

# Embedded Software Solutions

## Power your Intelligent Systems

- Embedded Applications
- SUSIAccess
- Embedded OS
- Embedded BIOS



**ADVANTECH**

*Enabling an Intelligent Planet*

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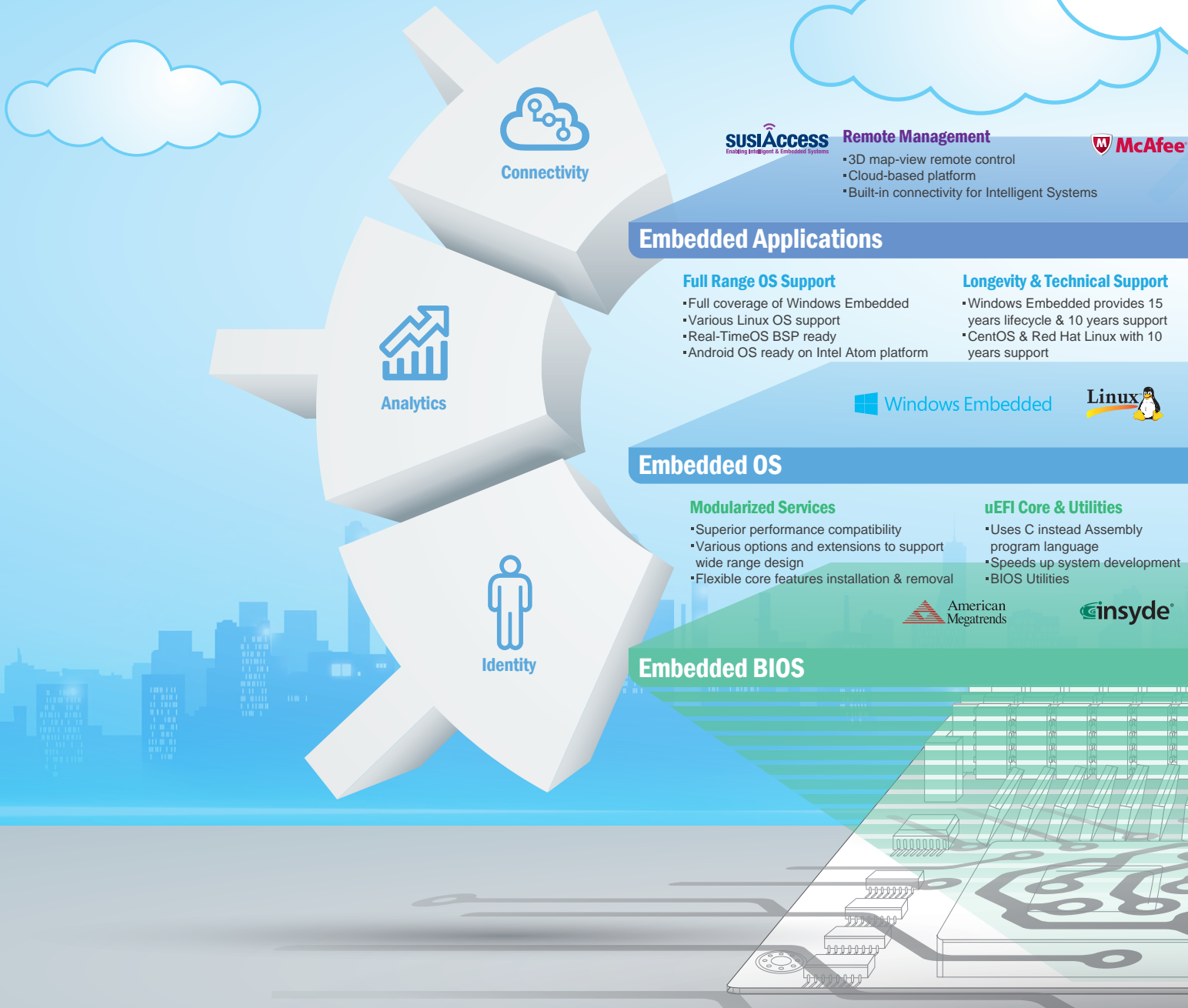
# Embrace Intelligent Systems

"Intelligent Systems are transforming the embedded industry and driving value among M2M and the Internet of Things. Billions of new users and billions more machines will drive the intelligent systems market to over 5 billion units and nearly \$2.4 trillion in revenue by 2017."

