

Enabler Release Definition for Secure User Plane for Location (SUPL)

Approved Version 2.0.6 – 04 Aug 2020

Open Mobile Alliance
OMA-ERELD-SUPL-V2_0_6-20200804-A

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. SCOPE4
- 2. REFERENCES5
 - 2.1 NORMATIVE REFERENCES5
 - 2.2 INFORMATIVE REFERENCES5
- 3. TERMINOLOGY AND CONVENTIONS6
 - 3.1 CONVENTIONS6
 - 3.2 DEFINITIONS.....6
 - 3.3 ABBREVIATIONS6
- 4. RELEASE VERSION OVERVIEW7
 - 4.1 VERSION 1.0 FUNCTIONALITY7
 - 4.2 VERSION 2.0 FUNCTIONALITY7
 - 4.2.1 UserPlane Location Protocol (ULP)7
 - 4.2.2 Internal Location Protocol (ILP).....8
 - 4.2.3 Roaming Location Protocol (RLP)8
- 5. DOCUMENT LISTING FOR SUPL 2.0.....9
- 6. OMNA CONSIDERATIONS10
- 7. CONFORMANCE REQUIREMENTS NOTATION DETAILS11
- 8. ERDEF FOR SUPL 2.0 – CLIENT REQUIREMENTS12
- 9. ERDEF FOR SUPL 2.0 – SERVER REQUIREMENTS.....13
- APPENDIX A. CHANGE HISTORY (INFORMATIVE).....14
 - A.1 APPROVED VERSION HISTORY14

Figures

- Figure 1: UserPlane Location Protocol.....8

Tables

- Table 1: Listing of Documents in SUPL 2.0 Enabler9
- Table 2: ERDEF for SUPL 2.0 Client-side Requirements12
- Table 3: ERDEF for SUPL 2.0 Server-side Requirements.....13

1. Scope

The scope of this document is limited to the Enabler Release Definition of SUPL (Secure UserPlane for Location) 2.0 according to OMA Release process and the Enabler Release specification baseline listed in section 5.

2. References

2.1 Normative References

- [23.271] 3GPP TS 23.271 Release 6 [URL:http://www.3gpp.org/ftp/Specs/latest/Rel-6/23_series/](http://www.3gpp.org/ftp/Specs/latest/Rel-6/23_series/)
- [DMAccDDF] “OMA SUPL Managed Object DDF, Version 2.0”. Open Mobile Alliance™. OMA-SUP-MO_SUPL-V2_0. [URL:http://www.openmobilealliance.org](http://www.openmobilealliance.org)
- [DMDDFDTD] “OMA DM Device Description Framework DTD, Version 1.2”. Open Mobile Alliance™. OMA-SUP-dtd_dm_ddf-v1_2. [URL:http://www.openmobilealliance.org](http://www.openmobilealliance.org)
- [IOPPROC] “OMA Interoperability Policy and Process”, Version 1.10, Open Mobile Alliance™, OMA-ORG-IOP-Process-V1_10, [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)
- [RLP 1.0] “Roaming Location Protocol”, Version 1.0, Open Mobile Alliance™, OMA-TS-RLP-V1_0 [URL:http://www.openmobilealliance.org/](http://www.openmobilealliance.org/)
- [SUPL 1.0 AD] “SUPL Architecture Document”, Version 1.0, Open Mobile Alliance™, OMA-AD-SUPL-V1_0 [URL:http://www.openmobilealliance.org/](http://www.openmobilealliance.org/)
- [SUPL AD] “SUPL Architecture Document”, Version 2.0, Open Mobile Alliance™, OMA-AD-SUPL-V2_0 [URL:http://www.openmobilealliance.org/](http://www.openmobilealliance.org/)
- [SUPL MO] “OMA Management Object for SUPL”, Version 2.0, Open Mobile Alliance™, OMA-TS-SUPL-MO-V2_0 [URL:http://www.openmobilealliance.org/](http://www.openmobilealliance.org/)
- [SUPL RD] “SUPL Requirements Document”, Version 2.0, Open Mobile Alliance™, OMA-RD-SUPL-V2_0 [URL:http://www.openmobilealliance.org/](http://www.openmobilealliance.org/)
- [SUPL TS-ILP] “UserPlane Location Protocol”, Version 2.0, Open Mobile Alliance™, OMA-TS-ILP-V2_0 [URL:http://www.openmobilealliance.org/](http://www.openmobilealliance.org/)
- [SUPL TS-ULP] “UserPlane Location Protocol ”, Version 2.0, Open Mobile Alliance™, OMA-TS-ULP-V2_0 [URL:http://www.openmobilealliance.org/](http://www.openmobilealliance.org/)
- [SUPL1.0 RD] “SUPL Requirements Document”, Version 1.0, Open Mobile Alliance™, OMA-RD-SUPL-V1_0 [URL:http://www.openmobilealliance.org/](http://www.openmobilealliance.org/)

