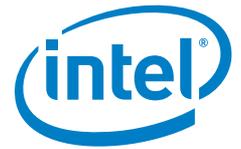


## SOLUTION BRIEF

Intel IoT  
Beacon Technology for Retail



# Simplified Beacon Management Expands In-Store Possibilities

**Intel and KS Technologies help stores deliver amazing experiences that convert sales with end-to-end beacon solutions designed for retail**

“We’re intrigued with the idea of crafting an entire solution built on Intel® architecture, from high-bandwidth data centers right down to the sensor.”

**Bob Kressin**  
President  
KS Technologies

### **Beacon Management Made Easier**

From helping customers find exactly what they need to providing incredible service, today’s retail is all about experiences that build loyalty. Forward-thinking retailers are using technology to engage with consumers as they shop—and even preempt their needs with timely information, services, and offers. To power these experiences, KS Technologies (KST) has developed an enterprise-class beacon platform that uses Bluetooth\* Low Energy (BLE) to interact with customers throughout the store.

Building on its world-class Particle\* and Ion\* beacon hardware, KST recently launched Molecule\*, an Intel®-powered gateway that centralizes and improves beacon management and data routing. Molecule brings cloud-based intelligence and manageability to traditionally static beacons. It also allows data to be processed at the edge, delivering critical information to store employees and customers faster, while minimizing data transmissions to the cloud. KST’s Covalence\* platform ties everything together with a common API for communication across devices, Molecule, and the cloud.

### **Consumer Expectations Accelerate**

Today’s shoppers are bringing online expectations to brick-and-mortar stores. They expect to find products and information fast, receive exceptional value and service, and take advantage of mobile payment options. To cater to these needs, retailers are deploying beacon technology.

Beacons are small, affordable hardware devices that can be installed in key places throughout retail stores. Beacons use BLE to communicate with the cloud or apps on a tablet or smartphone, so employees and shoppers don’t need to be connected to a Wi-Fi or cellular network. BLE is supported by all popular mobile operating systems.

However, typical beacons can be time-consuming to manage. Employees or managers must walk around the store and manually update each unit using a special mobile device. Molecule, a new Intel-based gateway from KST, promises to centralize beacon management and improve data routing to the cloud. The gateway is just one part of a secure, scalable retail platform based on Intel® technology. This end-to-end architecture protects data from the device to the data center and offers scalability for edge data processing and beacon technologies as they evolve—future-proofing retailer investment and leading to a better experience for their customers.





Brick-and-mortar stores are using beacons to create more engaging retail experiences.

### Leading-Edge Beacon Platform

KST's Particle and Ion are the beacons of choice for companies like BestFit Mobile, which develops apps that create revenue-driving experiences for world-class retailers like Neiman Marcus. Molecule centralizes the management of these beacons, so that the settings on individual beacons can be changed without having to handle each one.

Molecule is based on the Dell Edge Gateway\* 5000 Series and features an Intel® Atom™ processor. Molecule can transmit data directly to the cloud, but can also process it at the edge. This not only provides information faster and improves data visibility, but also relieves the demand on the network by reducing the amount of data to be transmitted.

Molecule is based on KST's open-source Covalence platform, giving retailers the flexibility to customize solutions. Covalence can run on the Intel® Retail Sensor Platform, which tracks items through RFID tags for near-real-time insights about inventory,

## RETAIL, REVOLUTIONIZED

Imagine that a customer has downloaded her favorite retailer's Android\* app. As she walks into the store, a beacon wakes up the app on her phone and sends a welcome message. The message might tell her about a special offer, reward her visit with loyalty points, or remind her about items she placed in her online shopping cart weeks before. When she's ready to purchase an item, she can use secure mobile payment right on her smartphone.

At the same time, the beacon can trigger an app that pulls up useful data on a store associate's tablet—think loyalty information and favorite items. Digital signage can respond with personalized offers as the customer moves from one department to the next. By helping associates cater to high-value customers and improving the shopper's engagements with merchandise, staff, and mobile devices, beacon technology can translate into higher sales and stronger customer loyalty.

stocking, customer traffic, and demand. Because Covalence offers an open API, third parties can create proximity-marketing applications for unique business scenarios. For example, if a retailer wants to provide better service to customers in dressing rooms, it can develop a custom app that sends an alert to an associate when a customer taps a "help" button on her app. By getting in front of customer needs, retailers can enhance the shopping experience, encourage purchases, and cement customer loyalty.