2013–2017 Market Forecast and Analysis, IDC

## The Next Big Opportunity for Intelligent Systems

The next big opportunity for technology suppliers, system vendors, and service providers is being defined today by the migration from traditional embedded systems to **intelligent systems**. An intelligent system centers on the **integration of higher plane hardware and software technologies** that allow for user reconfiguration, enable autonomous operation, access the internet, and extend the usage model of the system. What is apparent is that intelligent systems, in combination with the cloud, location based services, and social networks, will be able to reach the last node or touch the consumer.



# Embedded Software Solutions

## Power Your Intelligent Systems

Advantech provides customers with complete embedded software and cloud services to power, manage and connect your intelligent systems. The complete embedded software offerings - from BIOS, firmware, operating systems, and software applications – can fully power the essential elements of intelligent systems: connectivity, manageability, identity, analytics, security, and user experience.

### SUSIAccess

Enabling Intelligent & Embedded Systems

#### Industrial Cloud

##### System Security

- Whitelisting technology
- Zero-day attack protection
- Illegal operation control
- Military level security



##### Backup & Recovery

- Protects data and devices
- Scheduled backup
- One-click recovery



##### Reduce Total Cost Ownership

- Reduce development time
- Reduce engineer resource
- Reduce total cost

##### Tools & Utilities Ready

- Windows Embedded Utility
- Enhanced Kernel for Windows Embedded Compact



##### Secure BIOS

- Customizable Storage Lock to secure customer's data access
- Customizable Flash Lock to secure BIOS Flash data & settings
- Secure Boot to only boot with right signature



#### SUSI & iManager APIs

##### Data Protection

- Software Key-Pro to secure Application
- Platform unique ID

##### Enhanced System Reliability

- OS Independent : iManager
- Watchdog: Single and Multi-Level
- Hardware Monitoring

##### Unified APIs Ready

- Supports PICMG EAPI (Embedded Application Programming Interface)
- Never recompile applications with unified APIs
- Hardware Platform upgrade without software re-design



