Roaming Location Protocol

Candidate Version 1.0 – 07 Jun 2005

Open Mobile Alliance

OMA-TS-RLP-V1_0-20050607-C

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1. Scope

The purpose of this document is to specify the Roaming Location Protocol (RLP) technical specification of an inter-Location Server interface as described in [MLS AD] and based on MLP as specified in [OMA-MLP].

2. References

2.1 Normative References

[IOPPROC]   "OMA Interoperability Policy and Process", Version 1.1, Open Mobile Alliance™, OMA-IOP-Process-V1_1,

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

[RFC2234]   "Augmented BNF for Syntax Specifications: ABNF". D. Crocker, Ed., P. Overell. November 1997,

URL: http://www.ietf.org/rfc/rfc2234.txt

[RFC 2616]   "Hypertext Transfer Protocol –HTTP/1.1" June 1999.

URL: http://www.ietf.org

[RFC 2246]   "The TLS Protocol Version 1.0" January 1999.

URL: http://www.ietf.org

[XML1.0]   "Extensible Markup Language (XML) 1.0 (Second Edition)", W3C Recommendation, 6 October 2000, Tim Bray, Jean Paoli, C. M. Sperberg-McQueen, Eve Maler,

URL:http://www.w3.org/TR/REC-xml

[SSL3.0]   "The SSL Protocol Version 3.0",

URL:http://wp.netscape.com/eng/ssl3/draft302.txt

[RFC2818]   "HTTP Over TLS", E. Rescorla,

URL:http://www.ietf.org/rfc/rfc2818

[IANA]   Internet Assigned Numbers Authority (IANA)

URL: http://www.iana.org/

[OMA-MLP]   "Mobile Location Protocol". Open Mobile Alliance™. OMA-TS-MLP-V3_2

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

[MLS AD]   "OMA Mobile Location Service Architecture". Open Mobile Alliance™. OMA-AD-MLS-V1_0

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

[SUPL AD]   "Secure User Plane Location Architecture". Open Mobile Alliance™. OMA-AD-SUPL-V1.0

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

[22.071]   3GPP TS 22.071 Release 6: "Location Services (LCS); Service description, Stage 1".

URL: http://www.3gpp.org/ftp/Specs/latest/Rel-6/22_series/

[23.271]   3GPP TS 23.271 Release 6: "Functional stage 2 description of LCS"

URL: http://www.3gpp.org/ftp/Specs/latest/Rel-6/23_series/

[29.002]   3GPP TS 29.002: " Mobile Application Part (MAP) specification"

URL: http://www.3gpp.org/ftp/Specs/latest/Rel-6/29_series/

[ASCII]   US-ASCII. Coded Character Set - 7-Bit American Standard Code for Information Interchange. Standard ANSI X3.4-1986, ANSI, 1986.

2.2 Informative References

[OMADict] "Dictionary for OMA Specifications Version 1.0", Open Mobile Alliance™, OMA-Dictionary-V1_0,

URL:http://www.openmobilealliance.org

[23.003] 3GPP TS 23.003: "Numbering, Addressing and Identification"
URL:http://www.3gpp.org/ftp/Specs/latest/Rel-6/23_series/

[23.032] 3GPP TS 23.032: " Universal Geographical Area Description (GAD)"
URL:http://www.3gpp.org/ftp/Specs/latest/Rel-5/23_series/

[AST] OpenGIS© Consortium Abstract Specification Topic 2: 01-063R2

URL: http://www.opengis.org/techno/abstract/02-102.pdf.

[CRS] OpenGIS© Consortium Recommendation Paper 01-014r5: Recommended Definition Data for Coordinate Reference Systems and Coordinate Transformations

URL: http://www.opengis.org/techno/discussions/01-014r5.pdf

[GML] OpenGIS© Consortium Implementation Specification: Geography Markup Language V 2.0

URL: http://www.opengis.net/gml/01-029/GML2.html

[GEO] OpenGIS© Consortium Abstract Specification Topic 1 Feature Geometry : 010101

URL: http://www.opengis.org/techno/abstract/01-101.pdf

[RFC796] RFC 796: "Address mapping"

URL: http://www.ietf.org

[RFC3513] RFC 3513: "Internet Protocol Version 6 (IPv6) Addressing Architecture"

URL: http://www.ietf.org

[05.10] 3GPP TS 05.10, "Radio subsystem synchronization"

[UTC] ITU CCIR Recommendation "ITU-R-TF.460-4"

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.

