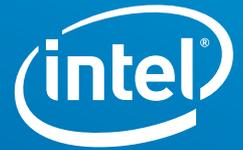


# SOLUTION BRIEF

Shipping and Logistics  
Shipment Monitoring



## Comprehensive Real-Time and Batch Monitoring During Shipment

### Intel® Connected Logistics Platform: An integrated end-to-end shipping solution

#### Solution Architecture:

##### Intel® Connected Logistics Platform

The solution uses sensor tags, a gateway, mobile devices, and cloud-based dashboards and analytics:

#### 1 Sensor tags

Placed on packages to collect data (temperature, tilt, shock, light, humidity, barometric pressure). The tag uses a credit card form factor with a typical battery life of up to 100 days depending on use case (battery life depends on frequency of data upload and amount of transferred data) and includes a security chip and wireless connectivity adapter.

#### 2 Gateway

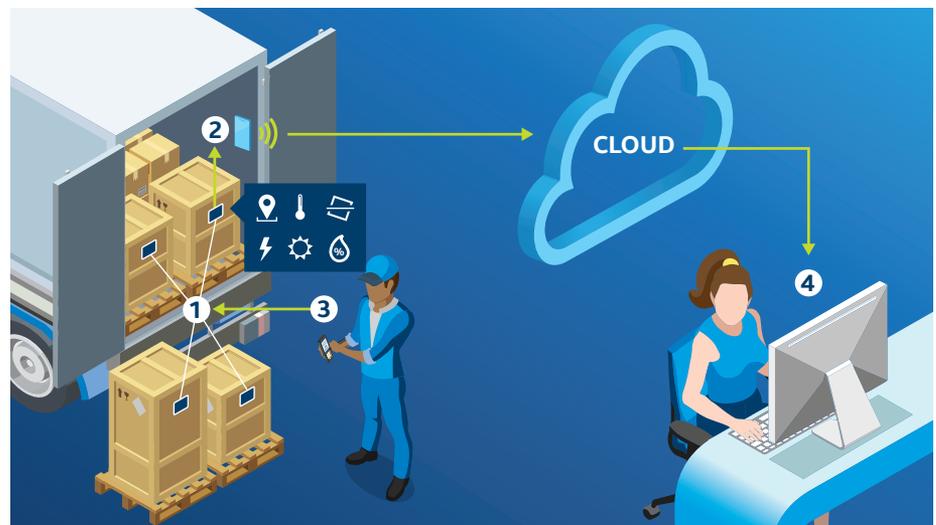
Familiar smartphone form factor uses Intel® IoT technology with GPS to collect sensor tag data and transmits it to the cloud for analytics. Battery life is 20–40 days.

#### 3 Mobile devices

A mobile app pairs/unpairs a tag with the package it's attached to and pairs/unpairs the gateway with the shipment it's tracking.

#### 4 Dashboards

Enable shippers to view real-time sensor data and receive alerts.



Companies ship millions of tons of goods and materials every year. When a shipment is compromised in transit (due to damage, loss, delay, theft, or spoilage), companies lose revenue and productivity as well as goods.

Intel and Capgemini have developed an IoT hardware/software solution to increase the visibility, integrity, and security of shipments as they move through the supply chain. The end-to-end solution provides real-time tracking and monitoring of shipment location, temperature, humidity, shock, ambient light, pressure, and tilt; provides a comprehensive dashboard for effortless monitoring and analysis; and includes programmable notifications and alerts for quick intervention.

### Challenge: Lack of cost-effective, real-time shipment visibility

Current shipment tracking solutions either fail to provide real-time visibility or are too expensive for package-level deployment, which hinders the ability to mitigate loss, assess responsibility, and identify process issues.



