

An aerial view of a city at night, with buildings and streets illuminated. A glowing blue network overlay is visible in the upper right, consisting of interconnected nodes and lines, suggesting a data network or IoT infrastructure. The overall color palette is dark with blue and yellow highlights.

Telit OneEdge

Shorten your Path to IoT Monetization

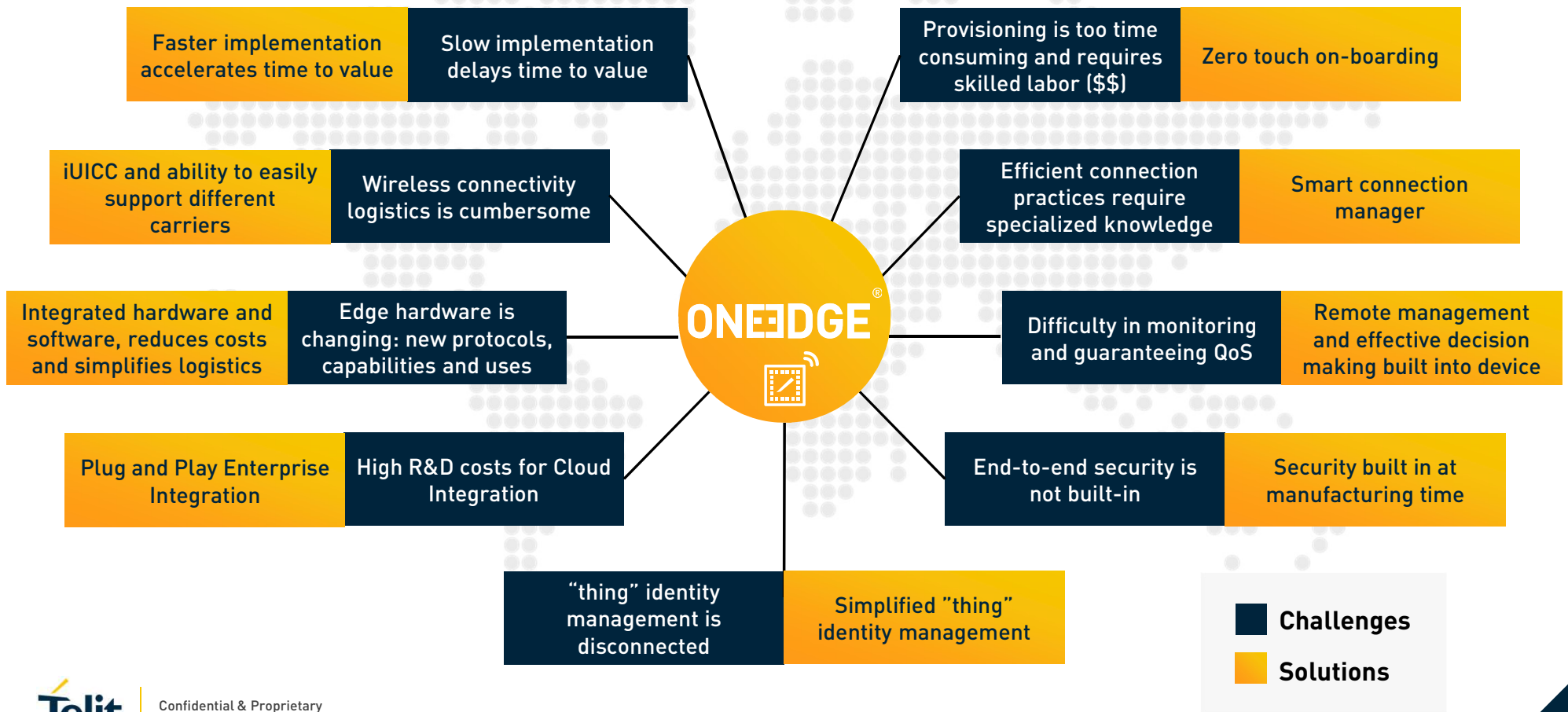
Martino Turcato

Product Manager, Software and Services

The Telit logo, featuring the word "Telit" in a white, sans-serif font with a yellow diagonal line above the 'i', followed by a solid yellow square.

Telit

Customer Pain Points and Telit OneEdge Solutions



Telit OneEdge Advantage – Buy and configure Vs. Make

Telit OneEdge	
Functions	Effort
Device Management	\$
Secure Manufacturing	\$
Connectivity Management	\$
LwM2M Stack	Included
Maps/Geofencing	\$
3 rd Party Integration	Included



Minimal time and cost to get your solution up and running quickly!

End-to-End Solutions Today	
Functions	Effort
Device Management	\$\$\$\$
Secure Manufacturing	\$\$\$\$
Connectivity Management	\$\$\$\$
LwM2M Stack	\$\$
Maps/Geofencing	\$\$\$
3 rd Party Integration	\$\$\$



Huge amount of development and integration effort in both time and cost.

The logo for Telit ONEEDGE. 'Telit' is in white, 'ONEEDGE' is in yellow and white, and there is a registered trademark symbol (®) to the right. The background is a night cityscape with light trails from a highway interchange.

