

WISE-DeviceOn

Embedded-IoT, Advantech

Technical Support



Agenda

- Industrial Pain Points and IoT Trends
- Benefit
- Solution Features and Deployment Options
- Pricing Details
- Customer Case Studies



Industrial Pain Points

Medical Equipment



Digital Signage



Semiconductor



Banking Machine

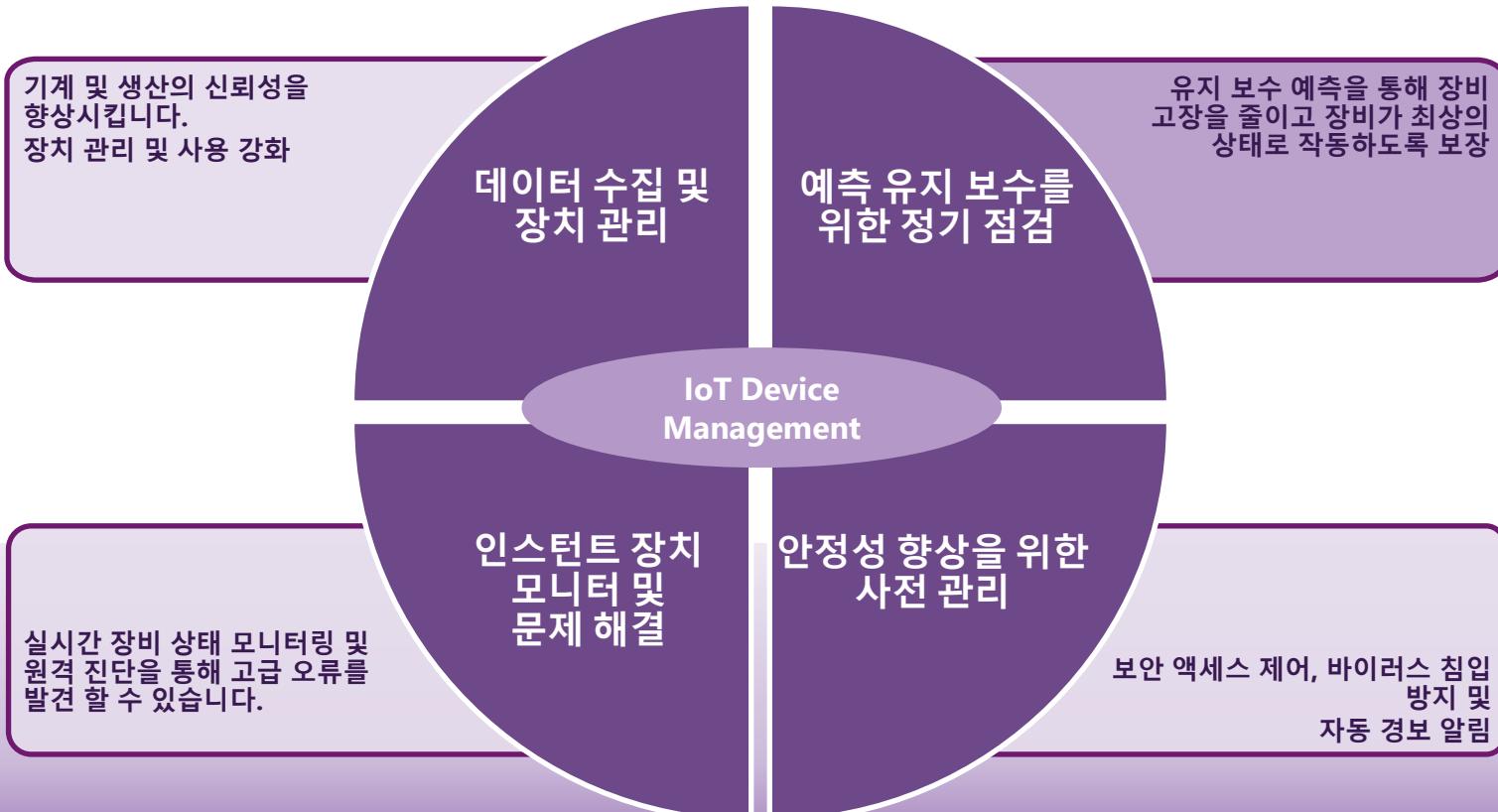
Transportation

Smart Factory



IoT Device Management

IoT 애플리케이션을 단순화하는 효율적인 솔루션 필요



Value Proposition

WISE-DeviceOn
Empowers Edge Intelligence



**Powerful, open and flexible
Data & Device management services
enabling IoT Solutions across many industries**
(I4.0, Smart Manufacturing, Smart Buildings/Cities, Energy & Utilities, Smart Agriculture,)

1

Single Platform supports
multiple device OS

Window, Linix, Android

4

Infra-independent with
flexible deployments

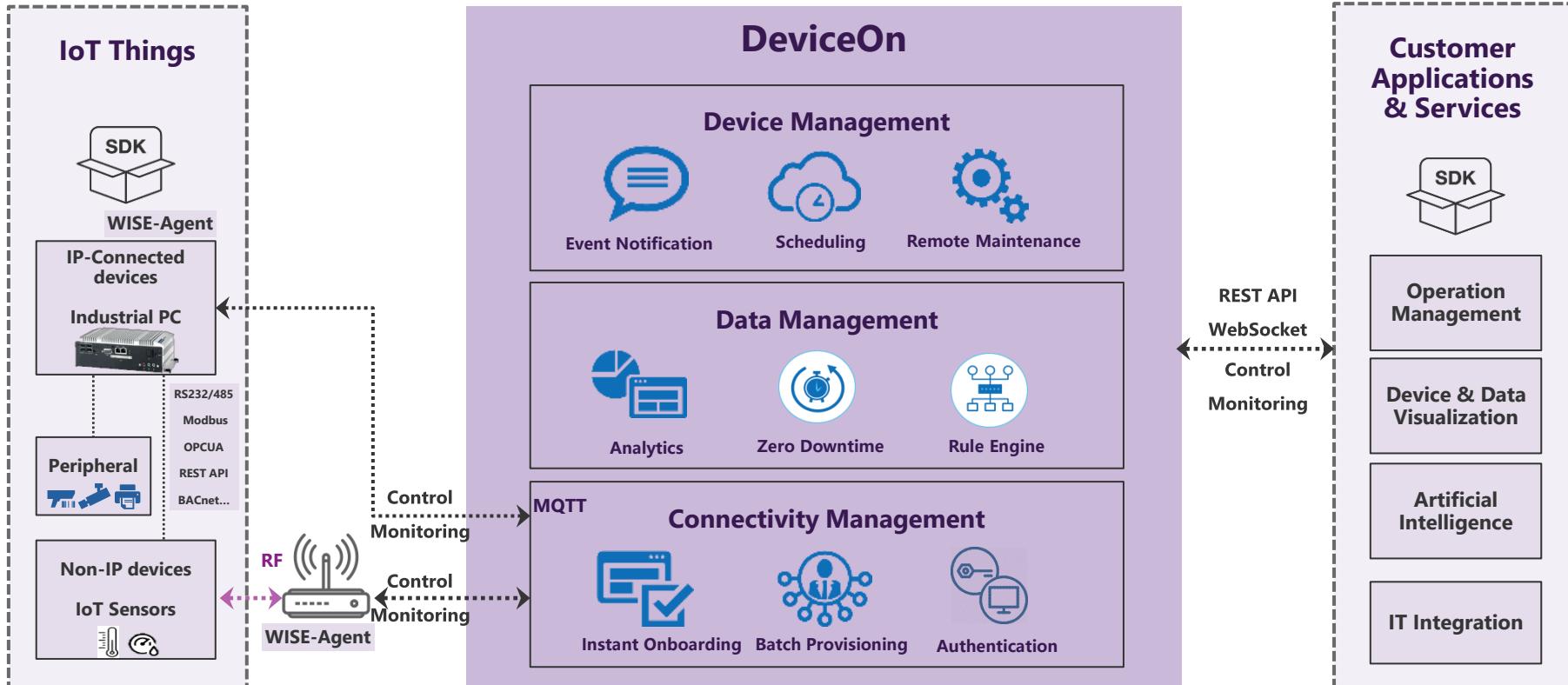
On-Premises, Private Cloud, Public Cloud,
Container

