

**Sierra Wireless is building
the Internet of Things.**

Combining LwM2M and OneM2M

A Developer's Perspective

OMA IoT Developer Seminar, Singapore, 26th October 2016



Sierra Wireless Overview

Founded in 1993

1,100 employees worldwide

2015 revenue: \$608 million

#1 IoT module supplier ⁽¹⁾

20+ years of innovation



Connected
Machines

IoT Hardware

AirPrime[®]
Embedded Solutions

AirLink[®]
Gateways Solutions

IoT Connectivity

SIERRA WIRELESS

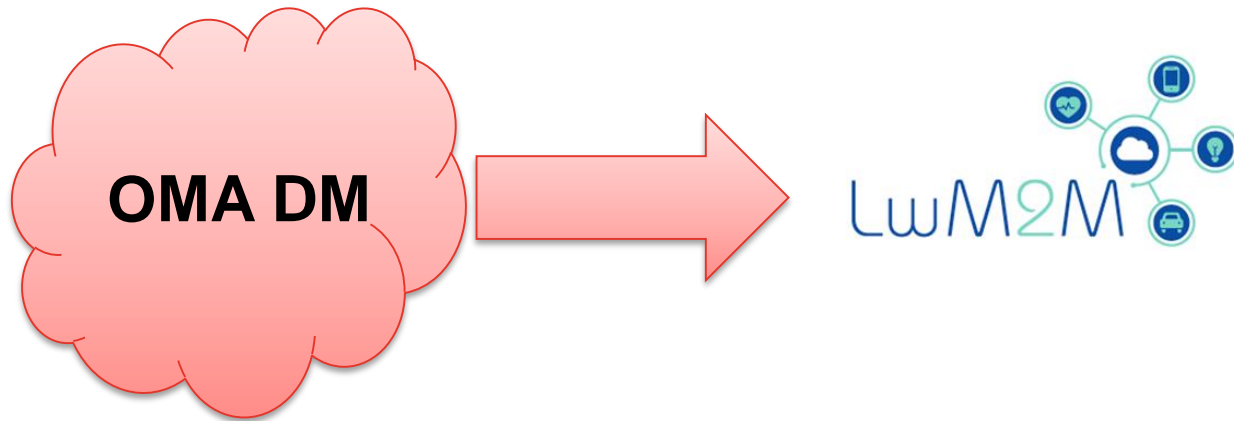
IoT Platform

AirVantage
IoT Platform



Enterprise
Services

Sierra Wireless and LightweightM2M



LightweightM2M – Summary

LightweightM2M is originally a **Device Management** technology
Extended to support generic data exchange



Device



Manager

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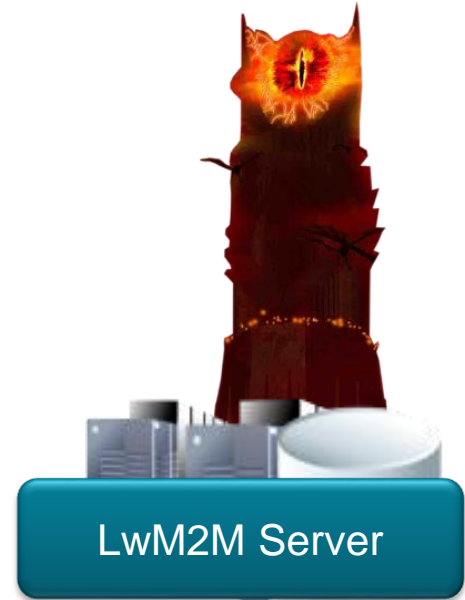


LwM2M Client

Device



1. Lightweight Protocol



LwM2M Server

Manager

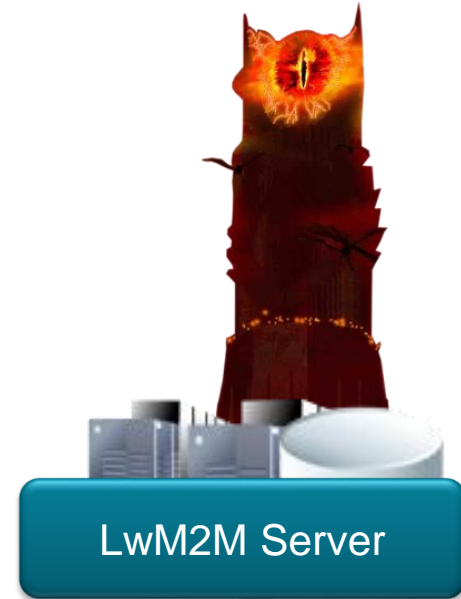
LightweightM2M – Summary

LightweightM2M is originally a **Device Management** technology
Extended to support generic data exchange

