



Enabler Release Definition for LPP Extensions (LPPe)

Candidate Version 2.0 – 04 Aug 2020

Open Mobile Alliance
OMA-ERELED-LPPe-V2_0-20200804-C

Use of this document is subject to all of the terms and conditions of the Use Agreement located at <https://www.omaspecworks.org/about/policies-and-terms-of-use/>.

Unless this document is clearly designated as an approved specification, this document is a work in process, is not an approved Open Mobile Alliance™ specification, and is subject to revision or removal without notice.

You may use this document or any part of the document for internal or educational purposes only, provided you do not modify, edit or take out of context the information in this document in any manner. Information contained in this document may be used, at your sole risk, for any purposes. You may not use this document in any other manner without the prior written permission of the Open Mobile Alliance. The Open Mobile Alliance authorizes you to copy this document, provided that you retain all copyright and other proprietary notices contained in the original materials on any copies of the materials and that you comply strictly with these terms. This copyright permission does not constitute an endorsement of the products or services. The Open Mobile Alliance assumes no responsibility for errors or omissions in this document.

Each Open Mobile Alliance member has agreed to use reasonable endeavors to inform the Open Mobile Alliance in a timely manner of Essential IPR as it becomes aware that the Essential IPR is related to the prepared or published specification. However, the members do not have an obligation to conduct IPR searches. The declared Essential IPR is publicly available to members and non-members of the Open Mobile Alliance and may be found on the “OMA IPR Declarations” list at <https://www.omaspecworks.org/about/intellectual-property-rights/>. The Open Mobile Alliance has not conducted an independent IPR review of this document and the information contained herein, and makes no representations or warranties regarding third party IPR, including without limitation patents, copyrights or trade secret rights. This document may contain inventions for which you must obtain licenses from third parties before making, using or selling the inventions. Defined terms above are set forth in the schedule to the Open Mobile Alliance Application Form.

NO REPRESENTATIONS OR WARRANTIES (WHETHER EXPRESS OR IMPLIED) ARE MADE BY THE OPEN MOBILE ALLIANCE OR ANY OPEN MOBILE ALLIANCE MEMBER OR ITS AFFILIATES REGARDING ANY OF THE IPR'S REPRESENTED ON THE “OMA IPR DECLARATIONS” LIST, INCLUDING, BUT NOT LIMITED TO THE ACCURACY, COMPLETENESS, VALIDITY OR RELEVANCE OF THE INFORMATION OR WHETHER OR NOT SUCH RIGHTS ARE ESSENTIAL OR NON-ESSENTIAL.

THE OPEN MOBILE ALLIANCE IS NOT LIABLE FOR AND HEREBY DISCLAIMS ANY DIRECT, INDIRECT, PUNITIVE, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES ARISING OUT OF OR IN CONNECTION WITH THE USE OF DOCUMENTS AND THE INFORMATION CONTAINED IN THE DOCUMENTS.

THIS DOCUMENT IS PROVIDED ON AN "AS IS" "AS AVAILABLE" AND "WITH ALL FAULTS" BASIS.

© 2020 Open Mobile Alliance.

Used with the permission of the Open Mobile Alliance under the terms set forth above.

Contents

1. SCOPE	4
2. REFERENCES	5
2.1 NORMATIVE REFERENCES	5
2.2 INFORMATIVE REFERENCES	5
3. TERMINOLOGY AND CONVENTIONS	6
3.1 CONVENTIONS	6
3.2 DEFINITIONS	6
3.3 ABBREVIATIONS	6
4. RELEASE VERSION OVERVIEW	7
4.1 VERSION 1.0 FUNCTIONALITY	7
4.2 VERSION 1.1 FUNCTIONALITY	7
4.3 VERSION 2.0 FUNCTIONALITY	8
5. DOCUMENT LISTING FOR LPPE 2.0.....	9
6. OMNA CONSIDERATIONS	10
7. CONFORMANCE REQUIREMENTS NOTATION DETAILS	11
8. ERDEF FOR LPPE - CLIENT REQUIREMENTS	12
9. ERDEF FOR LPPE - SERVER REQUIREMENTS	13
APPENDIX A. CHANGE HISTORY (INFORMATIVE).....	14
A.1 APPROVED VERSION HISTORY	14
A.2 DRAFT/CANDIDATE VERSION 2.0 HISTORY	14