Telit ONEEDGE[®]

The next generation cellular IoT module software suite with pre-packaged, secure, easy-to-use deployment & management tools so you can leap ahead into the new 5G super connected world

Shorten your path to IoT monetization by simplifying design deployment & management of products & solutions

OneEdge touching the real nerve of IoT pains



Juniper Research: Mobile Edge Computing Annual Spend to Reach \$11.2 billion by 2024, Fuelled by IoT, Start-Ups, AI & Machine Learning Innovation

\$9.8 billion rise from 2019 to 2024 fuelled by increasing demand to acquire real-time analysis of critical data at the Edge, for industries such as manufacturing, asset tracking and transportation

June 25, 2019 02:00 AM Eastern Daylight Time

BASINGSTOKE, England--(BUSINESS WIRE)--A new study from Juniper Research has found that total annual spend on Mobile Edge Computing (the collection and analysis of data at the source of generation, at the Edge of the network, instead of a centralised location such as the cloud), will reach \$11.2 billion by 2024. This is up from an estimated \$1.3 billion in 2019, with an average annual growth of 52.9%.

“Edge Computing and 5G, supported by continued advancements in machine learning and AI-derived algorithms, will continue to be the key drivers of Big Data analytics and complex real-time analysis at the Edge of networks.” ”

[Tweet this](#)

For more insights, download our free whitepaper: [How AI & Machine Learning Are Advancing Edge Processing.](#)

The Leaders in Edge Processing

Juniper Research ranked leading players in the Edge processing sector by a range of factors, such as the depth of their experience in IoT, their geographical footprint, along with the number, and type, of industries served. The top five players are:

1. Siemens
2. Bosch
3. AWS
4. VMware
5. Telit

Telit OneEdge Components

Device Management

- Zero-touch onboarding
- Remote provisioning & configuration
- Monitoring & troubleshooting
- SW updates

Edge Intelligence

- Define and build your edge app
- Speed deployment
- Optimizing behavior & resource usage
- Set control logic remotely
- Simplified cellular connection lifecycle management

Enterprise Integration

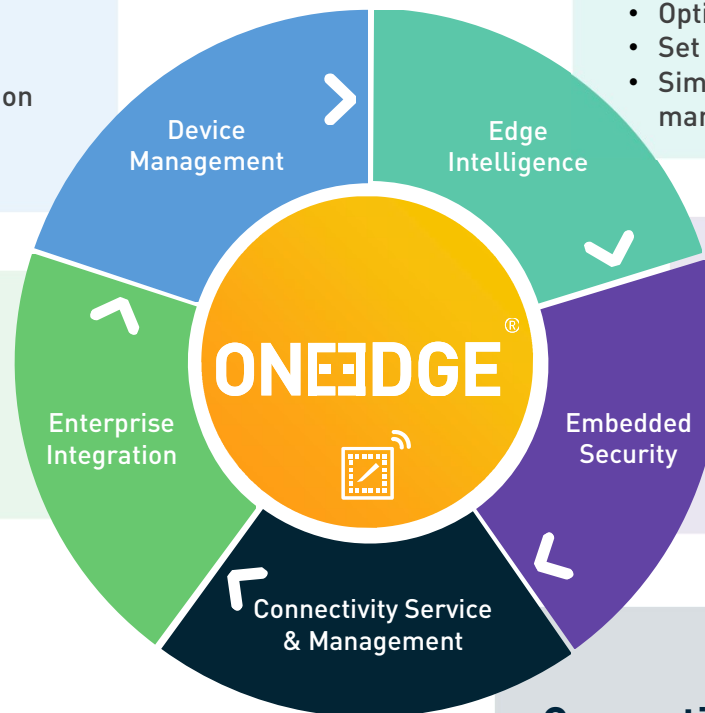
- Deliver data to the Enterprise
- Integrate with 3rd party business systems

Embedded Security

- End to end security, includes device, transport and platform
- Secured, pre-provisioned & personalized module (starting at manufacturing)

Connectivity Service & Management

- Simplified connectivity management & dashboard
- Integrated SIM with carrier switch options

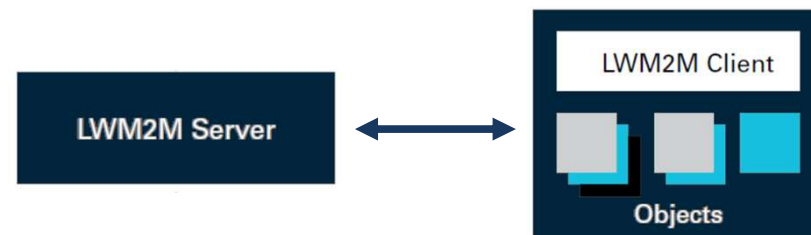


The Telit logo is positioned in the upper right corner of the slide. It features the word "Telit" in a white, sans-serif font, with a small yellow diagonal line above the letter "i". The logo is set against a background of a blue-tinted aerial photograph of a city with numerous skyscrapers.

