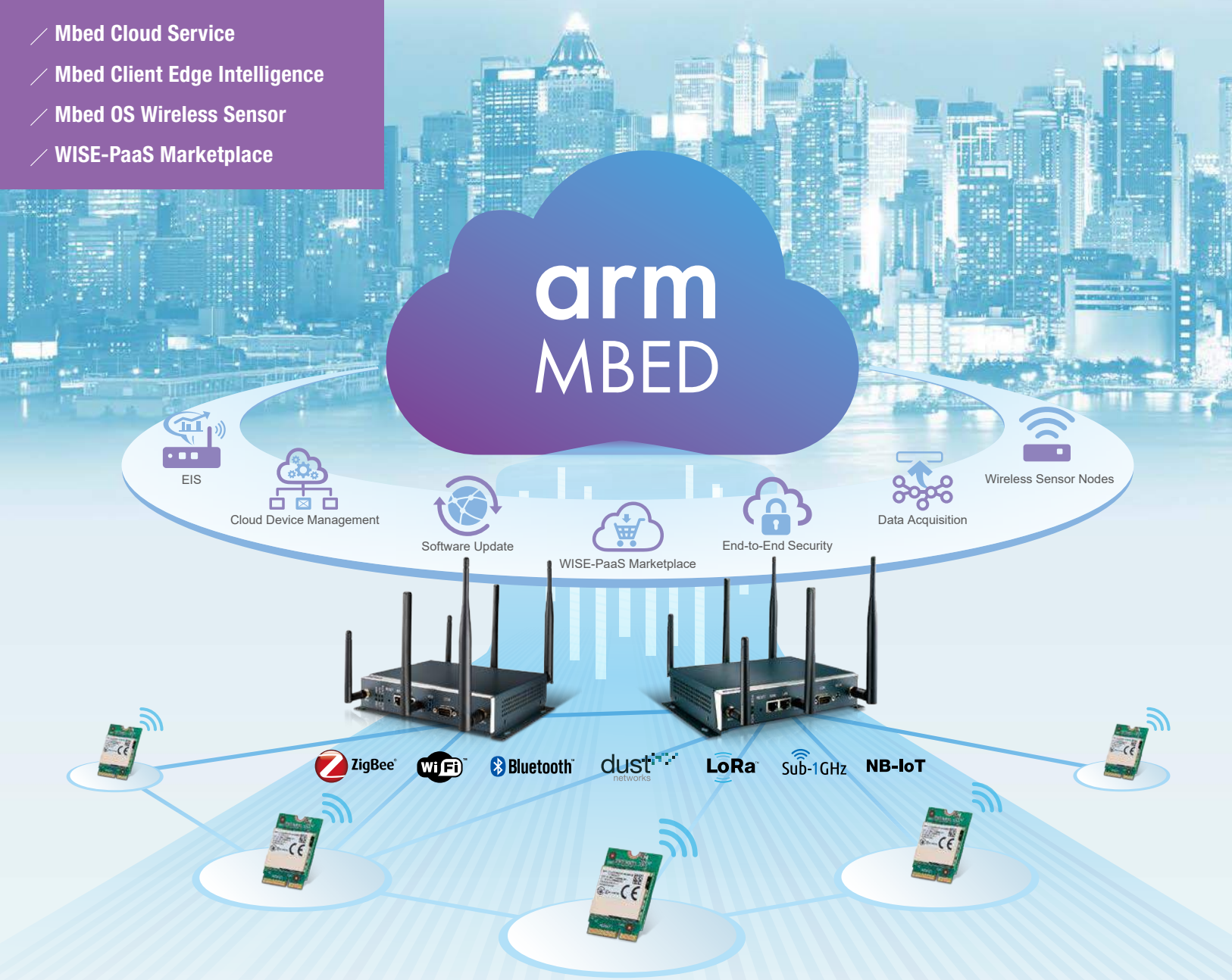
Arm Mbed Cloud Services

Centralized IoT Management from Sensor to Cloud

- Mbed Cloud Service
- Mbed Client Edge Intelligence
- Mbed OS Wireless Sensor
- WISE-PaaS Marketplace



