Enabler Release Definition for LightweightM2M

Approved Version 1.0 – 08 Feb 2017

Open Mobile Alliance

OMA-ERELD-LightweightM2M-V1_0-20170208-A

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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/

[LightweightM2M_RD] "Lightweight Machine to Machine Requirements", Version 1.0, Open Mobile Alliance™, OMA-RD-LightweightM2M-V1_0, URL: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/

[RFC2119] "Key words for use in RFCs to Indicate Requirement Levels", S. Bradner, March 1997, URL: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/

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/

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

Enabler Release	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.
M2M Device	A M2M Device is a device that runs (a) M2M application(s) and communicates through the Network Provider’s network.
M2M Service Provider	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.
M2M User	A M2M User uses the service provided by the M2M Service Provider.

3.3 Abbreviations

DM	Device Management
ERDEF	Enabler Requirement Definition
ERELD	Enabler Release Definition
LwM2M	Lightweight Machine to Machinbe
M2M	Machine to Machine
OMA	Open Mobile Alliance
OMNA	Open Mobile Naming Authority
RD	Requirements Document
SMS	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
Requirement Document		
[LightweightM2M_RD]	OMA-RD-LightweightM2M-V1_0-20170208-A	Requirement Document for LightweightM2M Enabler
Architecture Document		
[LightweightM2M_AD]	OMA-AD-LightweightM2M-V1_0-20170208-A	Architecture Document for LightweightM2M Enabler
Technical Specification		
[LightweightM2M_TS]	OMA-TS-LightweightM2M-V1_0-20170208-A	Technical Specification for LightweightM2M Enabler
Supporting Files		
[LWM2M_Access_Control_XML]	OMA-SUP-XML_LWM2M_Access_Control-V1_0-20170208-A	XML document for LightweightM2M Access Control Working file in LWM2M_XML directory: File: LWM2M_Access_Control-v1_0.xml Path: http://www.openmobilealliance.org/tech/profiles
[LWM2M_Connectivity_Monitoring_XML]	OMA-SUP-XML_LWM2M_Connectivity_Monitoring-V1_0-20170208-A	XML document for LightweightM2M Connectivity Monitoring Working file in LWM2M_XML directory: File: LWM2M_Connectivity_Monitoring-v1_0.xml Path: http://www.openmobilealliance.org/tech/profiles
[LWM2M_Connectivity_Statistics_XML]	OMA-SUP-XML_LWM2M_Connectivity_Statistics-V1_0-20170208-A	XML document for LightweightM2M Connectivity Statistics Working file in LWM2M_XML directory: File: LWM2M_Connectivity_Statistics-v1_0.xml Path: http://www.openmobilealliance.org/tech/profiles
[LWM2M_Device_XML]	OMA-SUP-XML_LWM2M_Device-V1_0-20170208-A	XML document for LightweightM2M Device Working file in LWM2M_XML directory: File: LWM2M_Device-v1_0.xml Path: http://www.openmobilealliance.org/tech/profiles
[LWM2M_Firmware_Update_XML]	OMA-SUP-XML_LWM2M_Firmware_Update-V1_0-20170208-A	XML document for LightweightM2M Firmware Update Working file in LWM2M_XML directory: File: LWM2M_Firmware_Update-v1_0.xml Path: http://www.openmobilealliance.org/tech/profiles
[LWM2M_Location_XML]	OMA-SUP-XML_LWM2M_Location-V1_0-20170208-A	XML document for LightweightM2M Location Working file in LWM2M_XML directory: File: LWM2M_Location-v1_0.xml Path: http://www.openmobilealliance.org/tech/profiles
[LWM2M_Security_XML]	OMA-SUP-XML_LWM2M_Security-V1_0-20170208-A	XML document for LightweightM2M Security Working file in LWM2M_XML directory: File: LWM2M_Security-v1_0.xml Path: http://www.openmobilealliance.org/tech/profiles

[LWM2M_Server_XML]	OMA-SUP-XML_LWM2M_Server-V1_0-20170208-A	XML document for LightweightM2M Server Working file in LWM2M_XML directory: File: LWM2M_Server-v1_0.xml Path: http://www.openmobilealliance.org/tech/profiles

Table 1: Listing of Documents in LightweightM2M Enabler

6. OMNA Considerations

6.1 Objects in OMNA Lightweight M2M Object & Resource Registry

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, URL:http://www.openmobilealliance.org/	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, URL:http://www.openmobilealliance.org/	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, URL:http://www.openmobilealliance.org/	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, URL:http://www.openmobilealliance.org/	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, URL:http://www.openmobilealliance.org/	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, URL:http://www.openmobilealliance.org/	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, URL:http://www.openmobilealliance.org/	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, URL:http://www.openmobilealliance.org/	Connectivity Statistics

6.2 IANA Considerations

IANA needs to maintain the structured syntax suffix tlv and also needs to maintain the following Media Types and CoAP [CoAP] needs to maintain Content-Format Registry associated to the Media Types:

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

6.2.1 Publication of [LightweightM2M_TS]

The IANA Structured Syntax Suffix Registry requires a pointer to the latest revision of [LightweightM2M_TS]. That pointer needs to be stable, i.e. when OMA revises the document, there should be no need to update that link in the IANA registry. Due restrictions of the current standard publication process, publication of the [LightweightM2M_TS] in an additional location will be used to provide such a stable link for the IANA registry to refer to the latest TS for this Enabler, [LightweightM2M_TS]. The filename of the document referred by the IANA link is: OMA-TS-LightweightM2M-V1_0.zip. The document filename does not contain the date or document status.

6.2.1.1 Actions required on publication

In addition to the standard publication process, the document [LightweightM2M_TS] has to be copied into the "Documents for External Reference" directory, and date and status have to be removed from the filename, such that it can be referenced externally as http://www.openmobilealliance.org/tech/extref/OMA-TS-LightweightM2M-V1_0.zip.

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
OMA-ERELD-LightweightM2M-V1_0-20170208-A	08 Feb 2017	Status changed to Approved by TP TP Ref # OMA-TP-2017-0009-INP_LightweightM2M-V1_0_ERP_for_Final_Approval