

ADVANTECH

Enabling an Intelligent Planet

Intelligent Railway Solutions

- Advantech Overview
- Rolling Stock & Wayside Solutions
- Management Infrastructure Solutions
- Advantech Successful Cases
- Certified Systems & IoT Solution Matrix



ADVANTECH

Enabling an Intelligent Planet

Est.

1983

Headquarters: Taipei, Taiwan

INDUSTRIES SERVED

Industry 4.0, Industrial IoT,
 Embedded Computing,
 Medical, Retail, Logistics



\$10.2B

MARKET CAP (USD)

(March, 2025)



HONORS & AWARDS

- No.5 in Best Taiwan Global Brands
- No.17 in Top 50 Global Automation Vendors
- No.9 in Top 100 Industrial IoT Companies
- Red Dot Product Design Award
- iF Product Design Award







WORLD'S LARGEST IPC COMPANY

Advantech IPC WW Revenue Share

41%

Advantech

Other IPC Companies

Source: OMDIA – Market Share estimates for Industrial PCs: World, 2024 Edition

\$1.87B

2024 REVENUE

(USD)

KEY ECO-SYSTEM PARTNERS

intel

Microsoft



NVIDIA

Micron

AMD



Canonical Ubuntu



TEXAS INSTRUMENTS

arm

NXP

Qualcomm



MEDIATEK

and more...

QUALITY SYSTEMS IN PLACE

- ISO9001
- ISO14001
- ISO13485
- ISO17025
- ISO27001
- ISO45001
- TL9000
- ISO50001
- RoHS
- WEEE
- SONY GP
- REACH

1.8 MILLION+ sq. ft.

MANUFACTURING PLANTS

Linkou, Taiwan



- 9 SMT lines, 16 system lines
- Engineering sample services
- Complex product lines
- Flexible & quick production

Kunshan, China



- 12 SMT lines, 13 system lines, 6 chassis lines
- Chassis design & production
- Mature product lines
- Cost-effective production

Nogata, Japan



- 4 SMT lines, 1 system line
- Japan design center, CTOS service, logistics center, repair center

WORLDWIDE OFFICES



Manufacturing

3

On-site service

4

Design centers

11

CTOS centers

16

Repair centers

17

Logistics centers

20

More than 90 offices globally!

8800+ EMPLOYEES



Intelligent Transportation Systems



Drive Safety Excellence

- IEC 62443 fortified cybersecurity
- Ensure system integrity & reliability



IT/OT Convergence

- Streamline diagnostics & operations
- Elevate the customer experience



Mobility Innovation

- Seamless IoT system integration
- Sustainable energy management



Partner Ecosystem

- Integrated R&D and production
- Joint design for future products



Edge Controllers &
Data Acquisition

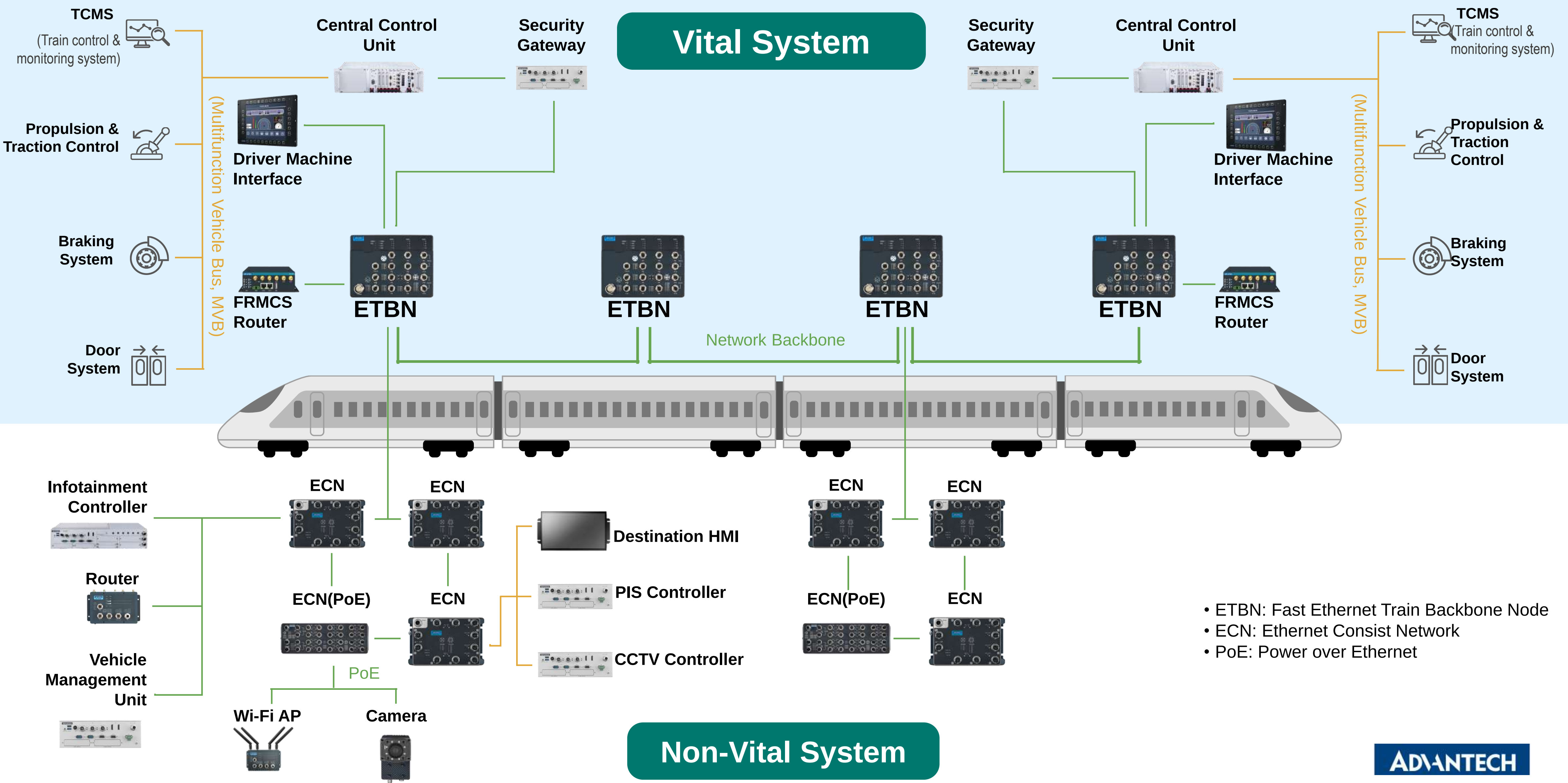


Rolling Stock & Wayside

A red high-speed train is captured in motion, crossing a railway crossing. The train is blurred, indicating speed. In the foreground, a red and white striped barrier is lowered across the tracks. To the right, a signal light is flashing red. The background consists of lush green trees.

Advantech delivers integrated solutions that ensure precise railway operations, seamless passenger experiences, proactive maintenance, and optimized trackside management through robust computing, reliable communications, and smart monitoring technologies.

