

# Aeris IoT + LTE-M: Low Cost, High Functionality

INDUSTRY BRIEF



## AT A GLANCE:

With low-cost modules, extended battery life, better signal penetration, and the ability to use existing infrastructure, LTE-M has the potential to improve all IoT business models.

LTE-M (also known as LTE-CAT-M) is a bi-directional, standards-based low power wide area technology that supports IoT through lower device complexity while providing extended coverage with prolonged battery life. One of the major reasons that LTE-M is advantageous over other new protocols available is that it does not need a new infrastructure as it can piggyback on existing LTE networks. That means a carrier can update software on its network, get LTE-M functional, and not spend any additional funds on infrastructure or support services.

Additionally, using an extended discontinuous repletion cycle (eDRX), the data collection devices can transmit data on a non-continuous schedule, as set by the end user. The device, when not sending data is not off, just asleep. When data is scheduled to be sent, the device does not need to be re-activated to join the network, it just wakes up. Having intermittent data send-schedules, which are not active 24x7, can save battery life, leading to significant cost savings.

## Not Without Challenges

As with any technology entering the marketplace, LTE-M is not without issues. For instance, LTE-M still is in the process of being deployed globally, therefore coverage holes exist. But as this protocol continues to grow in acceptance, those holes will go away altogether. And because of those holes, roaming is not as

seamless as it should be (that's why you need a technology-agnostic carrier). As this protocol expands, and more end-users see its value, network congestion could be an issue. But all these are growing pains, not insurmountable problems. The many advantages of LTE-M far outweigh any temporary drawbacks.

## Added Value of Aeris and LTE-M

Supported by all major mobile equipment, chipset, and module manufacturers, LTE-M can co-exist with standard consumer LTE mobile networks and benefit from all the security and privacy features of these networks, such as support for user identity confidentiality, entity authentication, data integrity, and mobile equipment identification.

In addition, Aeris Intelligent IoT Network has incorporated advanced functionality to provide the highest value for data access and security in the industry:

### ConnectionLock

Aeris ConnectionLock™ enables strong protection against device data leakage by restricting device communications to a handful of well-known back-end server endpoints (URLs or IP addresses). No additional action is needed from the customer side as ConnectionLock can be activated on all deployed devices via internal Aeris APIs.



### Connectivity Aware Campaign Manager for Remote Updates

Automate update attempts with automated re-tries; leverage connectivity network data to maximize changes; and automate connectivity rate plans to optimize data transport costs.



With the click of a control-center button, OTA updates can be deployed to thousands of devices at once, rather than requiring each device to be manually modified. OTA updates eliminate the need to send technicians into the field, save owners time and money, and make IoT products vastly more scalable. The ability to make software changes or add security patches to many devices at once is especially important for operators of large-scale IoT deployments where updating devices manually would be a nearly impossible task, as in, for example, tens of thousands of solar panels.



### Device Lock

Aeris Device Lock enables locking devices to a specific IP address or a set of IP addresses at the network level. Devices and SIM cards are virtually bonded to each other. One will not work without the other.



### SIM as Security Element

To simplify and heighten security capabilities, Aeris puts both security and connectivity on a single chip. SIMs are pre-activated but restricted to connect only to Aeris, thereby avoiding theft or misuse and the charges associated with such actions.

### Location APIs

Unlike GPS functionality that provides locations to within feet of an asset, coarse location functionality provides less specific location data from the cell tower, providing the city or neighborhood where the asset is located. Aeris can obtain cell tower data to which the customer device is connected globally. With this information, customers can access coarse location data in absence of GPS information. This procedure, via Aeris APIs, provides a pathway to greater asset security and cost reductions.



Leveraging Aeris location APIs for coarse location enables customers to not rely on continuously running GPS, thereby minimizing battery drain and extending battery life. Additionally, obtaining coarse location from the Aeris network enables organizations to meet their service level agreement commitments for asset tracking.

### Roaming Control

Specifies a network to which a device is connected. Moves to a stronger network (by means of using a visited network) if the signal strength drops below a defined threshold when travelling outside the geographical coverage area of the home network.

## What Can LTE-M Do for Your Business Model?

LTE-M is poised to dominate the IoT world for years to come, replacing GSM and CDMA protocols. One reason is the cost of cellular deployment, initially developed for high speed, high data volumes, is considered too expensive for widespread IoT use due to excessive power consumption and complex protocols that shorten battery life.

LTE-M is today's standard, meeting security and power conservation levels suited for global deployments in multiple business sectors. With low-cost modules, extended battery life, better signal penetration, and the ability to use existing infrastructure, LTE-M has the potential to improve all IoT business models.

### BENEFITS OF LTE-M



#### Low Cost Modules:

Up to 50% reduction in module costs over comparable IoT devices.



#### Existing Infrastructure:

LTE-M can piggyback on existing LTE networks.



#### Extended Battery Life:

Up to 10x improvement in battery longevity with the use of 'sleep mode' or PSM, as in power saving mode. Access to optimal coverage (multiple networks, no steering) minimizes battery drain, as does leveraging network location (coarse location) rather than using always-on GPS-based location functionality.



#### Better Indoor / Underground Penetration:

Lower MHz channels provide better penetration.

## ABOUT AERIS:

Aeris is a technology partner with a proven history of helping companies unlock value through IoT. We strive to fundamentally improve businesses by dramatically reducing costs, accelerating time-to-market, and enabling new revenue streams. Built from the ground up for IoT and road tested at scale, Aeris IoT services are based on the broadest technology stack in the industry, including the Aeris Connectivity Platform (ACP) and the Aeris Mobility Platform (AMP), spanning connectivity up to vertical solutions for things that move. At Aeris, we believe that if you focus on the customer, you gain a competitive edge by delivering an experience that surpasses your competitors and fulfills all customer expectations. We know that implementing an IoT solution can be complex, and we pride ourselves on making it simpler.

Visit [www.aeris.com](http://www.aeris.com) or follow us on Twitter [@AerisM2M](https://twitter.com/AerisM2M) to learn how we can inspire you to create new business models and to participate in the revolution of the Internet of Things.

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