THALES
Building a future we can all trust

Thales Adaptive Connect

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THALES **ADAPTIVE CONNECT**

A unique opportunity for Mobile Network Operators to extend the benefits of remote eSIM subscription management to IoT Service Providers.

Mobile Network Operators (MNOs) can now offer value-added services to IoT enterprises that want to embrace cellular networks and need rapid time to market to deploy their devices. In this regard, eSIM (embedded SIM) technology is the best enabler.

Executive summary: bringing flexible and convenient eSIM connectivity to massive IoT deployments

Across the consumer and industrial markets, eSIM (embedded SIM) technology is proliferating. Crucially, the eSIM can offer stakeholders a compelling array of benefits, including seamless remote connectivity and highly efficient subscription management over the entire product lifecycle. For the fast-growing sector that comprises massive IoT deployments such as smart meters, these are highly valuable attributes.

With the arrival of Thales Adaptive Connect (TAC), Global Connectivity Service Providers and Mobile Network Operators can offer global, resilient and cost-effective connectivity to IoT Service Providers, with no impact on device manufacturing and logistics operations.

The current market segments

Three distinct market segments have now emerged. Broadly speaking, they reflect the GSMA standards for Consumer and M2M (Machine-to-Machine) use cases covering automotive and other industrial use cases. And alongside these, the GSMA, supported by industry leaders including Thales, is addressing massive IoT, the fast-growing segment of very large fleets of devices. The IoT market, especially Service Providers and Connectivity Providers, have a pressing need for a more adapted approach to manage connectivity for these massive IoT deployments.

A unique opportunity for MNOs to support an untapped market

This is where Thales Adaptive Connect comes into play. This innovative new solution is designed specifically to deliver the flexibility required by the rapidly expanding massive IoT device deployments. In doing so, it extends new commercial opportunities to MNOs and global network service providers of all sizes.
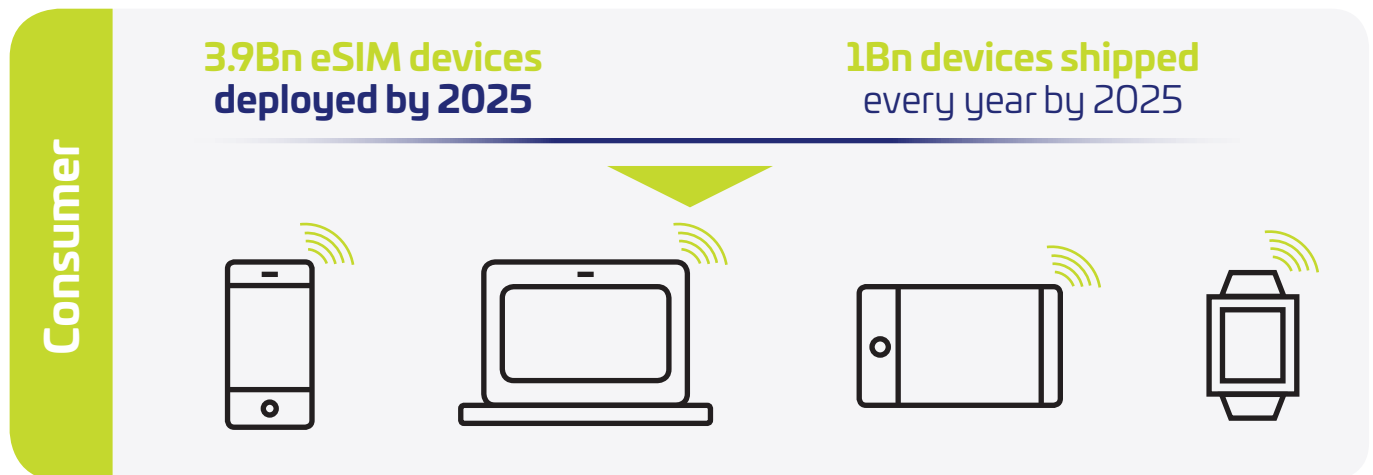
Combining the best of both worlds

Bringing together key elements of both the GSMA's Consumer and M2M concepts, Thales Adaptive Connect enables Connectivity Providers to differentiate with a global, resilient and immediate connectivity offer. For both MNOs and their clients, seamless integration and operation is facilitated. With the arrival of Thales Adaptive Connect, many more enterprises in the IoT sector will finally be able to embrace cellular connectivity, further strengthening an ecosystem that will soon number billions of connected devices.