Modern Train Control Systems



Modern Train Control Systems for Critical Operations

Designed to ensure the safe, efficient, and reliable operation of rail vehicles by integrating advanced technologies that monitor, control, and optimize train performance.

Advantages

- Reliable Communication for Train-to-Ground Connectivity**
Advantech provides advanced wireless solutions like GSM-R, LTE-R, 4G/5G, and Wi-Fi, ensuring secure, real-time communication for train control, monitoring, and safety, even in challenging environments, while enhancing data transmission reliability.
- Support for Autonomous Systems and ETCS Integration**
Advantech's solutions integrate ETCS, autonomous systems, and GPS/GNSS, enabling precise location tracking and automated train operations, ensuring safety, efficiency, and seamless railway performance.

Recommend Products



ITA-8100
Driver Machine Interface (DMI)

- 10.4" & 12.1" touch panel
- UIC 612-01 keypad layout
- EN 50155 OT4: -40~70°C



ITA-580
Train Security Gateway

- Microsoft Azure Certified (ESC) certification
- SuperCap-based power backup module



EKI-9512-ETB
Fast Ethernet Train Backbone Node

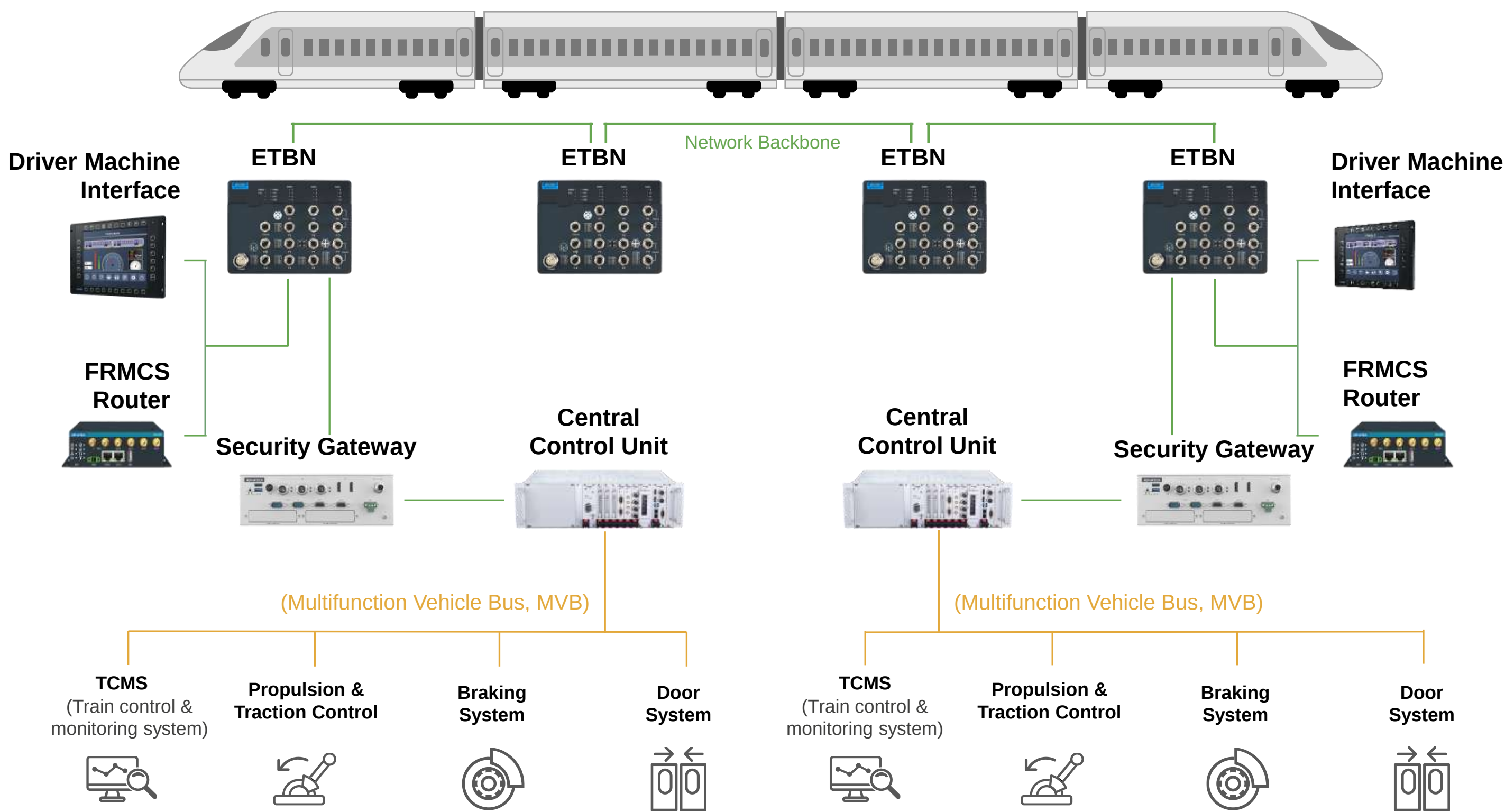
- Supports IEC 61375-2-3 (TRDP)
- IEC 61375-2-5 (TTDP)



3U CPCI Series
Central Control Unit

- 3U CPCI-S 19" System
- x86 & ARM based single or multi platform integration

System Architecture



• ETBN: Fast Ethernet Train Backbone Node

Train Information & Infotainment Systems

Advantech offers solutions for real-time passenger updates, entertainment, and seamless connectivity, ensuring smooth operations and enriched passenger experiences through robust computing, communication, and display technologies.

Advantages

• Real-Time Passenger Information Systems (PIS)

Advantech offers powerful computing and communication solutions for real-time passenger information. These solutions enable accurate, dynamic updates for schedules, delays, and station information, ensuring a seamless travel experience and efficient service management.

• Advanced Infotainment Systems for Passenger Comfort

Advantech's solutions integrate high-definition displays, media servers, and Wi-Fi connectivity, delivering interactive infotainment experiences such as entertainment, news, and travel information, which enhance passenger comfort and engagement throughout the journey.

Recommend Products



EKI-6333AC-M12
On-board Wifi AP / Clint

- Design with dual radio modules
- Supports IEEE 802.11n MIMO 2T2R



EKI-9528E
Managed PoE Ethernet Switch

- EN 50155, EN 50121, EN 45545-2 compliant
- X-Ring Pro for rapid and predictable convergence