 Device Management

Device Management in a nutshell

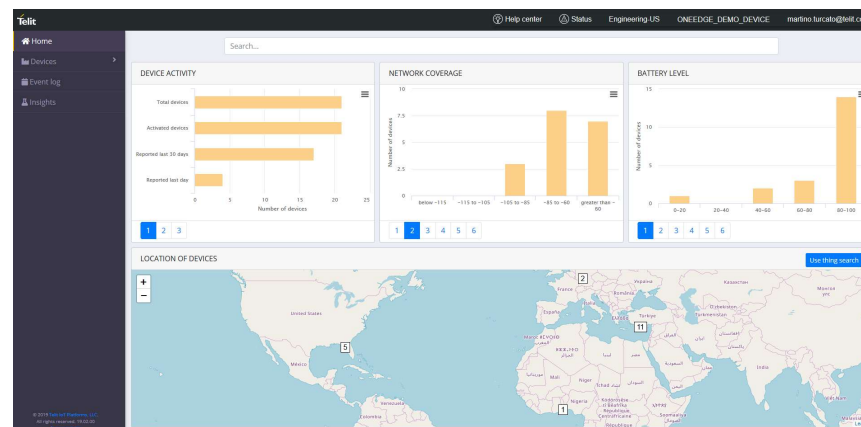
DM is the combination of components in the module and in the Portal working together



Data ABOUT the device and NOT data FROM the device

- Control plane of the device
- Totally independent of application data



DM provides single pane control of full deployment status and operations



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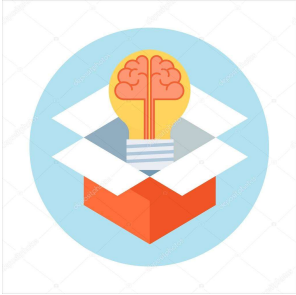
Device Management Implementation

Standard

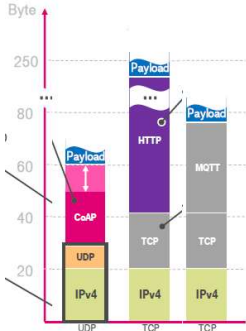
**Based on OMA LwM2M
(www.omaspecworks.org)**

Preintegrated




**The client is preintegrated
and personalized for
0-touch onboarding**

Efficient



**Reduced overhead using
CoAP and UDP**

Secure



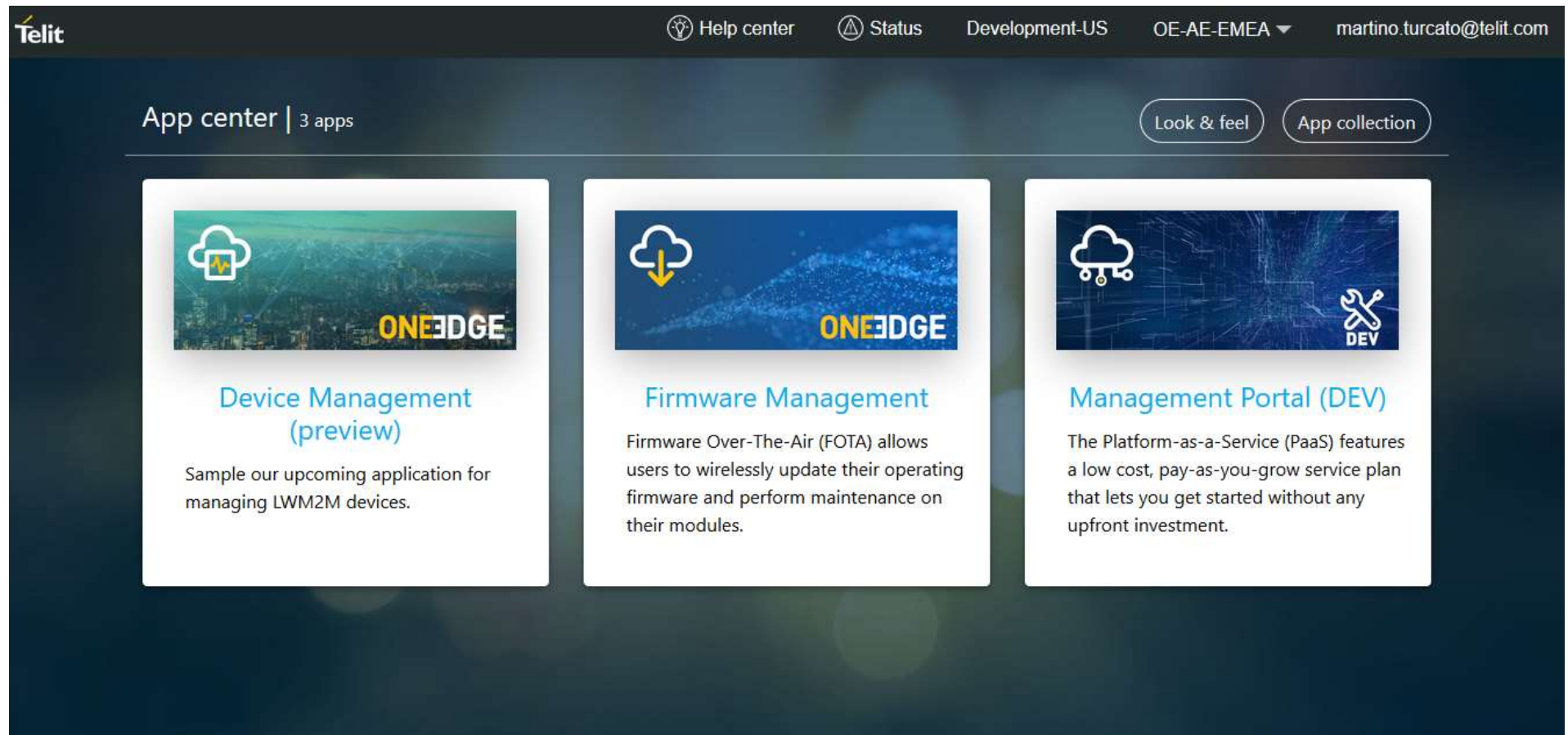
**DTLS encryption
ID and keys personalized
at manufacturing time**