ADVANTECH
Enabling an Intelligent Planet

arm

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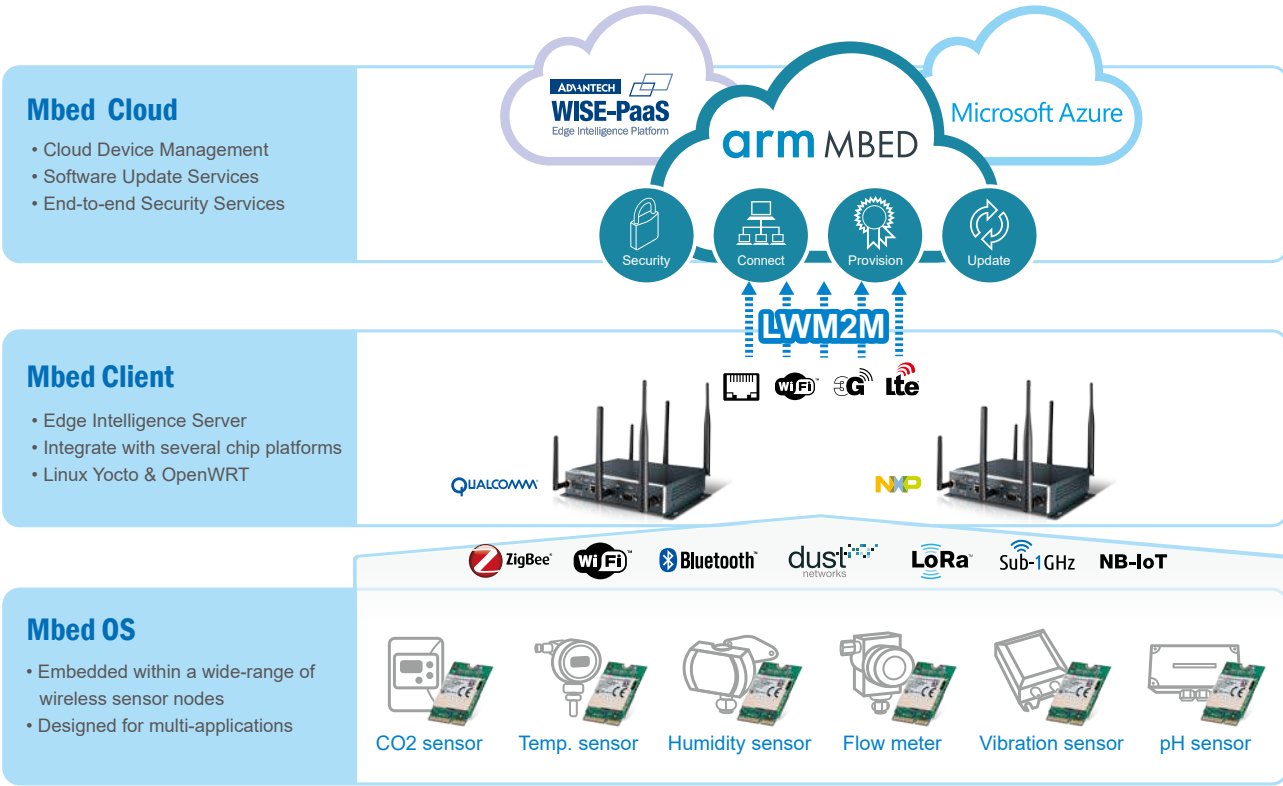
Centralized IoT Management From Sensor to Cloud

Advantech's wide coverage wireless connectivity solution is empowered by Arm's reliable core technology. With benefits such as low power usage and various wireless transmitting module selections and Arm Mbed Cloud services, this combination is perfect for most IoT scenarios.

Device-to-cloud security and management are the ultimate enabler for IoT applications to scale, especially when enterprises are looking to extend their existing deployments with IoT services. Integration of Arm Mbed OS and Mbed Cloud into WISE-PaaS Marketplace will accelerate onboarding and management of IoT nodes for businesses focused on bringing business outcomes.



