



# **Enabler Release Definition for Mobile Location Service (MLS)**

Candidate Version 1.1 – 26 Oct 2010

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**Open Mobile Alliance**  
OMA-ERELD-MLS-V1\_1-20101026-C

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# 1. Scope

The scope of this document is limited to the Enabler Release Definition of MLS (Mobile Location Service) according to OMA Release process and the Enabler Release specification baseline listed in section 6.

## 2. References

### 2.1 Normative References

- [23.271] “Functional stage 2 description of Location Services “, 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/)
- [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/)
- [MLP 3.2] “Mobile Location Protocol v3.2”, Open Mobile Alliance™, OMA-TS-MLP-V3\_2  
[URL:http://www.openmobilealliance.org/](http://www.openmobilealliance.org/)
- [MLP DTD] “MLP 3.2 DTDs”, Open Mobile Alliance™, MLP\_320\_DTD  
[URL:http://www.openmobilealliance.org/](http://www.openmobilealliance.org/)
- [MLS AD] “MLS Architecture Document”, Open Mobile Alliance™, OMA-AD-MLS-V1\_0  
[URL:http://www.openmobilealliance.org/](http://www.openmobilealliance.org/)
- [MLS RD] “MLS Requirements Document”, Open Mobile Alliance™, OMA-RD-MLS-V1\_0  
[URL:http://www.openmobilealliance.org/](http://www.openmobilealliance.org/)
- [PCP 1.0] “Privacy Checking Protocol v1.0”, Open Mobile Alliance™, OMA-TS-PCP-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)
- [RLP 1.0] “Roaming Location Protocol v1.0”, Open Mobile Alliance™, OMA-TS-RLP-V1\_0  
[URL:http://www.openmobilealliance.org/](http://www.openmobilealliance.org/)
- [RLP DTD] “RLP 1.0 DTDs”, Open Mobile Alliance™, RLP\_100\_DTD  
[URL:http://www.openmobilealliance.org/](http://www.openmobilealliance.org/)
- [SUPL AD] “SUPL Architecture Document”, Open Mobile Alliance™, OMA-AD-SUPL-V1\_0  
[URL:http://www.openmobilealliance.org/](http://www.openmobilealliance.org/)
- [SUPL RD] “SUPL Requirements Document”, 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” and “Introduction”, are normative, unless they are explicitly indicated to be informative.

The formal notation convention used in sections 9 and 10 to formally express the structure and internal dependencies between specifications in the Enabler Release specification baseline is detailed in [IOPPROC].

### 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>MCF</b>	Defined in [IOPPROC] as “All mandatory client features of the specification SCR”
<b>Minimum Functionality Description</b>	Description of the guaranteed features and functionality that will be enabled by implementing the minimum mandatory part of the Enabler Release.
<b>MSF</b>	Defined in [IOPPROC] as “All mandatory server features of the specification SCR”
<b>SUPL Enabled Terminal (SET)</b>	A device that is capable of communicating with a SUPL network. Examples of this could be a UE in UMTS, a MS in GSM or IS-95, or a PC over an IP-based transport.
<b>SUPL Location Platform (SLP)</b>	Entity responsible for SUPL Service Management and Position Determination. SLP contains the SLC and SPC Functions.

### 3.3 Abbreviations

<b>ERDEF</b>	Enabler Requirement Definition
<b>ERELD</b>	Enabler Release Definition
<b>MLP</b>	Mobile Location Protocol
<b>MLS</b>	Mobile Location Service
<b>OMA</b>	Open Mobile Alliance
<b>PCP</b>	Privacy Checking Protocol
<b>RLP</b>	Roaming Location Protocol
<b>SUPL</b>	Secure User Plane Location

## 4. Introduction

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

The OMA Mobile Location Service V1.1 (MLS V1.1) consists of a set of location specifications complying with 3GPP Release 6 LCS Specification [23.271]. MLS 1.1 is primarily intended for use in an 3GPP environment. Compliance to other environments is not an requirement but the specification has in several cases been extended to not unnecessary prevent use in other environments. The set of specifications in MLS V1.1 consist of MLP V3.2 [MLP 3.2], RLP V1.0 [RLP 1.0] and PCP V1.0 [PCP 1.0].

MLP V3.2 describes the protocol between an MLS client and a Location Server. In the 3GPP context, MLP V3.2 was chosen to be an instantiation of the stage 3 specifications for the Le reference point [23.271].