The **context**

The eSIM market is flourishing. In the consumer domain, an estimated one billion eSIM capable devices will be shipped annually by 2025.

Momentum is similarly strong in the IoT sector. Here, use cases such as smart metering, smart cities, automotive and track and trace will fuel the deployment of a further one billion eSIM devices by the same year.[2]

M2M/B2B IoT

1Bn eSIM devices deployed by 2025

250M devices shipped every year by 2025

| Smart Metering | Smart Cities, Retail POS, Health & Others | Automotive | Track & Trace |

Consumer

3.9Bn eSIM devices deployed by 2025

1Bn devices shipped every year by 2025

The fast-growing adoption of eSIM technology reflects a compelling value proposition. The eSIM enables instant, over-the-air connectivity, and touchless subscription management throughout the entire lifecycle of a deployed device.

For IoT Service Providers, that creates an outstanding opportunity to streamline the manufacturing and logistics of their devices.

Indeed, without eSIM technology, IoT Service Providers have several alternatives to deploy their services globally. However, they present drawbacks: using roaming agreements which are inflexible and costly, and preloading different profiles for each country supplied, leading to multiple SKUs (Stock Keeping Units).

With eSIM technology, a single SKU can serve the IoT Service Provider's entire global market. Equipped with an eSIM, the required local profile can be downloaded when the device reaches its destination with no need for roaming agreements. IoT Service Providers also enjoy far greater flexibility to choose other connectivity providers at a later date.

For MNOs, the potential unlocked by the eSIM is equally exciting. A vast new market for connectivity services is emerging, offering valuable opportunities to build market share and generate additional revenue streams. Moreover, with the eSIM, mobile subscriptions can be deployed and managed more efficiently than ever.

The **challenges**

The rapid development of the eSIM ecosystem has been built on the GSMA standards for consumer and M2M use cases.

The **GSMA Consumer standard** is ideally adapted to the ever more diverse array of connected products now reaching the market. Specifically, it enables the end user to simply 'pull' their preferred eSIM subscription offer from the MNO's SM-DP+ platform, via any available method, such as a QR code, 'one click' solution, or with a mobile app.

In contrast, the **GSMA M2M standard** reflects the fact that, in this area of the market, there is no 'end user' of the device to initiate the subscription download. Instead, it supports the deployment of a Fleet Manager by the manufacturer or IoT Service Provider, to 'push' profiles to large volumes of unattended eSIM capable devices. The GSMA M2M standard is well adapted to the requirements of automotive and other sophisticated industrial applications.