2.2 Informative References

None

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.

Minimum Functionality Description Description of the guaranteed features and functionality that will be enabled by implementing the minimum mandatory part of the Enabler Release.

3.3 Abbreviations

ERDEF Enabler Requirement Definition

ERELD Enabler Release Definition

OMA Open Mobile Alliance

4. Release Version Overview

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

SUPL V2.0 describes the protocol between a SUPL Enabled Terminal (SET) and SUPL Location Platform (SLP) and the protocol between SLC and SPC.

Communication between SET and SLP is transported over a secured IP connection, with one exception: for network initiated SUPL transactions the SUPL INIT message shall be sent as an MT SMS [TIA-637] using a dedicated Teleservice Identifier [TIA-41] for CDMA/HRPD/UMB, for GSM/WCDMA/TD-SCDMA/LTE, the WDP [WAP WDP] framing SHALL be used for MT SMS, and for WLAN/I-WLAN/WiMAX/I-WiMAX [UDP/IP] framing SHALL be used. For GSM/WCDMA/TD-SCDMA/LTE, a SUPL INIT message can also be sent via WAP Push, where the Push message from the PPG to SET shall follow the WAP Push specifications as per [WAP POTAP].

SUPL draws on support from RLP, a protocol specification from the OMA MLS Enabler. RLP is used such that SLP's from different SUPL providers can exchange information for positioning of roaming subscribers.

4.1 Version 1.0 Functionality

SUPL V1.0 supports immediate positioning procedures for GSM, WCDMA and CDMA networks. It supports the terminal based positioning methods defined for GSM, WCDMA and CDMA such as A-GPS, EOTD and Cid. The protocol between SLC and SPC is not defined in SUPL V1.0

SUPL V1.0 supports the following modes of operation for selected deployments:

- Proxy flows for GSM/WCDMA deployments
- Proxy flows for CDMA/CDMA2000 deployments
- Non-proxy flows for CDMA/CDMA2000 deployments

4.2 Version 2.0 Functionality

SUPL 2.0 adds a number of features on top of SUPL V1.0. The major functional enhancements are:

- Triggered positioning procedures, both periodic and area event.
- Emergency positioning procedures.
- Support of A-GANSS positioning method and improvements to enhanced cell id positioning method
- Support of WLAN, I-WLAN, WiMAX, I-WiMAX, HRPD/UMB, TD-SCDMA and LTE networks.
- Positioning procedures for delivery to third party and retrieval of location of another SET.

In addition the protocol between SLC and SPC, i.e. the ILP, is defined.