Notational Conventions and Generic Grammar

The following rules are used throughout this specification to describe basic parsing constructs. ANSI X3.4-1986 defines the US-ASCII coded character set, see ref. [5]

CR	= <US-ASCII CR, carriage return (13)>
LF	= <US-ASCII LF, linefeed (10)>
SP	= <US-ASCII SP, space (32)>

A set of characters enclosed in brackets ([]) is a one-character expression that matches any of the characters in that set. E.g., "[lcs]" matches either an "l", "c", or "s". A range of characters is indicated with a dash. E.g., "[a-z]" matches any lower-case letter.

The one-character expression can be followed by an interval operator, for example [a-zA-Z]{min,max} in which case the one-character expression is repeated at least min and at most max times. E.g., "[a-zA-Z]{2,4}" matches for example the strings "at", "Good", and "biG".

DTD Syntax Notation

The table below describes the special characters and separators used in the DTDs defining the different services.

Character	Meaning
+	One or more occurrence
*	Zero or more occurrences
?	Optional
()	A group of expressions to be matched together
|	OR...as in, "this or that"
,	Strictly ordered. Like an AND

3.2 Definitions

Lr	Reference point between Location Servers. See also [23.271].
Location Server	Software and/or hardware entity offering location capabilities.
Target	The entity being located.
Timing Advance	Parameter in GSM network used by the MS to advance its timings of transmissions to the Base Station so as to compensate for propagation delay. This parameter can also be used to estimate the distance between Base Station and MS.

3.3   Abbreviations

A-GPS	Assisted GPS
ANSI	American National Standards Institute
DTD	Document Type Definition
E-OTD	Enhanced Observed Time Difference (E-OTD)
GMLC	Gateway Mobile Location Center
GMT	Greenwich Mean Time
GPS	Global Positioning System
HTTP	Hypertext Transfer Protocol
HTTPS	HTTP Secure
LCS	Location Services
MLC	Mobile Location Center
MLP	Mobile Location Protocol
MPC	Mobile Positioning Center
MS	Mobile Station
MSID	Mobile Station Identifier
MSISDN	Mobile Station ISDN
OMA	Open Mobile Alliance
OTDOA	Observed Time Difference of Arrival
SLP	SUPL Location Platform
SSL	Secure Socket Layer
SUPL	Secure User Plane Location
TLS	Transport Layer Security
U-TDOA	Uplink Time Difference of Arrival
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
UTM	Universal Transverse Mercator
WAP	Wireless Application Protocol
WGS	World Geodetic System
XML	Extensible Markup Language

4. Introduction

The purpose of this specification is to specify the Roaming Location Protocol (RLP) technical specification of an inter-Location Server interface as described in [MLS AD]. In the 3GPP context, this specification will be an instantiation of the Lr reference point as defined in [23.271]. Additionally, this specification will be an instantiation of a reference point between SUPL Providers as described in [SUPL AD] with the purpose to transport information between SUPL Providers to enable positioning of roaming SUPL Enabled Terminals as described in [SUPL AD]. Examples of such information are tunneling of SUPL messages, coarse position used when generating GPS assistance data or the actual GPS assistance data.

This specification is based on MLP as specified in [OMA-MLP]. This specification refers to [OMA-MLP] where applicable.

