

SUCCESS CASE 22.2026

Smart Meter Lifecycle Management

A SINGLE TRACEABLE METER
ACROSS THE ESB NETWORKS
ESTATE



THE CHALLENGE

Managing a smart metering estate begins long before a meter is installed and continues until the asset is permanently removed from service. ESB Networks currently manages more than 2.2 million smart meters and processes between 250,000 and 600,000 new meters annually through deployment and replacement programmes. At this scale, maintaining accurate asset records, communications identities, security credentials and operational histories requires more than traditional asset management.

The challenge is not simply deploying meters, but maintaining a trusted lifecycle history for every device from before it enters the ESB Networks estate until the day it leaves it.

To address this challenge, ESB Networks has implemented a smart meter lifecycle model comprising four stages:

- Meter Assurance and Trusted Asset Onboarding
- Installation and Commissioning
- Operational Service and Asset Management
- Returns, Investigation and End-of-Life Management

Two principles underpin the lifecycle model: smart meters are installed once and are never repaired, refurbished or redeployed. In addition, installers install and electrically commission meters but do not configure, programme or manage them. Security credentials, meter access and configuration activities remain under central control throughout the meter lifecycle.

One Meter. One Identity. One Complete Lifecycle History.

THE SOLUTION

Meter Assurance and Trusted Asset Onboarding

Lifecycle management starts at manufacture.

Smart meters are produced to ESB Networks specifications and accompanied by assurance records covering metrology, quality, security and communications testing. Together, these records establish the initial identity of the asset before it enters the ESB Networks estate.

Each shipment includes a Meter Loadfile containing meter and communications asset information. ESB Networks validates this information before onboarding, ensuring that serial numbers and communications identities, including ICCID, IMSI, IMEI and eUICC identifiers, remain unique across the smart metering estate.

Once approved, asset information is loaded into SAP IS-U, security information is loaded into the Head End System, and the meter becomes available for deployment. Meters remain in quarantine until all validation activities are completed. This process ensures that only trusted and uniquely identifiable assets enter the smart metering lifecycle.



Installation and Commissioning

Before installation, the existing meter, meter readings and meter point condition are recorded and photographed. Any defects identified must be remedied before installation proceeds.

The smart meter barcode is scanned and associated with the correct installation job, premises and customer. Installation, commissioning and photographic records are uploaded directly to ESB Networks systems, where AI-assisted validation confirms that the correct meter has been installed and installation requirements have been met.

Installers perform installation and electrical commissioning activities only, while meter configuration, security credential management and access to smart metering systems remain under central control.

Following validation, the meter is associated with the customer and premises within SAP IS-U, receives security credentials through the Key Management System and is commissioned into the Advanced Metering Infrastructure. The installation and commissioning record becomes part of the permanent lifecycle record of the asset.



Operational Service and Asset Management

Once commissioned, the meter enters operational service.

Throughout its operational life, reads, events, firmware history, communications performance and installation records remain associated with the meter and premises. Operational teams continuously monitor asset performance using data collected through the Advanced Metering Infrastructure.

ESB Networks also maintains traceability of associated communications assets, including ICCID, IMSI, IMEI and eUICC identifiers, providing visibility of the communications service throughout the lifecycle of the installation.

Where issues are identified, remote investigation is preferred. However, because field visits represent the highest support cost, meter replacement is often more effective than extensive on-site diagnostics when a meter is suspected of being faulty.

Maintaining a complete lifecycle history supports customer service, billing investigations, operational analysis and supplier performance management.



Returns, Investigation and End-of-Life Management

When a meter is removed from service, it enters the final phase of its lifecycle.

ESB Networks does not repair, refurbish or redeploy smart meters. Every meter follows a single lifecycle from onboarding to final disposal or manufacturer return.

Where a fault is suspected, the meter is exchanged and returned to the ESB Networks Smart Meter Test Facility for investigation under controlled laboratory conditions. Returned meters are scanned, tracked and assessed, with investigation outcomes retained against the asset record.

Following removal, associated communications services are disabled and the meter is prevented from further communication with the smart metering environment.

Meters approved for disposal enter secure destruction and certified recycling processes. Records of destruction and recycling are retained as part of the lifecycle history, supporting environmental compliance and complete asset accountability. The lifecycle concludes when the final asset outcome is recorded in SAP IS-U and the asset record is closed.



MAIN ACHIEVEMENT

The main achievement of the ESB Networks Smart Metering Programme has been the establishment of a complete smart meter lifecycle model that maintains traceability of every meter from manufacture through installation, operation, investigation and final disposal.

The lifecycle record links meter identity, communications identities, security controls and operational history into a single trusted asset record, this enables ESB Networks to:

- Maintain end-to-end traceability of meter assets
- Support customer service, billing investigations and operational analysis.
- Identify supplier, manufacturing and configuration issues through individual meter traceability.
- Support warranty management and structured fault investigation.
- Demonstrate environmental compliance through controlled disposal and certified recycling processes.
- Support audit, regulatory and cybersecurity requirements through complete lifecycle accountability.

KEY SUCCESS FACTORS

The success of the lifecycle model is based on several core principles:

- Every meter maintains a single lifecycle record from onboarding through to final disposal or manufacturer return.
- All meter and communications identities are validated before entering service.
- Security credentials, meter access and meter configuration remain under central control throughout the asset lifecycle.
- Installers install and commission meters but do not configure meters or manage security functions.
- Operational, investigation and disposal activities remain linked to the original asset record throughout the life of the device.
- Smart meters are not repaired, refurbished or redeployed following removal from service.

These principles ensure that every smart meter remains visible, traceable and accountable throughout its lifecycle.

WAY FORWARD

As first-generation smart meters begin to enter large-scale replacement programmes and new metering technologies continue to be introduced, lifecycle management becomes increasingly important.

The ESB Networks lifecycle model provides the foundation for managing these activities at scale while maintaining full traceability of asset identity, communications identities, security credentials and operational history throughout the life of the meter.

While technologies, communications services and customer requirements will continue to evolve, the lifecycle principles remain unchanged. Every smart meter entering the ESB Networks estate must maintain a complete lifecycle history from onboarding through to final disposal or manufacturer return.

This lifecycle approach allows ESB Networks to manage a growing smart metering estate while maintaining confidence in customer service, asset quality, supplier performance, cybersecurity, environmental compliance and regulatory obligations.



One Meter. One Identity. One Complete Lifecycle History.