Pre-configured Mbed Solution Packages

WLAN Solution Package

- Low Data Transmission Latency with High Speed Throughput
- Connection-oriented by IP Stack Structure
- Easy and Quick deployment with exiting Wi-Fi Network

Part Number: **WISE-3620IMS21A1E**
Price per package: **USD$ 990**

LPWAN Solution Package

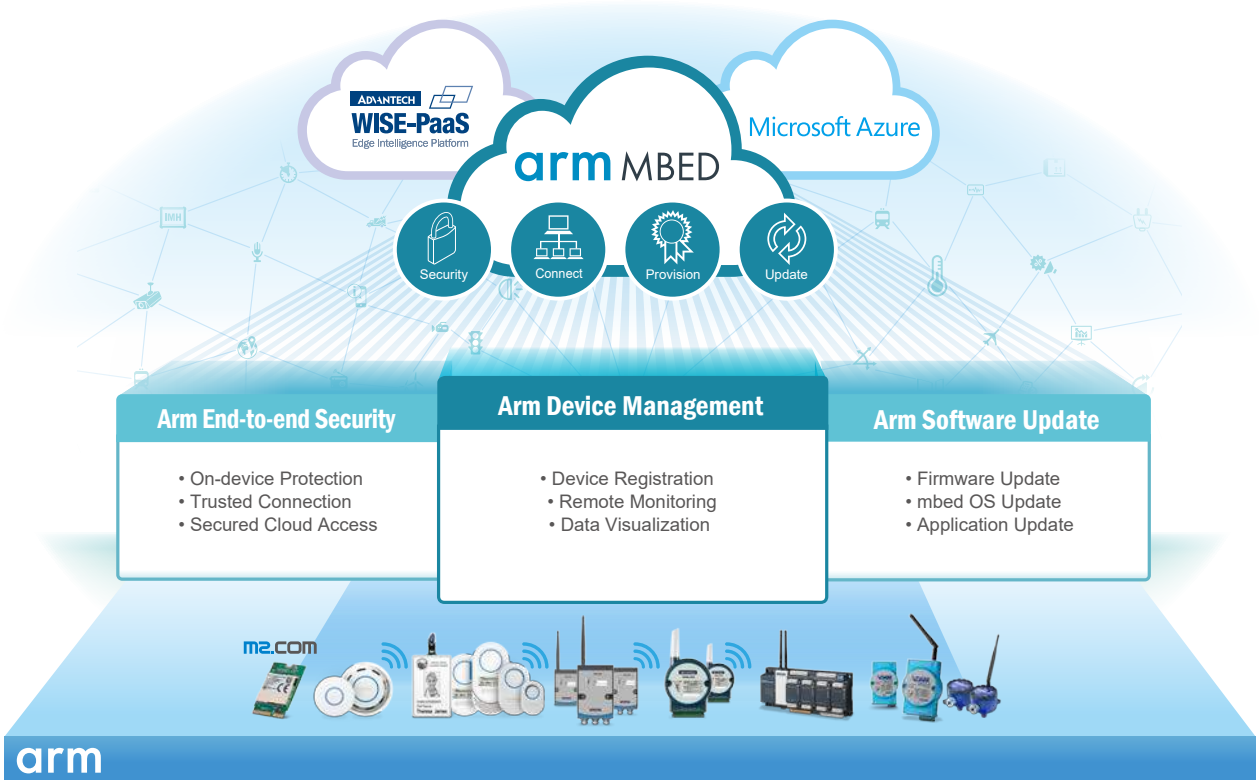
- Long Transmission Range and Battery Life
- High Sensor-nodes connection up to ten-thousand grade
- Low data rate for IoT suitable capacity

Part Number: **WISE-3610IMS51A1E**
Price per package: **USD$ 990**

Secured and Scalable IoT Cloud Solution

Arm Mbed Cloud offers IoT device management capability delivered as a service from the Cloud. Mbed Cloud offers the capability to securely manage “any device” on “any architecture” with “any cloud”. It is Arm’s first Software as a Service product aimed at OEMs. It enables them to simplify connecting, securing, provisioning and updating of devices across complex networks. This allows devices to have flexibility to work with multiple clouds. It offers coverage across Cortex-A& M, and any other device with an included flexible cloud client component.