>80%

Greatly reduce operating
costs

Remote device management, S/W updates
and automatic alert to solve remote device
problems, maintain and operate more devices

IoT Device Management & Data Flow



Cross-platform Connectivity

WISE-PaaS/EnSaaS

Microsoft Azure

kubernetes

VM

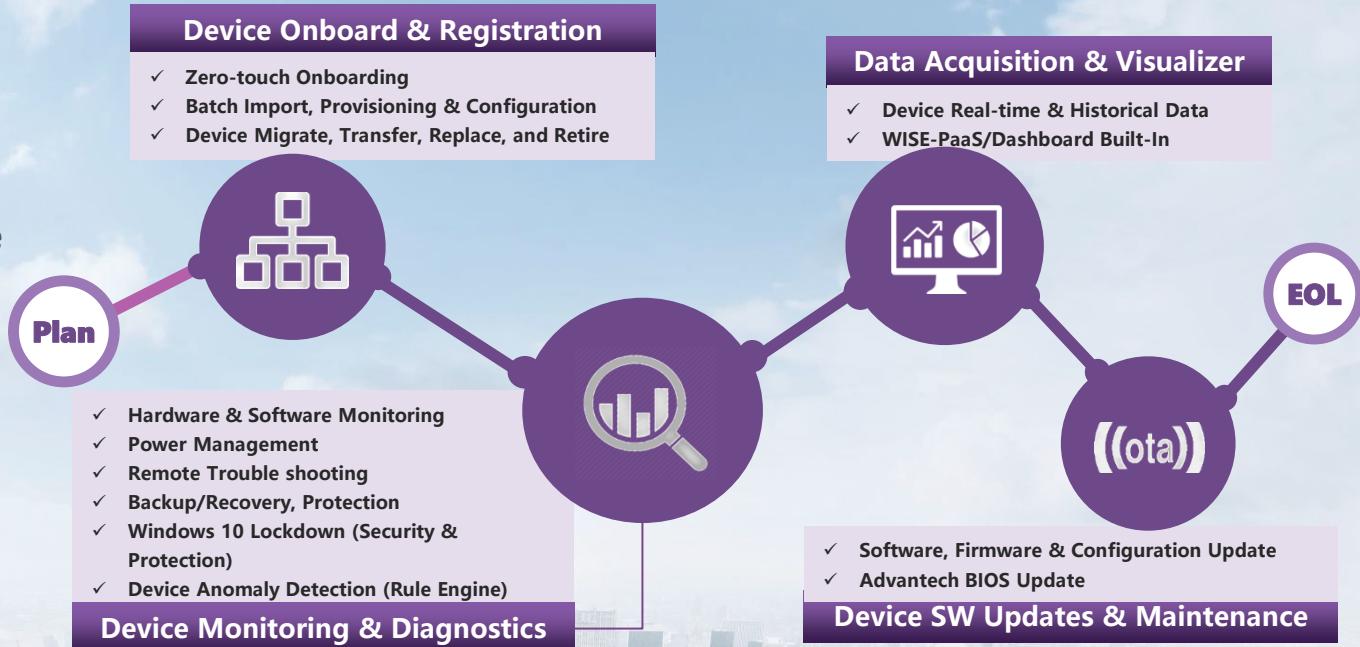
DFSI implementation

Device Lifecycle Management

Onboard, Configure, Monitor, Update, Retire

WISE-DeviceOn

Empowers Edge Intelligence

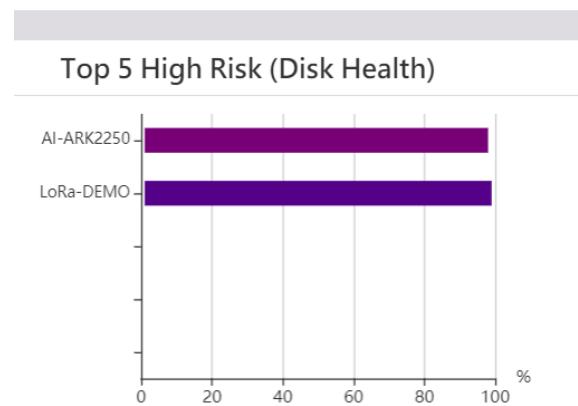
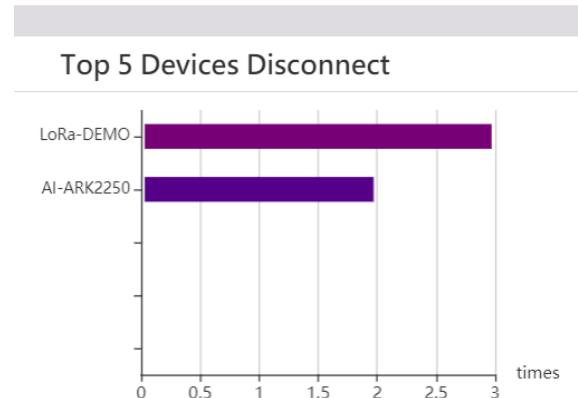


Benefit

- **Free License**
- **Device Monitoring & Management**
 - **SUSI API**
 - Control – GPIO / SMBus / I2C
 - Hardware Monitor – Watchdog / Fan speed / Temperature / Voltage, Etc
 - Hardware Control – PWM
 - Display – Backlight On/Off, Brightness Control
 - Power Saving – CPU Speed, System Throlling
- **Full Packages**
 - Web Server / Database / Dashboard / RestfulAPI
- **Easily develop IoT solutions**

Hardware Fault Case

- **System Down**
 - Overheat
 - CPU overload
- **CPU & System Fan Fault**
- **Disk Fault**



Real-time Monitoring

Assist you in managing, tracking, securing, and sustaining all your devices

This screenshot shows the RISE-Device dashboard with various monitoring panels. At the top, there are four main panels: 'Server Runtime' (last updated 03:00:16), 'Storage Usage' (New: 21%), 'CPU Usage' (New: 0.8%), and 'Memory' (New: 1.3%). Below these are two more panels: 'Device Status' (20 online devices, 773 assigned devices) and 'Assigned Device' (544 assigned devices). The bottom section displays 'Top 5 Devices Discovered' and 'Top 5 Device Network Traffic'.