ITA-520
Vehicle Management Unit

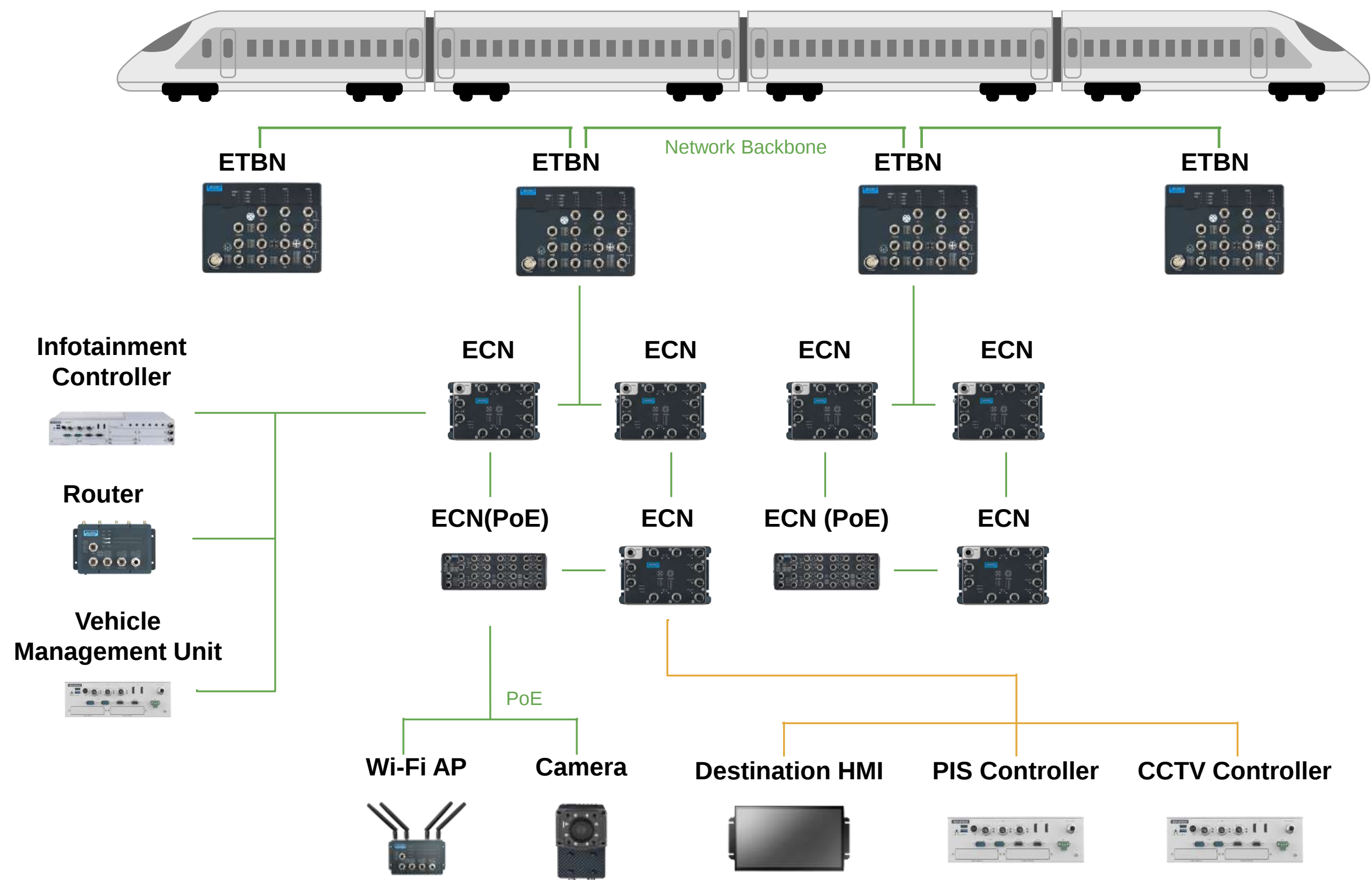
- 2U rack-mount EN 50155 fanless computer
- 3 x 2.5 GbE ports in M12 X-Coded; LAN bypass



ITA-7220
Rolling Stock Panel PC

- 22" LCD panel, 1920 x 1080 pixels resolution
- 24 / 48 / 72 / 110VDC isolation power input

System Architecture



- ETBN: Fast Ethernet Train Backbone Node
- ECN: Ethernet Consist Network
- PoE: Power over Ethernet

Intelligent Train & Infrastructure Inspection

Advantech provides comprehensive solutions for data sensing, acquisition, digitalization, and AI-driven analytics, enabling predictive maintenance and automated AI vision inspection to ensure railway safety and operational efficiency.

Advantages

- End-to-End Data Intelligence for Predictive Maintenance**
Advantech integrates sensor networks, data acquisition systems, and edge computing to collect and analyze real-time infrastructure and train health data. This enables intelligent operation, early fault detection, and predictive maintenance, reducing downtime and optimizing asset lifespan.
- AI Vision for Automated Railway Inspection**
With high-performance AI computing and machine vision technology, these solutions enable automated visual inspections of tracks, tunnels, and overhead lines, detecting defects with high precision, reducing manual labor, and ensuring railway infrastructure integrity.

Recommend Products



- SuperCap module for power backup
- Supports an MXM GPU module standards

ITA-580
Diagnostic Controller



- 8GE PoE + 2GE managed switch
- IP67 dust & waterproof design

EKI-9510G-MPW
On-board Ethernet Consist Network



- 3U CPCI-S 19" System
- Supports x86 & ARM based single or multi platform integration