2. Lightweight Data Model



Device



Manager

OneM2M – Summary

OneM2M is a full, but complex service layer technology



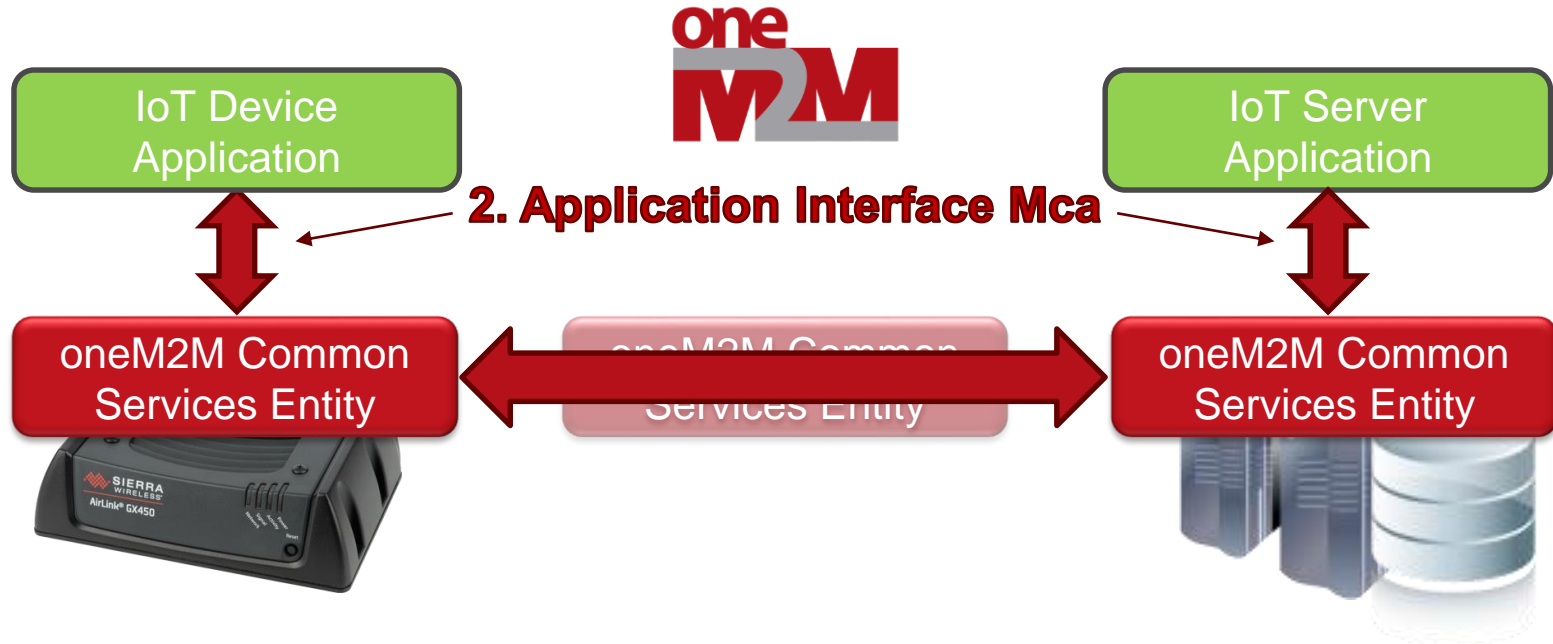