Manageability



User Experience



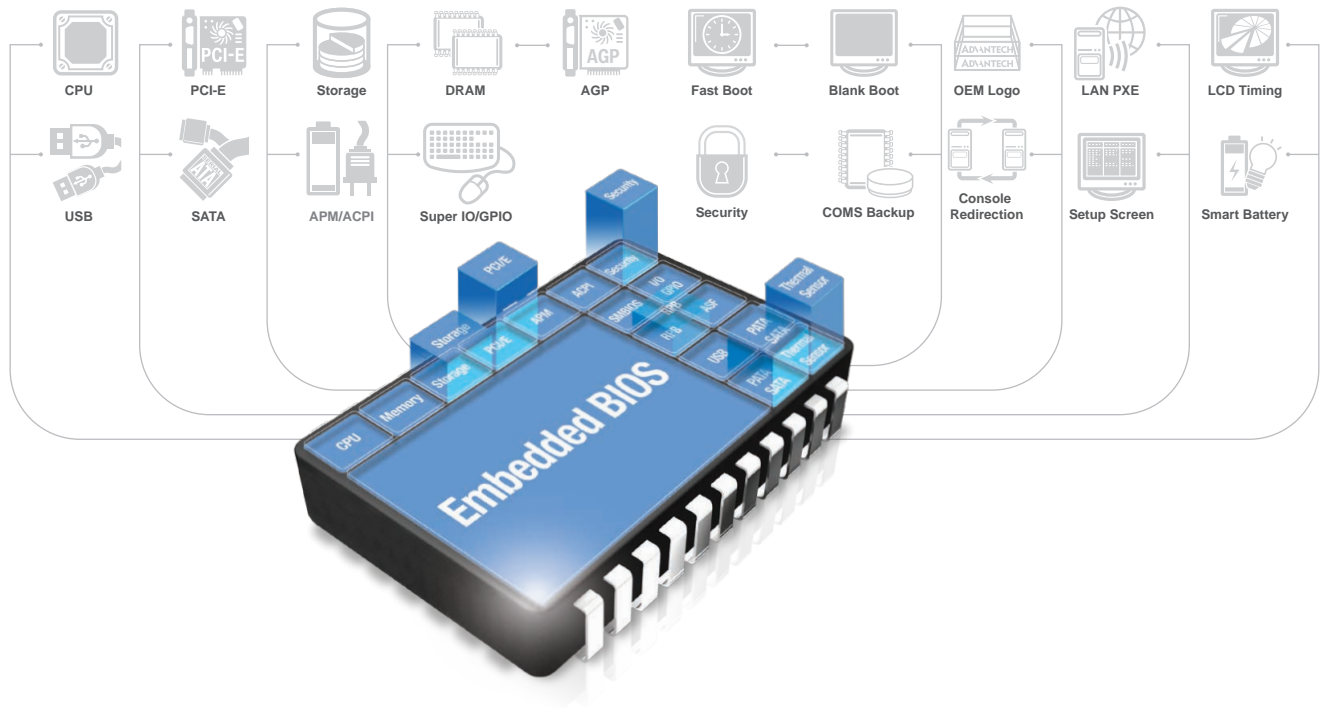
Security



#### iManager

# Embedded BIOS

Advantech provides full-featured Embedded BIOS solutions that deliver the superior performance compatibility and functionality that systems integrators need. The various options and extensions let customers tailor their products to a wide range of designs for their target markets. In addition, Advantech continues to focus on providing more unique embedded features that help differentiate your solution from the competition.



## Core Competence

### Modularized BIOS

We offer modularized solutions for the uEFI environment to speed up system development: eg. screenshot print outs, recovery, BIOS Flash and Fastboot. We also offer a customizable method for creating enhanced secure systems.

### Secure BIOS

Advantech provides 3 methods to secure your systems

- Secure the BIOS Flash to avoid the BIOS changes
- Secure storage for operation only on the right platform
- Secure platform boot on the right package

### uEFI Utility

Advantech has developed a series of unique utilities for developers.

- BIOS Manager utility for Read/Write BIOS settings in the Windows environment.
- On-click BIOS upgrade, combines the BIOS image with desired parameters.

# Embedded OS

## Complete Solution for Rapid Application Development

Advantech provides custom Embedded OS and built-in configuration utilities on our platforms to facilitate system integration.

- Various OS Support
- Longevity Support
- Total Cost Ownership
- Tool & Utility Ready

## Windows Embedded

Microsoft offers a comprehensive suite of operating systems and tools that can help device manufacturers reduce time to market and improve connected device performance. Windows Embedded technology powers embedded systems that enable organizations to connect to IT infrastructure, increase staff efficiency, and improve customer satisfaction. Advantech started using Windows Embedded from 1996, and over 15 years experience later we are now a Microsoft Valued Professional (MVP) expert and can provide complete services:

### Customization Services

We offer a ready to use embedded OS image. It provides a complete set of components that enable rapid proto-typing and application development.

- Windows Embedded Standard 2009, 7, and Windows Embedded 8 Standard
- Windows Embedded POSReady 2009, 7 and Windows Embedded 8, 8.1 Industry
- Windows CE 4.2, 5.0, 6.0 and Windows Embedded Compact 7 and 2013.

### Board Support Package (BSP) Services

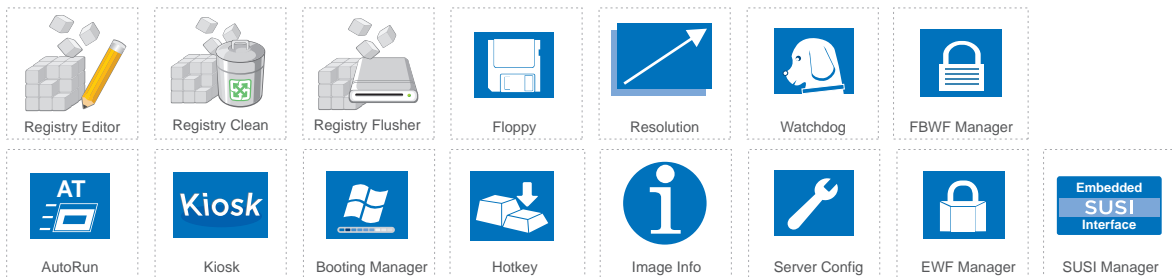
We work with silicon vendors and independent hardware vendors to get the latest embedded drivers. We integrate them with our modified kernel, boot loader and our own SUSI Software API, & embedded utilities to produce a fully tested and verified BSP. With Advantech BSP, a customer can build up a Windows CE Image and rapidly bring up the operating system on their custom hardware.

