



# Enabler Release Definition for LightweightM2M

## Candidate Version 1.0 – 07 Apr 2016

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**Open Mobile Alliance**  
OMA-ERELD-LightweightM2M-V1\_0-20160407-C

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# 1. Scope

The scope of this document is limited to the Enabler Release Definition of LightweightM2M v1.0 according to OMA Release process and the Enabler Release specification baseline listed in section 5.

## 2. References

### 2.1 Normative References

- [CoAP] Shelby, Z., Hartke, K., Bormann, C., and B. Frank, “Constrained Application Protocol (CoAP)”, draft-ietf-core-coap-18, Jun 2013.
- [LightweightM2M\_AD] “Lightweight Machine to Machine Architecture”, Version 1.0, Open Mobile Alliance™, OMA-AD-LightweightM2M-V1\_0, [URL:http://www.openmobilealliance.org/](http://www.openmobilealliance.org/)
- [LightweightM2M\_RD] “Lightweight Machine to Machine Requirements”, Version 1.0, Open Mobile Alliance™, OMA-RD-LightweightM2M-V1\_0, [URL:http://www.openmobilealliance.org/](http://www.openmobilealliance.org/)
- [LightweightM2M\_TS] “Lightweight Machine to Machine Technical Specification”, Version 1.0, Open Mobile Alliance™, OMA-TS-LightweightM2M-V1\_0, [URL:http://www.openmobilealliance.org/](http://www.openmobilealliance.org/)
- [RFC2119] “Key words for use in RFCs to Indicate Requirement Levels”, S. Bradner, March 1997, [URL:http://www.ietf.org/rfc/rfc2119.txt](http://www.ietf.org/rfc/rfc2119.txt)
- [SCRRULES] “SCR Rules and Procedures”, Open Mobile Alliance™, OMA-ORG-SCR\_Rules\_and\_Procedures, [URL:http://www.openmobilealliance.org/](http://www.openmobilealliance.org/)

### 2.2 Informative References

- [OMADICT] “Dictionary for OMA Specifications”, Version 2.9, Open Mobile Alliance™, OMA-ORG-Dictionary-V2\_9, [URL:http://www.openmobilealliance.org/](http://www.openmobilealliance.org/)

## 3. Terminology and Conventions

### 3.1 Conventions

The key words “MUST”, “MUST NOT”, “REQUIRED”, “SHALL”, “SHALL NOT”, “SHOULD”, “SHOULD NOT”, “RECOMMENDED”, “MAY”, and “OPTIONAL” in this document are to be interpreted as described in [RFC2119].

All sections and appendixes, except “Scope”, “Release Version Overview” and “Conformance Requirements Notation Details”, are normative, unless they are explicitly indicated to be informative.

The formal notation convention used in sections 8 and 9 to formally express the structure and internal dependencies between specifications in the Enabler Release specification baseline is detailed in [SCRRULES].

### 3.2 Definitions

<b>Enabler Release</b>	Collection of specifications that combined together form an enabler for a service area, e.g. a download enabler, a browsing enabler, a messaging enabler, a location enabler, etc. The specifications that are forming an enabler should combined fulfil a number of related market requirements.
<b>M2M Device</b>	A M2M Device is a device that runs (a) M2M application(s) and communicates through the Network Provider’s network.
<b>M2M Service Provider</b>	A M2M Service Provider provides (a) M2M service(s) to the M2M User by communicating to the M2M Device through the Network Provider’s network.
<b>M2M User</b>	A M2M User uses the service provided by the M2M Service Provider.

### 3.3 Abbreviations

<b>DM</b>	Device Management
<b>ERDEF</b>	Enabler Requirement Definition
<b>ERELD</b>	Enabler Release Definition
<b>LWM2M</b>	Lightweight Machine to Machine
<b>M2M</b>	Machine to Machine
<b>OMA</b>	Open Mobile Alliance
<b>OMNA</b>	Open Mobile Naming Authority
<b>RD</b>	Requirements Document
<b>SMS</b>	Short Messaging Service

## 4. Release Version Overview

Lightweight M2M enabler defines the application layer communication protocol between a LWM2M Server and a LWM2M Client, which is located in a LWM2M Device. The OMA Lightweight M2M enabler includes device management and service enablement for LWM2M Devices. The target LWM2M Devices for this enabler are mainly resource constrained devices. Therefore, this enabler makes use of a light and compact protocol as well as an efficient resource data model. It provides a choice for the M2M Service Provider to deploy a M2M system to provide service to the M2M User.