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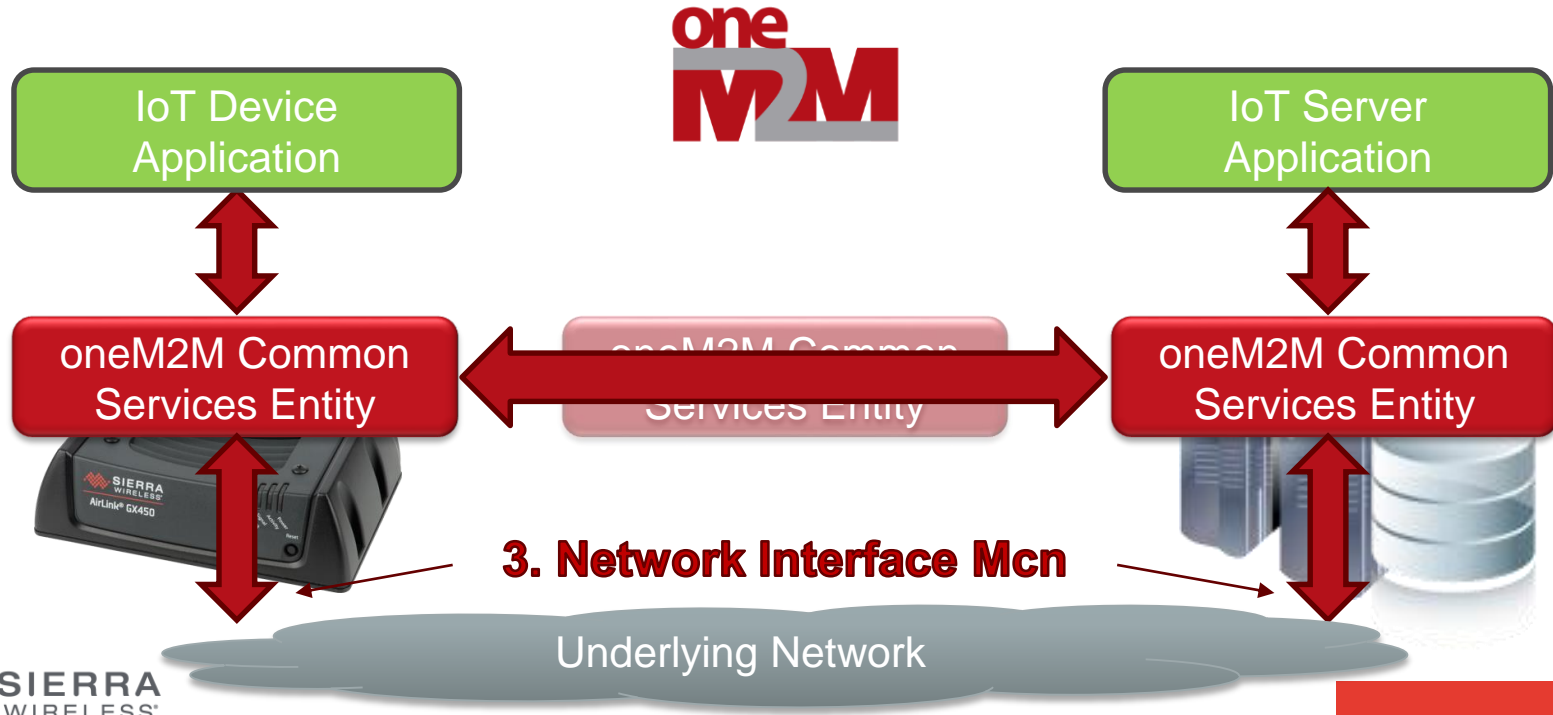
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