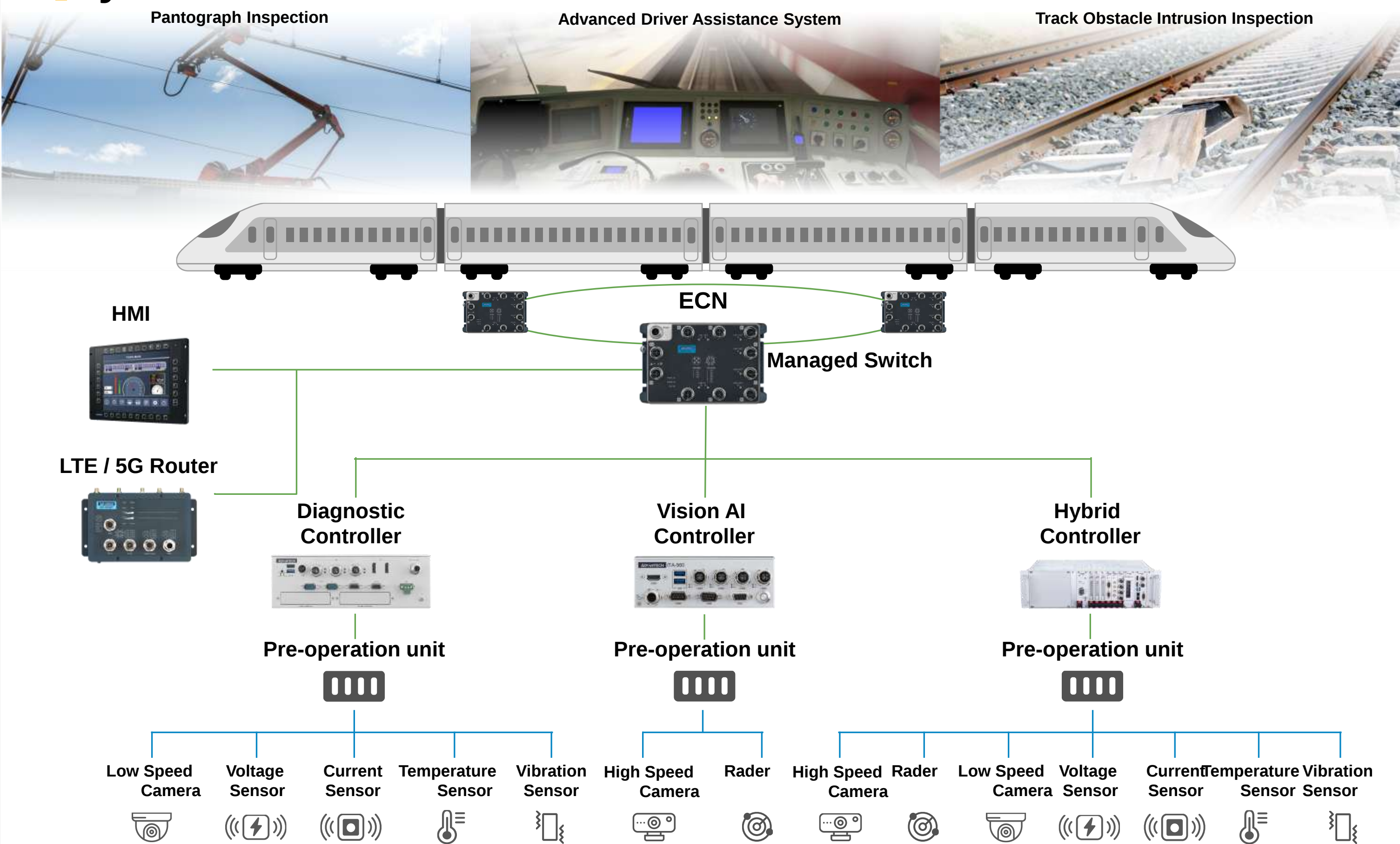
MIC-330 V2
Hybrid Controller



- Embedded NVIDIA® Jetson AGX Orin™/ Orin™ NX/ Orin™ Nano platform

ITA-560
Vision AI Controller

System Architecture



Advanced Wayside Control Systems

Advantech enhances railway infrastructure through rugged computing and high-speed communication solutions to ensure reliable signaling, real-time monitoring, and seamless integration with central control systems—improving both safety and operational efficiency.

Advantages

• Rugged Computing Solutions for Reliable Wayside Operations

Advantech's industrial-grade edge computers and servers deliver high-performance processing for railway signaling, condition monitoring, and fail-safe control, ensuring continuous and reliable operation in harsh trackside environments.

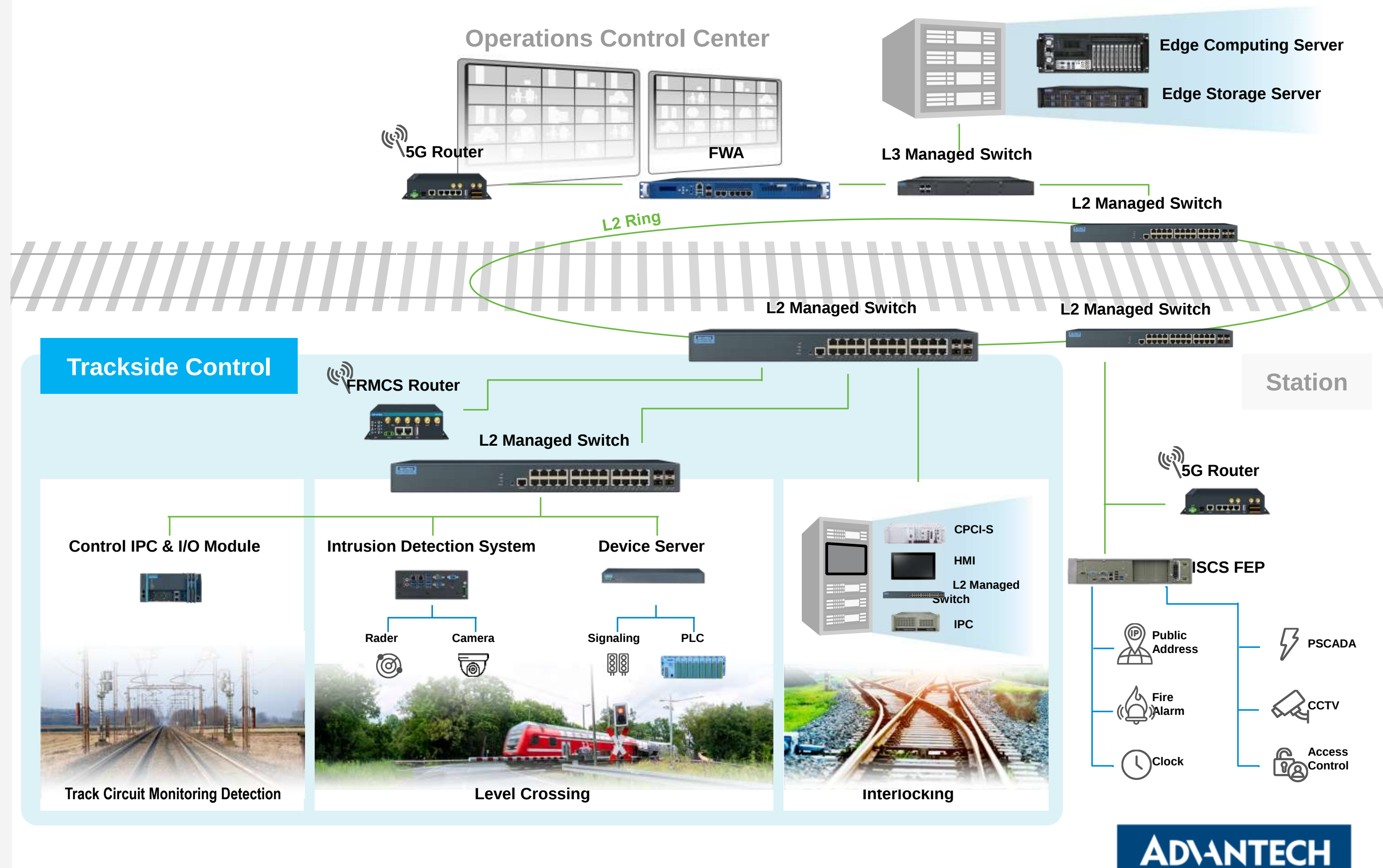
• Future-Ready Connectivity for Seamless Railway Communication

With support for FRMCS, GSM-R, and LTE-R, our networking solutions enable secure, real-time data exchange between wayside infrastructure and central control systems, enhancing operational efficiency and system integration.

Recommend Products

 ITA-2211 / 2231 Fanless front end processors for ISCS *EN 50121-4	 EKI-7428G 24G+4G combo port L2 managed switch
 MIC-770 V3 Level crossing control unit	 ICR-4461 5G & LTE advanced high speed router
 PPC-315 HMI for railway interlocking system	 AMAX-5580 Control IPC & IO/ module for track circuit monitoring

System Architecture



Management Infrastructure



Advantech provides industrial-grade computing platforms designed to enhance passenger flow efficiency, streamline fare transactions, and ensure smooth operational control at transport facilities.

Reliable Computing for Automated Ticketing

Our solutions for intelligent Automated Fare Collection (AFC) improve efficiency, enhance security, and elevate the passenger experience in smart stations. Leveraging rugged computing, IoT connectivity, and AI-driven analytics, they enable seamless ticketing, access control, and transaction management.

