



# Achieve a 360° view of your assets with eSIM and iSIM

The transport and logistics industry is witnessing growth in IoT solutions as more devices are connected and linked to the cloud. Digitalisation through smart sensors enables organisations to track assets, optimise traffic routes and increase efficiency in logistical operations on a global scale.

Cellular IoT devices provide real-time visibility across the supply chain, allowing for constant product status monitoring and proactive decision-making, improving supply chain operations. The data generated from connected devices holds immense potential that is only now starting to be recognised



**The secure data exchange of interconnected devices is evolving rapidly with connected tracking sensors ensuring high visibility of supply chain operations globally**

## IoT security as standard

Embedded SIM (eSIM) and integrated SIM (iSIM) are perfectly suited to tracking applications that require tamper-proof security to be enabled globally with cellular connectivity. Growing at 18% CAGR, eSIM is becoming the technology of choice for device OEMs serving the logistics, asset tracking and condition-based monitoring market. eSIM or eUICCs allow OEMs to embed or integrate (iUICC) functionality for remote SIM provisioning (RSP), streamlining manufacture and bringing a choice in connectivity throughout the life of the device. Further, the hardware-backed eSIM security can be used as a root of trust to authenticate data is trustworthy – a must for the 360-degree view of your supply chain.

## Smart and secure connectivity

IoT devices for tracking assets are installed on vehicles or goods such as containers that can securely transmit vital data through eSIM or iSIM to a web-based software platform. By strategically placing discrete trackers within crates, containers and pallets, goods can be efficiently tracked cost-effectively. ►

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**The challenge**

Our customers include device makers who need to support the growing demand for compact, cost-effective and battery-powered tracking solutions – namely, these take many forms: tags, labels, dongles or attached devices that can track condition-based monitoring of entire pallets or containers. Further, these are subject to an ever-increasing variance in temperatures, water, humidity, extreme climate events, and an increasing threat of counterfeit data that can offset forecasting or supply chain integrity.

**Optimised visibility:** Past tracking solutions are prone to counterfeiting, leading to supply chain dark spots, and excess or wasted inventory for end-users served by logistics. Tamper-proof security and trace accountability are essential for high-value assets that require hyper-connected data for logistics visibility.

**Vendor choice:** In a cost-sensitive market serving many types of asset value, it's important to operate with a choice of connectivity providers along with the ability to make use of the best connectivity for the end destination and throughout the service lifespan.

**Finite battery life:** Any security updates or management operations need to be remotely carried out without running down the battery charge, which would run the risk of vulnerable trackers or gaps in visibility. Solutions need to address battery constrained timelines.

**Tracing from factory to pharmacy:** For example, pharmaceutical manufacturers are required to securely record the logistics journey from factory to pharmacy according to regulations such as the DSCSA (Drug Supply Chain Security Act) in the US, effective from January 1, 2023. Similarly, EU/FMD (Falsified Medicine Directive) for full interoperable track and trace accountability. Temperature and humidity metrics and any threshold deviation that could alter the drug's efficacy must be recorded. All of this is done to ensure consumers are given effective dosages and, ultimately, better healthcare.

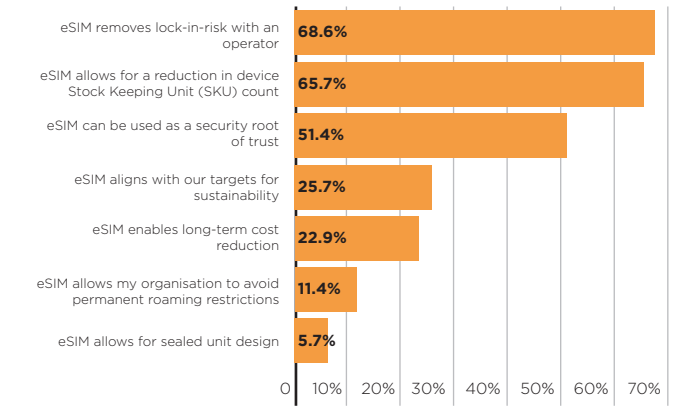
**Across the seas:** Once a pallet leaves the factory, it may have a bulky tracking device via cellular; however, that does not include a way to actively monitor each individually sealed package without spending impractical money. Major gaps and periods of no communication remain, especially over the oceans out of reach of terrestrial networks.

**Why eSIM?**

eSIM enables a rich set of IoT capabilities and is fast becoming the form factor of choice for module makers looking to install a root of trust in asset-tracking devices with robust, scalable chip-to-cloud security. Its compact size and ability to operate in low-power devices can be deployed in large quantities worldwide.

The transport and logistics industry has been a keen advocate of eSIM; 45% of transport and logistics respondents with a current cellular IoT deployment reported they use eSIM as quoted in the Enterprise Cellular IoT Survey 2023 from **Kaleido Intelligence**. The main reason for adopting eSIM is to avoid operator lock-in, with 69% of users reporting this as the reason for their usage. A reduction in stock-keeping unit (SKU) count is close behind at 66%.

**Figure 1:** Factors for choosing eSIM (eUICC) from the Enterprise Cellular IoT Survey 2023, Kaleido Intelligence.



**The solution**

Kigen, with its ecosystem of module and chipset partners and connectivity providers, has been serving the logistics industry with connected labels and tags based on iSIM technology for five years with partners such as **SONY** and **Vodafone**. This has led to a vibrant set of choice in hardware and connectivity options from turnkey solutions to security eSIM and iSIM OS on leading IoT modules and chipsets, such as **Murata Technologies**, **Quectel Wireless Solutions**, **Sierra Wireless** and more.

**Building blocks of success**

Kigen's consumer eUICC OS is the world's smallest code-size GSM-A-compliant software stack for eSIM technology, available in various sizes and packaging options. Further, iSIM technology inherently can achieve a far more compact device footprint – up to 98% smaller than eSIM. We offer flexible approaches for the management of subscriptions with due care to maximise battery life in the field. Kigen has supported multiple customers from the ground zero to choose the best-fit connectivity partner for their target markets.

As a forerunner in LPWAN support, our connectivity ecosystem is backed by all major operators and leading IoT MVNOs across all key regions offering terrestrial coverage in up to 200 countries.

With our partnership with **Skylo**, a non-terrestrial network (NTN) operator, logistics OEMs can benefit from a smooth transition between cellular and satellite connectivity. The combination is attractive for deployments that require continuous coverage such as real-time asset tracking, where constant cellular connectivity is necessary. ■

**Why Kigen**

By partnering with Kigen, you'll work with a global leader championing how IoT manufacturing can be streamlined. Utilise our experience, expertise and ecosystem for your success in delivering digitalisation for logistics.

To learn more about how our eSIM and iSIM secure OS and remote SIM Provisioning secure server capabilities, visit [kigen.com/cpe](https://kigen.com/cpe) and meet a sales representative at our next event: [kigen.com/mwc-las-vegas-2023/](https://kigen.com/mwc-las-vegas-2023/)