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2024 CHEAT SHEET

eSIM TECHNOLOGY

Standard SIM

Consumer SIM

Embedded SIM

What is an eSIM?

An eSIM or "embedded" SIM is a programmable SIM card. More than just a replacement for traditional SIM cards, eSIM is a revolutionary technology for global connectivity availble in multiple form factors. eSIMs are similar to a traditional SIM, as eSIMs can be a physical, insertable chip (2FF/3FF/4FF), however, unlike traditional SIMs, eSIMs can also be soldered onto the motherboard of a device (MFF2). Teal offers both plastic eSIM cards (like your standard SIM form factor) and embedded eSIMs that are compatible with any IoT device. This means that users can connect their devices directly onto T-Mobile's network without having to physically swap out their SIM cards. The over-the-air (OTA) activation process is simple and streamlines connecting devices directly onto T-Mobile easier than ever before.

GSMA eSIM Specifications

SGP.02

Machine-to-Machine eSIM Spec

The GSMA's Embedded SIM Specification provides a standard for the remote provisioning and management of M2M connections.

M2M benefits include:

- Push based SIM Provisioning
- Streamlined manufacturing
- Remote provisioning
- Lower power consumption

The main elements of the M2M architecture are eUICC (eSIM) in the device, Subscription Manager - Data Preparation (SM-DP), and Subscription Manager – Secure Routing (SM-SR) modules. The SM-DP performs eSIM profile preparation and download, while the SM-SR is responsible for eSIM and profile management and secure routing between the SM-DP and eUICC.

SGP.22

Consumer eSIM Spec

The Consumer eSIM remote provisioning specification is intended for user devices such as smartphones and tablets. It makes managing profiles simple, only requiring user consent to add a new profile or switch between profiles.

Consumer benefits include:

- Pull based Remote SIM Provisioning
- Simpler device setup Devices that can operate independently with their own subscriptions
- New, thinner devices.

No SM-SR module – instead, it has a component called Subscription Manager – Data Preparation+ (SM-DP+), which effectively combines SM-SR and SM-DP functionalities. For profile management, there is a Local Profile Assistant (LPA), a mobile application residing on the device.

SGP.32

Consumer eSIM for IoT Spec

Simplifying IoT Device Integration and Adoption

Broadly based on the Consumer specification. GSMA SGP.32 is the new technical specification for eSIM remote provisioning that is used for IoT devices that are network-constrained or user interface constrained. The standard will likely become available for use in 2024.

Benefits include:

- Pull based Remote SIM Provisioning
- Simplified integration
- Cost savings
- Interoperability
- Support for constrained devices
- Enhanced security features

The eIM facilitates the management of a single device or a fleet of IoT Devices and can be owned by the IoT OEM to manage their devices.

Assessing the eSIM Choices

MNO eSIM	MVNO eSIM	SIM Provider eSIM
MNO eSIMs are linked to their own network and use the technology of the time, making it difficult to switch providers.	Connecting to an MVNO for eSIM connectivity can lead to degraded performance due to de-prioritization on serving networks and smaller back-end infrastructure.	Many suppliers offer physical and eSIM solutions, such as Idemia, Thales, and VALID.
One Direct Network. International connectivity is subject to the supplier's relationships in other countries. These may change over time.	Many Virtualized Networks.	No built-in network agreements or CMP. Most eSIM solutions do not include network profiles, leaving companies to build their own solution.
eSIM technology is rented or leased, not wholly-owned like TEAL.	MVNOs tend to have limited options regarding network availability and technology sunsetting, as such decisions are out of their control.	Direct eSIM technology.
Devices using this solution have a single point of failure - there is no back-up network.	Most existing MVNOs that offer eSIM capabilities are renting or leasing their eSIM platform, thus limiting flexibility and preventing potential benefits from the technology.	While this can work for large-scale enterprises with budget and influence, most organizations cannot afford the costs and timeline associated with arranging carrier agreements and footing integration projects. This leads to an extremely long and costly project delivery making it impossible to scale for one enterprise.
Reliant on operator's inter-carrier roaming agreements.	MVNOs cannot access advantages of eSIM such as private networks, flexibility over pricing, or the lowest latency in the market.	
An MNO offered eSIM is cost-efficient but inflexible, making it most suitable for a single planned network deployment		

How TEAL is Uniquely Different

1. TEAL offers "true" eSIM solutions that are ready for global enterprise deployments and delivers a complete strategy.
2. TEAL has its own eSIM platform, runs its own its source code, and is not reliant on third parties for integration with the ability to preconfigure with a range of carriers.
3. Through its crowdsourcing model, TEAL creates a network-as-an-app style system.
4. Carrier profiles that aren't available in the Teal system can be integrated into its platform free of cost. This is because "true" eSIM platforms like Teal are serious about growing a collaborative 800+ carrier eSIM technology platform.
5. TEAL's GSMA certified eSIM platform provides you with the flexibility and control to remotely switch between networks, with no vendor lock-in, ensuring the highest level of reliability and performance for any IoT deployment.
6. With TEAL, accessing thousands of network configurations in a network "app store" enables direct connection, eliminating roaming completely.