Tables

Table 1: Listing of Documents in LPPE 2.0 Enabler	9
---	---

1. Scope

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

2. References

2.1 Normative References

- [3GPP LPP] 3GPP TS 36.355 LTE Positioning Protocol,
[URL:http://www.3gpp.org](http://www.3gpp.org)
- [LPPE 2.0 RD] “LPPE Requirements Document”, Version 2.0, Open Mobile Alliance™, OMA-RD-LPPE-V2_0
[URL:http://www.openmobilealliance.org/](http://www.openmobilealliance.org/)
- [LPPE 2.0 TS] “LPPE Technical Specification”, Version 2.0, Open Mobile Alliance™, OMA-TS-LPPE-V2_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)
- [SCR RULES] “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 1.9, Open Mobile Alliance™, OMA-ORG-Dictionary-V1_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.

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.
Minimum Functionality Description	Description of the guaranteed features and functionality that will be enabled by implementing the minimum mandatory part of the Enabler Release.
Server	Termination point of LPP/LPPE
Target	Termination point of LPP/LPPE

3.3 Abbreviations

EPDU	External Protocol Data Unit
ERDEF	Enabler Requirement Definition
ERELED	Enabler Release Definition
E-SMLC	Evolved SMLC
LPP	LTE Positioning Protocol
LPPE	OMA LPP Extensions
LTE	Long-Term Evolution
OMA	Open Mobile Alliance
OMNA	Open Mobile Naming Authority
SET	SUPL-Enabler Terminal
SLP	SUPL Location Platform
SMLC	Serving Mobile Location Centre
SUPL	Secure User Plane Location

4. Release Version Overview

This document outlines the Enabler Release Definition for LPPE Enabler and the respective conformance requirements for clients and servers claiming compliance to it as defined by Open Mobile Alliance across the specification baseline.

LTE Positioning Protocol LPP [3GPP LPP] is a positioning protocol for E-UTRAN control plane. The LPP termination points are “server” and “target”, which in the E-UTRAN control plane are the E-SMLC and the end-user device, respectively. However, LPP has been designed in such a way that it can also be utilized outside the control plane domain such as in the user plane in the context of SUPL. In the user plane use, the LPP termination points are most typically SLP (“server”) and the SET (“target”). Also SET-to-SET use cases are being considered.

LPP elementary messages (Request and Provision of Capabilities and Location Information and Assistance Data) each include a container, an EPDU, which can be used by standardization fora outside 3GPP to define their own extensions to the LPP messages. OMA LPP Extensions [LPPE 2.0 RD] take advantage of this option.

The advantages resulting from OMA building LPPE on top of the 3GPP-defined LPP include the convergence of control and user plane positioning protocols, reduced work load and being able to use the same LPPE protocol stack both in the control and user plane.

The main purpose of this LPPE release is to add the ability to broadcast unsolicited LPP/LPPE Provide Assistance Data messages.

4.1 Version 1.0 Functionality

3GPP LPP is a positioning protocol that provides procedures for

- Request and Provision of location information including raw measurements
- Request and Provision of assistance data
- Request and Provision of capabilities

OMA LPP Extensions (LPPE) build on the 3GPP-defined LPP and extends the location, measurement and assistance data capabilities beyond 3GPP LPP without unnecessarily duplicating the work done in 3GPP.

The OMA LPPE Release 1.0 enables support for

- High accuracy GNSS methods in the form of new positioning methods and assistance data types
- Emerging radio network –based positioning technologies including the radio network measurement reports for selected radio access types
- Terminal-to-terminal positioning and assistance data transfer

Moreover, OMA LPPE attempts to be bearer-independent as far as possible with respect to non-bearer associated position methods like A-GNSS and any terrestrial method applicable to a non-serving network.