### Innovation Utility Services

- Booting Manager: A utility for setting boot-up logo, color and shell application
- EWF Manager: A utility for Microsoft HORM (Hibernation Once Resume Many) technology, and to control the write protect function.

### Strength with Microsoft partnership from OEM to Distribution

- Windows Embedded Gold Partner form 2004.
- Early access member with Windows Embedded 8 and Windows Embedded Compact 2013.





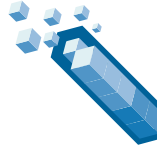
# Real-Time OS

Advantech provides a series of Real-Time OS services for Advantech Platforms, including VxWorks, QNX, and Windows Embedded Compact (Win CE).



## Multi-Core BSP Support

- Supports latest multi-Core CPU and Chipset
- Complete verification on Advantech Platforms



## Installation Wizard

- Advantech CE-Builder for Windows CE OS,
- Advantech VxTool for WindRiver VxWorks
- Advantech QNX-Builder for QNX OS



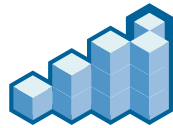
## Fast Boot-up

- Modify driver loading process to speed boot-up process
- Windows CE less than 3 seconds
- QNX loader for less than 6 seconds



## Software API/Utility Service

- SUSI Software API for controlling the onboard hardware I/O
- Design new API for custom functions
- Useful embedded Utilities for fast deployment



## System Performance Optimization

- Enhanced Kernel for Windows CE
- Customized background services depending on application
- Modified driver for IDE/USB/SATA/COM Port etc.



## Global Software Design Expertise

Design Support Centers are located in Taiwan Taipei, China Xi'an and US Irvine to offer instant design service

## Wind River VxWorks

### Powering the World's Real-Time Platforms

The stakes are high for your real-time embedded systems and you can't afford failure. Wind River® has a long history of consistently supporting your key requirements for high performance, absolute determinism, and minimal footprint—a history that has kept VxWorks® the market-leading real-time operating system (RTOS) year after year.

As the first RTOS with 32-bit and 64-bit processing, multi-core and multi-OS support, and diverse connectivity options, VxWorks provides you with the functionality and support you require to stay competitive. And as your platform plans evolve to take advantage of next-generation processor capability, we continue to stay ahead of the technology curve, continually expanding VxWorks' proficiency to extract maximum performance from the new multi-core landscape. VxWorks' unique combination of high speed and scalability with trusted safety and security capabilities will keep your platforms running at the leading edge of the latest embedded technology.

## QNX

The QNX® Neutrino® RTOS is a full-featured and robust OS that scales down to meet the constrained resource requirements of realtime embedded systems. Its true microkernel design and its modular architecture enable customers to create highly optimized and reliable systems with low total cost of ownership.

### True microkernel OS

The QNX Neutrino RTOS (realtime operating system) is so reliable because it is a true microkernel operating system. Under QNX Neutrino, every driver, protocol stack, filesystem and application runs in the safety of memory-protected user space, outside the kernel. Virtually any component can fail — and be automatically restarted — without affecting other components or the kernel. No other commercial RTOS offers this degree of protection.

### Multicore migration

The QNX Neutrino RTOS has a field-proven strategy for migrating from single-processor to multi-processor embedded environments. Its unique bound multi-processing (BMP) technology takes the risk out of migration by enabling developers to decide exactly where every process and thread will run.

