OMA Mobile Location Service Architecture

Candidate Version 1.0 – 07 June 2005

Open Mobile Alliance

OMA-AD-MLS-V1_0-20050607-C

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1. Scope (Informative)

This document is the AD for the Mobile Location Service V1.0 (MLS V1.0), which consists of the Mobile Location Protocol 3.2 (MLP V3.2), Roaming Location Protocol (RLP V1.0) and Location Privacy Checking Protocol (PCP V1.0).

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/

[MLS RD] "Mobile Location Service Requirements", Open Mobile Alliance™, OMA-RD-MLS-V1_0, URL: 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/

[RLP 1.0] "Roaming Location Protocol v1.0", Open Mobile Alliance™, OMA-TS-RLP-V1_0, URL: 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/

[PRIVACY RD] "Privacy for Mobile Services Requirements", Open Mobile Alliance™, OMA-RD-Privacy-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

[SUPL RD] " Secure User Plane Location Requirements", Open Mobile Alliance™, OMA-RD-SUPL-V1_0

URL: http://www.openmobilealliance.org/

[RFC 2616] "Hypertext Transfer Protocol –HTTP/1.1" IETF, June 1999. URL: http://www.ietf.org/rfc/rfc2616.txt

[WSDL] Web Services Description Language 1.1, W3C Note, 15 March 2001, URL: http://www.w3.org/TR/wsdl

2.2 Informative References

[ARCH-PRINC] "OMA Architecture Principles", URL:http://www.openmobilealliance.org/

[ARCH-REVIEW] "OMA Architecture Review Process", URL:http://www.openmobilealliance.org/

[OMA-DICT] "OMA Dictionary", 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” and “Introduction”, are normative, unless they are explicitly indicated to be informative.

3.2 Definitions

Interface	See [RFC2119].
Location Server	Software and/or hardware entity offering location capabilities. In 3GPP context this corresponds to the Gateway Mobile Location Center (GMLC).
MLS client	Software and/or hardware entity requesting location. In 3GPP context this corresponds to the LoCation Services client (LCS Client).
Mobile Location Service	A service with location capability
Location Privacy Checking Entity	Location Privacy Checking Entity, responsible for resolving IDs and for privacy checking. In 3GPP context this corresponds to the Privacy Profile Register (PPR). The PPR may be a part of the GMLC.
Reference Point	See [OMA-DICT].
SUPL Enabled Terminal (SET)	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.
SUPL Location Platform (SLP)	Entity responsible for SUPL Service Management and Position Determination. SLP contains the SLC and SPC Functions.
SUPL Provider	Mobile Network Operator, provides location assistance data to the SUPL Agent and optionally calculates the SET location. See also [SUPL RD]

3.3 Abbreviations

3GPP	3rd Generation Partnership Project
AD	Architecture Document
GPS	Global Positioning System
GSM	Global System for Mobile Communication
HTTP	Hyper Text Transport Protocol
LCS	LoCation Service
LS	Location Server
MLP	Mobile Location Protocol
MLS	Mobile Location Service
OMA	Open Mobile Alliance
PCE	Location Privacy Checking Entity
PCP	Location Privacy Checking Protocol
RD	Requirement Document
RLP	Roaming Location Protocol
SLP	SUPL Location Platform

SUPL	Secure User Plane Location
TS	Technical Specification
UMTS	Universal Mobile Telecommunication System
WSDL	Web Services Description Language
XML	Extensible Markup Language

4. Introduction (Informative)

The OMA Mobile Location Service V1.0 (MLS V1.0) consists of a set of location specifications complying with 3GPP Release 6 LCS Specification [23.271]. The set of specifications in MLS V1.0 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 the LS. In the 3GPP context, MLP V3.2 was chosen to be an instantiation of the stage 3 specification for the Le reference point [23.271].

RLP V1.0 describes the protocol between two LS. In the 3GPP context, RLP V1.0 will be an instantiation of the stage 3 specification 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 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 the LS and a Location Privacy Checking Entity (PCE). In the 3GPP context, PCP V1.0 will be an instantiation of the stage 3 specifications for the Lid/Lpp reference points [23.271].

The OMA Mobile Location Service V1.0 (MLS V1.0) will benefit the industry widely and not only 3GPP and more requirements have been added as needed for wireless technologies besides GSM and UMTS. One example of such an added requirement is the support of transport of SUPL parameter, see requirement R1 listed in section 4.3.

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.