Extensible



**Just import an XML file to
expand objects**

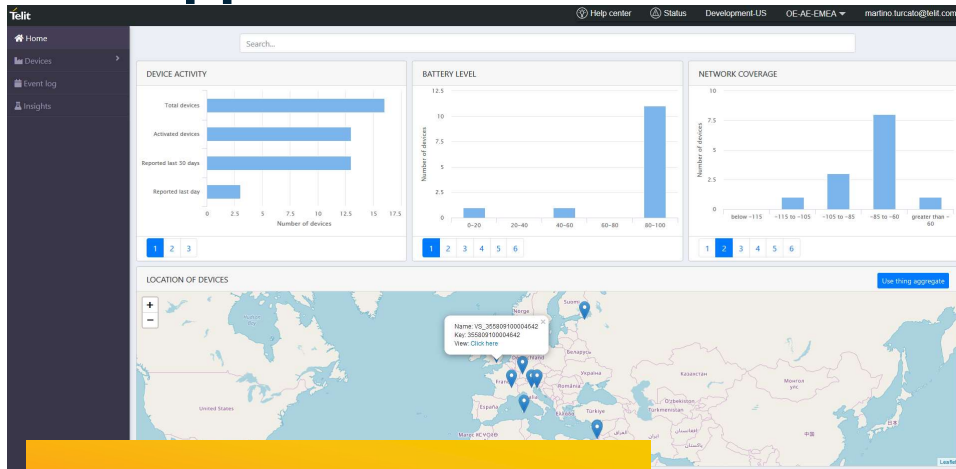
Telit Portal AppCenter



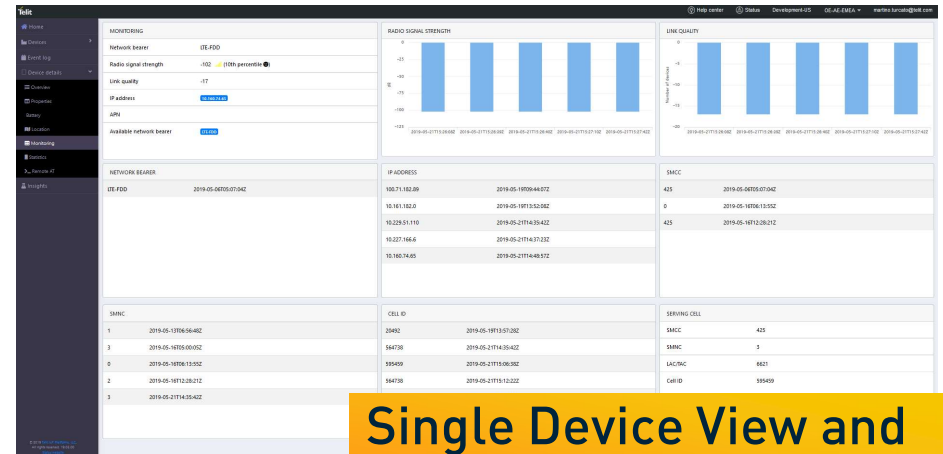
The screenshot displays the Telit Portal AppCenter interface. At the top, the Telit logo is on the left, and navigation links for 'Help center', 'Status', 'Development-US', 'OE-AE-EMEA', and the email 'martino.turcato@telit.com' are on the right. Below the navigation bar, the page title 'App center | 3 apps' is shown on the left, and two buttons, 'Look & feel' and 'App collection', are on the right. The main content area features three application cards:

- Device Management (preview)**: Includes an icon of a cloud with a pulse line and the text 'Sample our upcoming application for managing LWM2M devices.'
- Firmware Management**: Includes an icon of a cloud with a downward arrow and the text 'Firmware Over-The-Air (FOTA) allows users to wirelessly update their operating firmware and perform maintenance on their modules.'
- Management Portal (DEV)**: Includes an icon of a cloud with a key and a 'DEV' tag, and the text 'The Platform-as-a-Service (PaaS) features a low cost, pay-as-you-grow service plan that lets you get started without any upfront investment.'

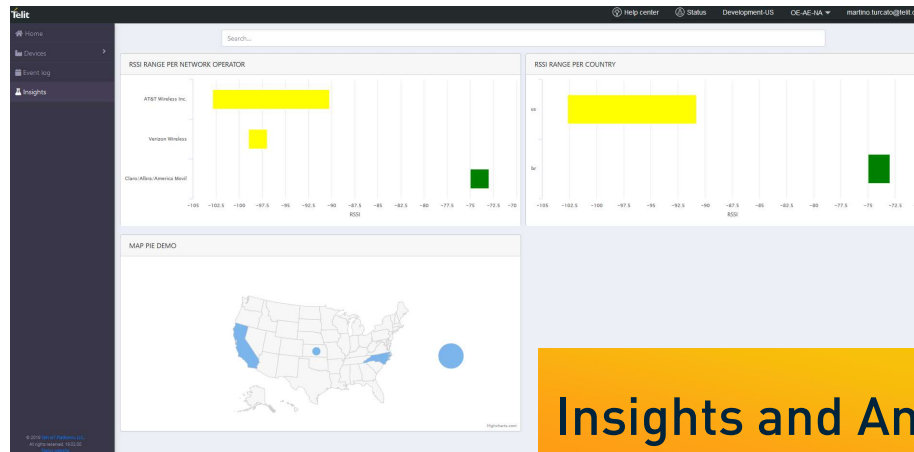
DM App



Deployment overview



Single Device View and Troubleshooting



Insights and Analytics



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Telit Easy FOTA App

- Telit OTA/FOTA configuration, remote provisioning and firmware updates
- Scheduled or ad-hoc campaigns: single unit, predefined groups, entire installed base
- Campaigns based on: Organization, Geography, Technology, Etc