### 4.1 Version 1.0 Functionality

Lightweight M2M 1.0 enabler introduces the following features below for the initial release.

- Simple Object based resource model
- Resource operations of creation/retrieval/update/deletion/configuration of attribute
- Resource observation/notification
- TLV/JSON/Plain Text/Opaque data format support
- UDP and SMS transport layer support
- DTLS based security
- Queue mode for NAT/Firewall environment
- Multiple LWM2M Server support
- Basic M2M functionalities: LWM2M Server, Access Control, Device, Connectivity, Firmware Update, Location, Connectivity Statistics

## 5. Document Listing for LightweightM2M V1.0

Doc Ref	Permanent Document Reference	Description
<b>Requirement Document</b>		
[LightweightM2M_RD]	OMA-RD-LightweightM2M-V1_0-20131210-C	Requirement Document for LightweightM2M Enabler
<b>Architecture Document</b>		
[LightweightM2M_AD]	OMA-AD-LightweightM2M-V1_0-20131210-C	Architecture Document for LightweightM2M Enabler
<b>Technical Specification</b>		
[LightweightM2M_TS]	OMA-TS-LightweightM2M-V1_0-20160407-C	Technical Specification for LightweightM2M Enabler
<b>Supporting Files</b>		
[LWM2M_Access_Control_XML]	OMA-SUP-XML_LWM2M_Access_Control-V1_0-20160407-C	XML document for LightweightM2M Access Control Working file in LWM2M_XML directory: File: LWM2M_Access_Control-v1_0.xml Path: <a href="http://www.openmobilealliance.org/tech/profiles">http://www.openmobilealliance.org/tech/profiles</a>
[LWM2M_Connectivity_Monitoring_XML]	OMA-SUP-XML_LWM2M_Connectivity_Monitoring-V1_0-20160407-C	XML document for LightweightM2M Connectivity Monitoring Working file in LWM2M_XML directory: File: LWM2M_Connectivity_Monitoring-v1_0.xml Path: <a href="http://www.openmobilealliance.org/tech/profiles">http://www.openmobilealliance.org/tech/profiles</a>
[LWM2M_Connectivity_Statistics_XML]	OMA-SUP-XML_LWM2M_Connectivity_Statistics-V1_0-20160407-C	XML document for LightweightM2M Connectivity Statistics Working file in LWM2M_XML directory: File: LWM2M_Connectivity_Statistics-v1_0.xml Path: <a href="http://www.openmobilealliance.org/tech/profiles">http://www.openmobilealliance.org/tech/profiles</a>
[LWM2M_Device_XML]	OMA-SUP-XML_LWM2M_Device-V1_0-20160407-C	XML document for LightweightM2M Device Working file in LWM2M_XML directory: File: LWM2M_Device-v1_0.xml Path: <a href="http://www.openmobilealliance.org/tech/profiles">http://www.openmobilealliance.org/tech/profiles</a>
[LWM2M_Firmware_Update_XML]	OMA-SUP-XML_LWM2M_Firmware_Update-V1_0-20160407-C	XML document for LightweightM2M Firmware Update Working file in LWM2M_XML directory: File: LWM2M_Firmware_Update-v1_0.xml Path: <a href="http://www.openmobilealliance.org/tech/profiles">http://www.openmobilealliance.org/tech/profiles</a>
[LWM2M_Location_XML]	OMA-SUP-XML_LWM2M_Location-V1_0-20160407-C	XML document for LightweightM2M Location Working file in LWM2M_XML directory: File: LWM2M_Location-v1_0.xml Path: <a href="http://www.openmobilealliance.org/tech/profiles">http://www.openmobilealliance.org/tech/profiles</a>
[LWM2M_Security_XML]	OMA-SUP-XML_LWM2M_Security-V1_0-20160407-C	XML document for LightweightM2M Security Working file in LWM2M_XML directory: File: LWM2M_Security-v1_0.xml Path: <a href="http://www.openmobilealliance.org/tech/profiles">http://www.openmobilealliance.org/tech/profiles</a>