It is optimized to take advantage of the energy efficiency of the Arm architecture on constrained devices through the use of CoAP – the constrained application protocol. Efficient caching capabilities allow reduction of operating costs for networks that need sleepy devices to conserve battery life as well as frequency of communications needed. Security and trust provisioning are built in, end-to-end, and provide security for every device transaction.



Mbed Cloud Service Highlights

Arm End-to-end Security

Protection goes both ways on device and on the cloud. On-device security is based on TrustZone and TrustZone-M, plus TLS to ensure connection reliability.

Part Number: **9806WMMBP0**
Monthly Subscription: **USD$ 40**

Arm Device Management

A centralized web-based console to remotely monitor devices. Easily manage and deploy IoT devices with LWM2M standard.

Part Number: **9806WMMBC0**
Monthly Subscription: **USD$ 30**

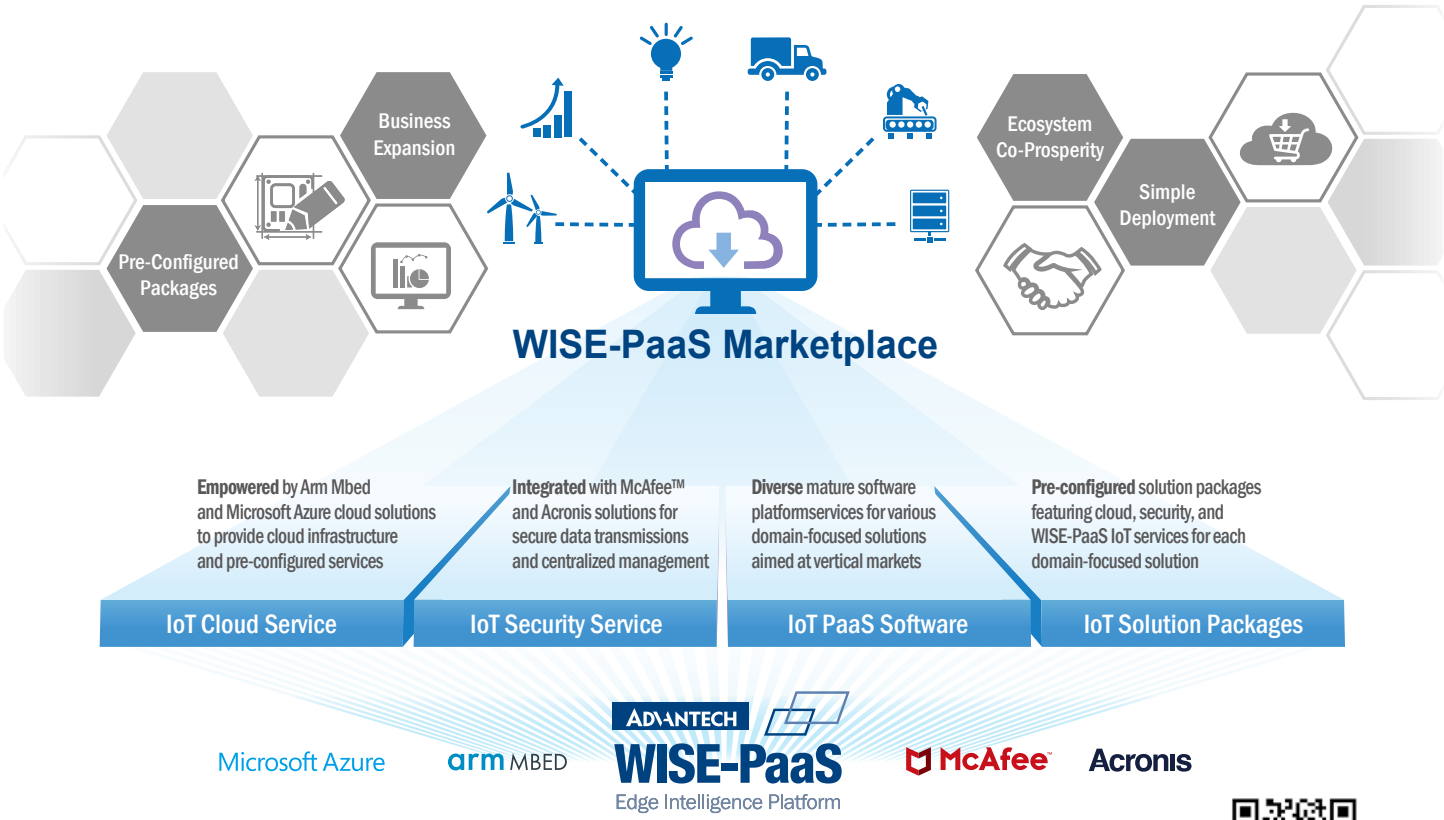
Arm Software Update

Remote firmware/ OS/ application update on hardware helps improve device longevity and reliability.

Part Number: **9806WMMBU0**
Monthly Subscription: **USD$ 50**

Enabling IoT Edge Intelligence with a Collaborative Software Ecosystem

Advantech has always been committed to upholding the spirit of 'partnering for smart city and IoT solutions'. The WISE-PaaS software ecosystem was composed with a flexible and expandable architecture that facilitates the seamless integration of diverse IoT Cloud Services. It collaborates with Arm Mbed, Microsoft Azure for IoT Cloud Services, McAfee and Acronis for IoT Security Services, IoT PaaS software Services, and Pre-configured