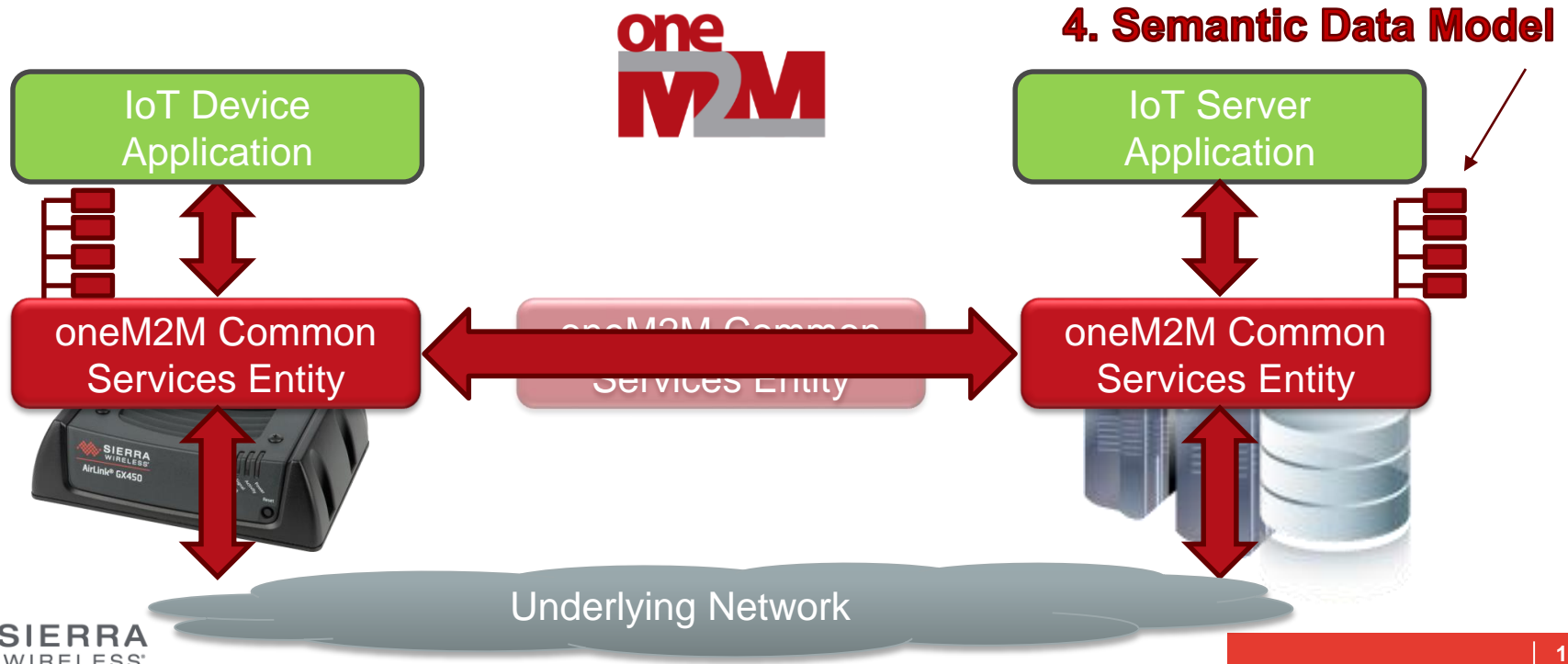
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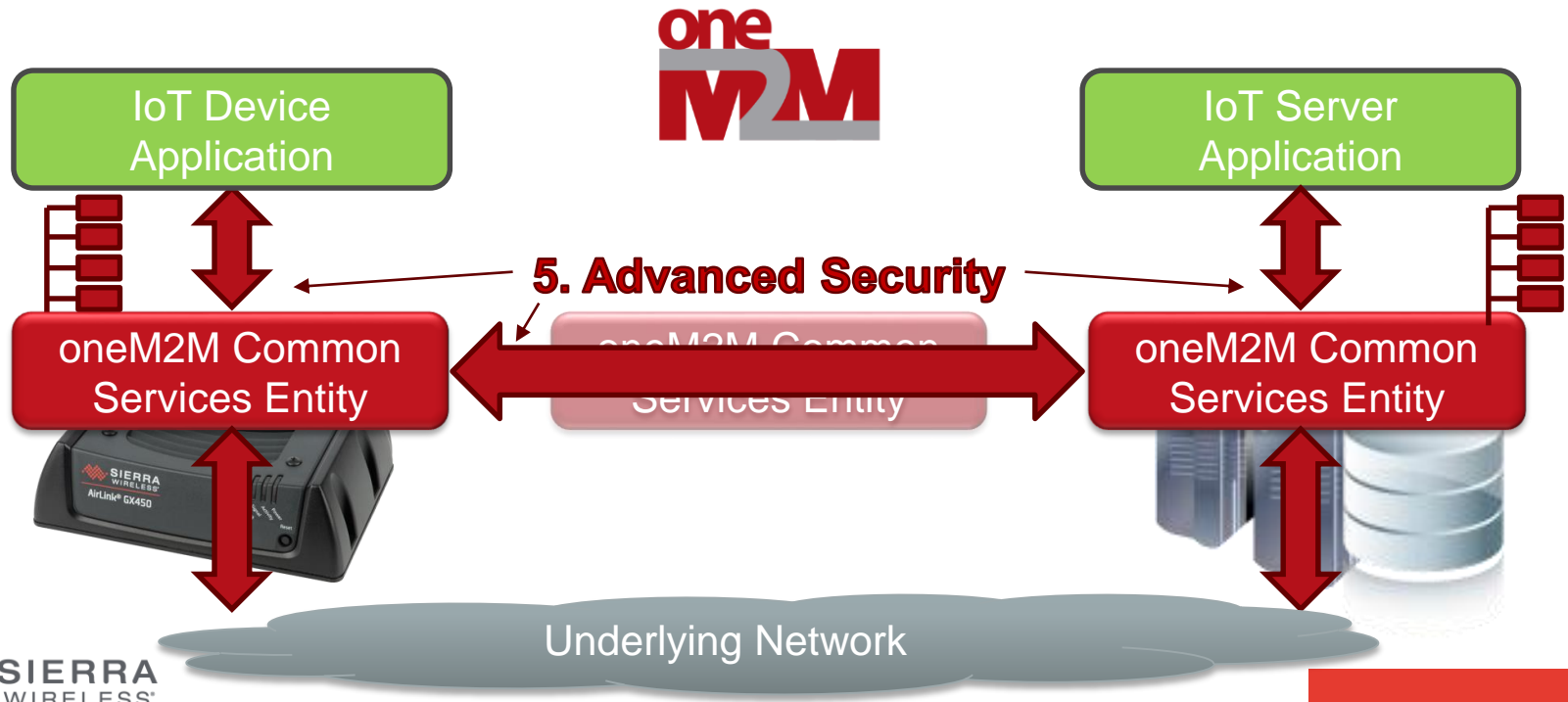