[LWM2M_Server_XML]	OMA-SUP-XML_LWM2M_Server-V1_0-20160407-C	XML document for LightweightM2M Server Working file in LWM2M_XML directory: File: LWM2M_Server-v1_0.xml Path: <a href="http://www.openmobilealliance.org/tech/profiles">http://www.openmobilealliance.org/tech/profiles</a>
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**Table 1: Listing of Documents in LightweightM2M Enabler**

## 6. OMNA Considerations

The OMNA portal needs to add and maintain the following Objects into its registry:

Object URN Identifier	Organization	Object Specification URL	Description
urn:oma:lwm2m:oma:0	OMA	“Lightweight Machine to Machine Technical Specification”, Version 1.0, Open Mobile Alliance™, OMA-TS-LightweightM2M-V1_0, <a href="http://www.openmobilealliance.org/">URL:http://www.openmobilealliance.org/</a>	LWM2M Security Object
urn:oma:lwm2m:oma:1	OMA	“Lightweight Machine to Machine Technical Specification”, Version 1.0, Open Mobile Alliance™, OMA-TS-LightweightM2M-V1_0, <a href="http://www.openmobilealliance.org/">URL:http://www.openmobilealliance.org/</a>	LWM2M Server Object
urn:oma:lwm2m:oma:2	OMA	“Lightweight Machine to Machine Technical Specification”, Version 1.0, Open Mobile Alliance™, OMA-TS-LightweightM2M-V1_0, <a href="http://www.openmobilealliance.org/">URL:http://www.openmobilealliance.org/</a>	Access Control Object
urn:oma:lwm2m:oma:3	OMA	“Lightweight Machine to Machine Technical Specification”, Version 1.0, Open Mobile Alliance™, OMA-TS-LightweightM2M-V1_0, <a href="http://www.openmobilealliance.org/">URL:http://www.openmobilealliance.org/</a>	Device Object
urn:oma:lwm2m:oma:4	OMA	“Lightweight Machine to Machine Technical Specification”, Version 1.0, Open Mobile Alliance™, OMA-TS-LightweightM2M-V1_0, <a href="http://www.openmobilealliance.org/">URL:http://www.openmobilealliance.org/</a>	Connectivity Monitoring Object
urn:oma:lwm2m:oma:5	OMA	“Lightweight Machine to Machine Technical Specification”, Version 1.0, Open Mobile Alliance™, OMA-TS-LightweightM2M-V1_0, <a href="http://www.openmobilealliance.org/">URL:http://www.openmobilealliance.org/</a>	Firmware Update Object
urn:oma:lwm2m:oma:6	OMA	“Lightweight Machine to Machine Technical Specification”, Version 1.0, Open Mobile Alliance™, OMA-TS-LightweightM2M-V1_0, <a href="http://www.openmobilealliance.org/">URL:http://www.openmobilealliance.org/</a>	Location Object
urn:oma:lwm2m:oma:7	OMA	“Lightweight Machine to Machine Technical Specification”, Version 1.0, Open Mobile Alliance™, OMA-TS-LightweightM2M-V1_0, <a href="http://www.openmobilealliance.org/">URL:http://www.openmobilealliance.org/</a>	Connectivity Statistics

IANA needs to maintain the following Mime Types and CoAP [CoAP] needs to maintain Content-Format Registry associated to the Mime Types:

- application/vnd.oma.lwm2m+json
- application/vnd.oma.lwm2m+text
- application/vnd.oma.lwm2m+opaque
- application/vnd.oma.lwm2m+tlv

## 7. Conformance Requirements Notation Details

This section is informative

The tables in following chapters use the following notation:

- Item:** Entry in this column **MUST** be a valid ScrItem according to [SCRRULES].
- Feature/Application:** Entry in this column **SHOULD** be a short descriptive label to the **Item** in question.
- Requirement:** Expression in the column **MUST** be a valid TerminalExpression according to [SCRRULES] and it **MUST** accurately reflect the architectural requirement of the **Item** in question.

## 8. ERDEF for LightweightM2M - Client Requirements

This section is normative.

Item	Feature / Application	Requirement
OMA-ERDEF-LWM2M-C-001-M	Lightweight M2M Protocol	[LightweightM2M_TS]

**Table 2: ERDEF for LightweightM2M Client-side Requirements**

## 9. ERDEF for LightweightM2M - Server Requirements

This section is normative.