Solution packages; all are offered now at the WISE-PaaS Marketplace. Customers can choose from a variety of software solutions, purchase a standard suite for creating unique solutions, or combine standard and purpose-built packages to enable IoT edge intelligence and customize an IoT solution according to their specific requirements and usage conditions.



WISE-PaaS marketplace

WISE-PaaS Alliance VIP Membership

Advantech's WISE-PaaS features an expandable architecture that facilitates the seamless integration of diverse software services offered at the WISE-PaaS Marketplace. Customers who join the WISE-PaaS Alliance, Advantech's IoT partnership program for resolving IoT application challenges, are able to access the WISE-PaaS Marketplace and select software packages via WISE-Point. The WISE-PaaS Alliance VIP members can leverage WISE-PaaS exclusive tools to quickly develop IoT solutions, increase product visibility with collaborative marketing, and establish mutually beneficial partnerships.

Smart City Solution

Arm Mbed Cloud Device Management

Solution Benefits

- Enables large-scale data acquisition, real-time monitoring and data analytics so as to provide reports and generate statements, helping to create new business models
- Allows secure and energy-efficient connectivity of a huge amount of devices with easy integration, and facilitates efficient and effective device management
- Leverages reliable and economic communication method for long range data transmission and reduces the overall cost for IoT system operation
- Paves ways for big data analyses to provide insight for making energy saving policies, pursuing a smarter and greener cities