This screenshot shows the DeviceOn interface under the 'Device List' tab. It displays a table of devices with columns for STATUS, DEVICE NAME, UPTIME, POWER, PROTECTION, BACKUPPCLOUD, GROUP NAME, and WIRE CPU LOAD. Devices listed include 'ARMB-04', 'DESKTOP-001...', 'DespotiTyp1', 'LightSensor', and 'M800522'. Each device entry includes a status icon (green circle with a dot), a power icon, and a link to its configuration page.

This screenshot shows the DeviceOn interface under the 'Device Monitoring' tab. It features several circular gauges: 'Network Speed' (80 Mbps), 'CPU Usage' (1%), 'Memory Usage' (27%), and 'Software Process' (31 seconds). Below these are two line graphs: 'Network Monitoring' (showing traffic over time) and 'Temperature' (showing temperature over time).

Dashboard Overview

Real-time SW & HW Status

Device List & Health Status

HDD Predictive Maintenance



Embedded Boards



Embedded PCs



Embedded Computers



Wireless IoT Gateways



Vertical Focused Solutions

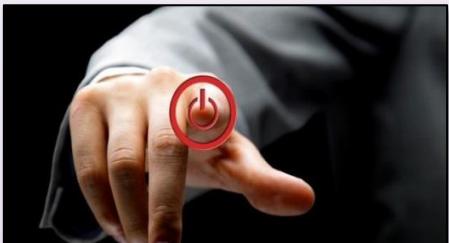
Device Secure Control

Configure and control your device with ease

- **Remote Power Management**
- **HW Watchdog**
- **Windows Lockdown**
 - Volume Control
 - LVDS Screen Brightness
 - USB Lockdown, Keyboard Lock
 - Touch Screen & Gestures Lock
 - Notification block
 - UWF Protection

The screenshot shows the software's main interface with a sidebar on the left containing 'Overview', 'Device' (which is highlighted with a red border), 'Account', 'Event Log', and 'Setting'. The main area has tabs for 'Device List' and 'Device Monitoring'. A 'SELECT GROUP' dropdown is set to 'Default'. On the right, a 'SELECT DEVICE' dropdown is set to 'ARK-1550'. A 'Remote Control' button is also highlighted with a red border. Below these are several control panels with icons and sliders:

- Screen Shot
- Terminal
- Remote Desktop
- Audio Volume Control
- LVDS Screen Bright...
- USB Lockdown
Disable USB Drives and Removable Disks
- Keyboard Lock
Disable Function Key - Ctrl, Alt, WinKey
- WatchDog ResetTime
- Touch Screen Lock
Disable Touch Screen Function
- Touch Gestures Lock
Disable Touch Gesture Function
- Windows Notification
Disable Windows Notification
- UWF Status
Disable UWF Notification



Simplicity of Protection & Backup/Recovery

- Powered by **ACRONIS** Backup and Recovery technology
 - Hot backup without interrupting current tasks
 - Regular automated backup with dynamic scheduling
- Powered by **McAfee** application control technology
 - Dynamic whitelisting model to block unauthorized apps
 - No continuous virus definition updating required

The screenshot shows the DeviceOn software interface. On the left is a sidebar with icons for Overview, Device, Account, Event Log, and Setting. The main area has tabs for All, Connected, and Disconnected. A sub-tab 'Warning' is selected. The table lists the following devices:

Device Name	Actions
admin-PC	McAfee Solidifier is currently disabled
Advantech	Device Busy
DS-862-PC	McAfee Solidifier is currently disabled
PWS-870_3	Operation
TPC-PC	Operation
User-PC	Operation
UTC-521E-PC	Operation
UTC-620	Operation

At the bottom, there are navigation buttons for First, Previous, Next, Last, and a page indicator 'Page 1/1 pages'. The footer contains the text 'Version 4.1.0 ©2019 Advantech Corp. All rights reserved.'

The screenshot shows the DeviceOn software interface. The sidebar and tabs are identical to the first screenshot. The main area has tabs for All, Connected, and Disconnected. A sub-tab 'Actions' is selected. The table lists the following devices:

Device Name	Last backup time	Actions
admin-PC	N/A	Operation
Advantech	N/A	Operation
DS-862-PC	N/A	Recovery: Acronis is not ready Preparing
PWS-870_3	N/A	Operation
TPC-PC	N/A	Operation
User-PC	N/A	Operation
UTC-521E-PC	N/A	Operation
UTC-620	N/A	Operation

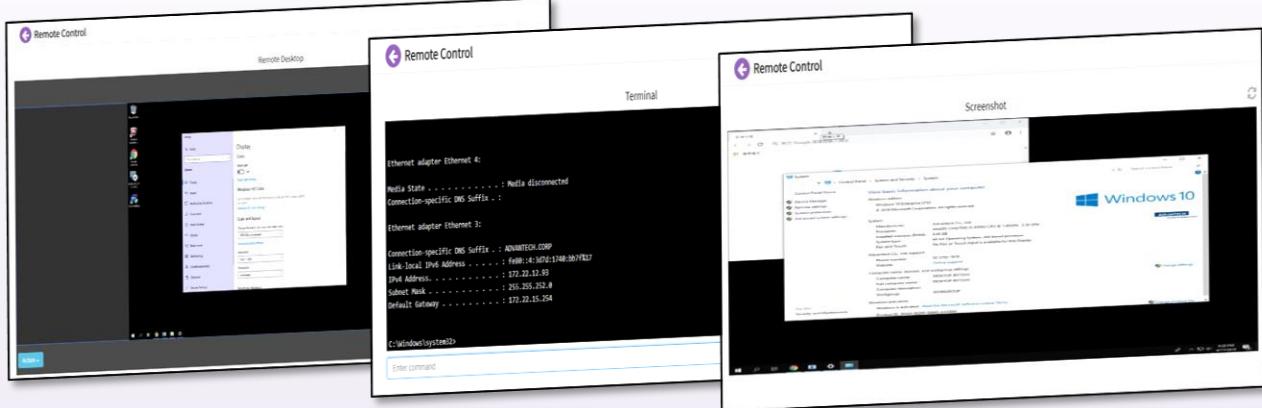
At the bottom, there are navigation buttons for First, Previous, Next, Last, and a page indicator 'Page 1/1 pages'. The footer contains the text 'Version 4.1.0 ©2019 Advantech Corp. All rights reserved.'

Remote Diagnostics & Notification

Monitor errors and bugs and rectify them in real-time to minimize device downtime

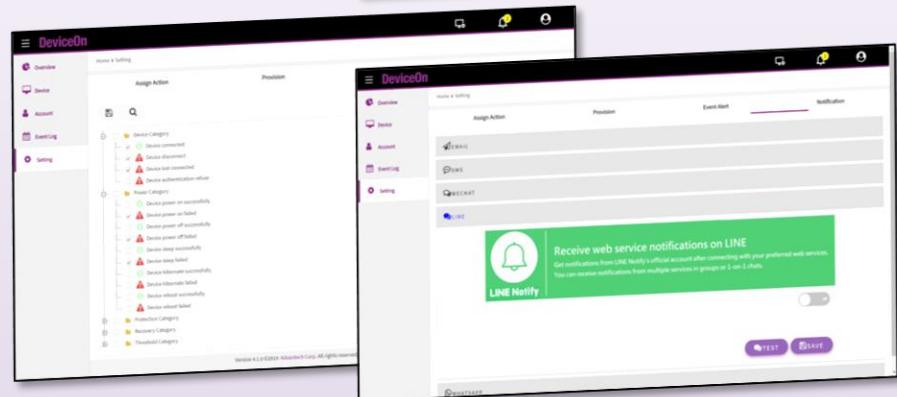
- **Remote troubleshooting tool to reduce maintenance cost**