Item	Feature / Application	Requirement
OMA-ERDEF-LWM2M-C-001-M	Lightweight M2M Protocol	[LightweightM2M_TS]

**Table 3: ERDEF for LightweightM2M Server-side Requirements**

## Appendix A. Change History (Informative)

### A.1 Approved Version History

Reference	Date	Description
n/a	n/a	No previous version in OMA

### A.2 Draft/Candidate Version 1.0 History

Document Identifier	Date	Sections	Description
Draft Versions OMA-ERELD-LightweightM2M-V1_0	20 Jun 2012	All	Baseline as agreed in OMA-DM-LightweightM2M-2012-0059-INP_LightweightM2M_v1.0_ERELD_baseline
	01 Oct 2012	5	Editorial changes to permanent document references
Candidate Version OMA-ERELD-LightweightM2M-V1_0	02 Oct 2012	All	Status changed to Candidate by TP TP Ref # OMA-TP-2012-0340R02-INP_LightweightM2M_V1.0_RD_for_Candidate_Approval
Draft Version OMA-ERELD-LightweightM2M-V1_0	15 Nov 2012	5	Editorial changes to permanent document references
Candidate Version OMA-ERELD-LightweightM2M-V1_0	27 Nov 2012	All	Status changed to Candidate by TP TP Ref # OMA-TP-2012-0434-INP_LightweightM2M_V1_0_AD_for_Candidate_approval
Draft Versions OMA-ERELD-LightweightM2M-V1_0	11 Jun 2013	5, 6	Editorial changes to permanent document references Add a line in Section 6: OMNA Considerations. Refer to TS clause 'C.2 OMNA Guidelines'
	09 Oct 2013	2, 3.3, 4, 5, 6, 8, 9, B	Incorporated CR: OMA-DM-LightweightM2M-2013-0152-CR_ERELD_Update Editorial changes
	14 Nov 2013	5	Editorial changes to permanent document references
	04 Dec 2013	5	Updated the document listing prior to Candidate approval
Candidate Version OMA-ERELD-LightweightM2M-V1_0	10 Dec 2013	All	Status changed to Candidate by TP TP Ref # OMA-TP-2013-0368-INP_LightweightM2M_V1_0_ERP_and_ETR_for_Candidate_approval
Draft Version OMA-ERELD-LightweightM2M-V1_0	26 Nov 2014	5	Editorial update of permanent document references in section 5
Candidate Version OMA-ERELD-LightweightM2M-V1_0	26 Nov 2014	All	Status changed to Candidate by TP TP Ref # OMA-TP-2014-0271-INP_LightweightM2M_V1_0_ERP_for_Notification
Draft Version OMA-ERELD-LightweightM2M-V1_0	30 Oct 2015	5	Editorial update of permanent document references in section 5 prior to Candidate notification
Candidate Version OMA-ERELD-LightweightM2M-V1_0	30 Oct 2015	All	Status changed to Candidate by TP TP Ref # OMA-TP-2015-0177-INP_LightweightM2M_V1_0_ERP_for_Notification
Draft Version OMA-ERELD-LightweightM2M-V1_0	01 Dec 2015	5	Editorial update of permanent document references in section 5 prior to Candidate notification
Candidate Version OMA-ERELD-LightweightM2M-V1_0	01 Dec 2015	All	Status changed to Candidate by TP TP Ref # OMA-TP-2015-0206-INP_LightweightM2M_V1_0_ERP_for_Notification
Draft Version OMA-ERELD-LightweightM2M-V1_0	14 Dec 2015	5	Editorial update of permanent document references in section 5 prior to Candidate notification
Candidate Version OMA-ERELD-LightweightM2M-V1_0	14 Dec 2015	All	Status changed to Candidate by TP TP Ref # OMA-TP-2015-0221-INP_LightweightM2M_V1_0_ERP_for_Notification
Draft Version OMA-ERELD-LightweightM2M-V1_0	07 Apr 2016	5	Editorial update of permanent document references in section 5 prior to Candidate notification
Candidate Version OMA-ERELD-LightweightM2M-V1_0	07 Apr 2016	All	Status changed to Candidate by TP TP Ref # OMA-TP-2016-0056-INP_LightweightM2M_V1_0_ERP_for_Notification