Intelligent Gateways Play a Key Role in the Internet of Things (IoT)

Intel® Gateway Solutions for the Internet of Things support key tenets for building secure and robust solutions.

The Connected World

The Internet of Things (IoT) refers to billions of Internet-connected devices, ranging from industrial sensors to complex CT scanners. This includes non-Internet-enabled devices that connect via gateways acting as a go-between. This is just one of the important roles gateways play in IoT infrastructure.

Gateways based on Intel® Processor

Customers can transform their businesses today with Intel® Gateway Solutions for the Internet of Things (Intel® Gateway Solutions for the IoT) that come with integrated and pre-validated software from Wind River* and McAfee. With scalable compute gateways delivered with standards-based interfaces, customers can securely and seamlessly connect, aggregate, filter, and share data from the edge to the cloud. This scalable family of gateways features the Intel® Atom™ processor E3800 product family and the Intel® Quark™ SoC X1000 as well as McAfee Embedded Control and the Wind River® Intelligent Device Platform software. Intel Gateway Solutions for the IoT streamline integration, lower development costs, and accelerate time to market with foundational building blocks that allow customers to focus on value-added applications versus reinventing base-level software and hardware components.
**Key Tenets for Building the IoT**

Intel Gateway Solutions for the IoT are designed to provide security and interoperability from edge to cloud in keeping with five key tenets defined by Intel:

- **World-class security** as the foundation
  » The gateways implement robust hardware and software-level protection.
- **Automated discovery and provisioning of edge devices** to ease deployment
  » The gateways are ideally located to support Plug and Play setup of edge devices.
- **Data normalization** through protocol abstraction to improve interoperability
  » The gateways perform protocol translation.
- **Broad analytics infrastructure** from edge to cloud to realize customer value
  » The gateways have the computing power to run analytics software locally.
- **Infrastructure** to monetize hardware, software, and data management from edge to cloud
  » The gateways can host revenue-generating services.

**Key Role in IoT**

Rather than replace existing infrastructure, companies require an interim step to address interoperability. Intel, McAfee, and Wind River are fulfilling this need with intelligent gateway solutions that connect legacy systems, supporting common interfaces and delivering seamless communication between devices and the cloud.

In addition to providing bi-directional connectivity between edge devices and the cloud, Intel Gateway Solutions for the IoT aggregate and filter data before securely sending a portion to the cloud. This is a crucial function because otherwise, an edge device could send an enormous and unmanageable amount of data to the cloud – up to two gigabytes (GB) every hour for some heating, ventilation, and air conditioning (HVAC) systems.

Instead, a gateway could filter the data, only sending information that reflects a relevant change in status. This requires an intelligent gateway with sufficient processing power to enable end-to-end analytics that will drive business transformation while securing and managing the legacy systems it supports, as shown in the following examples.

**Providing a Cleaner and Safer Environment with Next-Generation Fleet Management**

Vnomics*, a leading provider of fleet management solutions, brings intelligence to freight trucks, making drivers safer and more efficient, while reducing fuel consumption. The company's solutions offer real-time, individualized driver coaching, comprehensive vehicle analysis, and safety and compliance tools through IoT.

A heavy commercial vehicle has hundreds of sensors, and Vnomics takes all the information to create a picture (Figure 1) of exactly what is happening on the vehicle at any time. This information is continuously processed on the vehicle and provided back to the driver, maintenance crew, or operational personnel in an easily understood way.

![Figure 1. Improved Fleet Management using Intel® Gateway Solutions for the Internet of Things](image-url)
Increasing Comfort and Energy Efficiency with Intelligent HVAC

The world's largest HVAC manufacturer, Daikin Applied* is making use of IoT through the integration of an intelligent gateway solution based on Intel® processor in its existing Rebel* rooftop units. With the gateway, Daikin Applied is able to seamlessly connect Rebel units, pictured in Figure 2, to the cloud. As a result, Daikin Applied customers can proactively manage the performance of their buildings and address HVAC issues before they happen, thus avoiding expensive repairs and unpleasant temperature excursions.

Intel Labs worked with Daikin Applied to disaggregate component data, so now it is possible to see how much energy fans and compressors are consuming, and take corrective action if needed. Daikin Applied estimates that adding intelligence to HVAC systems can reduce energy consumption within a building by as much as 50 percent.

Maximizing the Value of the Internet of Things

The true value in IoT is realized when most devices, both old and new, are connected to the cloud and their data is collectively analyzed, revealing actionable insights that can transform business. Connecting legacy devices to the Internet is made easier by Intel Gateway Solutions for the IoT, which deliver the necessary security and robustness called out by Intel's five tenets. Start prototyping and testing today using Intel development kits.

To learn more about Intel® solutions for IoT, visit http://www.intel.com/iot.


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