The Home Dashboard provides a comprehensive overview of the system. It includes:

- DEVICES:** A table listing device groups and their status. For example, 'Device Manager (1 devices)' shows 100% completion, while 'Lightweight M2M (2 devices)' shows 0% completion.
- RECENT CAMPAIGNS:** A list of recent campaigns, such as 'Read RSSI from LWM2M devices' (100% complete) and 'Nick's Demo' (100% complete).
- CAMPAIGN OVERVIEW:** A bar chart showing the distribution of campaigns across different stages: Scheduled, Running, Paused, and Failed.
- RECENT ACTIVITY:** A log of recent system events, including campaign deletions and updates.

Home Dashboard

The 'CREATE CAMPAIGN' wizard guides the user through the process of setting up a new campaign. It consists of four steps:

- Step 1: Model selection
- Step 2: Device selection
- Step 3: Firmware selection
- Step 4: Campaign details

The current step, 'Model selection', shows a summary with 'Model: No model selected', 'Devices selected: 0', and 'Firmware selected: No firmware selected'. A 'Choose device model' button is available for selection.

Wizard guided steps

The 'CAMPAIGNS' management page allows users to view and control their campaigns. It features a table with columns for Name, Progress, Status, and Started/Scheduled. Campaigns are listed with their respective progress bars and status indicators (e.g., 'Testing conn rate plan ui' is 'New', 'test failure' is 'Failed', 'Find connections campaign' is 'No members', 'Check wait for completion' is 'Check wait for completion', 'Read RSSI from LWM2M devices' is 'Completed', and 'Nick's Demo' is 'Completed').

Manage your campaigns

> Edge Intelligence



Edge Intelligence

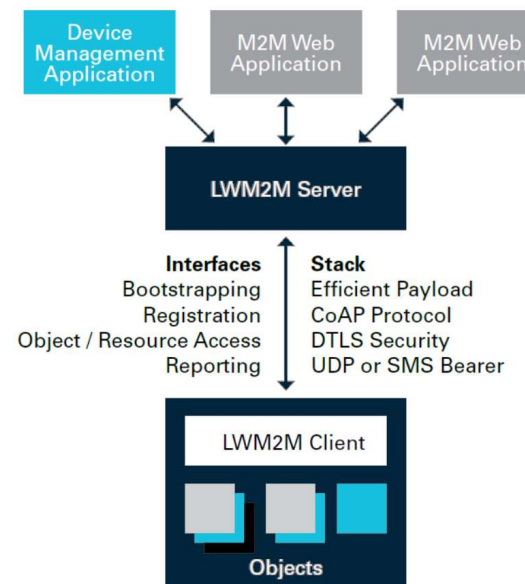
Connection Optimizer

- Simplifies management of cellular connection lifecycle
- Set-up, monitoring, QoS, usage optimization and re-connection policies.
- Easily handle the connection to cellular network and automate most common operations involved in the process.



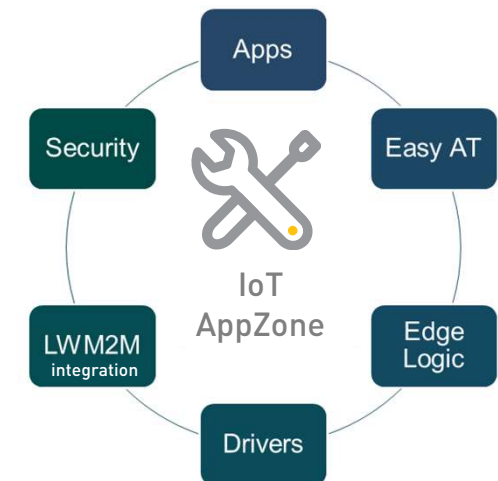
LWM2M

Edge device management and application data management leverages LwM2M technology



Application Development APIs

- Telit's AppZone allows customer to run embedded software on the application processor of the module
- An essential development environment to easily use and expand module capabilities