# Linux & Android Solutions

## Linux

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Linux is a popular operating system in the embedded market, Advantech provides three major Linux integration services:

### General Linux Distribution Services

We offer installation and verification for Ubuntu, SUSE/open SUSE, Red Hat, Fedora, and CentOS, depending on customer requirements.

### Linux Driver Modification & Configuration Services

We offer SUSI software API/driver development service based on the customer's defined Linux Kernel or distribution, including API for Watchdog Timer, GPIO, SMBus, backlight on/off, and brightness. We can also help configure the right parameters for graphic drivers, and network drivers etc.

### Third party solutions

We leverage McAfee and Acronis solutions for several Linux distributions to provide a security and backup/recovery solution.



## Android

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Android has become one of the fastest-growing embedded operating systems for its openness, customizable features, and robust ecosystem. But growing competitive pressures make it difficult for many companies to meet time-to-market deadlines with the differentiated features and quality levels demanded by their customers.

Android gives you everything you need to build best-in-class app experiences. It gives you a single application model that lets you deploy your apps broadly to hundreds of millions of users across a wide range of devices—from phones to tablets and beyond.

Android also gives you tools for creating apps that look great and take advantage of the hardware capabilities available on each device. It automatically adapts your UI to look its best on each device, while giving you as much control as you want over your UI on different device types.

Advantech provides Board Support Package (BSP) Services: we work with Intel and independent hardware vendors to get the latest embedded drivers. We integrate and produce a fully verified BSP that helps customers quickly build up Android OS for their solution.

# SUSIAccess

## Enabling Intelligent & Embedded Systems














Poised to be a key player in the new generation of technologies enabling an intelligent planet, Advantech is now offering a cutting-edge, cloud-based service –SUSIAccess, a smart and unique software platform for embedded developers. SUSIAccess featured remote device management to help customers centralize monitoring and managing of remote embedded devices in real-time. By providing a ready-to-use remote access solution, system integrators can focus more on their own applications and let SUSIAccess do the rest – configure systems, monitor device health, and embedded security. Now, all Advantech Embedded Computing products come pre-loaded with SUSIAccess. It's cloud-based and provides on-demand software services so SIs can easily download and upgrade applications when they need them.

### Built into All Advantech Solutions



**Remote Device Management**  
**Embedded Security**  
**Software Platform for Embedded Developers**

### Key Benefits and Features for Embedded Developers

System Monitoring	Remote Control	System Security	Multiple OS & Platforms
 Device Monitoring	 Remote KVM	 System Recovery	 Windows Embedded
 Automatic Alerts by Email/SMS	 Power On/Off	 System Protection	 Linux
<ul style="list-style-type: none"><li>Stay in sync with device health status</li><li>Automatically send alarm notifications</li></ul>	<ul style="list-style-type: none"><li>Quick access to remote devices</li><li>Save maintenance and energy cost</li></ul>	<ul style="list-style-type: none"><li>Protect system from any threats</li><li>Timely backup and recovery systems</li></ul>	 iOS
			 Android
			 Handheld
			 Mobile Devices
			 Tablets



# SUSIAccess Success Stories

Applying SUSIAccess helps customers dramatically save maintenance and energy costs, especially when embedded devices are deployed across widely separated locations. Here are some condensed SUSIAccess success stories featuring different applications, such as digital signage, medical, transportation, retail, ATMs, and factory automation.



**ARK-DS520**  
Digital Signage Player

## Efficient Network Management for Digital Signage

Typical digital signage deployment in a hospital includes more than 100 screens and needs to be carefully managed. SUSIAccess remote technology helps IT personnel save maintenance time and increase efficiency. As signage displays often need to be turned on and off daily, and require frequent content changes, SUSIAccess provides batch control and remote KVM for quick access.

## Empowering Bank Security: System Protection for ATMs

A critical task for ATMs is securing customers' personal information, so systems need to have robust security software firewalls that resist virus attacks, and data theft by hackers. SUSIAccess provides an effective way to block unauthorized applications and code, and eliminates the need for IT administrators to manually maintain lists of approved applications. By using a single, integrated management platform, companies greatly reduce the amount of IT resources needed to manage endpoint security across multiple consoles.