RLP V1.0 describes the protocol between two Location Servers. In the 3GPP context, RLP V1.0 will be an instantiation of the stage 3 specifications for the Lr reference point [23.271]. Additionally RLP V1.0 will be an instantiation of the reference point Lr as defined in [SUPL AD] between two SLPs with the purpose to transport information between the SLPs to enable positioning of roaming SUPL Enabled Terminals [SUPL RD]. Examples of such information are coarse position used when generating GPS assistance data or the actual GPS assistance data.

PCP V1.0 describes the protocol between Home Location Server and Location Privacy Checking Entity. In the 3GPP context, RLP V1.0 will be an instantiation of the stage 3 specifications for the Lid and Lpp reference points [23.271].

Figure 1 shows an architectural diagram of MLS, its components and interfaces.

Figure 2 shows an architectural diagram of relevant components and interfaces in SUPL.

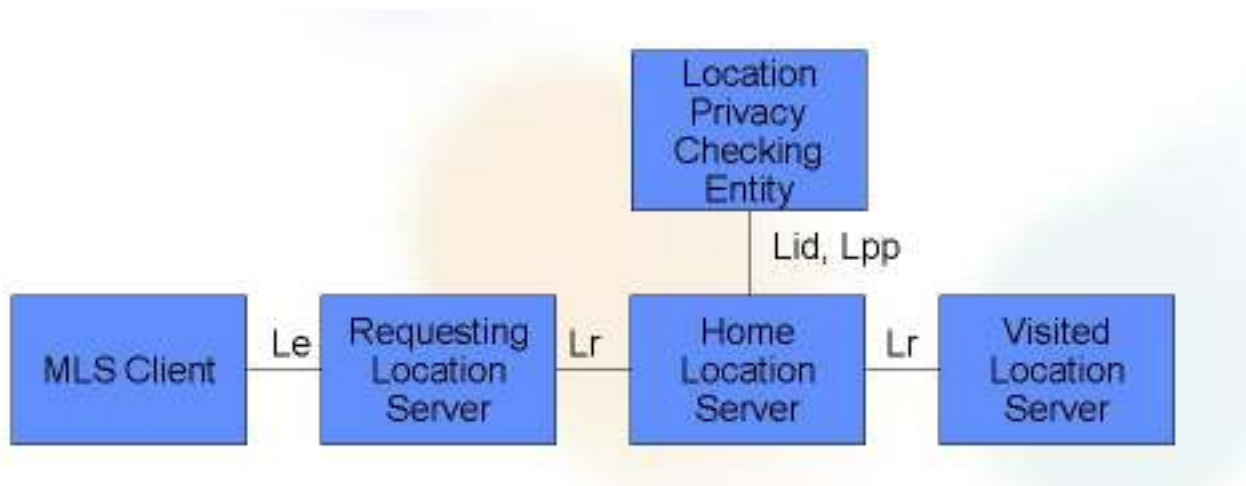


Figure 1: MLS Reference Points

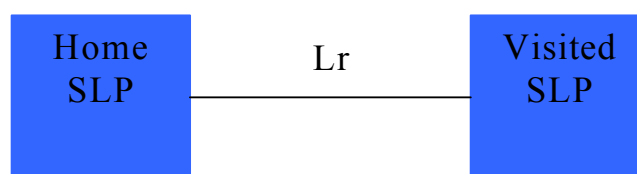


Figure 2: Relevant Reference Points in SUPL

## 5. Description of Differences from Previous Version

In MLS V1.1, the specification for the Privacy Checking Protocol [PCP 1.0] has been added.



## 6. Document Listing for MLS

This section is normative.

Doc Ref	Permanent Document Reference	Description
<b>Requirement Document</b>		
[MLS RD]	OMA-RD-MLS-V1_1-20060906-C	Requirement Document for MLS Enabler
<b>Architecture Document</b>		
[MLS AD]	OMA-AD-MLS-V1_1-20061020-C	Architecture Document for MLS Enabler
<b>Technical Specifications</b>		
[MLP 3.2]	OMA-TS-MLP-V3_2-20051124-C	Specification that defines the MLP protocol
[RLP 1.0]	OMA-TS-RLP-V1_0-20090930-C	Specification that defines the RLP protocol
[PCP 1.0]	OMA-TS-PCP-V1_0-20101026-C	Specification that defines the RLP protocol
<b>Supporting Files</b>		
[MLP DTD]	OMA-SUP-DTD_MLP_320-V1_0-20100831-C	DTD for the messages and included elements of the MLP protocol.  Working file in DTD directory: file: MLP*.dtd path: <a href="http://www.openmobilealliance.org/tech/dtd/">http://www.openmobilealliance.org/tech/dtd/</a>
[RLP DTD]	OMA-SUP-DTD_RLP_100-V1_0-20100831-C	DTD for the messages and included elements of the RLP protocols.  Working file in DTD directory: file: RLP*.dtd path: <a href="http://www.openmobilealliance.org/tech/dtd/">http://www.openmobilealliance.org/tech/dtd/</a>

**Table 1: Listing of Documents in MLS Enabler**

## 7. Minimum Functionality Description for MLS 1.1

This section is informative.