- Remote Desktop
- Screenshot
- Terminal



- **Notification Services**

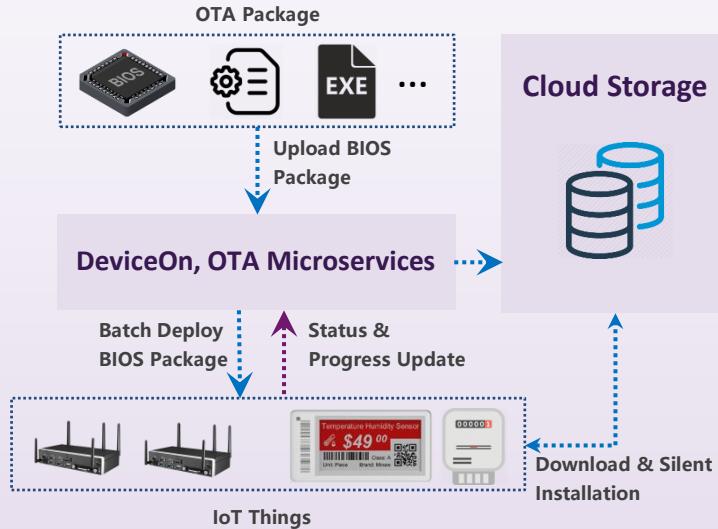
- Line/Wechat/WhatsApp/Mail/SMS



Device Software Updates & Maintenance (OTA)

Simplify Remote provisioning and updates on firmware, driver, and software at scale

- OTA storage/package management and online packing tool
- Software remote patching and updates (Single/Group/Rule)
- Update status report



Configuration

Replace Configuration & File

OTA Upgrade

SW/FW Updates

Dispatch and Update Software and Firmware

Windows Security Update

Offline to Patch Windows Security

Container

Container Management & Updates

Software Development Kit

Core Services to Expand IoT Applications

- ✓ REST API (Web Service Integration)
- ✓ WISE-Agent & Plugin SDK (Data Acquisition)
- ✓ Built-In Dashboard (Real-time Visualization)
- ✓ UI Extension Framework (Customized Apps)



Sensor & Peripherals

RS232/485, Modbus, OPCUA, REST API, BACnet...

Work Anywhere on Popular Platform and Service

DEVICE NAME	GROUP	STATUS
1 PC064589	3F-C	Connected
2 PC064590	3F-C	Connected
3 PC064591	3F-C, 3F	Connected
4 PC064592	3F-B, 3F	Disconnected
5 PC064593	3F-B, 3F	Abnormal
6 PC064594	3F-B	Disconnected

Public Cloud Platform

WISE-PaaS/EnSaaS
(Cloud Foundry Container)

 **Microsoft Azure**
(VM, AKS + Azure IoT Hub)



On-Premise Service

 **kubernetes**
(Container PaaS)

 **WISE-STACK**
(Standalone Installation)

WISE-STACK
(EnSaaS Private Cloud)

WISE-DeviceOn

- ✓ **Build-in for All Advantech System and Boards H/W**

- Empower Edge Intelligence with DeviceOn IoT Core Services

- ✓ **A Ready-to-use solution for IoT Device Operation Management**

- Remote Monitor & Control, Automated Alert Notification, OTA SW Updates

- ✓ **Easy-to-Develop SDK for Fast Realizing IoT Industrial Applications**

- WISE-Agent plugin, UI framework plugin, REST API, Visualization Tool

Business Information & Pricing



DeviceOn Promotion Program

Easy and Reliable IoT Device Management

WISE-DeviceOn



Cloud Service (EnSaaS Subscription)

https://wise-paas.advantech.com/zh-tw/marketplace/detailinfo/60#plan_9806WPDO02



VM & AKS on Azure Marketplace

https://azuremarketplace.microsoft.com/en-us/marketplace/apps/advantech.deviceon_on_windows_vm_v1?tab=Overview



VM on AWS Marketplace

<https://aws.amazon.com/marketplace/pp/B08972SVHN>

On-Premise Service (Standalone Version)

https://wise-paas.advantech.com/zh-tw/marketplace/detailinfo/60#plan_32WSWPDOOP03A1

Free for all Advantech Devices!

Promotion License

Promotion program

Free

- From **4/1**, Deploying Azure VM, AKS, EnSaaS Subscription and Standalone version gets FREE LICENSE
- Up to 1000 managed Advantech certified devices



Standard License

One-time Perpetual Package

50 USD
Per devices managed

- Purchasing Standard license for Non-Advantech devices
- Advantech CSP** account gets additional **70% Off** DISCOUNT
- 1-year product support & maintenance

