

Valid

THE SMART METERING eSIM PLAYBOOK

Key questions before deploying an eSIM strategy in smart metering

For service providers, smart metering deployments require more than simple network access. Ensuring reliable performance and long-term scalability means adopting an eSIM strategy that delivers operational flexibility, regulatory compliance, efficient lifecycle management, seamless control over connectivity and access to local networks throughout the device lifecycle.



01 WHERE WILL THE DEVICES BE DEPLOYED?

Deployment location is a key driver of your eSIM strategy. It impacts on network availability, regulatory compliance and how flexible your solution can be over time.



Are you targeting one country or multiple regions?

For single-country deployments, local connectivity may be enough. Multinational rollouts, however, require network interoperability to ensure seamless operation across regions.



Are there any permanent roaming restrictions to consider?

Some countries require connected devices to use a local mobile network after a certain period of time. eSIM technology helps meet these requirements by allowing connectivity to be changed remotely, without physically accessing the device.



What level of network coverage is required (e.g., legacy 2G, LTE-M, or NB-IoT)?

While 2G networks still exist in some regions, new IoT deployments increasingly use LPWA technologies like LTE-M and NB-IoT for better battery life and scalability.



Why it matters?

In smart metering, where devices operate for **15–20 years**, factors like network sunsets, permanent roaming restrictions and varying regional conditions make adaptability essential.

Key points

- ✓ **Deployment location** shapes the connectivity strategy.
- ✓ **Permanent local networks restrictions** must be considered.
- ✓ **Network coverage and technology choice** are critical for IoT projects.



02

WHAT CAPABILITIES DO YOU NEED FROM YOUR ESIM MANAGEMENT SOLUTION?

Solutions that integrate to your existing systems to remotely manage eSIMs allow for a new level of connectivity control.



Do you need the ability to switch connectivity providers remotely?

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Are you looking to integrate with your existing systems?

Integration with existing systems through APIs helps streamline operations and avoid data silos.



Do you require full visibility across the device lifecycle?

End-to-end visibility across the device lifecycle enables real-time monitoring, helping optimize performance, detect issues early and reduce operational costs.



Why it matters?

In smart metering, the right solution is key to managing devices, integrations and connectivity efficiently. Without the right solution, complexity, costs and scalability challenges increase quickly.

Key points

- ✓ **Remote connectivity switching** is a key benefit of IoT eSIM technology.
- ✓ **Integration with existing systems** is critical.
- ✓ **Full lifecycle visibility** improves operational efficiency.



03

DO YOU NEED A BOOTSTRAP CONNECTIVITY?

Bootstrap connectivity provides the initial connection required for a device to come online and receive its operational connectivity remotely, even when the final connectivity provider is not known at deployment.



Is the connectivity provider known at the point of manufacture?

In some projects, the final connectivity provider is not selected until later or can change during the deployment process. Bootstrap connectivity provides flexibility to assign connectivity when needed.



Do you require immediate connectivity when the device is powered on?

Immediate connectivity allows devices to connect as soon as they are switched on, enabling remote configuration and ensuring they are ready to operate without manual intervention.



Will devices need to work with different connectivity providers through deployments?

Utilities and service providers often manage deployments across different regions, customers or regulatory environments. Initial bootstrap connectivity enables a consistent deployment process.



Why it matters?

Bootstrap connectivity gives service providers greater flexibility throughout the device lifecycle. It enables connectivity decisions to be made later in the deployment process while ensuring devices can connect from day one.

Key points

- ✓ Bootstrap connectivity **enables devices to connect** before connectivity is assigned.
- ✓ **Devices can be configured remotely** without manual intervention.
- ✓ A consistent deployment process can be maintained **across different projects and regions.**



04

WHAT ARE YOUR BATTERY LIFE AND CONNECTIVITY REQUIREMENTS?

Data consumption is a key factor in defining your connectivity strategy and cost model. In smart metering, usage patterns can vary significantly depending on how often devices communicate and what type of data is transmitted.



Is communication periodic or event-based?

Periodic communication is predictable and easier to optimize, while event-based communication requires flexible connectivity to manage irregular traffic spikes.