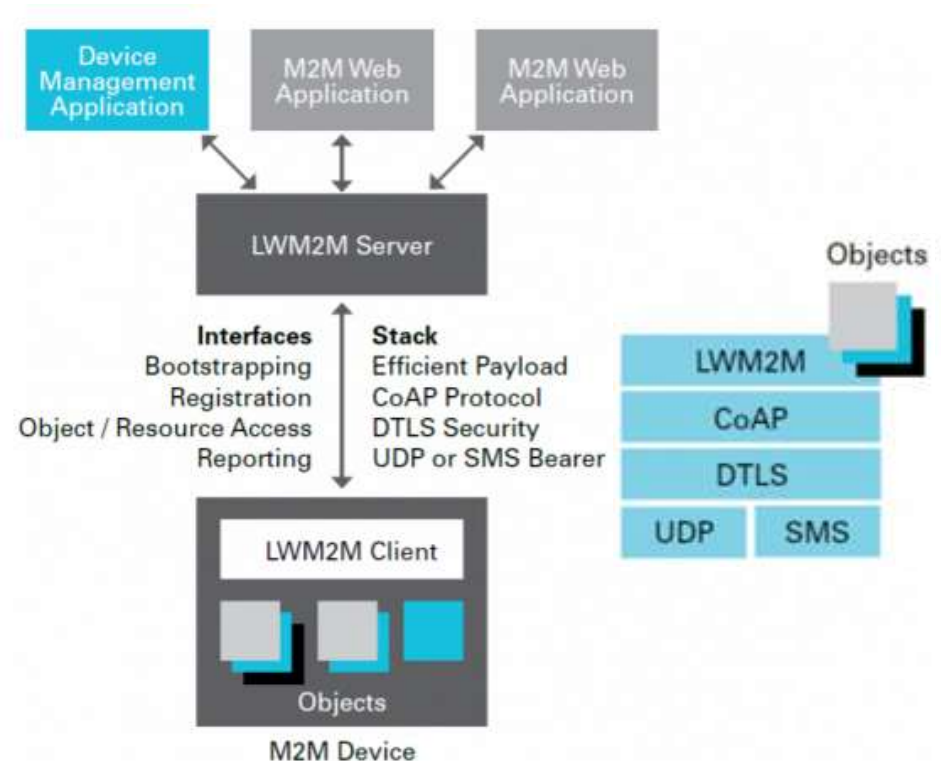


Main Elements of LWM2M

- Lightweight protocol specifically designed for constrained devices
- Reduced footprint and communication overhead
- Provide methods to efficiently implement low power IoT use cases
- De facto standard in Telecom industry and required by all major MNOs

Telit implementation

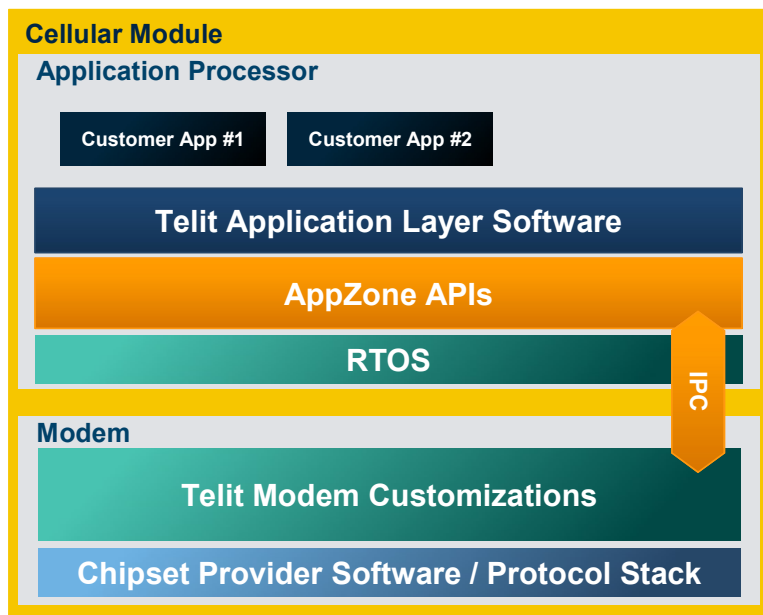
- LwM2M 1.0
- DTLS1.2
- CoAP and UDP binding, wake up SMS support
- Supporting OMA core standard objects including firmware update
- Extensible object model
- Client can be controlled through AT commands or AppZone APIs



Key LWM2M Device Management Objects

Name	Object ID	Description
LWM2M Security	0	Provides the keying material of a Lwm2M Client appropriate to access a specified Lwm2M Server.
Lwm2M Server	1	Provides the data related to a Lwm2M Device Management Server. A Bootstrap-Server has no such an Object Instance associated to it.
Lwm2M Access Control	2	Access Control Object is used to check whether the Lwm2M Server has access right for performing an operation.
Device	3	Provides a range of device related information which can be queried by the Lwm2M Server, and a device reboot and factory reset function. E.g. device model, serial number, hw/sw version, power source, battery level, etc...
Connectivity Monitoring	4	Enables monitoring of parameters related to network connectivity and link quality e.g. Network, Cell ID, RSSI, APN, etc...
Firmware Update	5	Enables management of firmware which is to be updated.
Location	6	Provides location information based on GNSS data.
Connectivity Statistics	7	Enables client to collect statistical information and enables the Lwm2M Server to retrieve these information, set the collection duration and reset the statistical parameters.
Cellular connectivity	10	This object specifies resources to enable a device to connect to a 3GPP bearer
APN connection profile	11	Specifies resources to enable a device to connect to an APN.