4.2.1 UserPlane Location Protocol (ULP)

The UserPlane Location Protocol (ULP) is a protocol-level instantiation of the Lp reference point. The protocol is used between the SLP (SUPL Location Platform) and a SET (SUPL Enabled Terminal). For more details about SUPL Requirements refer to [SUPL RD]. For more details about SUPL architecture and call-flows, refer to [SUPL AD]

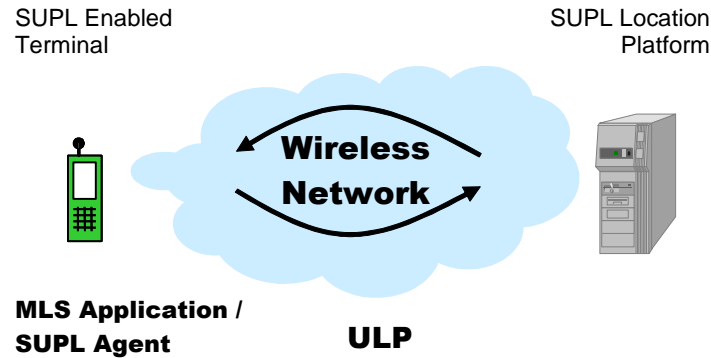


Figure 1: UserPlane Location Protocol

Possible realizations of a SUPL Location Platform functionality are within the GMLC, which is the Location Server defined in GSM and UMTS, and the MPC, which is defined in ANSI standards. Since the SUPL Location Platform should be regarded as a logical entity, other implementations are possible.

Depending which SUPL Agent initiates the dialogue, a SUPL INIT message is sent to the SET (network initiated), or a SUPL START message, a SUPL TRIGGERED START message, or a SUPL SET INIT message is sent to the SLP (SET initiated).

ULP can be implemented using various transport mechanisms. Currently, the only mapping defined is a mapping to TCP, with the following exception: the SUPL INIT message is transported over WAP Push or MT SMS.

4.2.2 Internal Location Protocol (ILP)

The function of the Lp reference point is logically separated into the Positioning Control Function and the Positioning Data Function.

4.2.3 Roaming Location Protocol (RLP)

RLP is an element of the OMA MLS Enabler, and facilitates the SUPL roaming scenarios. RLP is also known as Inter-Location Server Mobile Location Protocol.

Functional Requirements for both Application to Location Server interface and inter-Location Server interface for 3GPP networks may be found in 23.271 Rel16 [23.271]. However, those parts of RLP which are used by SUPL are specified in a way that they can be used by wireless networks other than 3GPP.

RLP can be implemented using various transport mechanisms. Currently, the only mapping defined is a mapping to HTTP.

5. Document Listing for SUPL 2.0

This section is normative.

Doc Ref	Permanent Document Reference	Description
Requirement Document		
SUPL 2.0_RD	OMA-RD-SUPL-V2_0-20120417-A	Requirement Document for SUPL V2.0 Enabler
Architecture Document		
SUPL 2.0_AD	OMA-AD-SUPL-V2_0-20120417-A	Architecture Document for SUPL V2.0 Enabler
Technical Specifications		
SUPL 2.0_TS	OMA-TS-ULP-V2_0_6-20200804-A	Specification that defines the SUPL 2.0.6 UserPlane Location Protocol.
SUPL 2.0_TS	OMA-TS-ILP-V2_0_6-20200804-A	Specification that defines the SUPL 2.0.6 SPC-SLC Protocol.
SUPL 2.0_TS	OMA-TS-SUPL_MO-V2_0-20120417-A	Specification that defines the SUPL 2.0 MO
Supporting File		
SUPL 2.0_MO	OMA-SUP-oma_supl-v2_0_1-20181213-A	Device Description of the Management Object for SUPL 2.0. Working file in Management Object directory: file: oma_supl-v2_0_1.ddf path: http://www.openmobilealliance.org/tech/omna/dm-mo

Table 1: Listing of Documents in SUPL 2.0 Enabler

6. OMNA Considerations

This file (OMA-SUP-oma_supl-V2_0_1-20181213-A) contains the Management Object for the SUPL 2.0 enabler registered as oma_supl-v2_0_1 with OMNA.

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 SUPL 2.0 – Client Requirements

This section is normative.