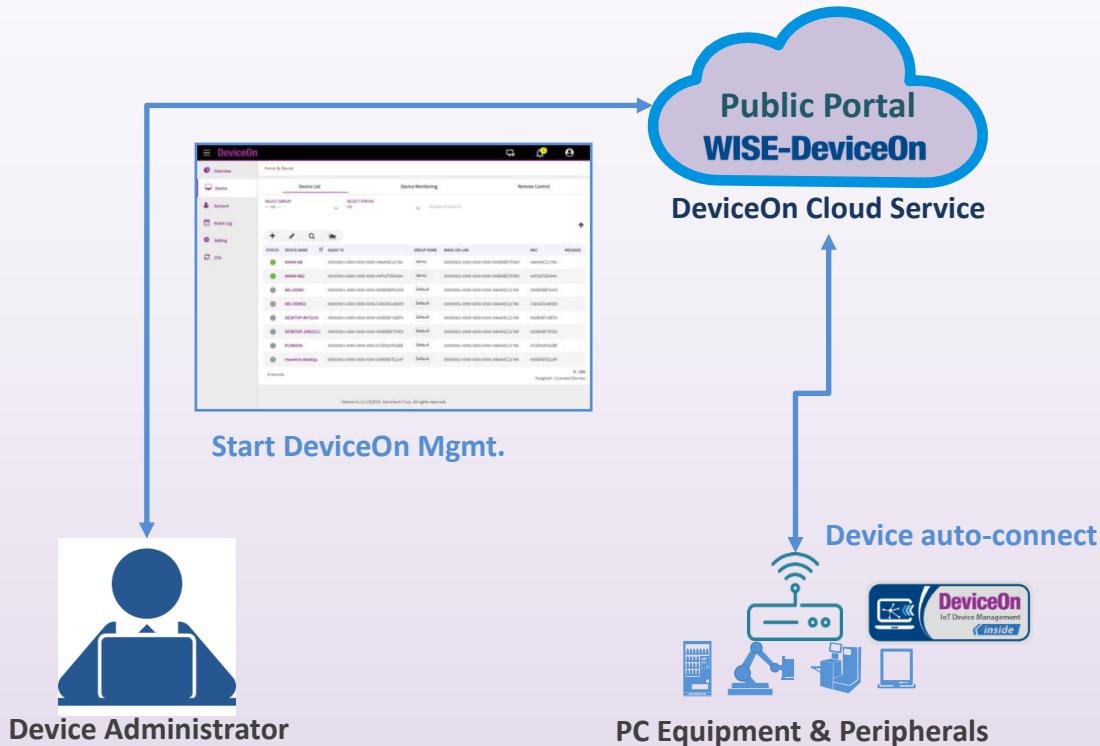
DeviceOn Service Options

Features	DeviceOn.DM	Promotion Program (FREE)	Additional Professional Services
Deployment & Hosting Option	WISE-PaaS/EnSaaS, WISE-Stack, Standalone Azure VM, K8s, other K8s	WISE-PaaS/EnSaaS, Standalone Azure VM, Azure IoT (K8s)	
License Model	Monthly Subscription (Free) Perpetual license (Volume)	Free License Activation & renewal	
Activation	Online/Offline	Online	EULA (Freeware): The Company (Advantech) reserves the right to change these terms and conditions at any time without prior notice.
Max. Managed Device Number	Standalone (1000 managed devices) Cloud (Unlimited managed device)	Advantech Certified Device (1000) Non-Advantech Device (1)	
Support Server OS	Windows Server, Ubuntu	Windows Server OS	
Support Edge OS	Windows, Ubuntu, CentOS, Android, Yocto	Windows	
Support & Maintenance	Service Level Agreement	Online support center, knowledge base	SLA (Enterprise license) With 1-yr Support & Maintenance 1. Non-Advantech Device management 2. Software updates/upgrades 3. Dedicated Support Ticket 4. Push/mail notification
Zero-touch Onboarding	V	V	
Role-Based Access Control	V	V	
Device & Group Management	V	V	
Device Realtime & Historical Data Monitoring	V	V	
Device Zero-Downtime Data Transmission	V	V	
Device Monitoring (Rule Engine) & Alert	V	V	
Device Control (Power Management)	V	V	
Remote Troubleshooting (Terminal, Screenshot, Remote Desktop)	V	V	
Backup/Recovery (Acronis), Protection (McAfee)	V	V (Paid bundle license)	Professional Service items: Our services and support programs ensure customer's success at every step through professional SOP of customization and consulting. 1. Non-Advantech device certification (Edge) 2. Non-Windows OS porting (Edge) 3. Support hours - Customized UI & features - IoT Apps designing & Consulting
Operation Management (Batch Control, Statistical Analysis, Report)	V	V	
Hardware Watchdog Monitoring	V	V	
Audio Volume, Brightness, Backlight Control			
USB Drive Block, Keyboard Lock & Filter			
Touch Screen & Gesture Lock	V	V	
Windows Notification Block			
UWF Protection			
OTA Software Updates & Upgrades	V	V	
Software Development Kit	V	V	

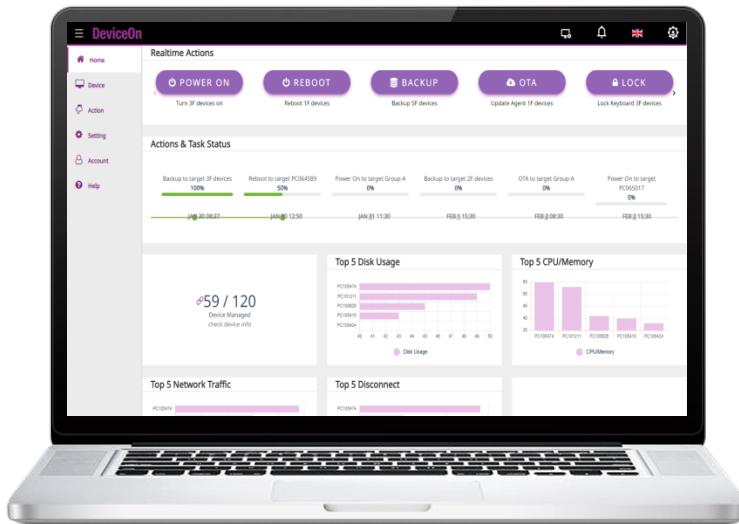
Device Instant Onboarding & Provisioning

Secure and self-onboard IoT devices in a minute at Scale

- Online registration with secure device ID and field configuration
- Free Functional Trial (6 months)



Ready to Manage All Your IoT Devices?



[DeviceOn DEMO >](#)

Click DeviceOn Demo button to experience the application.

OR

Get started with monthly subscription (first month free) for uninterrupted experience.

WISE-PaaS Marketplace
Discovering and Shopping for Your Own IoT Deployments

WISE-PaaS/DeviceOn
Service Provider : Advantech
Category : Industrial Cloud Solutions
Last Update : 2/27/2019 12:00:00 AM
Zero-touch onboard, visualized operations, real-time actions, and remotely manages connected devices at scale.

Introduction
Many IoT deployment and management involve hundreds of thousands devices that spread over multiple sites. It is essential to monitor, track, and manage connected industrial IoT devices. You need to ensure these devices work properly and securely after they have been deployed without technician site visits every time. Further, you need secure access to your device to monitor, detect, manage, and take time-critical action remotely.

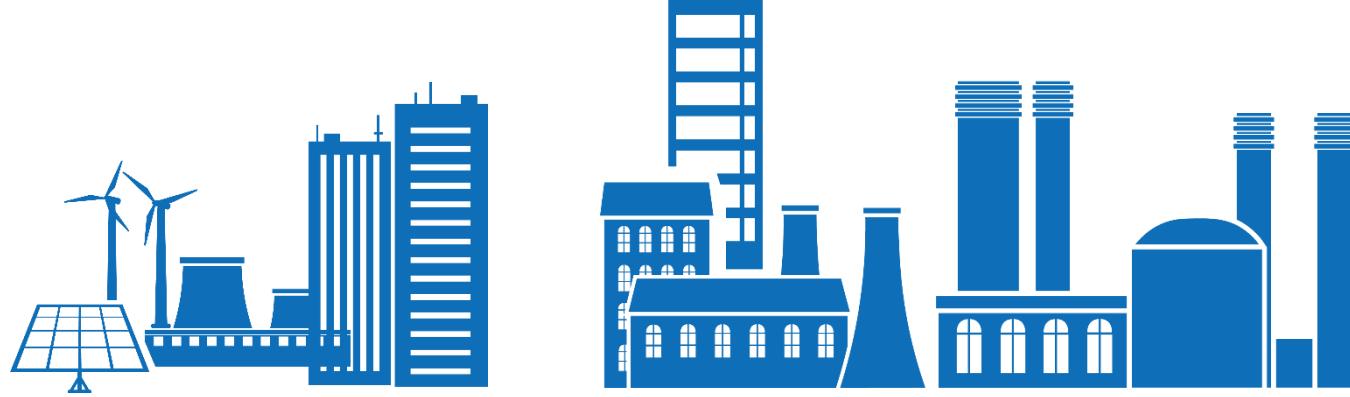
WISE-PaaS/DeviceOn makes it easy to onboard, visualize, operate, and manage your industrial IoT devices. With Advantech's WISE-PaaS/DeviceOn easy-to-use interface you can monitor device health status, take real-time actions to power on/off, troubleshoot problems, and send software and firmware updates over-the-air (OTA) on-site and remotely at scale.

