

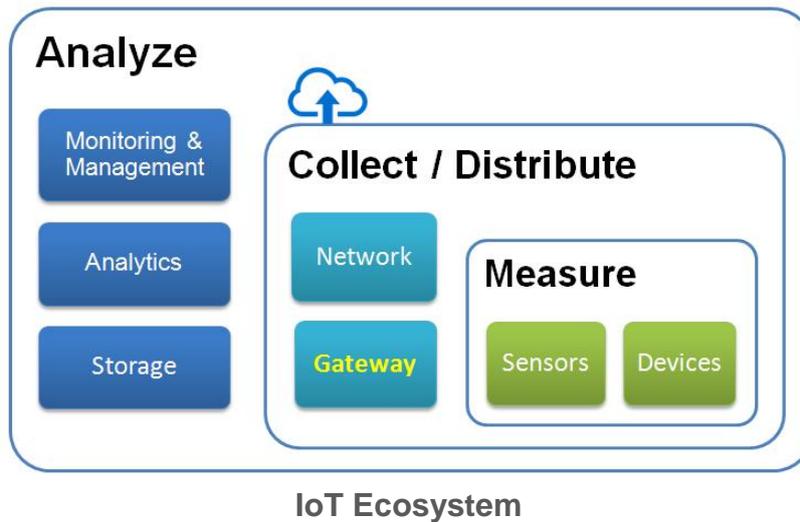


# IoT Gateway for Smart Factory Automation

With the emergence of gateways as the key element in bringing next generation devices to the IoT ecosystem and higher demand for big data analytics, the requirements for IoT gateway systems have been raised to a new level.

## OVERVIEW

The Internet of Things (IoT) ecosystem is made up of many components and layers. The bottom layer contains sensors and hardware to measure all the real-world data and variables. The gateway functions as a secure intermediary between the sensors and hardware devices by swapping information to the cloud. The top layer manages the comprehensive monitoring of the IoT ecosystem and analyzes the information gathered by the application in the infrastructure.



The IoT gateway functions by integrating protocols for networking, managing storage and edge analytics of the data, and facilitating data transfers between the entry-point edge devices and the cloud. As intelligent gateways and management systems have emerged to bring and connect legacy equipment and devices, as well as next generation devices to the IoT, increasing demand for big data analytics has led to greater requirements of IoT gateways.

## THE INDUSTRIAL IOT GATEWAY MARKET

IoT gateway devices and equipment come in many forms, shapes and sizes. Some IoT gateways are designed for vertical usage in fields such as smart city, fleet management, infotainment, or for Industrial Internet of Things (IIoT) applications in areas such as robotics, smart grid or factory automation – where we find the market of the Industrial IoT gateways.

The IIoT is connected by a network of devices using communications technologies to monitor, gather and analyze data to give industrial companies valuable insights that enable them to make smarter and faster decisions. Technavio’s market research analyst predicts the global industrial IoT gateway market to grow steadily at a CAGR of around 15% by 2021. The growth of the industrial IoT gateway market is accelerated by the growing amount of data in IIoT and higher demand for big data analytics.

## IOT GATEWAYS AND SECURITY

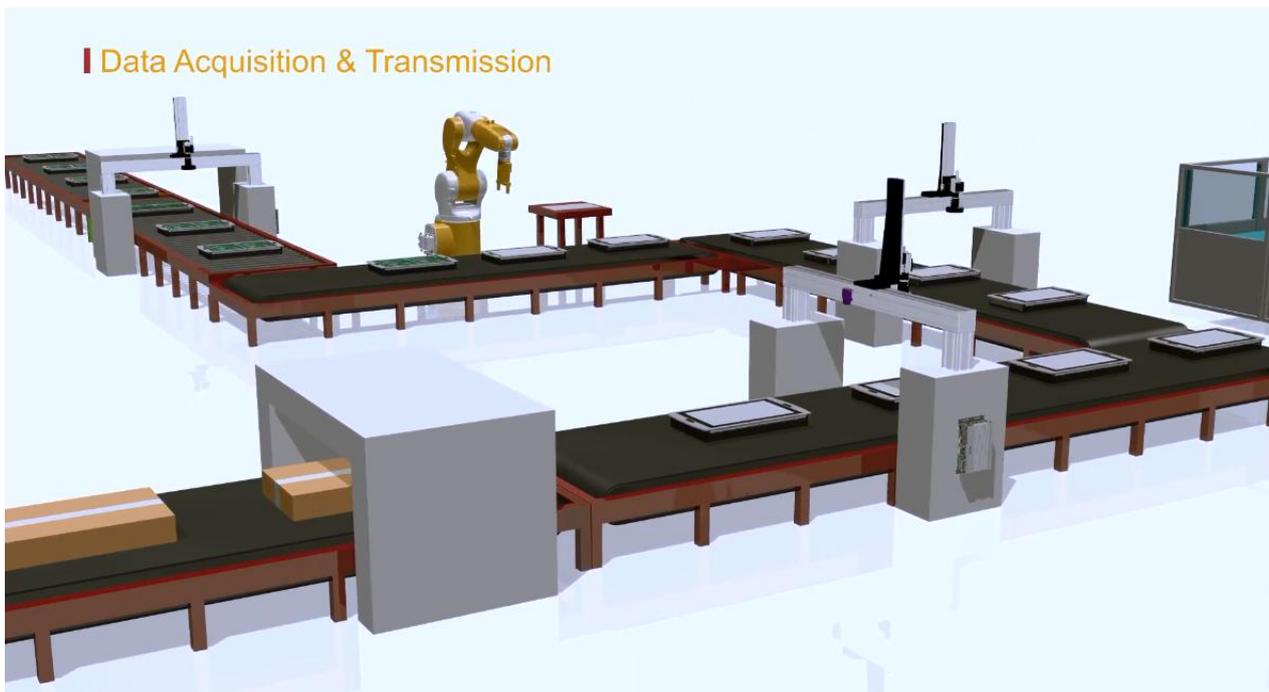
IoT gateways are devices that bridge the communication gap between field control/sensor nodes and cloud, enabling field data to be collected, stored and analyzed for manufacturing

process optimization, remote monitoring and management. However, in an IoT ecosystem, gateway security is of prime importance and data or information entering and leaving the connected system must be monitored and protected.