CONSUMER ELECTRONICS	IoT	INDUSTRIAL IoT	AUTOMOTIVE IoT

Consumer	Massive IoT deployments	M2M
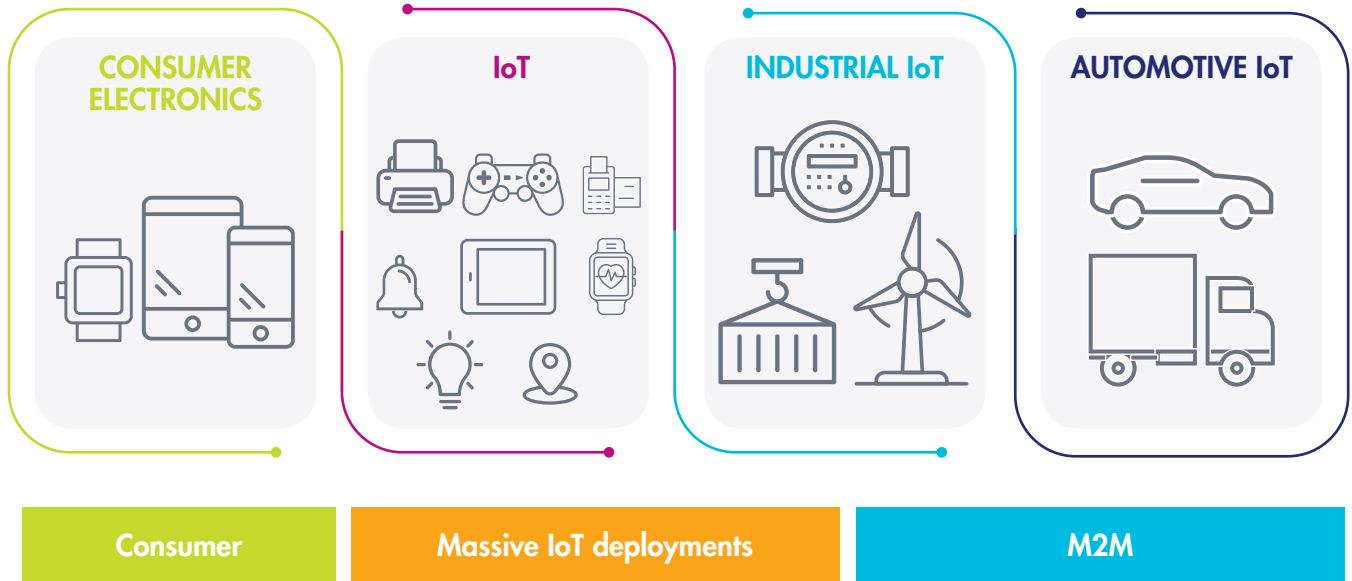
Between the Consumer and M2M use cases, we find another market segment: **the massive IoT**, which represents huge volumes of simple, unattended devices that could leverage eSIM technology. To connect to cellular networks, this segment needs adapted solutions, which are not fully addressed by the current standards.

In this regard, Thales, a global leader in remote eSIM provisioning, has launched a straightforward and flexible new solution tailored to the specific requirements of massive IoT deployments. Combining the consumer GSMA standards and M2M concepts, it opens the door to a powerful new offer for a currently untapped market.

The Thales Solution –
enabling massive IoT deployments

Thales Adaptive Connect (TAC)

Thales Adaptive Connect delivers on the promise of flexible eSIM connectivity for the IoT domain. It is a unique new solution that finally enables MNOs and Global Network Service Providers to offer seamless eSIM subscription management support that is perfectly adapted to IoT Service Providers working on massive IoT deployments.

With Thales Adaptive Connect, an IoT Service Provider can easily download local mobile subscriptions for an entire fleet of eSIM enabled IoT devices - as and when they are deployed in the field, and across any number of different countries.

The Thales solution

Thales solution comprises a TAC server, and an eSIM incorporating a TAC applet.

Thales collaborated closely with the GSMA on the development of its Consumer and M2M standards; Thales Adaptive Connect brings together key elements of both these approaches to meet the requirements of massive IoT deployments. IoT devices equipped with the new TAC eSIM can effectively behave like the users of consumer devices, and 'pull' their profiles from the chosen MNO's SM-DP+ platform. The SM-DP+ only needs to be GSMA certified. As a result, Thales Adaptive Connect also enables MNOs to offer seamless eSIM subscription services to a host of new customers.

The role of the Fleet Manager

The Fleet Manager is the IoT Service Provider's interface to manage the connectivity of the fleet of devices. The Fleet Manager relies on Thales TAC server APIs to apply specific business and/or provisioning rules. A good example of this type of rule is for a subscription to be downloaded from the chosen MNO, the first time an IoT device is powered up in its destination country.