WISE-PaaS/DeviceOn
For IoT Business Expansion
Easy and reliable device operations with assets management for your IoT devices at scale, everywhere

<https://wise-paas.advantech.com/en-us/marketplace/detailinfo/60>

DeviceOn Documentation and Resource

- **WISE-PaaS Technical Documentation**
 - DeviceOn User Manual, Sales Kit [LINK](#)
 - WISE-Agent SDK [LINK](#)
 - Video Introduction [Global](#)





Standard Offering

- Role-Based Access Control
- Device Zero-touch Onboarding
- Device & Group Management
- Threshold Detection (Rule-based Engine)

- Notification & Alert Service (Mail, SMS, LINE, WeChat, WhatsApp)
- Device Realtime & Historical Data Monitoring
- OTA, Software, Firmware Provisioning
- Device Basic Control
 - ✓ Power Control, Terminal, Screenshot, Remote Desktop
 - ✓ Backup/Recovery, Protection
- Device Data with Zero-Downtime
- Operation Management (Batch Control & Statistical Analysis)



Windows 10 Enterprise LTSC/LTSB Window 10 Lockdown Integrate

- Audio Volume Control
- USB Drive Block
- Keyboard Lock & Filter
- Touch Screen & Gesture Lock

- Windows Notification Block
- UWF Protection



Advantech SUSI Driver

Advantech Platform

- Hardware Watchdog Monitoring
- Brightness & Backlight Control
- Hardware Sensor Monitoring
- BIOS Update



DeviceOn Feature Highlight Support

	DeviceOn Feature Highlight	Windows 7, 8, 10	Windows 10 LTSC, LTSB	Ubuntu 16.04 x64	Linux on RISC (Yocto)	Android on RISC
Standard Offering	Role-Based Access Control	●	●	●	●	●
	Device Zero-touch Onboarding	●	●	●	●	●
	Device & Device Group Management	●	●	●	●	●
	Device Threshold Detection (Rule-based Engine)	●	●	●	●	●
	Notification & Alert Service (Mail, SMS, LINE, WeChat, WhatsApp)	●	●	●	●	●
	Device Realtime & Historical Data Monitoring	●	●	●	●	●
	OTA, Software, Firmware Provisioning	●	●	●	●	●
	Power Control, Terminal, Screenshot, Remote Desktop	●	●	●	○	○
	Backup/Recovery, Protection	●	●	●		
	Device Data with Zero-Downtime	●	●	●	●	●
	Operation Management (Batch Control & Statistical Analysis)	●	●	●	●	●
	Audio Volume Control	●	●			
Advantech Hardware Support	Hardware Watchdog Monitoring	●	●	●		
	Brightness & Backlight Control	●	●	●	●	●
	Hardware Sensor Monitoring	●	●	●	○	○
	BIOS Update	●	●	●		
Windows 10 Lockdown Features	USB Drive Block		●			
	Keyboard Lock & Filter		●			
	Touch Screen & Gesture Lock		●			
	Windows Notification Block		●			
	UWF Protection		●			

System Requirement

- **Server Standalone Installation**

Hardware Requirements

- ✓ Intel® Core™ i5 2.3 GHz CPU or above
- ✓ 8GB RAM
- ✓ 25 GB root partition for the system
- ✓ 100 GB data storage partition (for documents and indexing)

Supported Operating Systems

- ✓ Windows Server 2012/2012 R2 64-bit
- ✓ Windows Server 2016 Standard 64-bit
- ✓ Windows Server 2019 Standard 64-bit
- ✓ Ubuntu 18.04 (Q2/2020)

- **Agent/Device**

Hardware Requirements

- ✓ Advantech HW with SUSI driver 3.02/4.0 support, which is required for HWM (Hardware Monitoring Management) function to work normally

Supported Operating Systems

- ✓ Windows 10 Enterprise 2016 LTSB 64-bit
- ✓ Windows 10 Enterprise 2016 LTSC 64-bit
- ✓ Windows 10 Enterprise (1809) 64-bit
- ✓ Windows 10 Professional (1809) 64-bit
- ✓ Windows 8/8.1 64-bit
- ✓ Windows 7 SP1 32-bit/64-bit
- ✓ Ubuntu 16.04/18.04
- ✓ CentOS 7/7.5
- ✓ Android 6.0 RISC
- ✓ Yocto

System Requirement for Acronis & McAfee

Acronis

- **Windows (32/64-bit)**

- Windows Server 2016、2012/2012 R2、2008/2008 R2*
- Windows 10、8.1、8、7

- **Linux**

Kernel 2.6.9 ~ 4.15, glibc 2.3.4, 32/64-bit Linux distribution includes:

- Red Hat Enterprise Linux 4.x - 7.5
- Ubuntu 9.10 - 17.10, 18.04
- Fedora 11 – 24
- SUSE Linux Enterprise Server 10 – 12
- Debian 4 - 9.4
- CentOS 5.x - 7.4
- CloudLinux 7、7.1, 7.5
- ClearOS 5.x、6.x、7、7.1
- Oracle Linux 5.x - 7.5 (包括 UEK)

<https://www.acronis.com/zh-tw/business/backup/linux-server/supported-systems/>

McAfee

- **Windows (32/64-bit)**

- Embedded : Windows XPE、7 Embedded、WEPOS、POSReady 2009、WES 2009、Embedded 8、8.1 Industry、10
- Server : Windows Server 2008 (R2)、2012 (R2)
- Desktop : Windows NT、2000、XP、Vista、7/8/8.1/10

- **Linux**

- Red Hat/CentOS 5、6、7
- SUSE/openSUSE 10、11
- Oracle Enterprise Linux 5、6、7
- Ubuntu 12.04

<https://www.mcafee.com/enterprise/zh-tw/assets/data-sheets/ds-application-control.pdf>

Device Remote Control – Windows Lockdown

(Windows 10 Enterprise Limited Function)

- **Audio Volume Control**
- **LVDS Screen Brightness**
- **USB Lockdown**
 - Block USB drives and removable disks)
- **Keyboard Lock**
 - Block function key, such as “ALT”, “CTRL”, and windows key)
- **Touch Screen & Gestures Lock**
- **Windows Notification**
 - Disable windows notification from app and other senders)
- **UWF Protection**
 - Helps to protect your drives by intercepting and redirecting any writes to the drive (app installations, settings changes, saved data) to a virtual overlay