The IoT gateway should be able to ensure robust data security, device security and network security. Secure boot, for example, should be implemented to make sure that the gateway doesn't boot from an unauthorized firmware. Data transfer to and from every node in an IIoT network is protected using multiple security layers and encryption. Messages between the gateway and cloud or gateway sensor node are encrypted to authenticate and guarantee data integrity of sensor nodes.

## DATA ACQUISITION AND TRANSMISSION

With the utilization of sensors and control devices in measurement, gateway and network for the collection and distribution of data and for its storage, monitoring and analytics, an infrastructure integrated with information and communication technologies is turned into a network of embedded devices for the purpose of intelligent data monitoring and management. The IoT Gateway receives or acquires data from a wide range of wired or wireless transmissions such a router, Bluetooth, WiFi and Ethernet. These gateway systems can be equipped with software to convert all the received data into a format to allow IoT data transmissions to servers and cloud databases. The data or information goes through further analysis to acquire results that can be used to improve the reliability and efficiency of existing infrastructure systems like in a smart factory or power utility.



## AGS SERIES IOT GATEWAY SYSTEM – THE PRIME CHOICE



To meet the demands of the above-mentioned growing requirements, IBASE has designed the AGS Series IoT gateway systems that can satisfy most customer needs. The Intel® Apollo Lake-based AGS Series IoT gateway system is well suited for industrial control and factory automation applications as an IoT gateway platform to connect

devices and securely transfer data to cloud databases, or as a Machine-to-Machine (M2M) gateway, providing interconnection of wired or wireless devices to enhance workflow in various industrial environments.

The AGS100 can be powered by Intel® Atom™ processor E3950/E3930 with extended operating temperature (-40°C to 70°C), Intel® Pentium® N4200, or Celeron® N3350 processors (-20°C to 60°C). It supports 4GB DDR3L-1866 DO-DIMM, a 64GB MLC industrial-grade mSATA SSD, dual display ports (DVI-I and DisplayPort), 4x USB 3.0, 2x GbE, 2x COM, a DC-in terminal block for 9V~36V power input and over/under/reverse voltage protection.



The AGS100 features rugged aluminum and steel chassis for enhanced heat dissipation and easy expansions with a full-size Mini PCI-E socket, a 2230 M.2 E-Key socket for WLAN & BT, a 3042 M.2 B-Key socket for WWAN & SSD, an mSATA socket (Mini PCI-E), and a 2242 M.2 B-Key socket for mSATA SSD. Aside from supporting a wide-operating temperature range, it has also passed shock and vibration tolerance standards (IEC 60068-2-64 / MIL-STD-810G), the durability

needed to withstand harsh environments. Measuring 160mm (W) x 110mm (D) x 44mm (H), it comes provided with both DIN-rail and wall mounting kits.

The model AGS102 has additional two RS232 ports for COM3/COM4 and GPIO 4-in & 4-out multi-purpose interface for a variety of one- or two-wired devices for I/O, security and data storage purposes.

## WHY AGS SERIES IOT GATEWAY SYSTEM?

- Faster time to market: Reduce development effort
- Security out of the box: End-to-end encryption to guarantee security
- Intelligent connectivity: Seamless and direct communication with legacy PLC
- Data acquisition & transmission: Acquisition and transmission of accurate data with wireless sensor in real time

## ABOUT IBASE TECHNOLOGY

IBASE Technology (TPEX: 8050) is a reputable supplier that specializes in the design and manufacturing of robust industrial PC products. Since its establishment in 2000, IBASE has been committed to the production of high quality products, and to the rendering of excellent services. IBASE carries out manufacturing and quality control at its own production sites in Taiwan that are certified to meet ISO 9001, ISO 13485 and ISO 14001 standards. Specializing in OEM/ODM/JDM services, its current product offerings comprise of x86 and RISC based industrial motherboards, embedded systems, industrial panel PCs, digital signage players and network appliances for various applications in the automation, digital signage, gaming, transportation, smart building, medical, retail and networking markets. For more information, please visit [www.ibase.com.tw](http://www.ibase.com.tw).

IBASE is an Associate member of the Intel® Internet of Things Solutions Alliance. From modular components to market-ready systems, Intel and the 250+ global member companies of the Intel® Internet of Things Solutions Alliance provide scalable, interoperable solutions that accelerate deployment of intelligent devices and end-to-end analytics. Close collaboration with Intel and each other enables Alliance members to innovate with the latest technologies, helping developers deliver first-in-market solutions. Learn more at: [intel.com/IoTSolutionsAlliance](http://intel.com/IoTSolutionsAlliance).



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## CONTACT US

### **IBASE Technology Inc.**

Bldg. G, 11F, No. 3-1, Yuan Qu Street, Nankang, Taipei 115, Taiwan

Tel: +886-2-2655-7588

Fax: +886-2-2655-7388

[sales@ibase.com.tw](mailto:sales@ibase.com.tw)

[www.ibase.com.tw](http://www.ibase.com.tw)