision tasks, saving both time and resources.

**Benefits**

• Ready for Training and Inferencing – Provides reliable and compatible AI devices, ensuring efficient development from start to finish.
• Streamlined Workflow – Enables users to smoothly transition from data preparation to model training, optimization, and deployment within a unified environment.
• Scalability and Flexibility – Allows customers to easily scale AI models across large edge networks.

| Edge Operation | Edge Security | Edge AI Development | Edge Management | Edge Deployment Infrastructure | Edge Integration & Service |
|---|---|---|---|---|---|

**Edge AI SDK**          **DeviceOn**

EAI-3100   AIMB-289   AIR-520

# AI Automation of Technician and Customer Support

Traditional tech support often involves waiting for available technicians. With AI LLMs, support is instant, available 24/7, and enhances post-sales service efficiency and quality—delivering a superior customer experience.

### Customer Pain Points

• Limited Availability of Technical Staff – Service efficiency and quality depend on workforce availability and working hours.

• Knowledge Retention & Training – Developing and transferring technical expertise requires continuous investment in training.

• Inconsistent Service Quality – Variability in technician skills impacts customer satisfaction and sales retention.

### Solutions
• AIR-520-70B Plus with NVIDIA RTX 6000 Ada Generation (x2) – A high-performance server for LLM training.
• AIR-510 with NVIDIA RTX A5000 – An efficient inference server powering chatbot services.
• aiDAPTIV+ on AIR-520 – Optimizes cost and efficiency for AI-driven support.
• AIR-500 Series with NVIDIA AI Enterprise – Ensures a secure and reliable AI pipeline for seamless d

### Benefits
• Instant Technical Support – Enhances customer experience and boosts retention with real-time assistance.
• Consistently High Service Quality – Maintains customer satisfaction through reliable technical support.
• Seamless Long-Term Management – Easily integrates with Advantech DeviceOn for continuous optimization and smooth operations.

| Edge Operation | Edge Security | Edge AI Development | Edge Management | Edge Deployment Infrastructure | Edge Integration & Service |

**Edge AI SDK**    **DeviceOn**

**AIR-520**    **AIR-510**

# Optimizing Steel Production for Reliability and Efficiency

The customer's application is designed for automated production lines in the steel industry. The device must be stable, heat-resistant, and energy-efficient to reliably collect and transfer production data in harsh factory conditions. Compatibility with Microsoft tools is essential to avoid redevelopment and ensure cost-effectiveness.

**Customer Pain Points**

- Difficulty finding a lightweight, heat-resistant device for offline data collection.

- Challenges in identifying a cost-effective platform.

- Challenges in ensuring seamless integration with Microsoft .NET and SQL.

**Solutions**
- The Edge AI Box Computer (EPC-R3720) serves as a compact, energy-efficient gateway that is both lightweight and heat-resistant, making it ideal for demanding industrial environments.
- Powered by the i.MX8M Plus Arm SoC, the EPC-R3720 provides a cost-effective solution without compromising performance or reliability.
- Pre-installed Windows 10 IoT Enterprise on Arm ensures full compatibility with Microsoft .NET and SQL databases, enabling seamless integration with existing software.

**Benefits**
- Ready-to-Use Solutions developed by Advantech to reduce customer development time and boost production efficiency.
- Affordability while still delivering High Performance, utilizing the Arm platform within budget.
- Pre-installed with Microsoft Windows on Arm, enhancing compatibility, streamlining integration, and reducing power consumption, while off-loading the management of the system's architecture.

Edge Operation > Edge Security > Edge AI Development > Edge Management > Edge Deployment Infrastructure > Edge Integration & Service

Windows 10

**EPC-R3720**

# Windows 11 IoT Enterprise LTSC for Secure Factory Automation

In smart factories, Windows 11 IoT Enterprise LTSC powers automated production line control systems, providing long-term stability, robust security, and the ability to handle large data volumes. The OS supports real-time monitoring, predictive maintenance, and continuous optimization, while its infrequent updates ensure reliable operation in demanding industrial environments.

## Customer Pain Points

• A need for long-term system stability to handle production data in demanding factory environments.

• Difficulty maintaining secure and efficient real-time monitoring and machinery management.

• Challenges ensuring system reliability due to frequent updates and an ongoing risk of instability.

## Solutions

• Enhanced Security – Windows 11 IoT Enterprise LTSC includes robust security features such as Windows Defender, Credential Guard, and BitLocker, protecting against unauthorized access and malware to ensure reliable manufacturing processes.
• Seamless Integration – Backward compatibility with older hardware and software allows existing factory systems to operate seamlessly without disruption.
• Long-Term Stability – With up to 10 years of extended support, Windows 11 IoT Enterprise LTSC minimizes the need for frequent updates, ensuring continuous and stable operation.

## Benefits

• Robust Security – Provides reliable protection against cyber threats, ensuring system integrity for factory automation.
• Seamless Integration – Supports smooth operation, reduces upgrade costs, and maintains compatibility with legacy systems.
• Long-Term Stability – Minimizes updates, enabling reliable, uninterrupted operation in demanding factory environments.

| Edge Operation | Edge Security | Edge AI Development | Edge Management | Edge Deployment Infrastructure | Edge Integration & Service |
|---|---|---|---|---|---|

**Windows 11**

# Traffic Management for Severe Conditions

As countries move toward smarter infrastructure, the need for high-performance industrial computers is increasing. These systems must withstand harsh weather conditions, offer robust security features, and meet strict certification standards to ensure reliability and customer confidence.

## Customer Pain Points

• Regulatory Compliance – Meeting strict regulations for traffic management and infrastructure projects.

• Long-Term Security & Compliance – Ensuring cybersecurity and adherence to industry standards throughout extended construction and operational phases.

• Handling Environmental Conditions – Industrial computers must withstand extreme temperatures, vibrations, and dust while maintaining high durability and reliability.

## Solutions

• ARK-3534 Box PC – Certified with IEC 62443-4-2, ensuring compliance with tender requirements.
• End-to-End Security – Protects data integrity with robust security from hardware to software and firmware, minimizing vulnerability to cyberattacks.
• Industrial-Grade Durability – Operates reliably in extreme temperatures (-20 to 60°C / -4 to 140°F), resists vibrations and shocks, and supports a wide power input range (9 ~ 36 VDC) to withstand harsh industrial environments.

## Benefits

• Enhanced Tender Eligibility – Compliance with IEC 62443-4-2 increases likelihood of selection while reducing certification costs and time for industry-specific standards.
• Regulatory Compliance – Ensures readiness for the 2027 Cyber Resilience Act (CRA) by utilizing IEC 62443-4-2 certified devices, meeting mandatory cybersecurity requirements.

| Edge Operation | Edge Security | Edge AI Development | Edge Management | Edge Deployment Infrastructure | Edge Integration & Service |
|---|---|---|---|---|---|

Advantech
IEC 62443-4-2
Pre-Certified

**ARK-3534**

# *Memo*

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