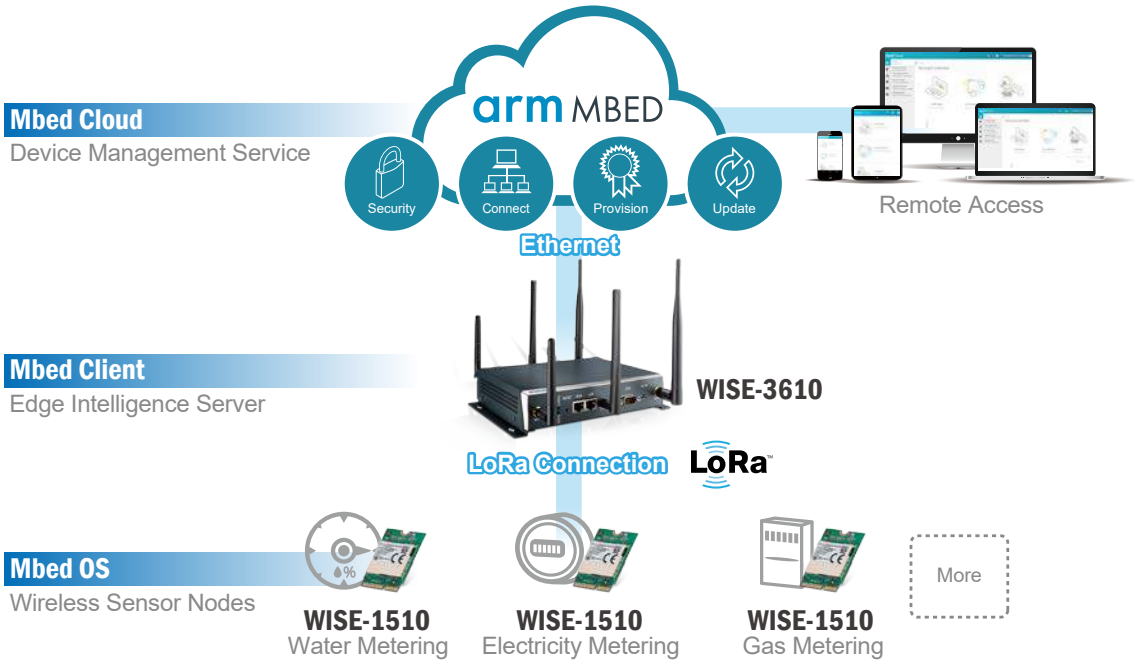
Application Challenges

The IoT and sensing technologies are improving our quality of life in many ways, from intelligent transportation, smart street lighting, smart medical services to smart metering, giving us smarter and more efficient cities that offer increased convenience and innovative services. Smart City applications often require the deployment of huge number of devices over a large area, and how to efficiently deploy and manage application devices at scale yet at an affordable price is of course crucial.

Smart City Solution

Advantech proposed an Arm-based soft-and-hardware solution combining LoRa long-range and Arm Mbed Cloud Platform Services. With Arm Mbed Cloud Device Management Service, an SI can easily and quickly provision functions including data acquisition, remote monitoring, and device management. By doing so,Arm Mbed Cloud provides tools for developing a dashboard to present data with figures, tables, or plain text. User-end dashboards can also be developed that let utility subscribers use browser-supported devices to review their energy use and billing in smart metering for example. Even more, Arm Mbed Cloud creates logic rules for triggering short message notifications as part of billing system or alArm system management.

Such Smart City applications require constant delivery of large amount of small data packets to the cloud, so Advantech recommends the use of LoRa wireless communication for data transmission; it features lower power, lower maintenance cost, and reliable data delivery over long distances. Advantech WISE-1510 is recommended for deploying wireless sensor nodes, and WISE-3610 for wireless IoT gateways; both are based on a simplified RISC structure using Arm processors or microprocessors and supporting low power LoRa LPWAN.



Smart Manufacturing Solution

Arm Mbed End-to-end Security

Solution Benefits

- Hardware-based Arm security provides device-root protection from chip to the cloud ensuring trusted connection, cloud access and data transmission
- Wi-Fi WLAN communication provides a cost-effective wireless communication method for delivering small data packets in a smart factory environment
- Customers can develop their own security solutions based on this solid platform