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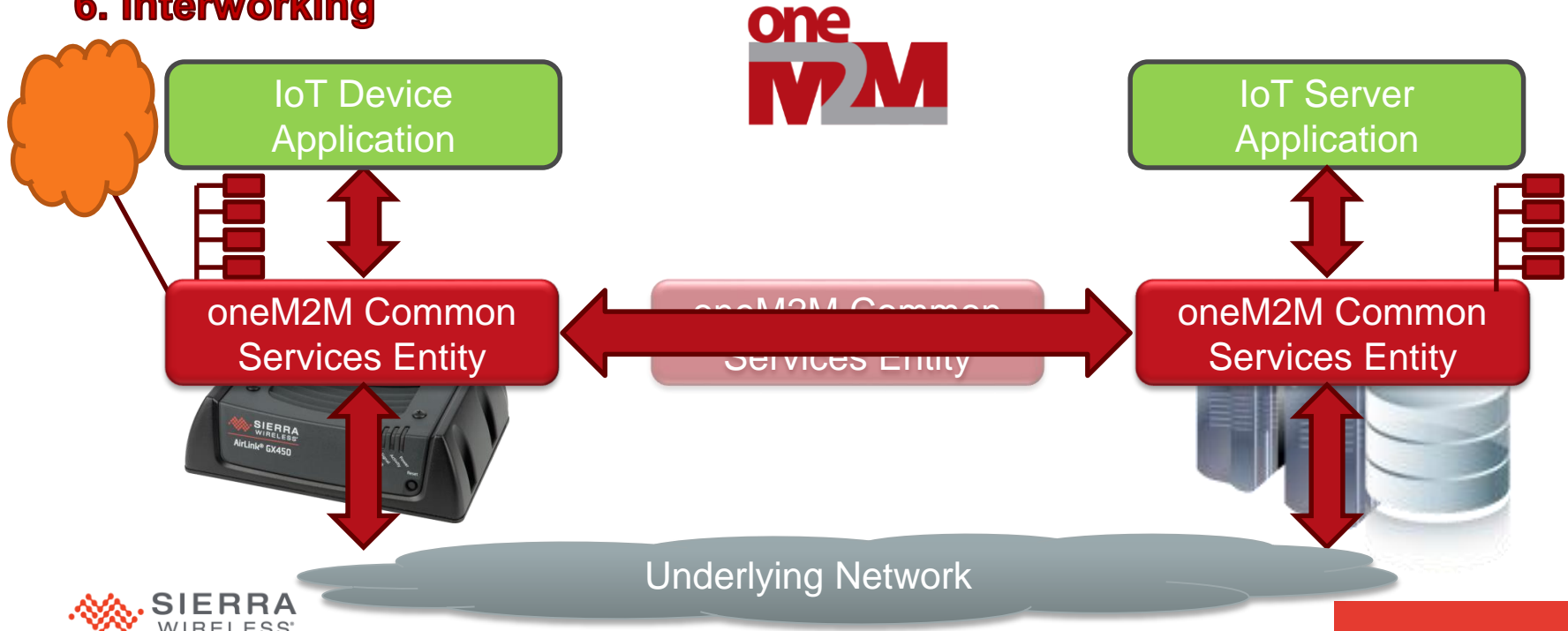
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OneM2M – Summary