Telit AppZone C framework highlights and architecture



- AppZone C is the framework integrated in the module on top of the modem software and OS. It provides a set of interfaces (APIs) to the modem functionalities, hardware resources, peripherals, OS functions, TCP/IP stack, SSL, file system and more
- The framework is lightweight, fast and efficient, to fully take advantage of hardware resources and optimize real time performances
- Provides multitasking programming
- Support of HW interrupts and timers
- C programming Language
- Compilers: ARM and gcc
- Application is developed by customer starting from a skeleton project provided in the wizard
- Code samples and tutorials are included to illustrate usage of main features and services
- Complete documentation with APIs, online help and manuals
- Jtag target debugging and emulator supported

Connection Agent Main Functionalities

- Set up cellular connection with a single AT command or API call
- Automate the lifecycle management of the connection: check status, automatically reconnect, logging, etc.
- Configurable behavior of the state machine:
 - Policy (always connected or on demand)
 - Timers (e.g. network registration)
 - Retry mechanism
 - Thresholds (e.g. min RSSI, BER, etc.)
 - Roaming



Traditional Implementation vs Connection Optimizer

Without Connection Optimizer

- Check Signal
 - AT#CSQ, AT#MONI
- Registration and activation
 - AT#COPS, AT#CREG, AT#CGREG, AT#WS46
- Data connection
 - AT#SGACT, AT+CGDCONT, AT#CEERNET, AT+CGPADDR
- Application logic
 - State machine
 - *Timers*
 - Monitoring
 - (Re)connection policy

With Connection Optimizer

- Start agent
 - AT#CASN=1, <optional parameters>

> Security

Telit



Embedded Security

Device

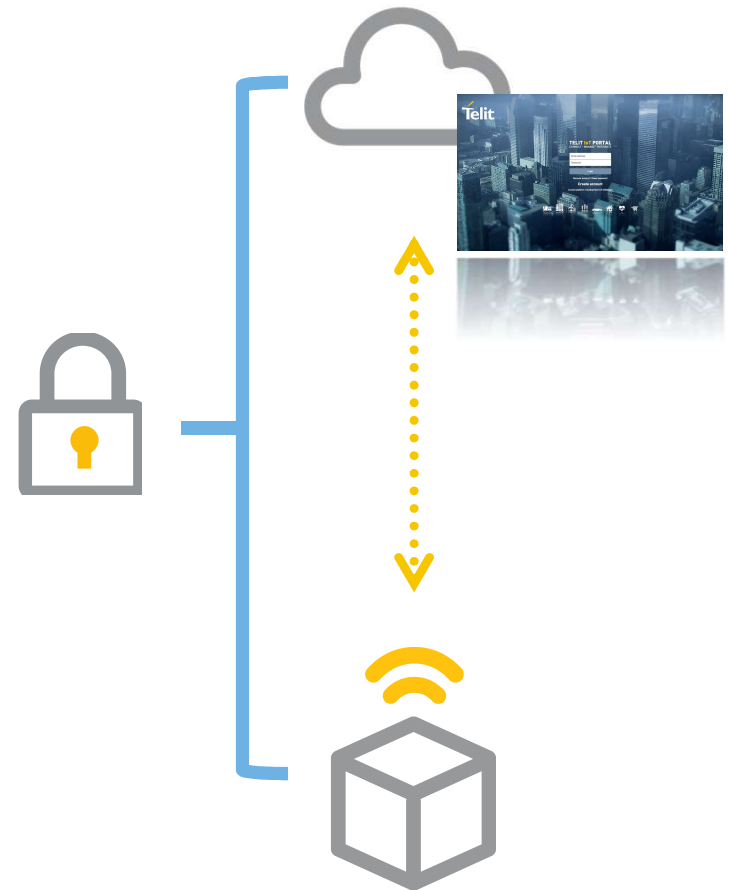
- Module secured and personalized at time of manufacture
- Device is 'born' with ID, credentials and SIM functions embedded inside
- Provides security microservices
- Secure boot

Transport

- Device to cloud over encrypted communication for secure end-to-end data and control