Security, authentication, privacy and charging are out of scope of LPPE. It is assumed that these services are provided by the user plane protocol which uses LPP/LPPE as the positioning protocol.

4.2 Version 1.1 Functionality

The OMA LPPE Release 1.1 enables support for:

- Broadcast of unsolicited LPP/LPPE Provide Assistance Data messages
- Request and provision of assistance data point to point related to LPP/LPPE broadcast support
- Support of Ground Morphology assistance data (altitude and/or building height)

4.3 Version 2.0 Functionality

LPPe Version 2.0 supports the following capabilities additional to those in Version 1.0 and 1.1:

- Support of new positioning methods
- Support for Indoor location
- Support for Crowd Sourcing

5. Document Listing for LPPE 2.0

This section is normative.

Doc Ref	Permanent Document Reference	Description
Requirement Document		
[LPPE_RD]	OMA-RD-LPPE-V2_0-20141202-C	Requirements Document for LPPE 2.0 Enabler
Architecture Document		
		None will be defined.
Technical Specification		
[LPPE_TS]	OMA-TS-LPPE-V2_0-20200804-C	Technical Specification for LPPE 2.0 Enabler
Supporting File		
		None will be defined

Table 1: Listing of Documents in LPPE 2.0 Enabler

6. OMNA Considerations

LPPE enabler allows carrying vendor/operator-specific data between a client and a server. In this case the data is identified by vendor/operator ID, which are allocated and maintained by OMNA.

The up-to-date IDs are available at <http://www.openmobilealliance.org/Tech/OMNA/OMNA-vendor-operator-ID.aspx>.

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 LPPE - Client Requirements

Static Conformance Requirements for an LPPE Client are specified in Appendix B.1 of [LPPE 2.0 TS].

9. ERDEF for LPPe - Server Requirements

Static Conformance Requirements for an LPPe Server are specified in Appendix B.2 of [LPPe 2.0 TS].

Appendix A. Change History (Informative)

A.1 Approved Version History

Reference	Date	Description
n/a	n/a	No prior version

A.2 Draft/Candidate Version 2.0 History

Document Identifier	Date	Sections	Description
Draft Versions OMA-EREELD-LPPe-V2_0	21 Mar 2013		Baseline
	03 Apr 2013	5	Editorial to update document list.
	30 Apr 2013	2.1, 5	OMA-LOC-2013-0044- CR_LPPe_2_0_EREELD_Review_Comment_Resolution_LGE
Candidate Version OMA-EREELD-LPPe-V2_0	21 May 2013	All	Status changed to Candidate by TP TP Ref # OMA-TP-2013-0134- INP_LPPe_2.0_for_Candidate_Approval
Draft Versions OMA-EREELD-LPPe-V2_0	26 Aug 2014	1, 4, 4.3, 5	Incorporated CR: OMA-LOC-2014-0152-INP_EREELD_for_LPPe_2.0 Editorial changes
	06 Nov 2014	2.2, 5	As per comments received during consistency review and agreed proposed solutions documented in OMA-CONRR-LPPe-V2_0-20141105-D
	14 Nov 2014	5	Editorial update of permanent document references in section 5
Candidate Version OMA-EREELD-LPPe-V2_0	02 Dec 2014	All	Status changed to Candidate by TP TP Ref # OMA-TP-2014-0269- INP_LPPe_V2_0_ERP_and_ETR_for_Candidate_Approval
Draft Version OMA-EREELD-LPPe-V2_0	28 Jul 2020	All	Editorial update of permanent document references in section 5
Candidate Version OMA-EREELD-LPPe-V2_0	04 Aug 2020	All	Status changed to Candidate by LOC OMA-LOC-2020-0020- INP_LPP_Extensions_2.0_for_Candidate_Approval