OneM2M is a full, but complex service layer technology

6. Interworking



What do you develop?

1. Enabling Technology

Protocol stack (client / server)

Object/Data Manager

2. End Applications

Server Applications

Device Applications

Combining LwM2M and OneM2M

LightweightM2M is a good first step for IoT standards

- Enough for most applications
- Data consumer is the same as the data producer (80% of cases)
- No northbound interfaces, ok for integrated devices

Combining LwM2M and OneM2M

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OneM2M is a natural extension of LightweightM2M

1. Reuse LightweightM2M and CoAP as device-to-cloud enablers
2. Use the OneM2M Interworking capabilities to integrate LightweightM2M
3. Use OneM2M Mca as the application - northbound interfaces
4. Bring in full data semantics and advanced security

Reuse LightweightM2M and CoAP



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Reuse LightweightM2M and CoAP



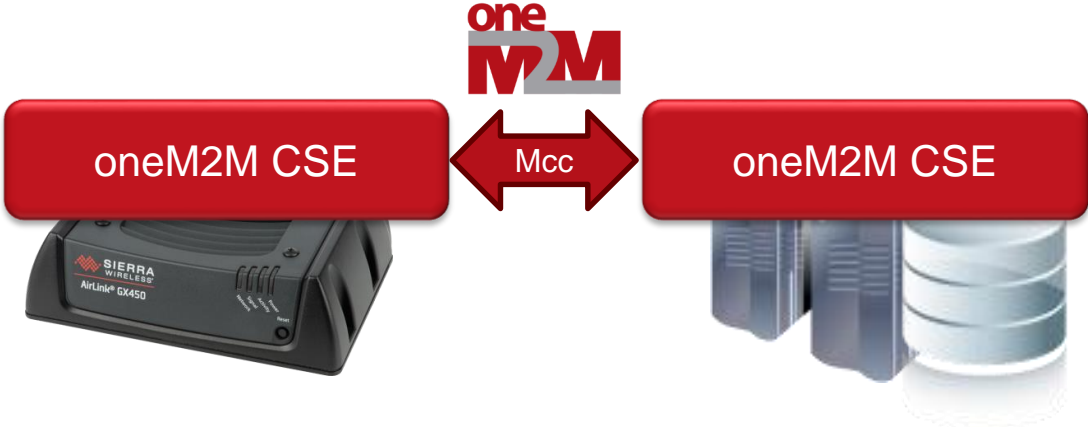
Use the OneM2M Interworking capabilities