Although the possibilities are exciting, beacons create new concerns around security. To help ensure customer data is protected from the edge to the cloud, KST is integrating Intel® Security software into its solutions.

"End-to-end security is absolutely vital to us," said Bob Kressin, president of KST. "We believe it takes the right architecture to protect customer and sensor data whether moving between the edge, the gateway, or the cloud. Coupled with current and future beacon security enhancements, Intel Security software is helping us achieve this high level of protection."



KST developed Molecule\*, powered by Intel® Atom™ processors, to improve beacon management and data routing.

### Secure Processing at the Edge

Intel technologies help ensure beacons, gateways, and mobile tablets all work together to securely process data and send it to where it's needed. Working with Intel, KST is taking steps to enhance its beacons with Intel-based technology, improving management and processing at the edge.

"We're intrigued with the idea of crafting an entire solution built on Intel® architecture, from high-bandwidth data centers right down to the sensor," said Kressin.

### Intel® Quark™ and Intel® Curie™

Beacons embedded with sensors can collect and transmit valuable data about an asset or environment at the very edge of the network. KST's engineers are exploring ways to embed its Particle beacon with a sensor based on the Intel® Curie™ module or Intel® Quark™ SoC.

The Intel® Quark™ SE microcontroller is Intel's newest low-power, secure SoC, designed to bring intelligence to the network edge and reduce development costs for securely managed IoT endpoint devices. Intel Quark technologies can be embedded in sensors and beacons for retail, industrial, healthcare, and many other applications.

Intel Curie is a highly integrated hardware module that can power a solution the size of a button. It's a complete low-power solution designed for sensors, beacons, and wearable devices. At its core is the Intel Quark SE SoC, which can run for extended periods from a coin-sized battery and features motion sensor, BLE radio, and battery charging capabilities.

**Intel® NUC**

Intel® NUC mini PCs, kits, and boards feature 6th generation Intel processors for high performance and reliability. These affordable, customizable computing systems are ideal for powering IoT gateways, like KST's Molecule.