Platform

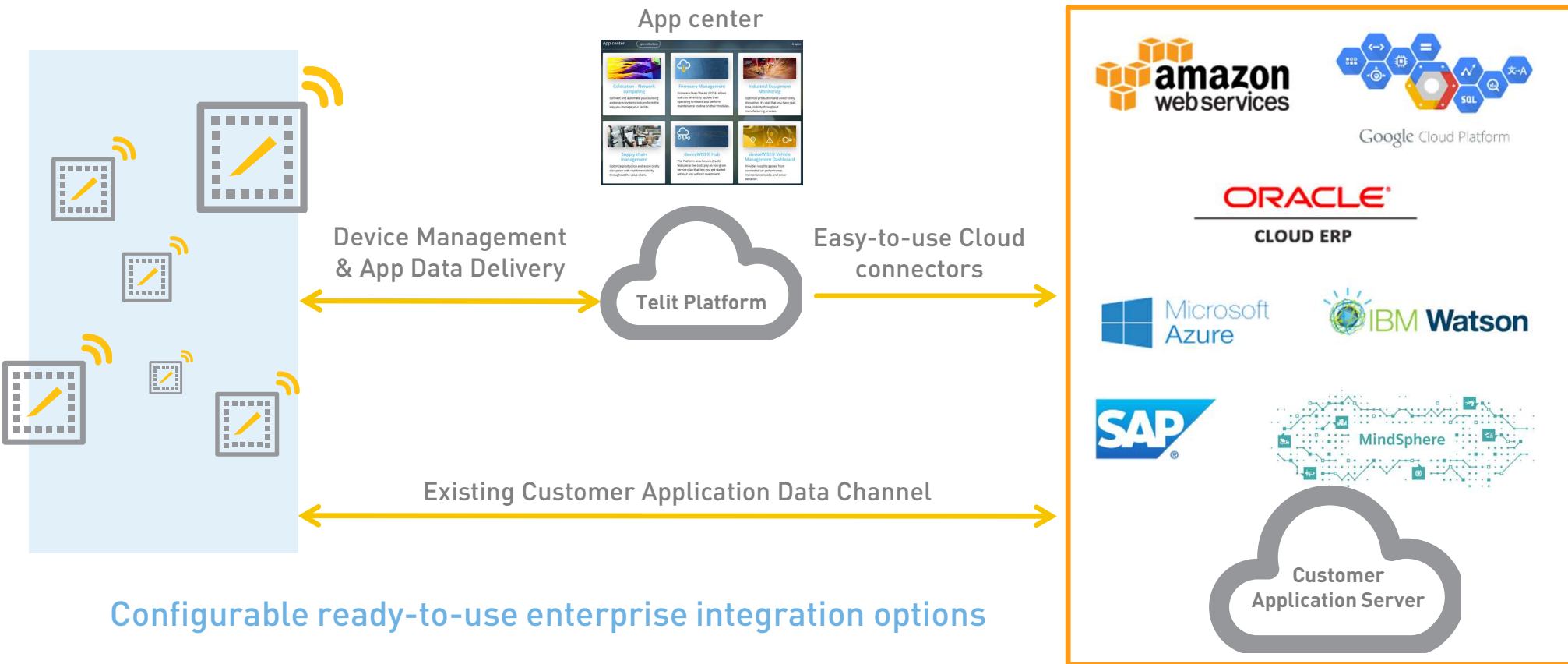
- Telit servers are protected against security threats
- (e.g. role based security, TLS, VPN)
- "Thing" IDs and credentials are automatically synchronized in the Telit IoT Portal before shipment



> Enterprise Integration



Enterprise Integration



Configurable ready-to-use enterprise integration options



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> Connectivity Management

Connectivity Service and Management

- SIM functions implemented directly into the module based on Telit simWISE technology
- Secure remote provisioning GSMA compliant



Fully integrated Telit CDP Pro Portal



CDP PRO
Manage your SIMs.
Fully integrated to
Multiple MNOs



Intelligence
BI Environment to
identify and
analyze trends



Bridge
VPN and IP
infrastructure
Redundant, Secure
and 24/7 monitored

The logo for Telit simWISE™ features the word 'Telit' in a white sans-serif font with a yellow diagonal stroke above the 'i'. To its right, 'simWISE' is written in a white sans-serif font, with 'sim' in lowercase and 'WISE' in uppercase. A small 'TM' trademark symbol is positioned to the upper right of 'WISE'. The background is a long-exposure photograph of a city street at night, showing light trails from cars and illuminated buildings.

Telit simWISE™

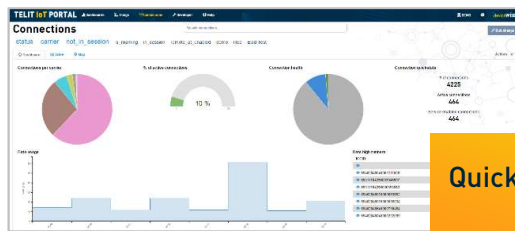
- Full eUICC OS function is implemented directly in the module – based on iUICC technology
- Strategic partnership with IDEMIA to further harden solution security and reach
- Secure remote provisioning (based on GSMA v3.1)
- Dramatically reduces the device footprint, time to market, complexity, and total cost of ownership of IoT devices
- Roaming (Based on LTE CAT-M1 and 2G access networks) and Global Data Plans based on Telit's connectivity offering

CDP Pro

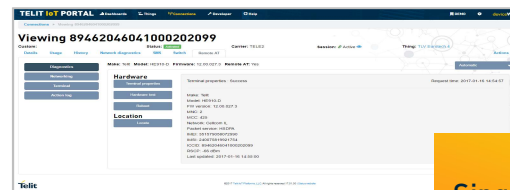
Connectivity Management



- Design & Manage your service profiles
- Self-Care Subscription & lifecycle management
- Real-time diagnostics and usage controls
- Integration with various carriers and platforms including Jasper, Vodafone GDSP, Ericsson DCP, Telefonica Kite, AT&T, Verizon, T-Mobile and more



Quick glance at all global connections



Single device diagnostics

ID	Carrier	Status	Network	Device ID	IMEI	ICCID	Roaming	Signal	Power	Location
1	Verizon	is_online	Verizon	89462046041000202099	35201234567890123456	89012345678901234567	False	Strong	Normal	New York, NY
2	Verizon	is_offline	Verizon	89462046041000202099	35201234567890123457	89012345678901234568	False	Weak	High	New York, NY
3	Verizon	is_offline	Verizon	89462046041000202099	35201234567890123458	89012345678901234569	False	None	High	New York, NY

Detailed drill down per SIM



Single device data usage



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Why Choose...

ONEEDGE[®]

- Accelerate time to deployment, shorten time to revenue
- Smoothly scale up deployments
- Ensure QoS to your business applications
- Optimize TCO and processes throughout the whole product lifecycle
- Enable intelligent communications in every “Thing”
- Adapting to the new era of NB-IoT/CAT-M