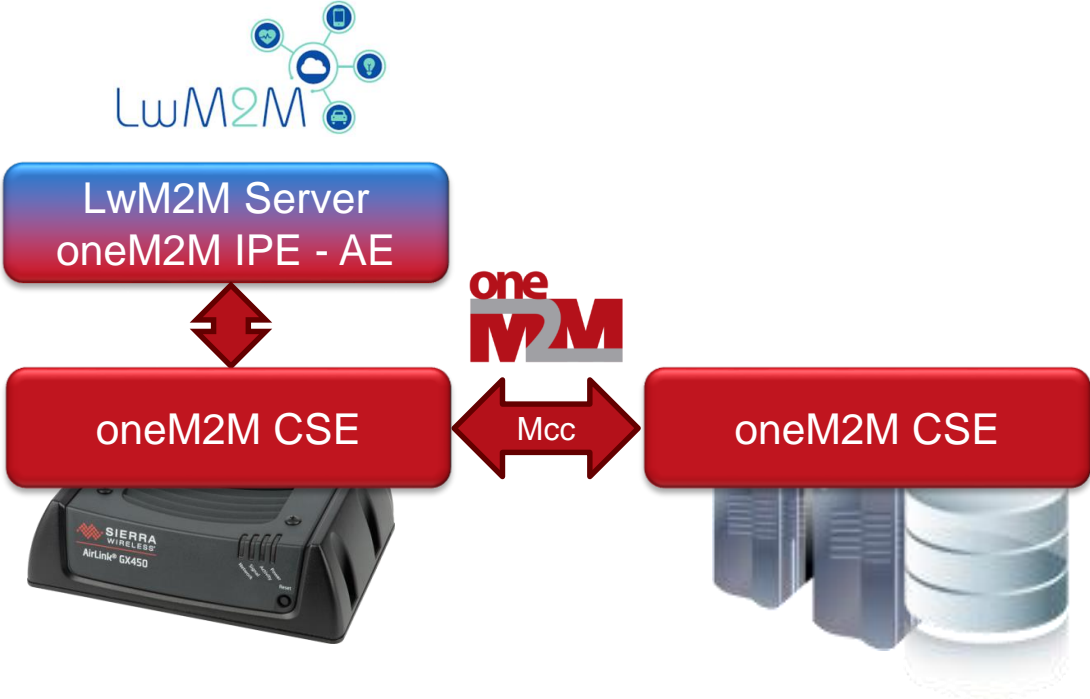
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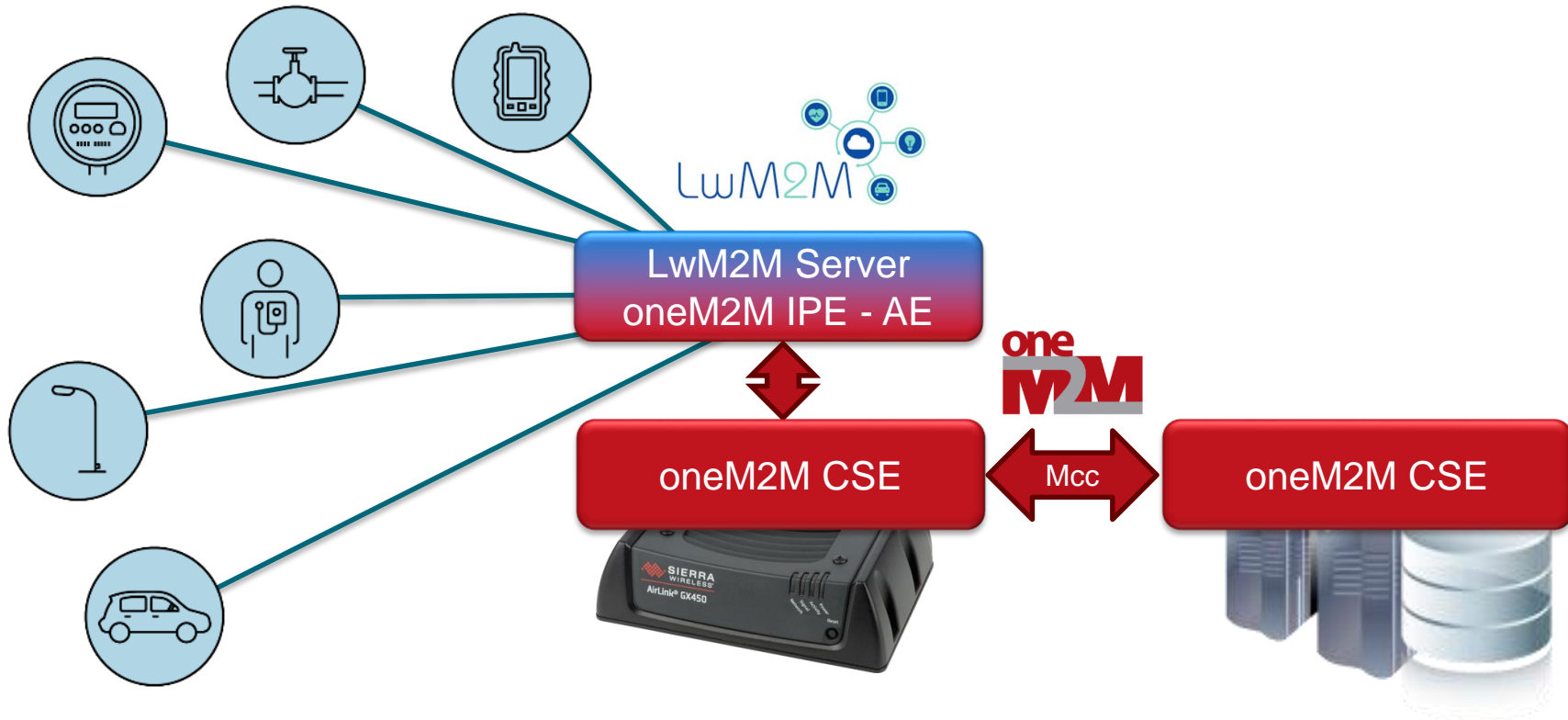
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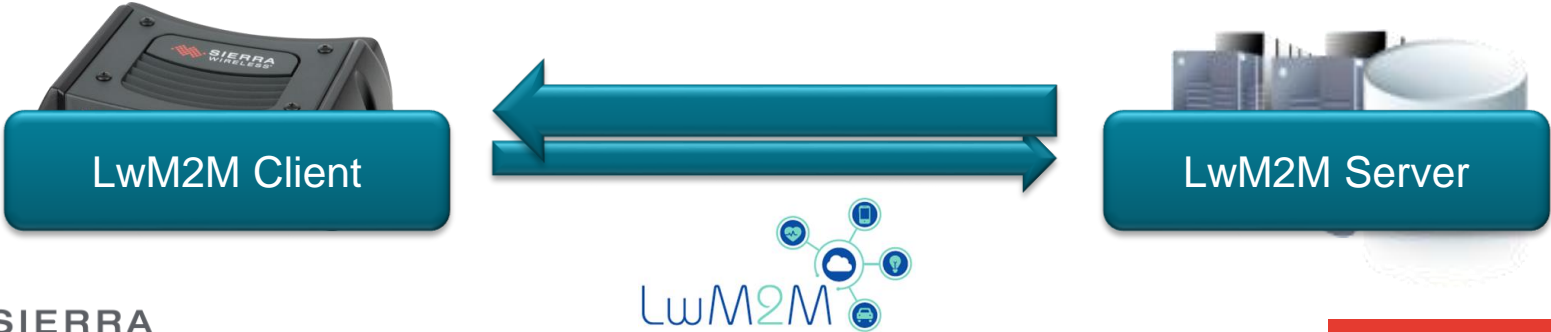
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Use OneM2M Mca as northbound interfaces



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Use OneM2M Mca as northbound interfaces



Bring in full data semantics

In LwM2M, data semantics is shared out-of-band through object defs.

Example: Odins single phase power meter ([urn:oma:lwm2m:x:10243](#))

« Active Power » is the resource [/10243/0/6/0](#), expressed in kWatts

But there is also the IPSO Object power ([urn:oma:lwm2m:ext:3305](#))

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In oneM2M, each data can be « tagged » using a semantic descriptor:

- Reference to external ontology (ex: DLMS/COSEM model)
<http://www.dlms.com/COSEMpdu/>
- Reference to actual object definition:
Example: OBIS ID = 1.1.1.7.0.255 for Active Power, in Watts

Bring in advanced security

In LwM2M, security is provided by:

- Transport layer security (DTLS)
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In OneM2M, advanced security is available:

- Transport layer security (TLS/DTLS)
- Finer access control determined per application/entity, also using roles
- Distributed authentication and authorization model
- Application-level end-to-end encryption is supported
- More to come in release 3 (privacy profiles, ...)

Thank You



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Sierra Wireless - Senior Manager, Business and Innovation

OneM2M – Chairman of the WG2-Architecture

OMA – Member of the Board of Directors