Advantages

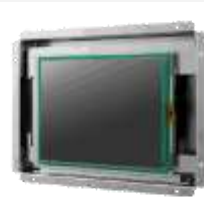
- Reliable Computing for Automated Ticketing & Access Control**
Advantech's industrial-grade computing solutions power AGM and TCM, ensuring fast and secure ticket validation, passenger authentication, and seamless entry/exit operations even in high-traffic environments.
- Smart Self-Service Systems for Hassle-Free Transactions**
With high-performance edge computing and interactive display technology, Advantech enhances BOM and TVM, enabling fast ticket purchases, digital payments, and real-time fare updates, improving station efficiency and passenger convenience.

Recommend Products



ITA-178
Station Self-Service Controller

- Rich I/O designs for USB, COM & displays
- Robust anti-vibration design for station gates



IDS-3106
Industrial Open Frame Monitor

- 6.5" VGA LCD panel with LED backlight
- Dual signal interface with VGA & DVI



ACP-4340
IPC for Station Computer System

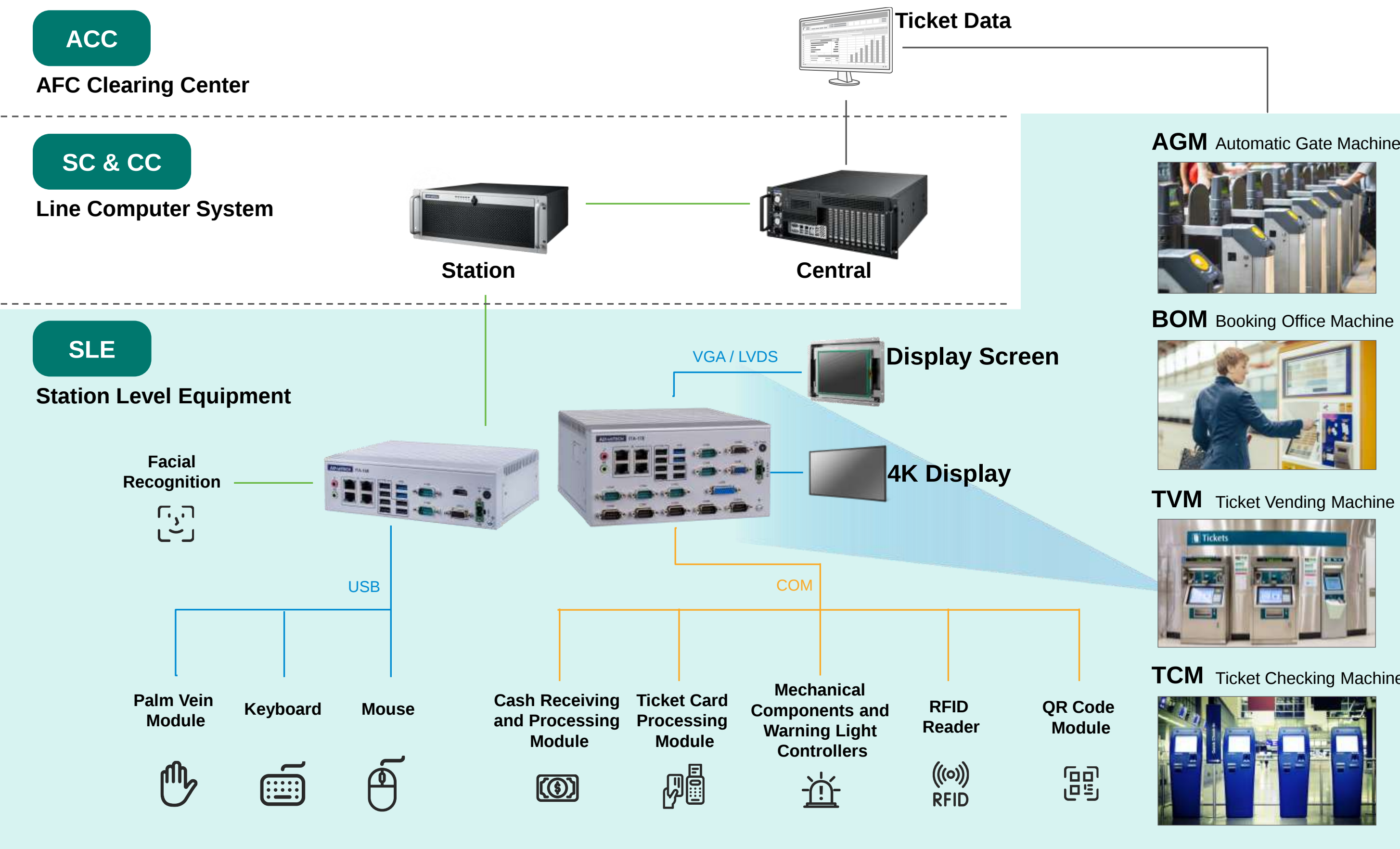
- High scalability with various motherboards
- Front-accessible design for easy maintenance



HPC-7420+ASMB-977
Server for ICSC / Central Control

- 4U 18" short-depth Edge Accelerator Server
- Dual Intel® 4th Gen Xeon® scalable processors

System Architecture



Integrated Smart Parking Infrastructure

Advantech's smart parking solution connects entry/exit gates, payment terminals, surveillance, EV charging, and vehicle search systems via a robust Ethernet network and edge computing framework, supporting real-time control, centralized monitoring, and seamless scalability across parking facilities.

Advantages

- End-to-End Networked Architecture for Parking Operations**
From gate control to EV charging, Advantech's Ethernet managed infrastructure integrates all subsystems under one secure, real-time network. L2/L3 switches, 5G routers, and edge servers ensure reliable data exchange and control across the full site.
- Modular & Scalable Design for Multi-System Parking Management**
Supports critical applications including entry/exit automation, payment systems, CCTV, EV charging, and vehicle guidance. With industrial-grade controllers and panel PCs, the system delivers long-term reliability and easy expansion for future smart parking needs.