An implementation of MLS 1.1 may realise on of the following entities:

1. MLS Client
2. Requesting Location Server, server side and or client side
3. Home Location Server, server side and or client side
4. Visited Location Server
5. Location Privacy Checking Entity.

An implementation of MLS 1.1 may realise any combination of 2, 3, and 4.

A MLS Client must support the MLP Standard Location Immediate Service.

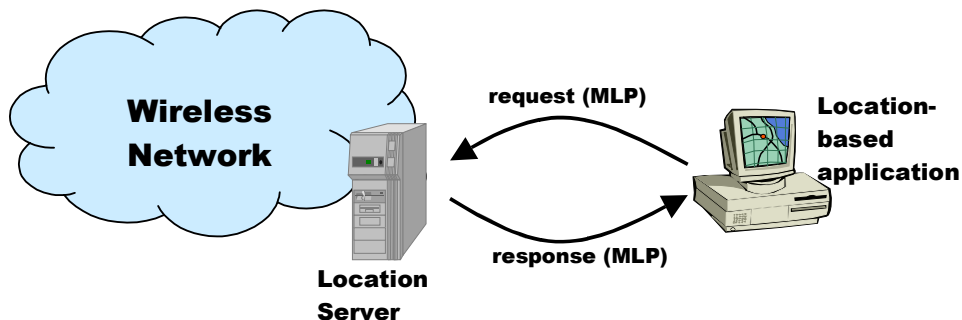
A Requesting Location Server, server side must support the MLP Standard Location Immediate Service.

A Home Location Server must support the RLP Standard Roaming Location Immediate Service.

A Visited Location Server must support the RLP Standard Roaming Location Immediate Service.

### 7.1 Mobile Location Protocol (MLP)

The Mobile Location Protocol (MLP) is an application-level protocol for querying the position of mobile stations independent of underlying network technology. The MLP serves as the interface between a Location Server and a location-based application.



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

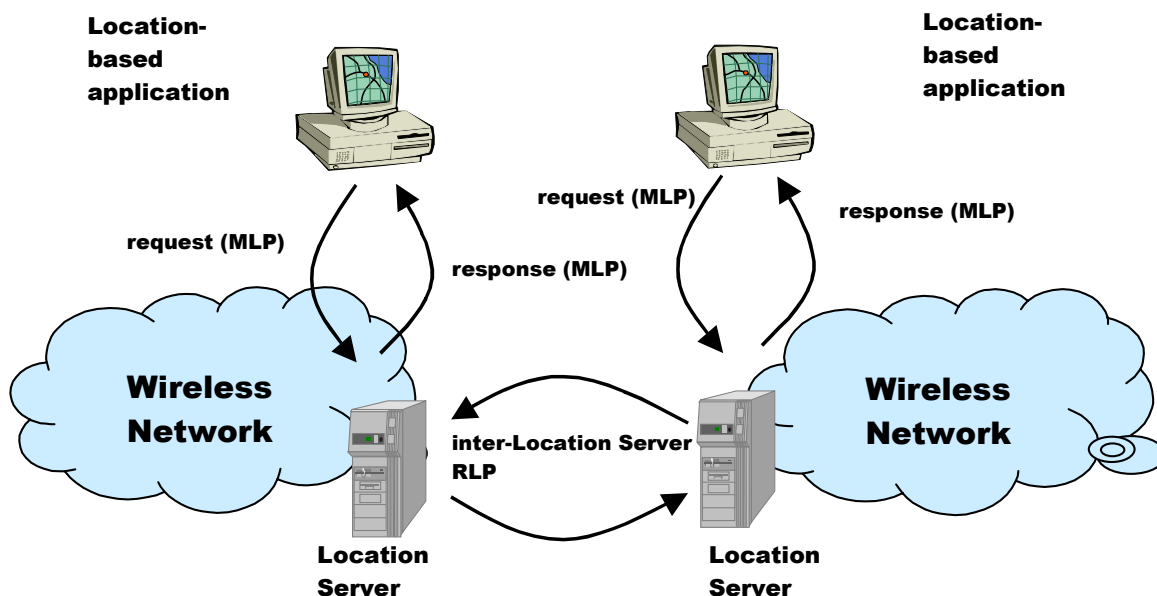
In the most scenarios an LCS client initiates the dialogue by sending a query to the Location Server and the server responds to the query.