**1 OUT OF 10**  
US e-commerce packages arrives damaged<sup>1</sup>

**1,582**  
containers lost at sea each year<sup>2</sup>

**800+**  
cargo thefts in 2016 in the US and Canada, with an average value of USD 207K<sup>3</sup>

**15% TO 25%**  
of perishable goods worldwide lost/damaged along the cold chain<sup>4</sup>

## End-to-end visibility from powerful, scalable Intel® technology and cloud services

- **Real-time risk mitigation.** Visibility into package-level condition and shipment location helps prevent and reduce losses.
- **Geofencing.** GPS-enabled tracking across the entire journey ensures accurate routing. Users receive alerts when a shipment is off track and proof-of-delivery notifications when shipments are delivered.
- **Predictive analytics.** A dashboard enables shipment monitoring and provides data to help triage problems to optimize the supply chain. Analytics and deep learning can be applied to optimize any container's location and anticipate delivery needs.
- **Cost-effective.** An accessible price point for all-in-one devices allows package-level tracking while reducing costs associated with product waste and inefficiencies. And instead of paying licensing fees, customers can opt to pay per day for each asset tracked (full-service mode).

## Use cases

### Track and monitor high-value, sensitive equipment

**Challenge.** Excessive tilt or shock can damage large, costly items such as laboratory equipment or machinery.

**Common solution gaps.** Shock/tilt indicators only provide data upon delivery and don't indicate time and place of an incident.

**Solution.** Real-time dashboard alerts for location and excessive tilt and shock enable root-cause isolation and triage.

### Track and monitor goods at risk of theft

**Challenge.** High-value shipments—like consumer electronics, branded goods (perfume, clothing, and/or alcohol and tobacco products), pharmaceuticals, or intellectual property—are often targeted for theft.

**Common solution gaps.** Package-level tracking can be cost prohibitive and analog devices don't provide a means to identify and address theft.

**Solution.** With cost-effective GPS-enabled tracking along the entire shipping journey, sensors detect near-real-time changes in the environment and conditions, reporting if a single item/package is separated from the others.

### Track and monitor conditions during temperature-regulated shipments inside and outside of package

**Challenge.** Perishables like pharmaceuticals, produce, and chemicals must maintain specific temperatures to prevent spoilage and meet regulatory standards.

**Common solution gaps.** Analog devices only provide after-the-fact information and are cost prohibitive for package-level tracking.

**Solution.** Cost-effective sensors monitor regulated interior and outside temperatures in real time.

## How it works

The Intel and Capgemini solution includes inexpensive, disposable sensor tags; hardwired or battery-powered mobile gateways; a web-based dashboard; and middleware for cloud service provider applications. The sensor tags are affixed to each container, pallet, box, or item, depending on the level of granularity desired. Cameras also can be used for asset tracking. The gateways are placed in shipping containers to gather data from tags, provide intelligence at the edge, and push select data to the cloud. Altogether, the solution delivers real-time tracking and monitoring during transit, proof of delivery, real-time alerting, and data logging. In addition, the multimodal device infrastructure eliminates reverse logistics and provides intelligence at the edge with hardware-level security.



## Transform logistics and gain a competitive advantage

- Ensure real-time asset tracking and monitoring of shipment quality, integrity, and security at every stage of the supply chain, anywhere in the world, through Intel® technology-based IoT gateways.
- Deploy an easy-to-set-up visibility dashboard, customized for your enterprise needs.
- Seamlessly integrate devices into existing workflows with minimal onboarding.
- Track packages worldwide and scale with your business.
- Deploy robust end-to-end data security and device protection through Intel technology.

## Get on board today!

- The Intel and Capgemini solution can be provided via SaaS or as a shared revenue engagement.
- The solution includes Intel® architecture-based tags, a gateway, and a virtual gateway for device management.
- Capgemini integrates hardware and cloud technologies and generates APIs for customer data access.
- The flexible architecture allows for customization.

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## Learn more about the Intel® Connected Logistics Platform

Contact your Intel representative for more information or visit [intel.com/supplychainiot](https://intel.com/supplychainiot).

## Learn more about Capgemini integrated, end-to-end shipment-monitoring solutions

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