Item	Feature / Application	Status	Requirement
OMA-ERDEF-SUPL-C-001	Support of SET Procedures	M	OMA-ERDEF-SUPL-C-002 OR OMA-ERDEF-SUPL-C-003 OR OMA-ERDEF-SUPL-C-007
Network and security types			
OMA-ERDEF-SUPL-C-002	SET supporting GBA authentication	O	ULP-PRO-C-004-O
OMA-ERDEF-SUPL-C-003	SET supporting ACA model	M	ULP-PRO-C-005-M
OMA-ERDEF-SUPL-C-007	SET supporting WiMAX mode, SEK authentication	O	ULP-PRO-C-006-O

Table 2: ERDEF for SUPL 2.0 Client-side Requirements

9. ERDEF for SUPL 2.0 – Server Requirements

This section is normative.

Item	Feature / Application	Status	Requirement
OMA-ERDEF-SUPL-S-001	Support of ULP Procedures	M	OMA-ERDEF-SUPL-S-004 OR OMA-ERDEF-SUPL-S-005 OR OMA-ERDEF-SUPL-S-006 OR OMA-ERDEF-SUPL-S-007 OR OMA-ERDEF-SUPL-S-008 OR OMA-ERDEF-SUPL-S-009 OR OMA-ERDEF-SUPL-S-013
OMA-ERDEF-SUPL-S-002	Support of RLP, H-SLP part	O	RLP 1.1: MCF
OMA-ERDEF-SUPL-S-003	Support of RLP, V-SLP part	O	RLP 1.1: MSF
OMA-ERDEF-SUPL-S-004	Support of ILP, SLC part	O	ILP 1.0 MCF
OMA-ERDEF-SUPL-S-005	Support of ILP, SPC part	O	ILP 1.0 MSF
Network and security types			
OMA-ERDEF-SUPL-S-006	SLP supporting GBA authentication	O	ULP-PRO-S-004-O
OMA-ERDEF-SUPL-S-007	SLP supporting ACA authentication model	M	ULP-PRO-S-005-M
OMA-ERDEF-SUPL-S-008	SLP supporting SSK authentication model	O	ULP-PRO-S-006-O
OMA-ERDEF-SUPL-S-009	SLP supporting SLC only authentication model	O	ULP-PRO-S-007-O
OMA-ERDEF-SUPL-S-013	SLP supporting WiMAX mode, SEK authentication model	O	ULP-PRO-S-008-O

Table 3: ERDEF for SUPL 2.0 Server-side Requirements

Appendix A. Change History

(Informative)

A.1 Approved Version History

Reference	Date	Description
OMA-ERELED-SUPL-V2_0-20120417-A	17 Apr 2012	Status changed to Approved by TP TP Ref # OMA-TP-2012-0170-INP_SUPL_20_for_Final_Approval
OMA-ERELED-SUPL-V2_0_1-20121205-A	05 Dec 2012	Status changed to Approved by TP TP Ref # OMA-TP-2012-0455-INP_SUPL_2.0.1_ERP_for_Notification
OMA-ERELED-SUPL-V2_0_2-20140708-A	08 Jul 2014	Status changed to Approved by TP TP Ref # OMA-TP-2014-0149R01-INP_SUPL_V2_0_2_ERP_for_Notification
OMA-ERELED-SUPL-V2_0_3-20160524-A	24 May 2016	Status changed to Approved by TP TP Ref # OMA-TP-2016-0075-INP_SUPL_V2_0_3_ERP_for_Notification
OMA-ERELED-SUPL-V2_0_4-20181213-A	13 Dec 2018	Status changed to Approved by LOC WG Ref LOC WG Doc# OMA-LOC-2018-0022- INP_Secure_User_Plane_Location_2.0_ERP_for_Final_Approval_notification
OMA-ERELED-SUPL-V2_0_5-20191028-A	28 Oct 2019	Status changed to Approved by LOC WG Ref LOC WG Doc# OMA-LOC-2019-0015- INP_Secure_User_Plane_Location_2.0_for_Final_Approval
OMA-ERELED-SUPL-V2_0_6-20200804-A	04 Aug 2020	Status changed to Approved by LOC WG Ref LOC WG Doc# OMA-LOC-2020-0019- INP_Secure_User_Plane_Location_2.0.6_for_Final_Approval