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

### 7.2 Roaming Location Protocol (RLP)

This protocol is also known as Inter-Location Server Mobile Location Protocol.

The picture below shows the general arrangement. Functional Requirements for both Application to Location Server interface and inter-Location Server interface for 3GPP networks may be found in 23.271 Rel6 [23.271]. Protocol specifics for Application to Location Server interface can be found in [MLP 3.2].

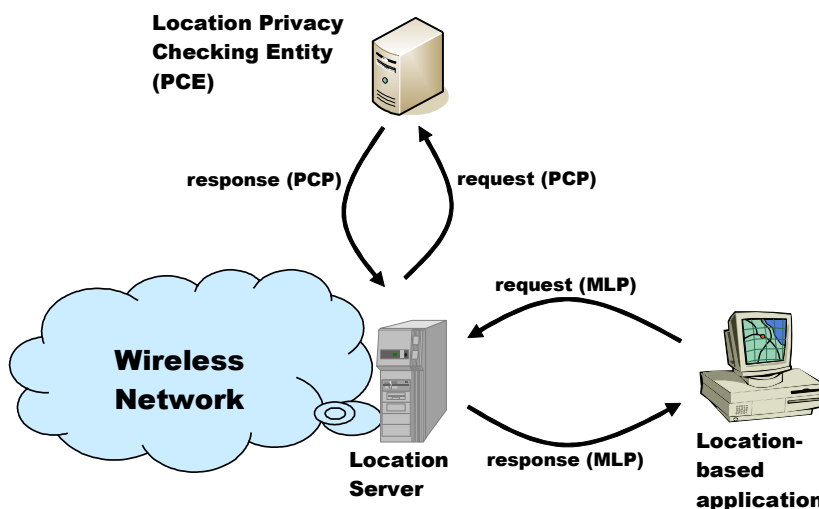


RLP can be implemented using various transport mechanisms. Currently, the only mapping defined is a mapping to HTTP.

### 7.3 Privacy Checking Protocol (PCP)

The Privacy Checking Protocol (PCP) is an application-level protocol for asserting mobile subscribers privacy settings from an external Privacy Checking Entity. PCP may be used as the protocol between a Location Server and an external privacy checking entity.

The Figure below show services for location privacy control between three entities, Location Server, Privacy Checking Entity, and MLS Clients. The PCE is equivalent to PPR(Privacy Profile Register) including PMD(Pseudonym Mediation Device) functionality. The Location Request/Response message between location server and MLS client refer to the MLP



## 8. Conformance Requirements Notation Details

This section is informative

The tables in following chapters use the following notation:

<b>Item:</b>	Entry in this column <b>MUST</b> be a valid ScrItem according to [IOPPROC].
<b>Feature/Application:</b>	Entry in this column <b>SHOULD</b> be a short descriptive label to the <b>Item</b> in question.
<b>Status:</b>	Entry in this column <b>MUST</b> accurately reflect the architectural status of the <b>Item</b> in question. <ul style="list-style-type: none"><li>• M means the <b>Item</b> is mandatory for the class</li><li>• O means the <b>Item</b> is optional for the class</li><li>• NA means the <b>Item</b> is not applicable for the class</li></ul>
<b>Requirement:</b>	Expression in the column <b>MUST</b> be a valid TerminalExpression according to [IOPPROC] and it <b>MUST</b> accurately reflect the architectural requirement of the <b>Item</b> in question.

## 9. ERDEF for MLS 1.1 - Client Requirements

This section is normative.

Item	Feature / Application	Status	Requirement
OMA-ERDEF-MLS-C-001	MLS Enabler	M	OMA-ERDEF-MLS-C-002 OR OMA-ERDEF-MLS-C-003 OR OMA-ERDEF-MLS-C-004 OR OMA-ERDEF-MLS-C-005
OMA-ERDEF-MLS-C-002	MLS Client	O	MLP 3.2:MCF
OMA-ERDEF-MLS-C-003	Requesting Location Server	O	RLP 1.0: MCF AND NOT (RLP-D-C-003 AND RLP-V-C-010 AND RLP-V-C-012)
OMA-ERDEF-MLS-C-004	Home Location Server	O	RLP 1.0: MCF
OMA-ERDEF-MLS-C-005	Location Privacy Checking Entity	O	PCP 1.0: MCF

**Informative Note:** The requirement for Item OMA-ERDEF-MLS-C-003 exempt three privacy related SCR Items in RLP from being mandatory as they are not applicable for the Requesting Location Server.

