



CSG eSIM ORCHESTRATOR

Capitalize on the management of eSIM-enabled devices

Separate devices used to require separate SIM cards—but not anymore. Today, electronic or embedded SIM cards (eSIMs) allow consumers to connect to new devices and networks with a few quick taps on their smartphone. Consumers can seamlessly share their mobile number and voice plan and data allowance, or switch to a secondary network if there's better coverage—without switching out hardware.

Beyond just consumer wearables, eSIM presents more exciting opportunities to connect tens, hundreds or thousands of devices seamlessly to a shared plan—the epitome of the Internet of Things. Imagine provisioning thousands of new devices at once and connecting them all to a single network—and changing to a new network in real time if there are better rates.

For the communications service provider and the digital service provider, eSIM brings new opportunities to innovate with multi-device bundling, making it easier for consumers and enterprises to adopt and modify with rapid activation and deactivation of the eSIM-enabled devices. eSIM simplifies shared data plans with split device and service fees, enabling a new and potentially lucrative business model.

WHAT IS AN eSIM?

An eSIM is an electronic or embedded SIM. Instead of a physical SIM card, the technology is built right into the device or phone. The eSIM is a tiny chip that provides the same functionality as the traditional SIM card, namely, to authenticate the device and subscriber identity with the service provider.

With a traditional SIM card, consumers have to switch the SIM if they want to move to another service provider, or temporarily use an alternative service provider, like when traveling. eSIM technology enables the consumer to switch service providers without having to switch SIM cards. Instead of having to order a new SIM card and wait for it to arrive, the switching process is done on the device using an app or self-care UI. eSIM technology also supports multiple accounts (dual SIM) and facilitates easy switching between them.

The Google Pixel 2 was one of the first devices to support eSIM technology, and an app for managing the eSIM is available from the Google Play Store. The iPhone 11 and 12 models offer both a physical SIM card slot and an eSIM. The Apple Watch Series 5 and Series 6 also have eSIM technology.

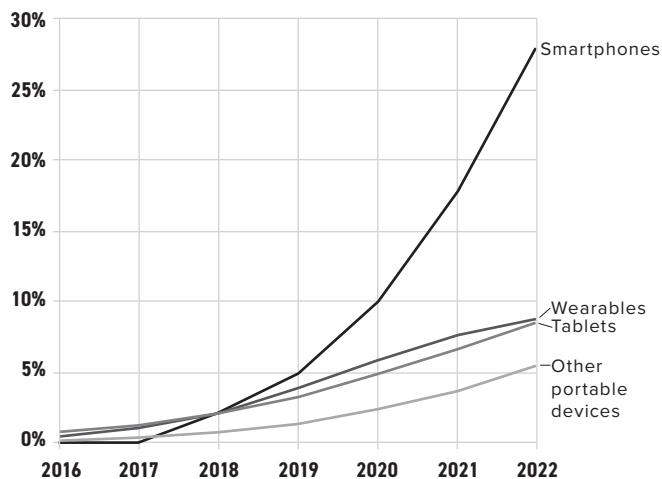
As with the Apple Watch, eSIM will help make devices smaller and more waterproof, which is extremely important for wearable technology. However, devices such as the Apple Watch need to be first paired with a primary device (such as the owner's phone) and activated that way. This activation process also needs to be supported by any eSIM management solution.



eSIM—THE MARKET OPPORTUNITY

According to Ovum, embedded SIM (eSIM) cards are forecast to be present in 30 percent of new smartphones by 2022, representing 10 percent of the active smartphone base. The introduction of eSIM into consumer devices is seen as disruptive technology, opening up a broad array of new business opportunities for the service provider.

% OF TOTAL DEVICE SALES



eSIM technology will also be present in a range of consumer devices other than smartphones, including wearables and tablets. IoT devices such as connected vehicles, smart home products, sensors and smart city infrastructure will also contain eSIM technology, and eSIM will be a key enabler for the proliferation of the IoT ecosystem.

eSIM technology will enable the expansion of the device ecosystem beyond smartphones, expanding market opportunities and delivering new customers and revenue. Companion devices like smart watches or wearables are examples for early implementations of eSIM. However, eSIM will open opportunities for more advanced use cases, where users can attach several devices seamlessly to a single shared data plan. Shared data plans have been successful in several markets already including the U.S. and the U.K.

With the introduction of eSIM technology, multi-device bundling will become easier for consumers to adopt and modify. Shared data plans with split device and service fees can attract and retain consumers who do not wish to commit to separate plans for each companion device.