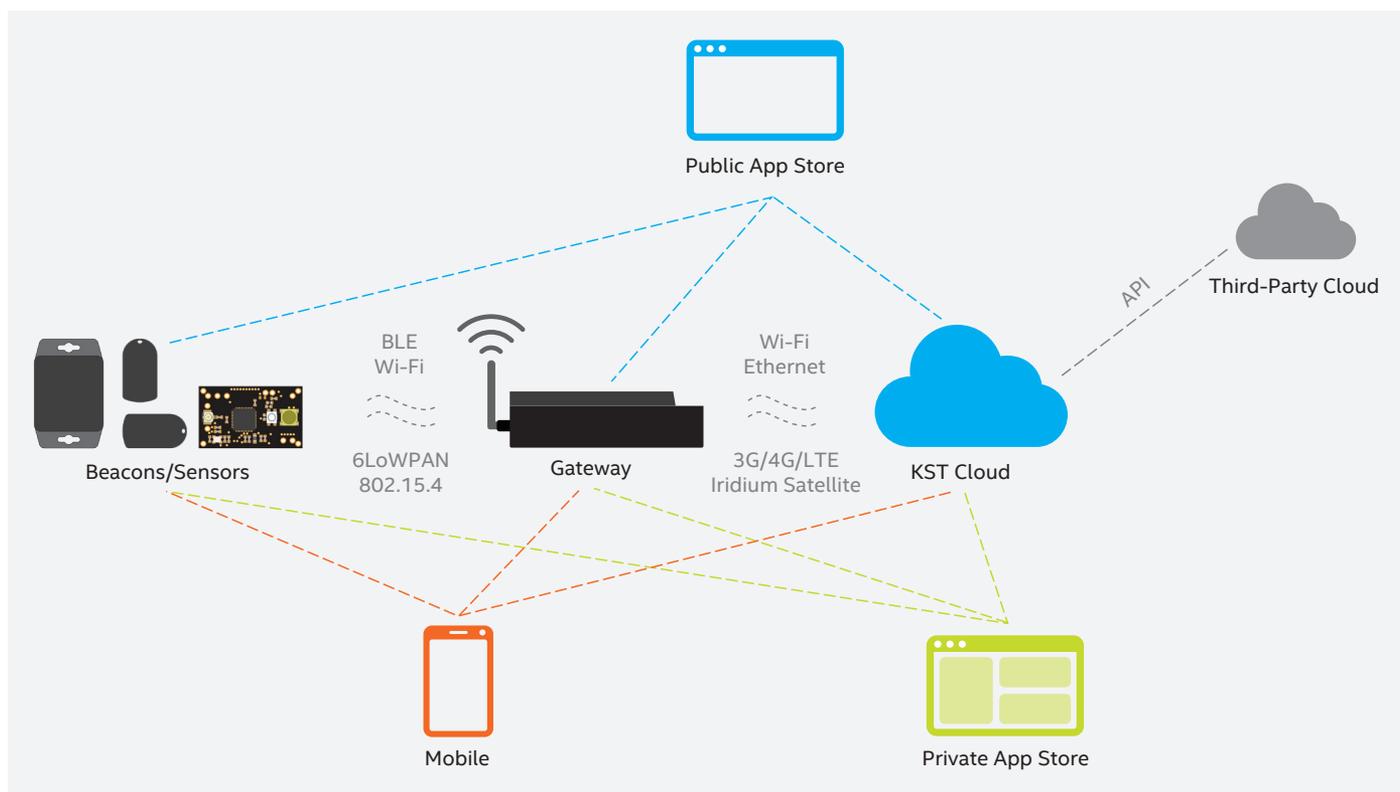
**Intel® processor-powered tablets**

Employees can quickly pick up signals from beacons using Android\* or Windows\* tablets powered by Intel® processors. Intel is the platform of choice for making sure tablets and other mobile solutions are both powerful and easy to manage.

**Intel Security**

Intel Security is intensely focused on developing proactive, proven security solutions and services that protect systems, networks, and mobile devices for business and personal use around the world.

## KST BEACON TECHNOLOGY ARCHITECTURE



**Figure 1.** Beacons trigger actions in public or private apps, like those on a customer's smartphone or an employee's tablet. Information is shared between apps and cloud services, with gateways filtering and routing data.

## Enhancing Retail and Beyond

Beacon technologies are already transforming retail experiences, but they can also enable smart cities, next-generation healthcare delivery, industrial workflows, and more. Beacons can guide visitors through a museum, help staff quickly locate diagnostic equipment at a hospital, or engage with shoppers as they explore a retail store. When powered by Intel technology, beacons can also enable secure processing at the device level, opening the door for powerful analytics at the edge, more immediate insights delivered to teams, and reduced data transmissions.

## Learn More about IoT

For more information about Intel IoT technologies, visit [intel.com/iot](http://intel.com/iot).

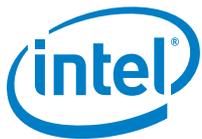
To learn more about Intel's solutions for retail, visit [intel.com/retail](http://intel.com/retail).

Learn more about KS Technologies' industry-leading beacon hardware and solutions at [kstechnologies.com](http://kstechnologies.com).

## RETHINKING RETAIL

Customer expectations are changing—and retail technology is changing in response. Intel® technology makes it easier for customers to find what they want, when and where it suits them. It also gives retailers a flexible foundation for better inventory tracking, smarter use of data, and frictionless experiences.

- **Mobile solutions**, including Intel® processor-based ruggedized tablets and kiosks, help customers find product information while shopping.
- **Digital signage** and vending solutions help retailers present customized offers and showcase products.
- **Omnichannel solutions**, like Intel® Retail Client Manager, deliver a consistent experience across a growing number of channels.
- **Data-driven solutions**, including sensors, beacons, gateways, servers, and analytics programs, collect and analyze real-time data for valuable insights.
- **Security solutions** help protect retailers against growing malware threats.



Intel® technologies' features and benefits depend on system configuration and may require enabled hardware, software, or service activation. Performance varies depending on system configuration. No computer system can be absolutely secure. Check with your system manufacturer or retailer, or learn more at [intel.com](http://intel.com).

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