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

## 10.ERDEF for MLS 1.1 - Server Requirements

This section is normative.

Item	Feature / Application	Status	Requirement
OMA-ERDEF-MLS-S-001	MLS Enabler	M	OMA-ERDEF-MLS-S-002 OR OMA-ERDEF-MLS-S-003 OR OMA-ERDEF-MLS-S-004 OR OMA-ERDEF-MLS-S-005
OMA-ERDEF-MLS-S-002	Requesting Location Server	O	MLP 3.2:MSF
OMA-ERDEF-MLS-S-003	Home Location Server	O	RPL 1.0: MSF AND NOT (RPL-D-S-003 AND RPL-V-S-010 AND RPL-V-S-012)
OMA-ERDEF-MLS-S-004	Visited Location Server	O	RPL 1.0:MSF
OMA-ERDEF-MLS-S-005	Location Privacy Checking Entity	O	PCP 1.0:MSF

**Informative Note:** The requirement for Item OMA-ERDEF-MLS-S-003 exempt three privacy related SCR Items in RLP from being mandatory as they are not applicable for the Home Location Server.

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

## Appendix A. Change History

(Informative)

### A.1 Approved Version History

Reference	Date	Description
n/a	n/a	No prior version –or- No previous version within OMA

### A.2 Draft/Candidate Version 1.1 History

Document Identifier	Date	Sections	Description
Draft Versions OMA-ERELED-MLS-V1_1	10 May 2006	n/a	First draft
	13 Jul 2006	6 All	Updated the permanent document references: <ul style="list-style-type: none"> <li>- OMA-AD-MLS-V1_1-20051017-D with OMA-RD-MLS-V1_1-20060404-C</li> <li>- OMA-TS-PCP-V1_0-20060414-D with OMA-TS-PCP-V1_0-20060516-D</li> </ul> General formatting clean-up. Added the tables of Figures and the table of Tables
	24 Jul 2006	6 All	Updated the permanent document references: <ul style="list-style-type: none"> <li>- OMA-AD-MLS-V1_1-20051017-D with OMA-AD-MLS-V1_1-20060724-D</li> <li>- OMA-TS-PCP-V1_0-20060516-D with OMA-TS-PCP-V1_0-20060724-D</li> <li>- OMA-TS-DTD_MLP_320-V1_0-20051124-C with OMA-SUP-DTD_MLP_320-V1_0-20051124-C</li> <li>- OMA-TS-DTD_RLP_100-V1_0-20051124-C with OMA-SUP-DTD_RLP_100-V1_0-20051124-C</li> </ul> Cleanup in preparation for Approval as Candidate
	06 Sep 2006	All	Updated the permanent document references: <ul style="list-style-type: none"> <li>- OMA-AD-MLS-V1_1-20060724-D with OMA-AD-MLS-V1_1-20060829-D</li> <li>- OMA-TS-PCP-V1_0-20060724-D with OMA-TS-PCP-V1_0-20060829-D</li> </ul> No change to ERELD. Class 2 CR agreed against OMA-RD-MLS-V1_1-20060906-C  Submitted to TP as OMA-TP-2006-0288
Candidate Version OMA-ERELED-MLS-V1_1	20 Oct 2006	n/a	Status changed to Candidate by TP TP ref# OMA-TP-2006-0288- INP_MLS_V1_1_ERP_for_Candidate_Approval
Draft Version : OMA-ERELED-MLS-V1_1	08 Sep 2009	6	Candidate Version modified following TSs: OMA-TS-RLP-V1_0-20090908-D
	28 Sep 2009	6	SUP file date updated following update of RLP TS
Candidate Version OMA-ERELED-MLS-V1_1	30 Sep 2009	n/a	Status changed to Candidate by TP TP ref# OMA-TP-2009-0435R01- INP_MLS_V1_1_ERP_for_Notification
Draft Version : OMA-ERELED-MLS-V1_1	12 Aug 2010	5	Document listing updated
Candidate Version OMA-ERELED-MLS-V1_1	31 Aug 2010	n/a	Status changed to Candidate by TP TP ref# OMA-TP-2010-0376- INP_MLS_1.1_ERP_for_Candidate_re_approval
Draft Version : OMA-ERELED-MLS-V1_1	04 Oct 2010	5	Document listing updated
Candidate Version OMA-ERELED-MLS-V1_1	26 Oct 2010	n/a	Status changed to Candidate by TP TP ref# OMA-TP-2010-0434- INP_MLS_1.1_ERP_for_Candidate_re_Approval