**AIMB-501**  
Industrial Motherboards



**ARK-VH200**  
In-vehicle Surveillance System

## Real-time Management for Traffic Surveillance

At present, governments deploy surveillance systems widely to monitor vehicle traffic and other public areas. These systems must be robust, and able to record and transmit video to storage devices on a 24/7/365 basis. Therefore, road surveillance systems must be highly available and easy to recover if errors occur. SUSIAccess provides not only real-time monitoring to check device / HDD status and internet connection, but also quick access to adjust system settings and perform troubleshooting. It ensures reliable video data under all conditions.

## Reducing Maintenance Costs for Retail POS Devices

Typical POS machines are located in stores and shopping centers and require huge maintenance efforts. SUSIAccess provides a Client-Server-Console management interface to solve these issues. It can easily set up multiple devices via the management console. It saves maintenance effort. From an energy-savings point of view, the POS machine can be set up to automatically turn off during the night. It is easy to set up daily maintenance schedules which turn a player off during certain times and back on as needed. The on/off function can be implemented even if the power button on the machine has been switched off.



**UTC-515**  
All-in-one Touch Computer



**UNO-2173A**  
Automation Controller

## Turnkey Solutions for Factory Automation

This customer was looking for a total solution, including server and device computing solutions to fulfill their requirements for factory automation, along with compatible software services and programs to help take full control via a remote management function. The combination needed to allow the system to operate in critical temperature environments, and at the same time reduce cost and enhance management efficiency. Advantech server-grade and device computing with SUSIAccess was chosen for its winning combination of powerful, ruggedized features and complete remote control functions.

# Embedded Applications

## McAfee

McAfee Embedded Security software is the industry's first and only solution to secure embedded devices and automate the enforcement of software change control policies, helping manufactures ensure that their products and devices are protected from cyberthreats and attacks. McAfee solutions span a wide range of technologies to address all challenges, including application whitelisting, change management and integrity. Our solutions can be tailored to meet the specific design requirements for a manufacturer's device and its architecture. It helps accelerate time-to-market by providing a quick to deploy software solution that provides out of the box security, lockdown, software change control and compliance, the essentials of a production ready system.

### Advantech offers a total solution for your Embedded Security

#### Level 1: McAfee Application Control

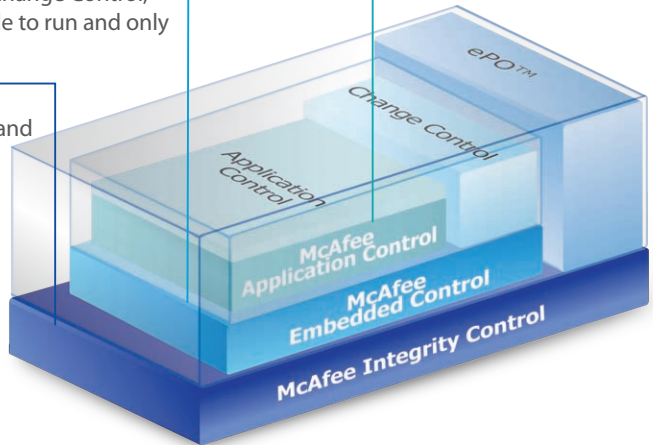
Application Control is McAfee's fundamental product to provide an effective way to block unauthorized applications and code on fixed-function devices.

#### Level 2: McAfee Embedded Control

McAfee Embedded Control combines Application Control and Change Control, providing advanced protection by only allowing authorized code to run and only authorized changes to be made.