Recommend Products



ITA-168

Fanless compact system with 8GB on board



NVS-811RL

High performance 16/24 AI NVR with 802.3 at/bt PoE



FPM-721W

21.5" Full HD industrial monitor with P-CAP touch control



TPC-110WX

10.1" high brightness touch panel computer



ADAM-3600

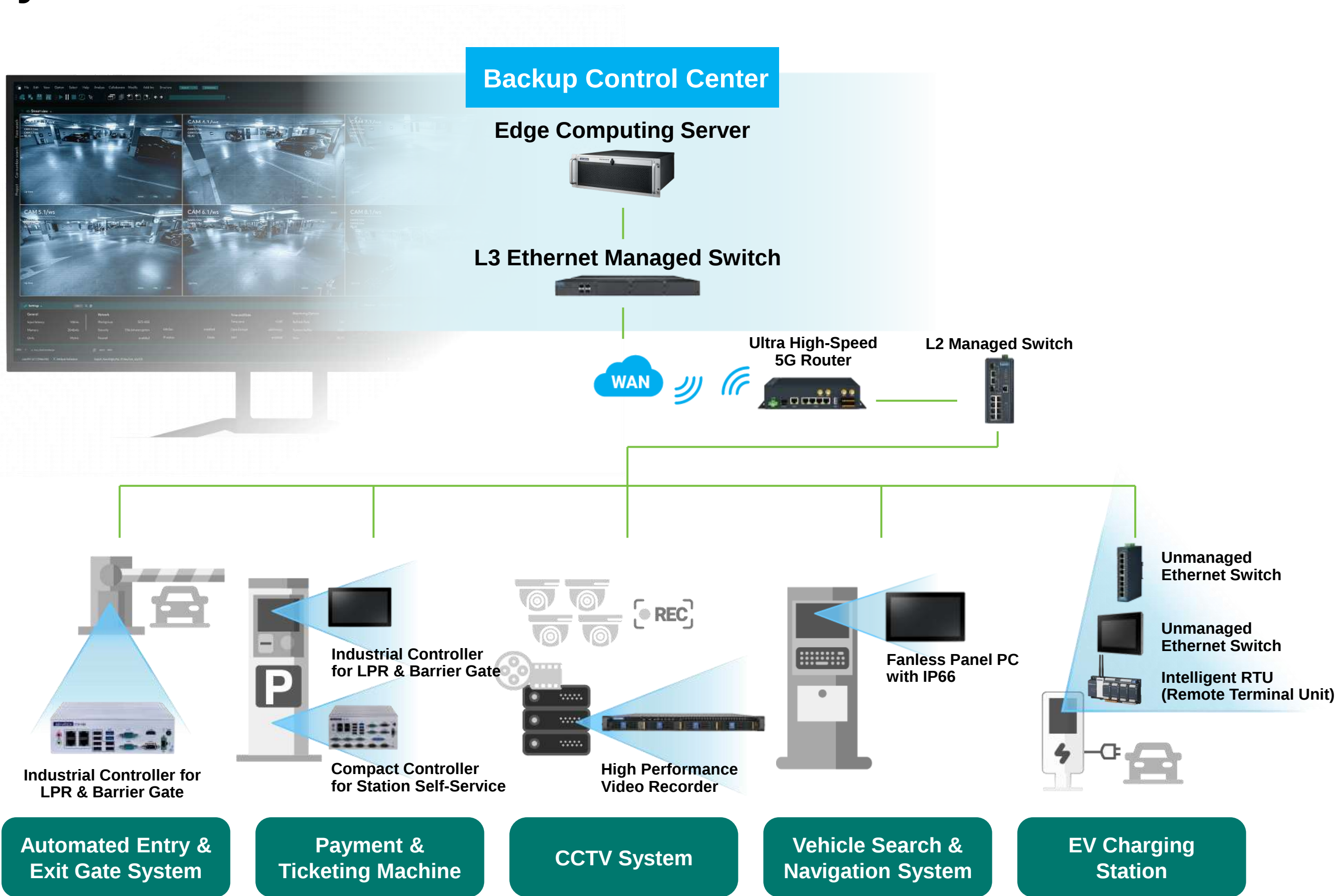
Intelligent RTU with high I/O flexibility



EKI-2528I

8FE unmanaged Ethernet switch -40~75°C

System Architecture



Application Cases & Product Matrix

- Advantech Successful Cases
- EN 50155 / E-Mark Compliant Systems
- Industrial IoT Solution & Offerings

State-of-the-art Connectivity and Infotainment System for an Enhanced Digital and Travel Experience

Case Study 1



Location:
Europe

Company:
Passengerera

Interview with:
Sales Director

“Advantech’s railway solution benefits the railway operator through the ability to retrofit many old train vehicles across several countries and the creation of additional revenue streams through in-app marketing and personalized services.”

Sales Director, Passengerera

Overview

Railway operators across the globe are increasingly aware of the need to modernize their transportation systems, particularly in countries with aging infrastructure and equipment. This has led to significant investment in the renewal of passenger carriages and digital infrastructure, where Passengerera help to optimize the cost.

Challenges / Requirements:

- A scalable, modular system adaptable to diverse national and regional environments.
- Seamless integration of multiple onboard and back-office systems into one unified platform.
- A consistently enhanced passenger experience.
- Additional revenue opportunities through advertising and personalized digital services.

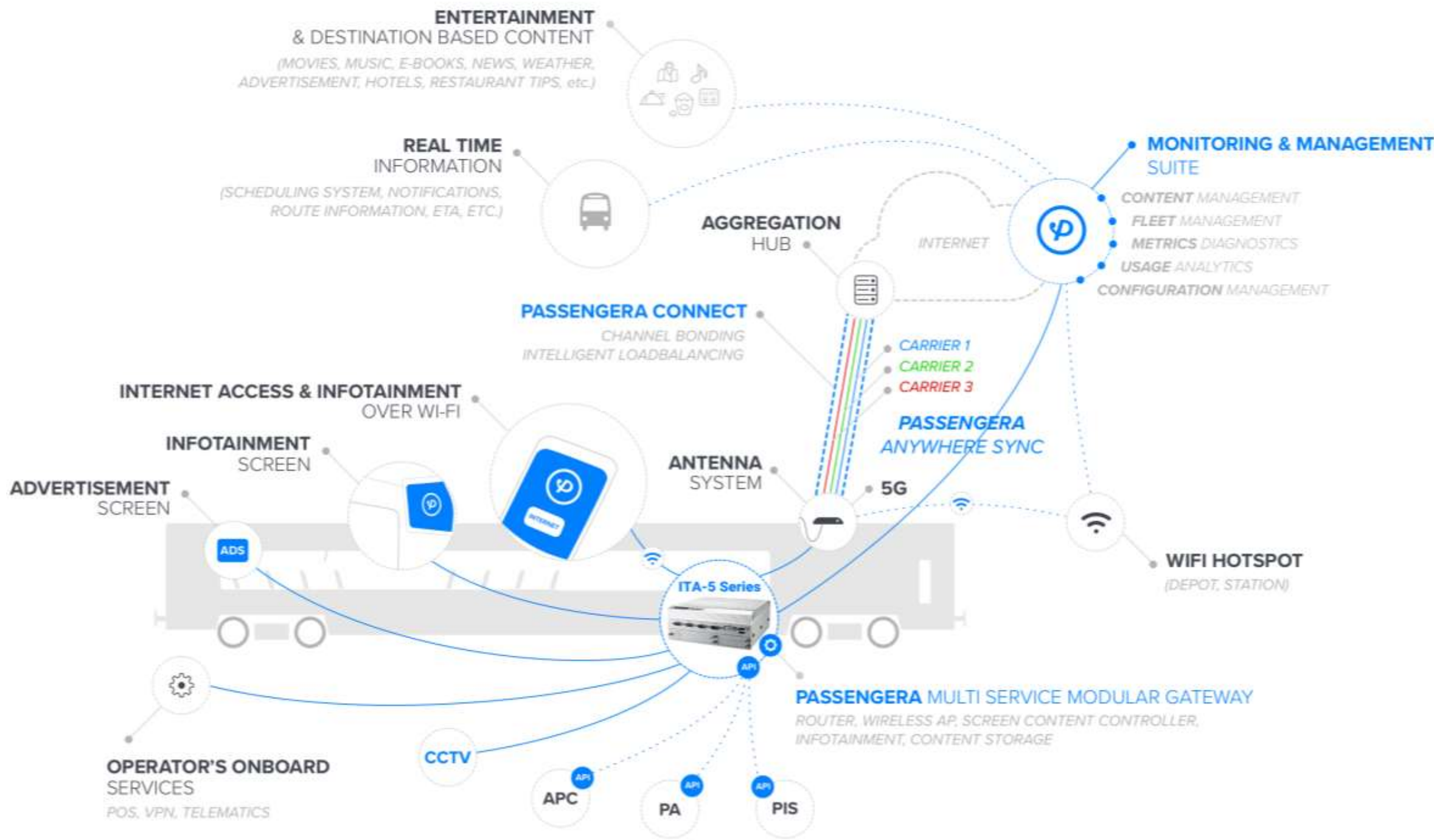
Solution:

- High-quality onboard infotainment with localized and curated content.
- Reliable onboard Wi-Fi with low latency and high-speed mobile internet connectivity.
- Edge computing containerization platform for secure hosting of multiple onboard applications.
- Centralized monitoring and management platform with advanced data insight

Benefits:

- Seamless deployment and integration with 3rd party systems, while maintaining efficiency and security
- Delivery of a premium onboard experience tailored to the operator’s specific technical and operational requirements.

System Diagram



Highly Accurate and Robust Smart Surveillance System Stops Illegal Fares

Case Study 2



Location:
South Korea

Company:
VISIONIN



Interview with:
Dr. Hak Nam Kim,
the head of research institute,
VISIONIN

“VISIONIN aims to provide services throughout the world. Our focus was not only on the equipment performance, but also on A/S and certifications”.

Dr. Hak Nam Kim, head of research institute, VISIONIN

Overview

Public transportation can put a great strain on public finances and fare evasion is a real headache for authorities. Fare evasion includes illegal use of discount cards, fare-dodging, and ticket forgery. Cities in South Korea, have implemented methods to minimize, deter, and manage fare evasion.

Challenges / Requirements:

- Public transportation can be a great strain on public finances and fare evasion is a real headache for authorities causing revenue loss.
- You need a reliable, robust, scalable and high computing solution that can run accurate and quantifiable data analysis.

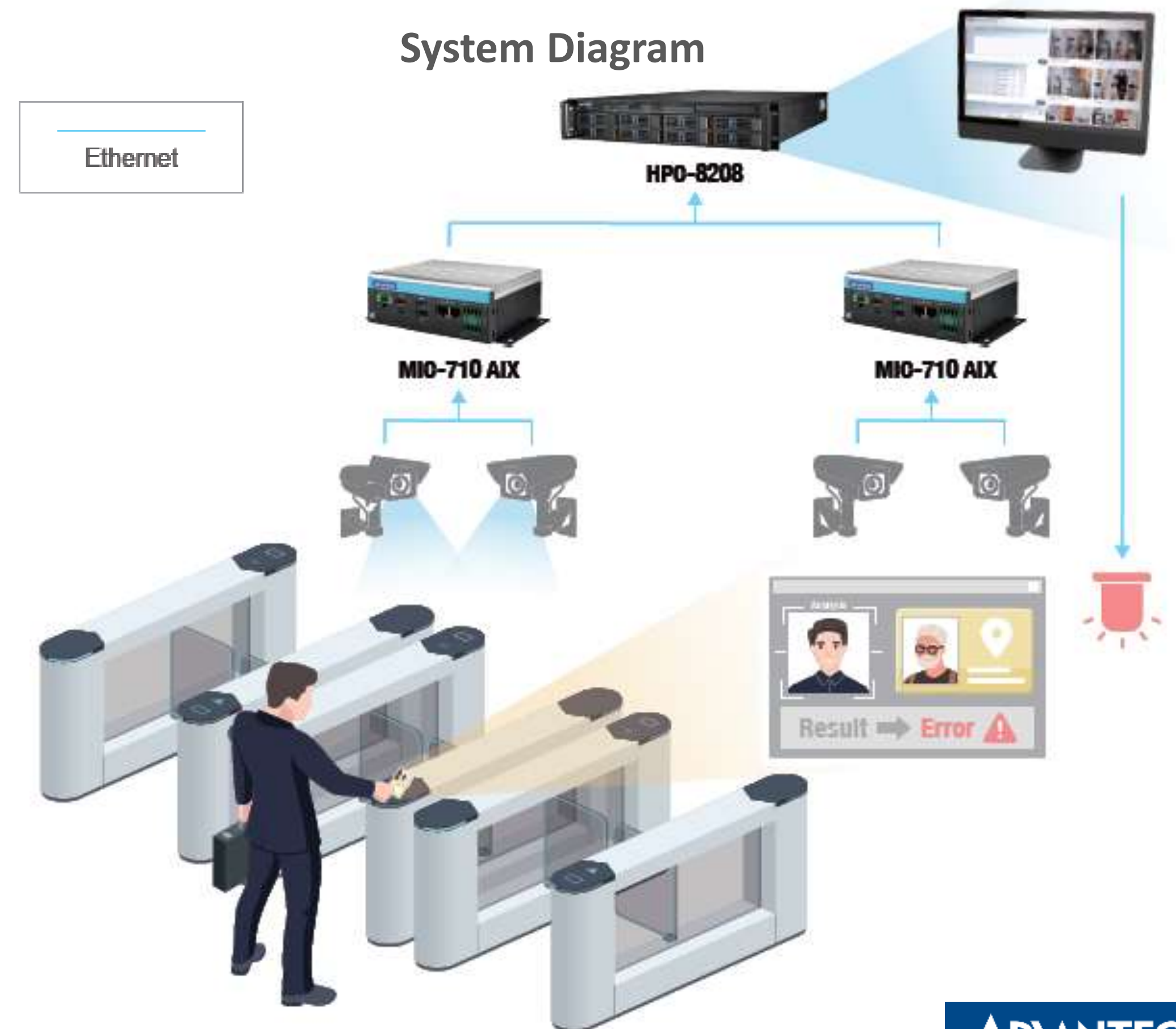
Solution:

- MIC-710AIX, MIC-720AI, and HPC-8208 Edge Inference
- CCTV, automatic alarms
- Age Inference and pose profile estimation

Benefits:

- The solutions delivered high accuracy, and minimized the risk of false recognition.
- This hardware solution provided high processing capabilities, which ensured functionalities during rush hour.

System Diagram





Overview

To support Vietnam’s transition to greener urban transportation, a leading public transportation operator partnered with Advantech to implement an intelligent electric bus management system. The goal was to improve operational efficiency, reduce carbon emissions, and provide a safer, smarter commuting experience across major Vietnamese cities.