The Fleet Manager can be supplied by Thales, or the customer is free to choose its own.

How does it **work?**
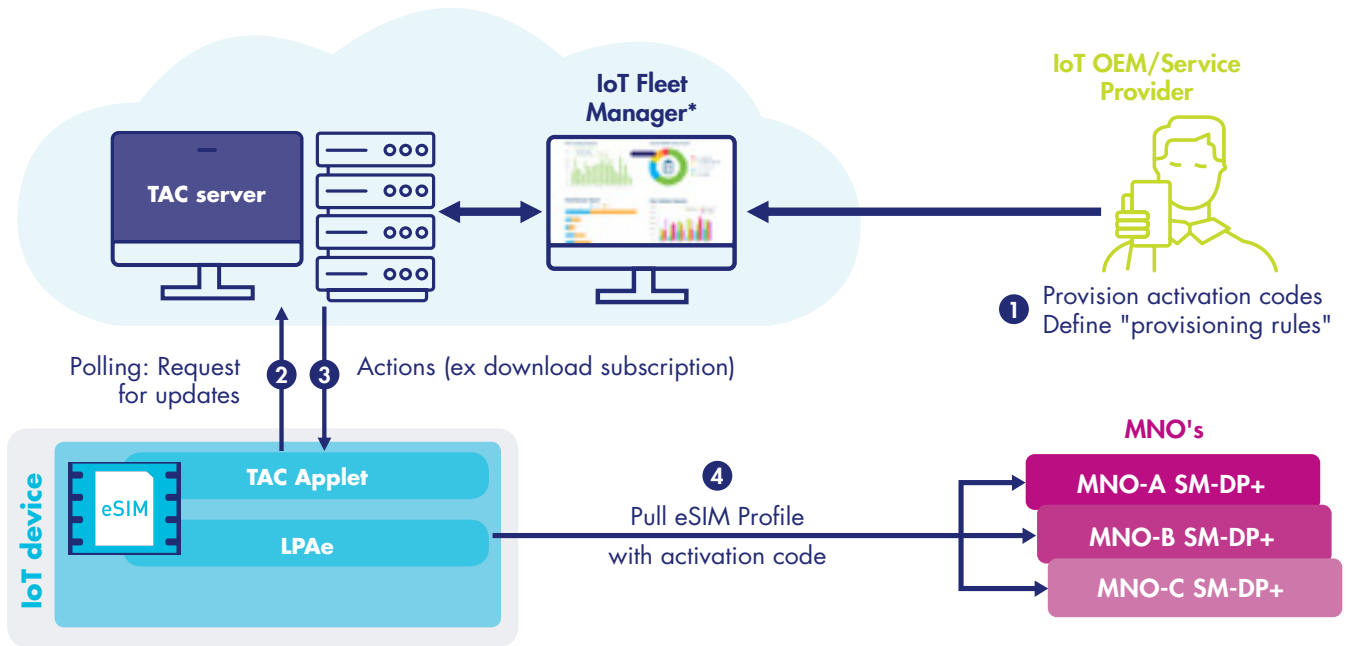
• *Provided by Thales or that of the customer*

Step-by-step

1. The IoT Service Provider defines the 'provisioning rules' and associated actions in its Fleet Manager. All the information that must be executed by the TAC applet, and needed to recover the profile from the SM-DP+ server, is provisioned in the Fleet Manager.

2. The TAC applet contacts the TAC server regularly to check if there are any provisioning actions that need to be executed.

3. The TAC server responds to the TAC applet with any actions to be executed.

4. Based on the provisioning actions, the TAC applet asks the SM-DP+ server, via the LPAe feature of the eSIM, to download an eSIM profile.

The illustration above demonstrates how Thales Adaptive Connect marries aspects of both the GSMA's Consumer standards and M2M concepts. It therefore provides a simple and flexible solution that is optimised for deployment and operation by Global Connectivity Service Providers and Mobile Network Operators, as well as their business customers.