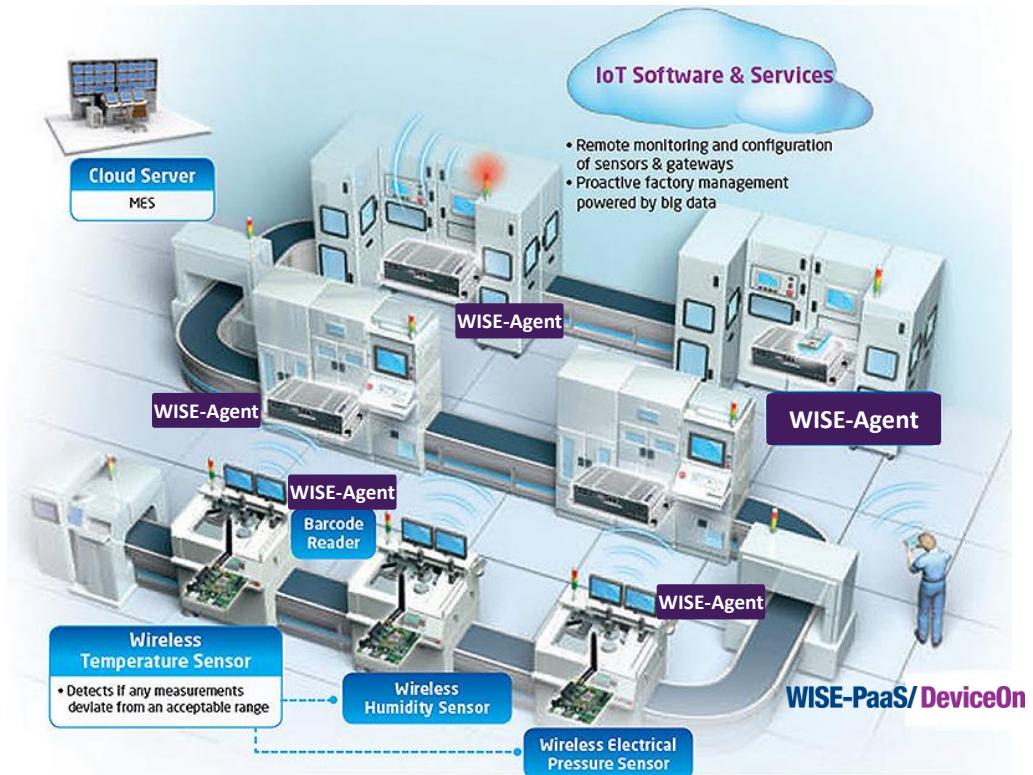
Customer References & Use Cases





- Monitor a large number of production process management devices at any time (software and hardware health).
- Provide notifications to administrators (Email and SMS) the equipment fails and remote device soft and firmware OTA updates.
- Remotely troubleshoot and eliminate equipment failure repair time to improve production utilization.

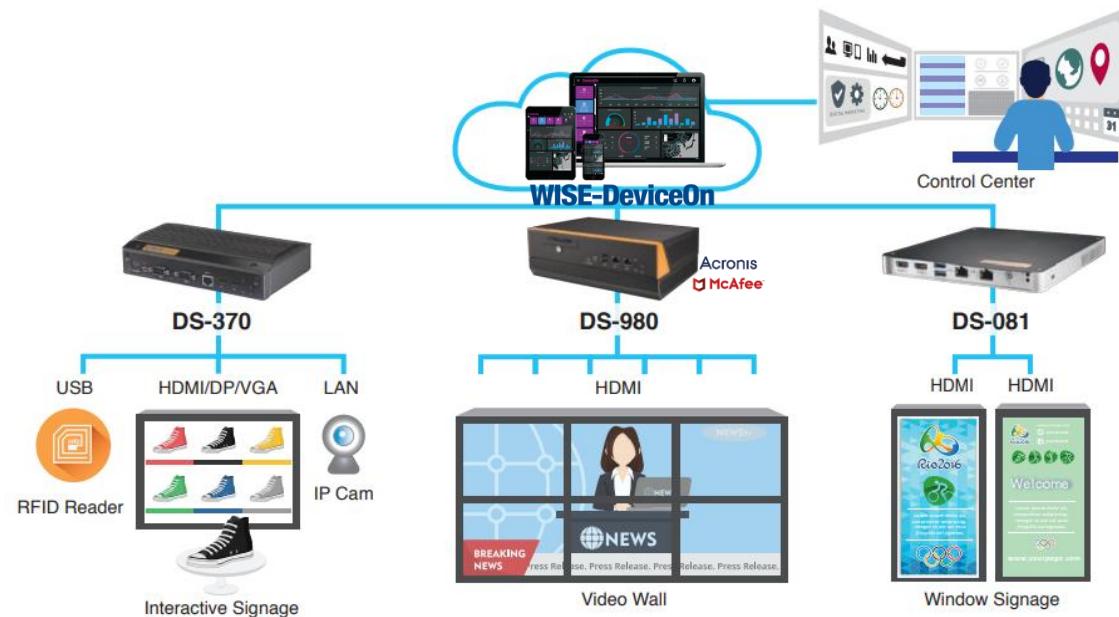
Case Study: Semiconductor & Smart Production Uses DeviceOn to Increase Production Utilization





Case Study: Enhancing China's Flight Information Display Systems (FIDS)

- With WISE-PaaS/DeviceOn's intuitive interface, you can monitor device health, take real-time actions (i.e. power on/off), troubleshoot problems, and send software and firmware updates over-the-air (OTA) on-site and remotely at scale.
- Blue screen recovery
- Windows popup block
- Automated alert notification
- Simple Acronis system backup & recovery
- McAfee whitelist protection





- Provide cloud infrastructure, complete device and data management solution to support highly distributed wind turbine farms.
- Protocol converter to help connect key components in the wind turbines. Flow control and Inference Engine to perform predictive maintenance
- Connect key information from the wind turbines, send real-time power generation status and have situation rooms manage it.

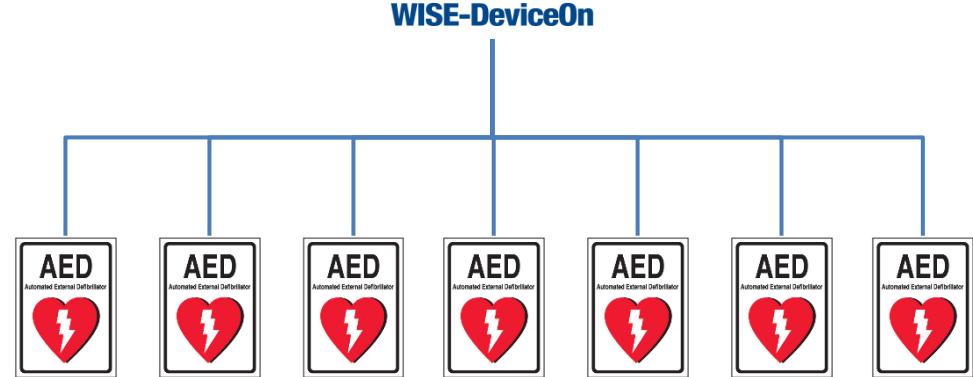
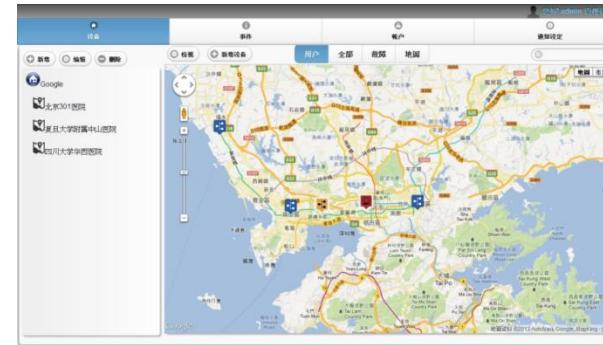
Case Study: Wind Turbine Power Plant Manages Several Sites with Equipment-to-Intelligence SRP





- A cloud solution is needed to periodically self-test AED devices to ensure functional integrity.
- A timed self-test and self-awake connection to ensure that the battery is retained for the longest period of use.
- Equipment map dashboard to help quickly establish visual map management, including equipment failures and maintenance events, which can be seen at a glance through graphical management , as well as notifications and firmware OTA updates.