Challenges / Requirements:

- Analyze and record driver behavior and blind spot detection for better fleet management
- Overcome harsh conditions such as strong vibrations, high temperatures, and ensure voltage protection
- Integrate in-vehicle devices and transmit real-time data to support vehicle management

Solution:

Advantech’s TREK-60 serves as a rugged in-vehicle hub that supports real-time GPS tracking, driver behavior analysis, and AI-powered ADAS integration using onboard cameras. Engineered for harsh conditions, it features wide-temperature operation, anti-vibration design, automotive power protection (ISO 7637-2 compliant), and IP-rated I/O ports. Its robust connectivity via 4G and Wi-Fi ensures seamless data transmission for effective fleet monitoring and vehicle management.

Benefits:

- Enhanced fleet efficiency through real-time tracking and centralized data management
- Improved driver safety with AI-based ADAS alerts and behavior monitoring
- Increased system durability thanks to automotive-grade rugged design
- Reduced maintenance and operational costs through predictive insights and remote diagnostics

System Diagram



EN 50155 / E-Mark Compliant Systems

EN 50155 Rolling Stock Systems



	ITA-560 Edge AI Inference Box Computer (NVIDIA® Jetson™)		ITA-580 Edge Application Box Computer (Intel® Core™)		ITA-580G Edge AI Inference Box Computer (Intel® Core™)		CPCI-S CPU Boards Intel® Core™ / NVIDIA® Jetson™
	ITA-510 Edge AI Inference 1U Rackmount (NVIDIA® Jetson™)		ITA-520 Edge Application 2U Rackmount (Intel® Core™)		ITA-520G Edge AI Inference 2U Rackmount (Intel® Core™)		MIC-330 V2 3U CPCI-Serial 19" System (Intel® Core™)
	ITA-8100 10.4" LCD Touch Panel PC (Intel® Atom™)		ITA-7220 22" LCD 400 nits Brightness Panel PC (Intel® Celeron™)		EKI-6333AC IEEE 802.11 a/b/g/n/ac Wi-Fi AP/Client		EKI-1652WT IEEE 802.11 a/b/g/n/ac, M12 Wi-Fi/LTE Router
	EKI-9512E 12-Port Ethernet Train Backbone Router		EKI-9528 28-Port L2 Managed (PoE) Switch		EKI-9520H 20-Port L2 Managed (PoE) Switch w/10G		EKI-9510E/G 10-Port L2 Managed (PoE) Switch

E-Mark In-Vehicle Systems



	EKI-9508G-ST 8-Port L2 Managed (PoE) Switch		TREK-60/60N Modular Rugged AI System (Intel® / NVIDIA® Jetson™ optional on 60N)		DLT-V73/V73A 10" / 12" Rugged Vehicle Mount Computer (Intel® / Qualcomm®)		AIM-77S 10" Arm-Based Tablet with Android OS
	EKI-2708G-PI 8 GE PoE Unmanaged Switch		TREK-50N Rugged AI Computer (NVIDIA® Jetson™)		TREK-773 7" Rugged Compact Computer (Intel® Atom™)		TREK-20 Rugged Android Computer (Qualcomm®)

Comprehensive Industrial IoT Solution & Offerings

High Performance Computing



HPC-7420

Short-dept Rackmount Server with ATX/ EATX/ EE-ATX Server Board



HPC-8208

Edge Storage Server with ATX / EATX Motherboard



ACP-4340

4U Rackmount IPC with ATX / uATX Motherboard



IPC-7130

Desktop/Wallmount IPC with ATX / uATX Motherboard

GPU Accelerator & Edge AI



SKY-640 V2

4U Rackmount Scalable GPU Server (Intel® Xeon®)



GPU Cards

Embedded GPUs
RTX GPUs
Data Center GPUs



MIC-733

Compact Fanless Edge GenAI System (NVIDIA® Jetson™)



MIC-717

AI NVR Solution with NVIDIA Metropolis Microservices

Edge Computing



ITA-178

Compact Controller for Station Self-Service



*EN 50121-4

ITA-260

Compact Controller for Wayside & Roadside



UNO-148 V2

Ultra-Compact DIN-rail PC-based Control Edge



MIC-770 V3

Modular IPC with Advantech i-Module MIC-75G20

HMI Edge



PPC-315

Fanless All-in-One Slim-Bezel Panel PC



TPC-115W

Web-Browser Terminal with Arm® SystemReady IR Certificate



FPM-221

ErP Certified Rugged Industrial Monitor



UTC Display

All-in-One Touch Computers & Kiosks

Connectivity



EKI-8528

19" Rackmount L3 Modular Managed Switch



EKI-7428

24G+4G Combo Port L2 Managed Switch



*IEC-62443-4-1 / IEC-62443-4 -2 / EN 50121-4

EKI-7710G

8G+2G Combo Port L2 Managed Switch



ICR-4461

5G & LTE Advanced High Speed Router

I/O & Camera



AMAX-5580

Control IPC With EtherCAT Slice IO Expansion



ADAM-5000/TCP

PC-based Programmable Controller



ADAM-6217

Ethernet Remote I/O with Cloud Management



ICAM-540

High-End All-in-One Industrial AI Camera

Regional Service & Customization Centers

China	Kunshan 86-512-5777-5666	Taiwan	Taipei 886-2-7732-3399	Netherlands	Eindhoven 31-40-267-7000	USA	Milpitas, CA 1-408-519-3800
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Worldwide Offices

Asia Pacific		Asia Pacific		Europe		Americas		
Taiwan		Japan		Netherlands		United States		
Toll Free	0800-777-111	Toll Free	0800-500-1055	Eindhoven	31-40-267-7000	Cincinnati	1-888-576-9668	
Taipei	886-2-7732-3399	Tokyo	81-3-6802-1021	Breda	31-76-523-3100	Milpitas	1-408-519-3800	
Taichung	886-4-2372-5058	Osaka	81-6-6267-1887	Germany	Munich Düsseldorf Amberg	Irvine	1-800-866-6008	
Kaohsiung	886-7-392-3600	Nagoya	81-052-291-4860			Ottawa	1-800-346-3119	
		Nogata	81-949-22-2890			Chicago	1-513-742-8895	
China		Korea		France		Canada		
Toll Free	800-810-0345	Toll Free	080-363-9494/5	Paris	33-1-4119-4666	Toronto	1-800-866-6008	
Beijing	86-10-6298-4346	Korea HQ (Seoul)	080-363-9494/5			Brazil		
Shanghai	86-21-3632-1616	Singapore	Singapore 65-6442-1000	Italy		Toll Free	0800-770-5355	
Shenzhen	86-755-8212-4222			Milan		39-02-9544-961	São Paulo	55-11-5592-5355
Kunshan	86-512-5777-5666			UK		Newcastle London	44-0-191-262-4844 44-0-208-317-1380	Itajuba
Hong Kong	852-2720-5118	Malaysia		Spain				Mexico
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		Jakarta	62-21-751-1939	Ireland		Galway	Bursa	90-850-840-3995
		Australia		Galway			353-91-792444	
		Toll Free	1300-308-531					
		Melbourne	61-3-9797-0100					
		India						
		Bangalore	1-800-425-5071					
		Pune	91-94-2260-2349					

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