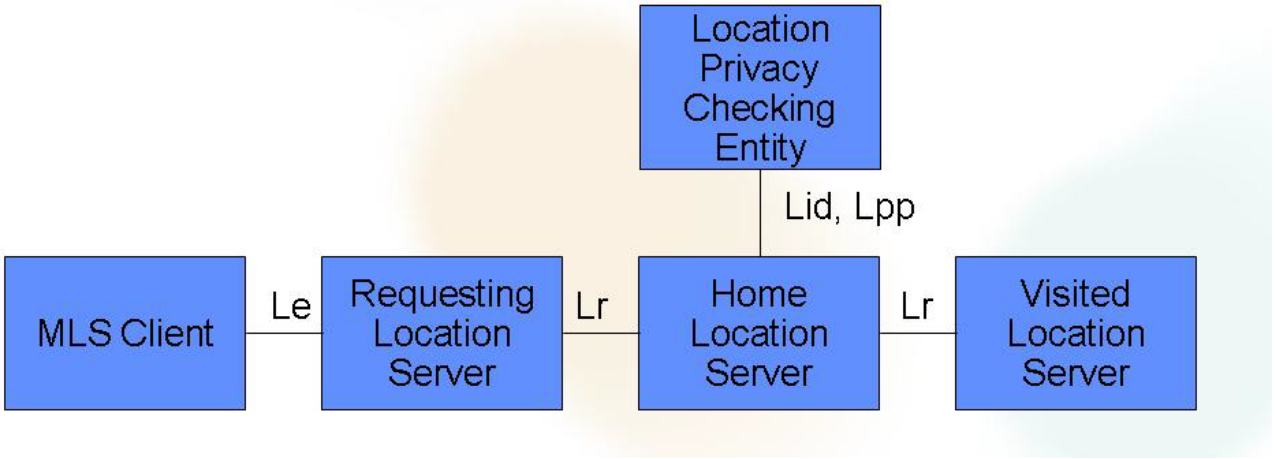

Figure 1: Architectural diagram of MLS

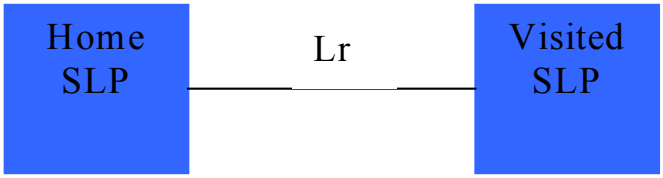

Figure 2: Relevant Reference Points in SUPL

4.1 Use Cases

Use cases for MLS V1.0 are described in [MLS RD].

4.2 Requirements

This architecture satisfies all of the requirements in [MLS RD].The requirements for MLS V1.0 are listed in the table [Table 1] and derived from [MLS RD].

Requirement ID/Number	Phase Met
G1	1.0
R1	1.0
R2	1.0
R3	1.0
R4	1.0
R5	1.0
R6	1.0
R7	1.0
P1	1.0
P2	1.0

Table 1: Requirements derived from [MLS RD].

4.3 Planned Phases

As new requirements are defined for MLS, new releases will be worked at.

The PCP TS [PCP 1.0] will not be part of the first Enabler Release, MLS V1.0, but is planned to be included in coming releases.

5. Architectural Model

The Architectural model of MLS V1.0 is described in [23.271]. The Architectural model described in [23.271] is summarised in [Figure 1] in section 4.

5.1 Dependencies

MLS V1.0 has no dependencies to other architectures in OMA.

5.2 Architectural Diagram

The architecture for MLS V1.0 is described in [23.271]. MLS V 1.0 also contains network specific parameters and more, beyond the scope of [23.271].

5.3 Functional Components and Interfaces

The Architecture of MLS V1.0 as described in [23.271] defines four reference points Le, Lr, Lpp and Lid. These are instantiated by three OMA protocol specifications as listed below.

Reference point Le is instantiated by MLP V3.2 [MLP 3.2]. MLP V3.2 is defined using XML transported over HTTP [RFC 2616].

Reference point Lr is instantiated by RLP V1.0 [RLP 1.0]. RLP V1.0 is defined using XML transported over HTTP [RFC 2616].

Reference points Lpp and Lid are instantiated by PCP V1.0 [PCP 1.0]. PCP V1.0 is defined using WSDL [WSDL].

The Architecture of MLS V1.0 as described in [23.271] also describes the components in the architecture as shown in [Figure 1] in section 4. The components are:

- MLS Client that is described in [23.271] section 6.3.2
- Requesting Location Server, Home Location Server and Visited Location Server that are described in [23.271] section 6.3.3
- Location Privacy Checking Entity that is described in [23.271] section 6.3.11 and 6.3.12.

For the transport of MLP V3.2 and RLP V1.0 over HTTP the following mechanism applies. All Location Services are invoked by sending a request using HTTP POST. The answer to the invocation of a Location Service is returned using an HTTP response. If the MLS Client requests standard location of asynchronous mode, triggered or periodic reporting of location, the Location Server will, in addition to the answer returned in a HTTP response, return one or more reports by performing HTTP POST operations towards the client. The client must specify the URI that the report should be posted to. This is done in the service request or by having it in the LCS client profile that can be stored in the Location Server.

5.4 Flows

The flows for MLS V1.0 are described in [23.271] section 9.

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 V1_0 History

Document Identifier	Date	Sections	Description
Draft Versions: LER AD V1.0	01 Sep 2004		First draft after merging MLP V3.2, RLP V1.0 and PCP V1.0 AD.
LER AD V1.0	24 Sep 2004		Updated with comments
OMA-AD-LER-V1_0	18 Nov 2004	All	Incorporated CRs: OMA-LOC-2004-0430-LATE-LER-AD-Editorial OMA-LOC-2004-0429-LATE-LER-AD-Context-Model OMA-LOC-2004-0428-LATE-LER-AD-Introduction
OMA-AD-MLS-V1_0	07 Dec 2004	All	Name change reflected from LER to MLS according to decision at teleconference 2004-12-01.
OMA-AD-MLS-V1_0	02 Feb 2005	All	Changes based on Architecture Review according to: OMA-ARC-2005-0046R02-ADRR_MLS_V1_0_20041118_D
OMA-AD-MLS-V1_0	11 Feb 2005	All	Document restructured due to new template. Document spell checked.
OMA-AD-MLS-V1_0	21 Feb 2005	All	Editorial changes
OMA-AD-MLS-V1_0	02 May 2005	3.2, 3.3, 4, A.2,	Editorial changes 3.2, 3.3 and A.2. Removed first section in 4: references to LIF, rewording and adding figure 2.
OMA-AD-MLS-V1_0	18 May 2005	2.1, 5.3	CR OMA-LOC-2005-0236-ResolutionMLS_CONRR_ID012-013 incorporated.
Candidate Version: OMA-AD-MLS-V1_0	07 Jun 2005	n/a	Status changed to Candidate by TP: OMA ref# OMA-TP-2005-0180-MLS-V1_0-for-Candidate-approval