Are readings sent daily, hourly or in real time?

Data transmission frequency affects network load and battery usage, with real-time communication requiring higher data consumption and stronger connectivity.



Do you require OTA firmware updates?

Firmware updates can consume significant data and require reliable bandwidth, impacting both connectivity planning and battery performance.

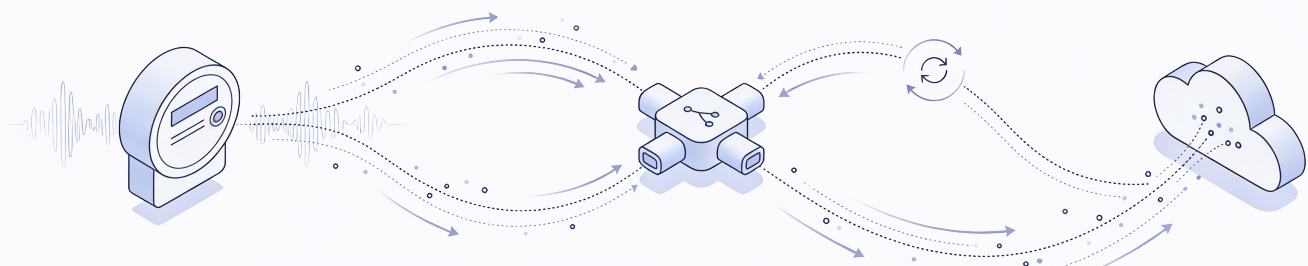


Why it matters?

Data consumption impacts network choice, energy efficiency, and costs, making the **right balance between performance and efficiency** essential for long-term sustainability and device autonomy.

Key points

- ✓ **Communication patterns** impact connectivity requirements.
- ✓ **Data transmission** frequency affects network and battery usage.
- ✓ **OTA firmware updates** must be included in connectivity planning.



05

HOW MANY ESIMS DO YOU PLAN TO ACTIVATE?

The scale of your deployment directly impacts how your eSIM strategy needs to be designed: from platform capabilities to operational processes and commercial models.



Are you deploying thousands, hundreds of thousands, or millions of devices?

Low-volume deployments require limited automation, while large-scale deployments depend on fully automated connectivity management, monitoring and lifecycle operations.



How important is long-term connectivity flexibility?

Over the lifetime of deployment, connectivity requirements may change. eSIM technology helps maintain flexibility without requiring physical access to devices.



Why it matters?

At scale, **deployment becomes an operational challenge** where automation, lifecycle management, and sustainable connectivity agreements are essential.

Key points

- ✓ **eSIM technology enables connectivity changes** without physical intervention.
- ✓ **Long-term connectivity flexibility** helps future-proof deployments.
- ✓ **Rollout strategy** impacts deployment risk.

CONCLUSION

Scalable Smart Metering Connectivity

As smart metering deployments grow in scale and complexity, connectivity flexibility becomes essential to ensure long-term operational efficiency. Remote lifecycle management, bootstrap connectivity, and end-to-end visibility help utilities and service providers simplify deployments, adapt to changing network or regulatory requirements, and maintain control over connectivity throughout the device lifecycle.



SGP.32-READY CONNECTIVITY FOR LONG-TERM SMART METERING DEPLOYMENTS

Valid offers a future-ready eSIM architecture designed to support long-term smart metering deployments with remote lifecycle control, global interoperability and operational resilience.



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Valid's SGP.32-ready solution provides the foundation to address the evolving requirements of smart metering by **combining global interoperability with 400+ mobile network operators**, remote connectivity management through the eIM, and bootstrap connectivity to enable zero-touch device activation.



Designed for large-scale IoT environments, the solution supports optimized connectivity operations, efficient lifecycle management, and reliable performance for smart meters expected to operate autonomously for 15 to 20 years.



By enabling secure remote profile management and full lifecycle connectivity control, **SGP.32 becomes a key architecture for scalable IoT business growth**, helping utilities, manufacturers, and service providers simplify operations, reduce maintenance costs, and maintain control over connectivity throughout the entire device lifecycle.

