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MARKET REPORT

# Why cellular IoT and eSIM are ready to scale across North America



# North America: A market ready to scale

North American organizations are moving connected products and infrastructure from pilots to large, long-lived fleets. The commercial opportunity is significant, but success depends on connectivity that can be deployed quickly, managed remotely and adapted throughout the device lifecycle.

Adoption of embedded SIMs (eSIMs) is set to gain traction. **ABI Research** expected 403 million consumer devices and 140 million IoT eSIM-enabled devices globally to ship in 2025[1]. **Kaleido Intelligence** predicts that implementation of the SGP.32 specification will ramp up from 2027[2]. By 2029, the firm projects that nearly a quarter of all eSIMs activated for IoT use cases will be supported by SGP.32 eSIMs and associated architecture. Meanwhile, the new specification will help drive the market to more than one billion activated eSIMs within IoT in 2028.

North America is poised to play a leading role in the next generation of IoT. As the GSMA's SGP.32 specification gathers momentum, **Juniper Research** has forecast that connected logistics, oil and gas, and the smart street lighting sector, all of which are mature in the region, will be the fastest-growing IoT eSIM sectors in 2026. The firm believes that these industries will benefit the most from the specification in 2026; contributing a combined 75 million new eSIM connections[3].

**20–21%**

**of global IoT connections are expected to be in North America through the coming decade.**

Source: Transforma Insights, 2025

**8 billion**

**North American IoT connections in 2034 rising from 4.3 billion in 2026.**

Source: Transforma Insights, 2026

**US$1,000+**

**Cost of truck-roll including direct and indirect costs.**

The Technology and Services Industry Association (TSIA)

[1] https://www.abiresearch.com/press/esim-enabled-device-shipments-will-exceed-633-million-in-2026-driven-by-chinese-smartphone-adoption-and-sgp32-advancements-across-consumer-and-iot-markets
[2] https://kaleidointelligence.com/cellular-iot-top-vertical-reached-2-2-billion-global-connections-in-2025/
[3] https://www.juniperresearch.com/press/esim-connections-reach-1bn-globally-in-2026/

## Why cellular is the natural backbone for North American IoT

North American IoT deployments often span large territories, multiple mobile-network footprints and a mix of urban, rural and industrial environments. Devices may be installed in vehicles, utility infrastructure, retail sites, alarm systems or remote assets where local Wi-Fi is unavailable, unmanaged or dependent on the end customer. Cellular provides a common connectivity foundation that can operate independently of local networks and can be managed consistently across the fleet.

Its value is not limited to coverage. The cellular ecosystem offers mature device identity, authentication, roaming and service-management capabilities, with technology options for different performance profiles. 4G and 5G address high-throughput applications; LTE-M, NB-IoT and RedCap support lower-power or lower-complexity devices; private cellular can serve controlled industrial environments. This breadth allows manufacturers to align connectivity with the device rather than force every use case into one network model.

For OEMs and service providers, this translates into a faster path from regional pilots to repeatable deployments. A cellular product can be activated after installation, monitored remotely and supported without relying on a customer to configure a router or maintain a local gateway.

Key cellular IoT benefits for North America include:

- Broad reach across cities, states, provinces and transport corridors.
- Connectivity options for high-throughput, mid-tier and low-power devices.
- SIM-based identity and authentication anchored in secure hardware.
- Operational independence from customer Wi-Fi and short-range gateways.

**Cellular therefore establishes the durable network foundation. The next challenge is ensuring that this foundation can adapt after the device has left the factory.**

**Figure 1:** The business benefits of cellular

| Business benefit | How cellular delivers it |
|---|---|
| **Faster rollout** | Activate devices remotely and reduce site configuration. |
| **Lower operating cost** | Use remote diagnostics and reduce field interventions. |
| **Greater resilience** | Maintain an independent communications path across dispersed locations. |
| **Simpler operations** | Simplify subscription and connectivity operations across the fleet. |



**A manufacturer can build a common device design and assign the appropriate connectivity profile closer to deployment**

## eSIM makes cellular adaptable over the device lifecycle

A conventional removable SIM can lock a device into decisions made during manufacturing or installation. That model becomes restrictive when a connected product is expected to operate for ten years or more, move between regions, change ownership or remain in service while operator contracts and coverage conditions evolve.

eSIM addresses this constraint by storing operator profiles in an embedded, tamper-resistant secure element. Instead of physically opening the device and replacing a SIM, an authorized organization can download, enable, disable or change the required profile remotely. Connectivity becomes a lifecycle capability rather than a one-time hardware choice.