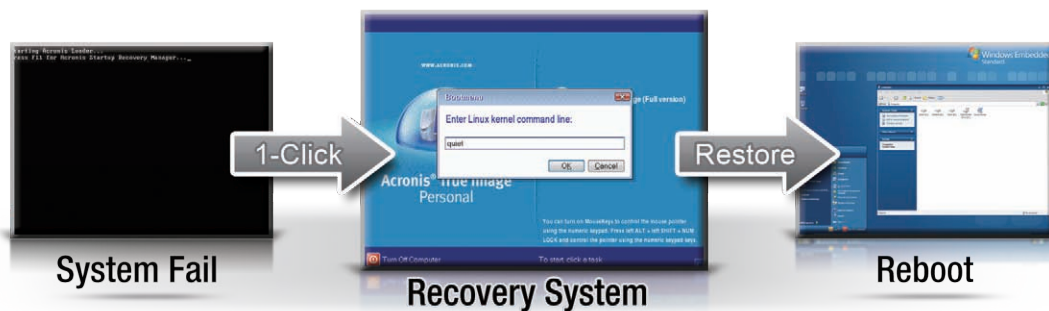
#### Level 3: McAfee Integrity Control

McAfee Integrity Control combines McAfee Embedded Control and the McAfee ePolicy Orchestrator® (McAfee ePO™) console—providing integrated audit and compliance reports to help satisfy multiple compliance regulations.



## Acronis

Advantech Acronis solution provides a powerful data recovery utility: OEM Acronis True Image, which enhances the stability of industrial products, prevents unexpected hazards from harming important data and systems, minimizes loss, and reduces reaction time for improving the software protection capability, all of which keeps your embedded devices alive and thriving.



## Benefits

- System Backup – Secures your software and important data, saving them to hidden storage preventing accidental damage.
- Rapid Data Restore – 1-click recovers the entire system to its original state so disasters have no effect.
- Secure Data Destruction – Absolute removal of sensitive hard drive data prevents theft.

# SUSI APIs

If you are a software developer or a system integrator you are all too familiar with the following problem: You are writing an application that requires direct hardware access. Unfortunately, that access is no longer available in modern operating systems. So you have to locate and study reams of specifications to write the appropriate drivers, and that is a complex and time-consuming job. To ease the burden, Advantech has created SUSI (Secure and Unified Smart Interface), a suite of application program interfaces that allows users to directly monitor and control digital I/O, I2C, CPU stepping speed, watchdog timers, smart fans and access hardware monitoring sensors.



## iManager APIs

To fulfill the ever-changing specialized demands of various industrial applications, Advantech designed an intelligent self-management agent with software control functions and standalone hardware design: iManager, a built-in solution chip, is a perfect solution that provides a standardized API, integrating several unique platform consolidating functions needed by embedded system integrators to help improve consistency, lighten the development effort and speed-up a product's time-to-market.

### Benefits

#### OS-Independent

- Cross-Platform Programming
- Real-time Response
- Plug & Play

#### Self-Management

- Intelligent Resource Management
- Auto-Protection & System restore
- Security Enhancement

## Software API (SUSI: Secure & Unified Smart Interface)

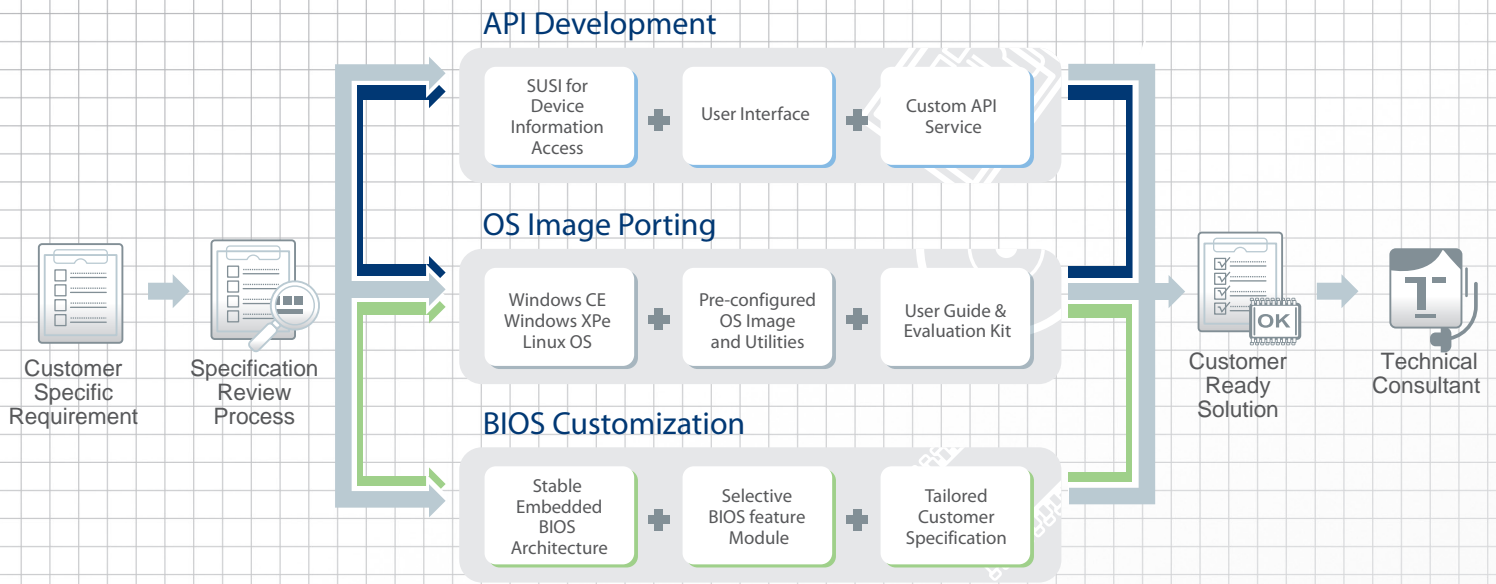
### Better Products, Faster Time-to-Market, More Reliable