Case Study: AED Medical Emergency Equipment Inspection and Maintenance

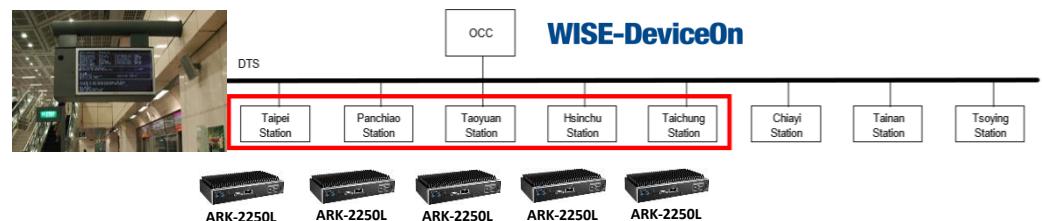
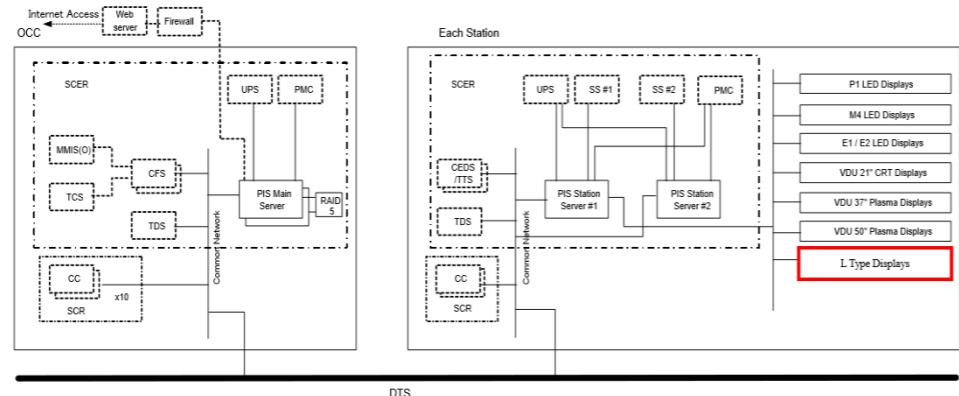




Case Study:

HIGH SPEED RAIL - (PIS)Passenger Information System

- Remotely monitor the hardware information of the computer server (CPU temperature, CPU load rate, RAM usage rate, operating voltage value, hard disk information, network bandwidth monitoring and other hardware information of IPC)
- Managers can control the real-time operating status and maintain operational safety.
- Supporting the MQTT protocol, it can adapt to the application system of the IoT architecture and has the ability to expand the service in the future.



Battery Management APP for Medical Equipment

DeviceOn

Overview Device Account Event Log OTA Setting Document Dashboard Addins Setting Battery

Battery List

CLIENT STATUS	POC SYSTEM	POC SYSTEM S/N	BATTERY CAPACITY	LINK WIFI AP LOCATION	DC-IN STATUS	DATA TRANSFER TIME
Green	POC1	TPX123456	98%	5F-501	Connected	2019-02-12 09:14:56
Red	POC2	TPX789101	30%	N/A	Connected	2019-02-11 02:10:02
Grey	POC3	TPX456789	70%	2F-202	Disconnected	2019-03-15 08:02:10
Green	POC1	TPX123456	98%	5F-501	Connected	2019-02-12 09:14:56
Red	POC2	TPX789101	30%	N/A	Connected	2019-02-11 02:10:02
Grey	POC3	TPX456789	70%	2F-202	Disconnected	2019-03-15 08:02:10
Green	POC1	TPX123456	98%	5F-501	Connected	2019-02-12 09:14:56
Red	POC2	TPX789101	30%	N/A	Connected	2019-02-11 02:10:02
Grey	POC3	TPX456789	70%	2F-202	Disconnected	2019-03-15 08:02:10
Green	POC1	TPX123456	98%	5F-501	Connected	2019-02-12 09:14:56

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<https://deviceon.wise-paas.com/#/deviceon/POC>



Advanced POC Battery Dashboard - V1.0.1

Basic Advanced System Settings

DC-In Status: Connected

Slot 1	Slot 2	Slot 3
85% Suggested Replacing Battery Status: Charging Remain Time: 10:20	28% Suggested Replacing Battery Status: Charging Remain Time: 01:25	100% Full Battery Status: Full Remain Time: 15:00
Average Battery Level: 71% Charging Remain Time: 02:25		
Battery Status: Slot 2 & Slot 3 are suggested for replacing.		

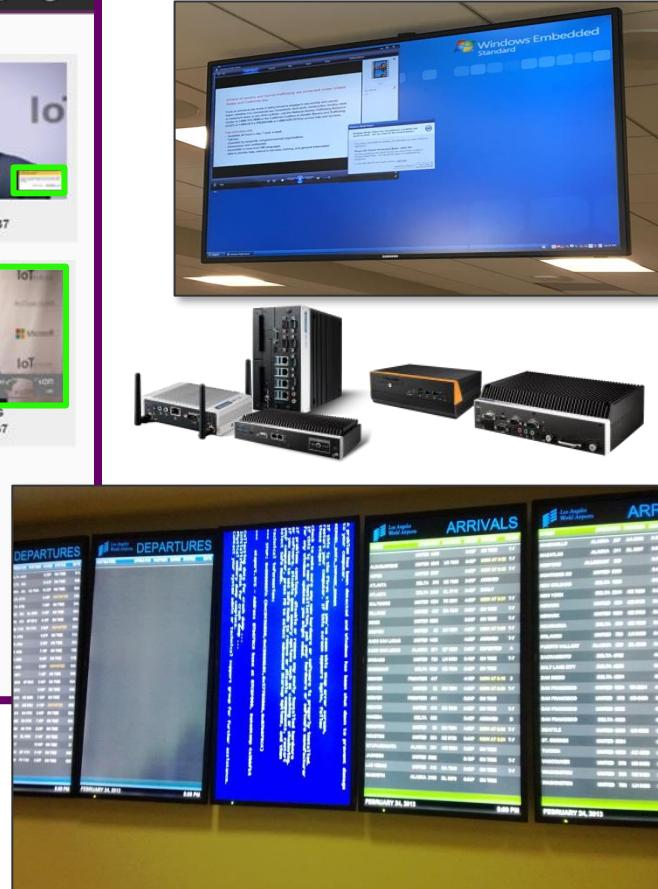
- Asset/Device management
- Battery management
- Software updates

Signage Anomaly Detection

The screenshot shows the DeviceOn software interface. The main area displays a grid of 8 video thumbnails, each showing a different scene from a digital signage monitor. Four thumbnails are highlighted with green boxes around specific anomalies:

- Thumbnail 1: ARK-1550 : POPUP, 2019/11/18 上午9:59:53
- Thumbnail 2: ARK-1550 : POPUP, 2019/11/18 上午10:00:03
- Thumbnail 3: ARK-1550 : POPUP, 2019/11/18 上午10:00:27
- Thumbnail 4: ARK-1550 : POPUP, 2019/11/18 上午10:00:37
- Thumbnail 5: ARK-1550 : POPUP, 2019/11/18 上午10:00:57
- Thumbnail 6: ARK-1550 : POPUP, 2019/11/18 上午10:01:07
- Thumbnail 7: ARK-1550 : FREEZING, 2019/11/18 上午10:01:27
- Thumbnail 8: ARK-1550 : FREEZING, 2019/11/18 上午10:01:37

- Blue screen recovery
- Screen freezing & Windows popup detection
- Automated notification



Co-Creating the Future of the IoT World



Hands On Lab the Future of the IoT World

<https://github.com/advantechkr/DeviceOn>