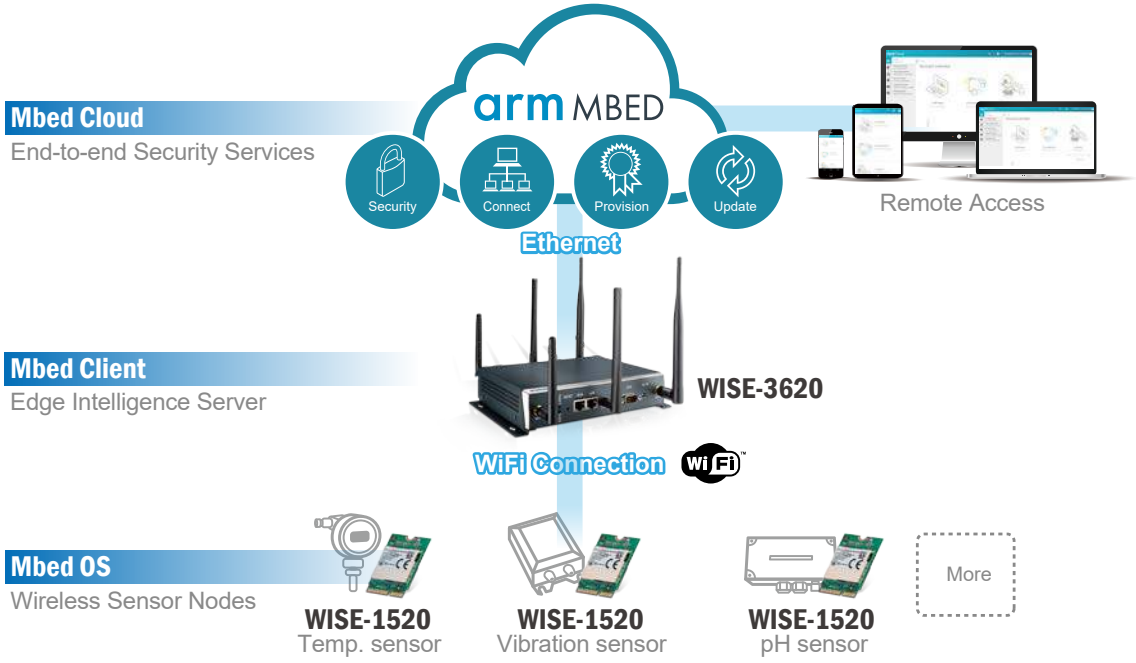
Application Challenges

The trend of Industry 4.0 is connecting a huge number of devices and other factory assets to the Internet or even to the cloud in order to achieve higher efficiency and quality production. An effective security solution is needed that provides protection from the root to the top. A smart factory has many sensors deployed that collect operating and production data, such as motor vibration rates, pH values, pressures, temperatures, humidity, and a lot more. Analyzing the collected data often produces business intelligence. A comprehensive security solution is needed to protect the data from leaking, whether during the process of gathering, or transmission, or of storage. Furthermore, as a smart factory often downloads software from the cloud or makes changes to the firmware from a cloud management platform, secure firmware/software updates are key for IoT security.

Smart Manufacturing Solution

The Arm Mbed Security platform has trust managed from the cloud but enforced by the device based on Arm® TrustZone®, which separates secure and non-secure worlds in hardware, and keeps non-secure software blocked from accessing secure resources directly. Within the processor, software either resides in the secure world or non-secure world, and a switch (debug) between the two worlds is accomplished and monitored by software (Cortex-A) or by the core logic (Cortex-M). This concept was extended beyond the processor to include memory, software, bus and peripherals within a SoC, providing a foundation for system-wide security covering firmware, peripherals and I/O ports.

The Advantech WISE-1520 sensor node and WISE-3620 IoT gateway adopted Cortex processors and have TrustZone® and other security technologies provided by Arm Mbed security services. a bottom-to-top Arm architecture reinforced by the Advantech ecosystem partnership will guarantee optimal integration, scalability, and security for Smart Factories and other security-critical IoT applications.



Smart Agriculture Solution

Arm Mbed Cloud Software Update

Solution Benefits

- Energy-saving and reliable LoRa long range data transmission reduces communication expenses
- Remote software update eliminates the need for manual sensor calibrations and corrections, saving labor and maintenance cost and ensuring long product life
- Realizing smart fArming reduces production cost while improving agricultural productivity