Utilising a Fleet Manager, IoT Service Providers can easily provision activation codes supplied by their chosen MNOs. The Fleet Manager provides this information to the TAC server, which is operated securely in the cloud.

Thales' solution also encompasses a GSMA-certified eSIM that incorporates a TAC applet and an embedded Local Profile Assistant (LPAe). The TAC server interfaces with this applet to provision the activation code and relevant details of the MNO that will supply the profiles. The LPAe then effectively acts as the 'end user' of the device. It utilises the information provided by the TAC server to 'pull' the correct eSIM profile from the MNO's SM-DP+ platform.

The TAC applet regularly checks for updates with the TAC server. The check frequency is defined by the IoT Service Provider.

The Fleet Manager is used to communicate any such updates to the TAC server, including changes to the device profile.

The TAC applet also initiates the check based on events such as a change in the country code of the device or loss of operational connectivity. This indicates it has moved to a different location and potentially requires a new profile to be requested from a different MNO. Since the eSIM can accommodate multiple profiles, the IoT Service Provider can use the connectivity of several MNOs, whenever required during the device lifecycle.

Benefits for
Global Connectivity Service Providers

The Thales Adaptive Connect solution puts Global Connectivity Service Providers and Operators at the heart of the IoT ecosystem. Benefits include:

Deliver on the promise of **flexible eSIM connectivity** for the IoT market.

Fast time-to-market for massive IoT deployment: simple architecture and cost-effective solution to address massive IoT.

Boost services revenues: support IoT Service Providers looking for flexible and streamlined connectivity management for massive IoT deployments.

**Avoid costly roaming agreements:** leverage existing infrastructure of local partners.

Benefits for
IoT Service Providers

For the first time, Thales Adaptive Connect offers IoT Service Providers the freedom to cost-effectively design eSIM capability into their IoT devices, and manage them via their Fleet Manager. Benefits therefore include:

Streamline the manufacturing and logistics of their IoT devices: a single SKU meets the requirements of all international markets.
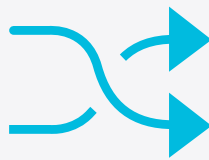
Greater flexibility: ensure adequate data connectivity is always available for IoT devices, throughout their lifecycles.

Out of the box connectivity experience: avoid roaming charges and get the best local connectivity.

THALES AND THE GSMA

Thales is a global leader in remote SIM provisioning platforms. The company collaborates closely with the GSMA and other relevant standardization bodies and is at the forefront of work on new specifications. As well as leading the development of the GSMA Consumer and M2M eSIM remote provisioning standards, Thales is using the experience and expertise embodied in Thales Adaptive Connect to support the creation of the forthcoming GSMA IoT standard.

ABOUT THALES

Thales occupies a unique position in the field of eSIM solutions. We master all the necessary components, and benefit from long-term trusted relationships with MNOs regarding the secure management of their network credentials.

Our award-winning solutions have been adopted by numerous MNOs, MVNOs and key industry players worldwide. Indeed, we are the world leader for Remote SIM Provisioning platforms, employed in both consumer and M2M environments.

We enable streamlined deployment of Thales eSIM Subscription Management solutions with the most complete and innovative portfolio of eSIM products and services. Our business relationships extend to 450 MNOs and over 100 OEMs across the M2M, IoT and consumer markets. These partnerships are built around our strong local support and testing capabilities, with a global footprint of technical consultants and field application engineers.

Combined with eSIM technology, the 5G future connected world will open a new chapter, more digital than ever, for Communications Service Providers and their customers (consumers, enterprises and governments). Extreme mobile broadband speed, massive critical IoT services implementing eSIM technology and ultra-latency complemented by network slicing will bring a shift from selling connectivity to analytics driven services and experiences. In parallel, new vulnerabilities, cyber-security and data privacy concerns and regulations, and identity management for people and devices will all increase, in a more complex multi stakeholder ecosystem. Thales makes the 5G world a place we can all trust.

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