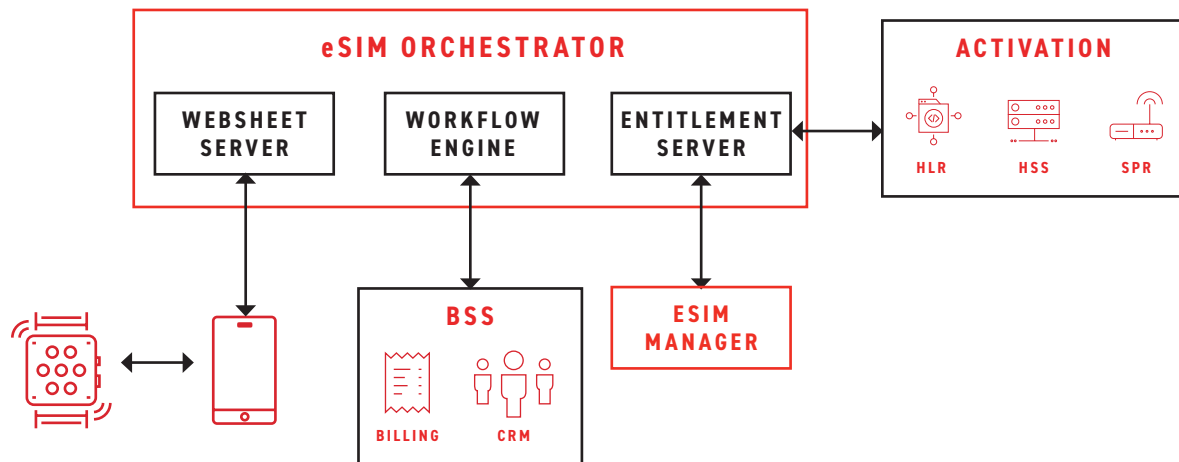
eSIM BENEFITS

The use of eSIM technology brings a number of advantages to service providers including:

- Reduced costs from not having to pay for manufacture and distribution of physical SIM cards
- Reduced overheads and improved automation through increased use of self-care rather than call centers or retail outlets
- Build customer loyalty and reduce churn through innovative multi-device shared bundles
- Increased device reliability (e.g., better waterproofing)
- Makes it easier to offer and manage IoT services and devices
- Makes it easier to support RAN sharing and support MVNOs on their network

In addition, there are clear advantages for end consumers, including:

- Ability to use one number for business and another number for personal calls
- Instantly set up an eSIM to use local voice and data services in another country
- Maintain totally separate voice and data plans
- Set up and maintain multi-device plans with shared allowances and billing



eSIM ACTIVATION IS DIFFERENT

The process for activating an eSIM is different to that of a regular SIM card, and is often initiated by the device user downloading an app or scanning a QR code and following a self-care process. Once the eSIM is activated, there will be a need to communicate the response back to the device in a range of different formats (e.g., a web page that the user can read). The user experience will be critical, and those service providers offering the most user-friendly and quick eSIM sign up process will encourage further usage of the eSIM.

Secondary device activation also needs to be supported. This is where the secondary device (e.g., smart watch) pairs with a primary device (e.g., smartphone) in order to gain initial connectivity and request the activation of its own eSIM. In IoT/M2M scenarios, all communication between the device containing the eSIM and the activation platforms will be initiated and automated by the back-end systems managing the device profiles.

The CSG eSIM Orchestrator, combined with our market-leading charging and billing solutions, offers a unique opportunity for the service provider to manage and monetize eSIM technology and improve the user experience.

CSG eSIM ORCHESTRATOR

CSG eSIM Orchestrator provides a single integrated platform for activation and management of eSIM devices, while also providing full support for physical SIM cards. Support both consumer and IoT eSIM scenarios in a single solution, and bill device usage against single or multiple numbers or networks.

CSG eSIM Orchestrator supports the activation of both physical SIM and eSIM cards. Multiple activation scenarios are supported including:

- Physical SIM card activation
- eSIM activation at point of sale
- eSIM activation via self-care/app
- Secondary device activation via primary device (e.g., phone paired to watch)

The solution provides the following functionality:

- Receipt of service orders from upstream systems using standard interfaces (e.g., XML/SOAP/REST API)
- Support for pass-through of HTML content from upstream systems for rendering by websheet server (e.g., for self-care/app-based sign up)



- Responding to upstream system with final status of each service order
- Decomposition of service orders into transactions for each downstream system using scripted logic and table-based rules
- Management of entitlements and associated configuration policies for each device type
- Mapping transactions into appropriate commands/API calls on the target downstream systems/devices
- Managing errors returned from the downstream systems/devices
- Support for retrying of failed transactions as well as transaction rollback
- End-to-end transaction audit log and traceability
- Deployable as an on premise solution, or operated as a managed service in CSG's private cloud or Amazon Web Services (AWS) environments
- Distributed architecture and horizontal scalability, creating cost-effective incremental scalability as event volume increases
- A field-tested, stable platform that offers all the necessary activation features and functionality to perform high quality and accurate message processing
- A future-proof solution that will evolve alongside new requirements and business models
- Exceptionally low total cost of ownership

SOLUTION BENEFITS

- Manage and support both consumer and IoT eSIM scenarios in a single solution
- Support for activation of physical SIM and eSIM cards in a single solution
- Unique configuration tools that enables new services, new business rules or changes to be developed, test and deployed quickly and easily
- Intuitive, easy-to-navigate Graphical User Interface to operate, monitor, control as well as make changes
- The most modern high-performance and low-cost commodity hardware architecture based upon Intel® XEON® and Linux technology and fully supporting virtualization technology such as VMware

ABOUT CSG

For more than 35 years, CSG has simplified the complexity of business, delivering innovative customer engagement solutions that help companies acquire, monetise, engage, and retain customers. Operating across more than 120 countries worldwide, CSG manages billions of critical customer interactions annually, and its award-winning suite of software and services allow companies across dozens of industries to tackle their biggest business challenges and thrive in an ever-changing marketplace. CSG is the trusted partner for driving digital innovation for hundreds of leading global brands, including AT&T, Charter Communications, Comcast, DISH, Eastlink, Formula One, MTN and Telstra. To learn more, visit our website at csgi.com and connect with us on [LinkedIn](#) and [Twitter](#).