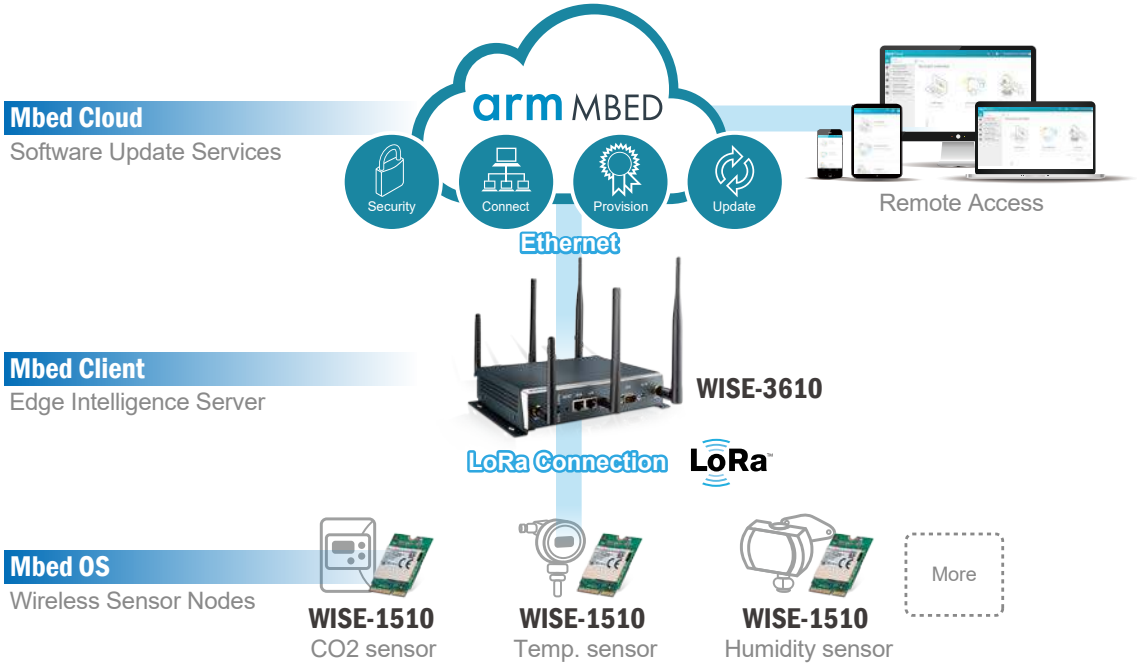
Application Challenges

An international agricultural technology company came to Advantech in initiating a pilot plan which need to deploy intelligent fArming systems on 1,500 paddy fields in four Asia-Pacific countries to implement remote monitoring of environmental and weather conditions in the fields. A large scale Smart Agriculture application requires deployment of numerous sensors over a wide area, thus reduced costs for deployment, operation and maintenance, as well as longer product service life and better wireless communication coverage are all important factors to be considered.

Smart Agriculture Solution

This Arm-based hard-and-software solution will enable simplified device connections, device provisioning and device updates. The Software Update services implemented from Mbed Cloud management platform—including firmware updates, OS updates and application updates—are especially valuable when IoT systems cover wide areas as they do on smart agriculture, which often need to recalibrate and correct sensors for more accurate sensing results.

Sensors will be deployed to collect data on water levels, water temperature, atmospheric temperature and humidity, and watering will be automatically triggered. With wireless communication deployment and app development, fArmers will be able to remotely watch their paddies and their crops via a dashboard on their computers or smartphones or any other mobile devices with browser support. If monitored conditions are judged to be favorable to pests, an alert warning will be aired to the fArmer's personal device. For the Asia-Pacific smart agriculture project, Advantech proposed the deployment of Advantech WISE-1510 for sensor nodes and WISE-3610 for IoT gateways, together with the use of LoRa wireless, long-range communications and Arm Mbed Cloud Software Update services.



Arm Mbed Cloud Design-In Services

Overview
- mbed OS/ mbed Client/ mbed Cloud Introduction
- Successful Case Studies

Trial
- mbed Services Demo
- Free trial
- Feature Study

New Account
- Join Advantech mbed Services
- Create Account
- Description of the Billing Date and Rules

Consulting
- Solution Architecture Design
- Technical Support
- Publishing Service from WISE-PaaS Marketplace

Pay-As-You-Go
- Pay only for what you use each month
- No upfront costs
- No termination fees

Presale → Selling → Services

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