**Time to market** — Not having to delve into chipset hardware specs and develop drivers for each new board and application reduces the overall project effort and means quicker time to market and therefore profit.

**Enhance hardware reliability** — Use of SUSI APIs can help reduce heat and power consumption, resulting in increased reliability. This allows the setup of warning mechanisms, event triggers, display adjustments, and other critical settings and actions that enhance overall system reliability and lower maintenance requirements.

**Flexible upgrades** — New functions and settings can easily be implemented via SUSI and new versions of SUSI; no need to rewrite an entire application.

# Embedded Software Service Flow



## Regional Service & Customization Centers

### China

Kunshan  
86-512-5777-5666

### Taiwan

Taipei  
886-2-2792-7818

### Netherlands

Eindhoven  
31-40-267-7000

### Poland

Warsaw  
48-22-33-23-740 / 741

### USA

Milpitas, CA  
1-408-519-3898

## Worldwide Offices

### Greater China

**China**  
800-810-0345  
Beijing 86-10-6298-4346  
Shanghai 86-21-3632-1616  
Shenzhen 86-755-8212-4222  
Chengdu 86-28-8545-0198  
Hong Kong 852-2720-5118

**Taiwan**  
0800-777-111  
Rueiguang 886-2-2792-7818  
Yang Guang 886-2-2792-7818  
Xindian 886-2-2218-4567  
Taichung 886-4-2378-6250  
Kaohsiung 886-7-229-3600

### Asia Pacific

**Japan**  
0800-500-1055  
Tokyo 81-3-6802-1021  
Osaka 81-6-6267-1887

**Korea**  
080-363-9494  
Seoul 82-2-3663-9494

**Singapore**  
Singapore 65-6442-1000

**Malaysia**  
1800-88-1809  
Kuala Lumpur 60-3-7724-3555  
Penang 60-4-397-3788  
60-4-397-4188

**Indonesia**  
Jakarta 62-21-769-0525

**Thailand**  
Bangkok 66-2-248-3140

**India**  
1800-425-5071  
Bangalore 91-80-25450206

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1300-308-531  
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**Germany**  
Münich 49-89-12599-0  
Hilden 49-2103-97-885-0

**France**  
Paris 33-1-4119-4666

**Italy**  
Milano 39-02-9544-961

**Benelux & Nordics**  
Breda 31-76-5233-100  
Roosendaal 31-165-550-505

**UK**  
Reading 44-0118-929-4540

**Poland**  
Warsaw 48-22-33-23-740/741

**Russia**  
Moscow 8-800-555-01-50  
7-495-232-1692

### Americas

**North America**  
1-800-866-6008  
1-888-576-9668  
Cincinnati 1-513-742-8895  
Milpitas 1-408-519-3898  
Irvine 1-949-420-2500

**South America**  
Mexico 52-55-6275-2777

**Brazil**  
São Paulo 0800-770-5355  
55-11-5592-5355

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