This flexibility can reduce the number of regional product variants, simplify SIM logistics and support late-stage localization. A manufacturer can build a common device design and assign the appropriate connectivity profile closer to deployment. Once devices are in the field, profiles can be adapted to support redeployment, refurbishment, changes in commercial arrangements or differences in network availability.

- Activate devices after shipment or installation.
- Change operator profiles without a physical SIM swap.
- Reduce regional SKUs and localize products through software.
- Reprovision devices when they are moved, refurbished or transferred.
- Keep credentials and security keys within a protected secure element.

eSIM makes it possible to adapt connectivity after deployment. The next requirement is a common approach that makes this flexibility practical across large and diverse IoT deployments. This is where GSMA SGP.32 is important.

## SGP.32 makes eSIM practical at IoT scale

GSMA SGP.32 is the IoT standard that defines how eSIM profiles can be securely downloaded, managed and changed remotely across mobile operators. It extends the benefits of eSIM to a wide range of IoT devices and deployment models, including devices that may remain in the field for many years without direct user interaction.

For manufacturers and service providers, the value lies in having a consistent and interoperable way to use eSIM across large device populations. Rather than creating a different connectivity approach for every device type, operator or deployment, SGP.32 provides a common framework that can support a broad product portfolio across regions and networks.

SGP.32 is important because it helps reduce fragmentation between device manufacturers, connectivity providers and mobile operators. This creates a clearer path to deploying eSIM at scale, supporting faster market entry, greater flexibility and secure connectivity throughout long-life IoT deployments. SGP,32 enables streamlined connectivity for deployments that benefit from:

**Scale:** Support large device populations across multiple regions and mobile networks.

**Consistency:** Use a common, interoperable approach across devices, connectivity providers and mobile operators.

**Faster deployment:** Simplify the introduction of eSIM across products, markets and use cases.

**Flexibility:** Support different device types, deployment models and changing connectivity needs.

**Lower barriers to adoption:** Make standardized eSIM available to a broader range of OEMs and service providers.

The progression is straightforward: cellular provides the coverage and reliability needed for wide-area IoT; eSIM allows connectivity to change without replacing a physical SIM; and SGP.32 provides the common, interoperable framework needed to extend those benefits across IoT deployments.



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## Immediate value across key verticals

| | |
|---|---|
| **Utilities and smart metering** | Remote provisioning and fewer field interventions for meters and grid sensors with long service lives. |
| **Track and trace** | More consistent connectivity for assets moving across routes and coverage areas. |
| **Security and alarms** | An independent communications path with protected credentials and remote policy updates. |
| **Retail and mobile POS** | Primary or backup connectivity that reduces lost transactions and support visits. |
| **Fixed wireless and distributed sites** | Faster activation and alternative profiles for resilience. |
| **Industrial monitoring** | Secure identity and lifecycle flexibility across heterogeneous, hard-to-reach sites. |



## Thales enables secure, scalable cellular IoT

Bringing cellular IoT and eSIM to market requires experience across devices, connectivity, security and the mobile ecosystem. With SGP.32 compliant eSIM solutions, Thales brings these capabilities together to help OEMs and service providers reduce deployment complexity and support connected products throughout their operating life.

**Support for industry standards.** Thales contributes to the development and implementation of eSIM standards for IoT.

**Security by design.** Expertise in secure elements, digital identity and cybersecurity protects connectivity from manufacture through operation.

**Ecosystem scale.** Integration across chipset, module, device, connectivity-provider and operator ecosystems reduces deployment friction.

**Lifecycle support.** Thales helps customers prepare for connectivity needs that may change over a product's operating life.

Beyond SGP.32, Thales helps enterprises simplify and take greater control of IoT connectivity through advanced orchestration and automation, with unified visibility and management via a Single Pane of Glass.




To learn more about how Thales can help your deployment optimise connectivity and operations while preparing for SGP.32-enabled mass-scale growth, visit **Thales IoT Solutions**