Private LTE Networks

LTE Small Cell Base Station(s) **Mobile Edge Cloud Server (MECS)**

The Challenge

Reliable and secure wireless connectivity is an essential requirement for all industries. Nowadays, all types of communications, Human-to-Human (H2H), Human-to-Machine (H2M) and Machine-to-Machine (M2M) are needed. Some of which require centralized cloud processing; however, a lot of data has a **local context**.

The network must be capable of supporting various **Quality-of-Service** (QoS) profiles. Long communication data delays (latencies) may degrade the performance or quality of processes or may even be prohibitive.

Strong security and privacy are major concerns for enterprises. For many enterprise applications, data exposure to the "cloud" cannot be tolerated.

Public mobile networks are frequently unable to fully meet the above-stated requirements. Short Range Device (SRD) technologies such as WLAN (WiFi) operate in unlicensed spectrum, i.e. shared frequency bands, thus cannot sufficiently support mission-critical industrial applications.

Our Solution

Private networks based on MECSware's Mobile Edge Cloud Server (MECS) and Sercomm's Small Cell Base Stations are using proven LTE technology. LTE was originally designed for **licensed spectrum**, i.e. exclusive frequency bands, thus taking advantage of **higher reliability** due to less interference from other devices. In Germany, for example, 100 MHz of LTE spectrum (3700-3800 MHz) has been dedicated to local and regional private networks.

LTE comes with a **higher radio link budget** compared to WLAN. **Large coverage areas** can be supported more **cost-efficiently** since less LTE Base Stations than WLAN Access Points need to be installed and operated.

LTE uses a **centralized Radio Resource Management** (RRM). Thus, in contrast to WLAN which is based on an uncoordinated access method (Carrier Sense Multiple Access/Collision Avoidance – CSMA/CA), QoS parameters such as data throughput and latency can be controlled reliably.

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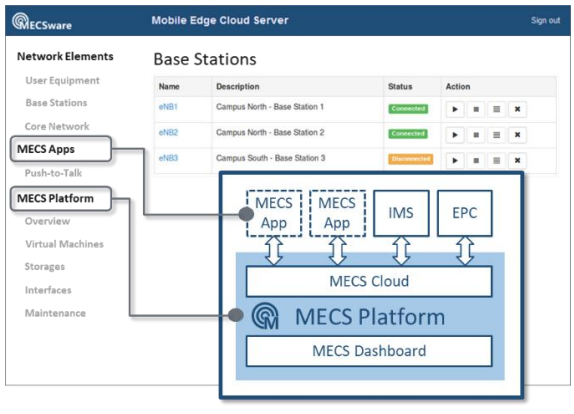
Private LTE is taking advantage of all essential features developed for public networks like seamless handover, robust security and scalability.

Within the MECS, the LTE Core Network functions (Evolved Packet Core – EPC) are integrated with the Access Network (Small Cell Base Stations) and the Applications. That means, the availability of the network will be increased, and high end-to-end latency caused by a long and uncontrollable data path will be avoided.

The Edge Cloud infrastructure, the **MECS Cloud**, provides computing resources and storage capacity to user applications, the **MECS Apps**, and connects them to the user devices on the shortest possible path. Installation of additional Application Servers, which may be expensive in harsh outdoor environments, can be avoided.

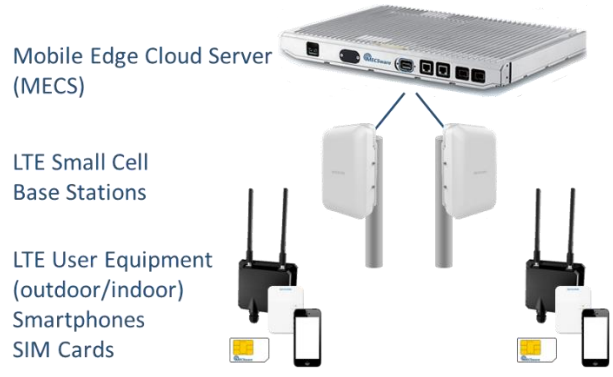
Using the highly-integrated MECS, a common infrastructure for any kind of mobile communication can be built cost efficiently with a **single device**. For example, real-time applications such as Push-to-Talk may be implemented as a MECS App. Large amounts of data (Big Data) may be pre-processed locally to save uplink connection costs.



With the **MECS Dashboard**, the complexity of the underlying elements is hidden and the whole network can be easily managed through a Web-based Graphical User Interface (GUI).

Due to its compactness, the MECS is easily transportable. It works with ambient temperatures from -20°C to +55°C, i.e. datacenter environmental conditions are not required. The architecture is future-proof and prepared for 5G as the next evolutionary step.

The Private LTE Starter Kit is also available on a rental basis.



MECS	
Operating temp.	-20°C to +55°C, with fan
Ingress Protection	IP65
CPU	24/32/40 logical cores
RAM	16/32/64/96 GB
Storage	Dual sATA SSD drive bays
Edge Cloud	KVM based
System VMs	EPC IMS
EPC functions	MME, S-GW, P-GW, HSS, PCRF
MECS Apps (opt.)	Push-to-Talk
O&M	Web GUI
LTE Small Cell Base Station	
Operating temp.	-20°C to +50°C
Ingress Protection	IP65
Mounting options	Pole/wall/strand
LTE band	B42/43 (3400–3800 MHz) other bands on request
Industrial LTE CPE	
Operating temp.	-20°C to +50°C
Ingress Protection	IP65
LTE band	B42/43 (3400–3800 MHz) other bands on request
Transport mode	Bridged , Routed (NAPT)
User interface	Ethernet

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