5. Inter-Location Server Protocol

5.1 Overview

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 [OMA-MLP].
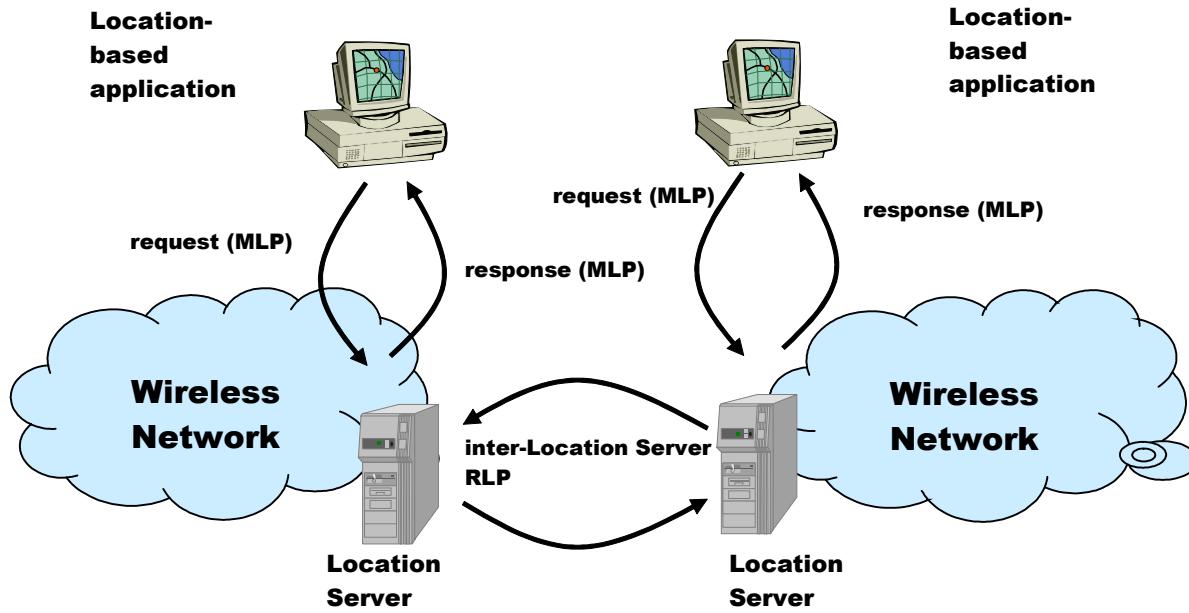
Figure 1 RLP Overview

5.1.1 Inter-Location Server protocol structure

The general structure of the inter-Location Server protocol follows the structure of MLP and is found in [OMA-MLP].

5.1.2 Inter-Location Server protocol extension mechanism

The extension mechanism in inter-Location Server protocol is analogous to MLP and is found in [OMA-MLP].

6. Normative Behaviour

The following section describes normative behaviour with regards to the inter-Location Server specification.

6.1 Parsing of DTDs

Location Servers MUST parse all valid RLP XML documents. XML documents received not following the XML format SHALL result in a resid 106 - SYNTAX ERROR. Requests not complying with the RLP protocol SHALL result in resid 105, 110 or 111.

Although certain elements are used only for optional functionality, all implementations MUST still be able to parse any well-formed and valid location XML instance document and respond with an appropriate error code if necessary.

For example, an implementation not supporting the Emergency Roaming Location Immediate Request must still be able to parse such a request and respond that the service is not supported.

6.2 Invalid Values

This specification specifies valid values and ranges for most elements and attributes in request messages. If any value beyond such constraints - e.g. a negative requested accuracy - is provided in a request message then the Location Server SHALL return the error code "INVALID PROTOCOL ELEMENT VALUE" for invalid element values, and "INVALID PROTOCOL ELEMENT ATTRIBUTE VALUE" for invalid attribute values.

6.3 QoP

Quality of position, QoP, can mean either of the following or a combination of them - possibly with a precedence order:

- • Response time requirement – i.e. how long the application is willing to wait for the location information

- • Age of the location information - i.e. when was the information actually collected.

- • Accuracy of the location information (a system estimation).

6.3.1   Quality of Position in Request Messages

Age of location information:

Location Servers may specify a requested maximum age using the `max_loc_age` element in a request message. This information SHOULD be used by the Location Server of the target's serving network to, for example, to determine whether a cached location estimate is sufficient.

Accuracy of location information:

Location Servers may specify a requested accuracy using the `eqop` element in a request message. This information may be used by the Location Server of the target's serving network to, for example, select an appropriate location method.

6.3.2   Quality of Position in Answer and Report Messages

Maximum age of location information:

1. The maximum age of delivered location information MUST be indicated in answer and report messages (unless unknown), through a time stamp. The time stamp MUST specify the time when the location information was originally determined. Note: "time" here MUST also give an indication about the time zone or offset to GMT.

2. If no specific maximum age is specified in the request message, then the maximum age of the delivered location information is up to the Location Server of the target's serving network (e.g., it can do a best effort, use the most

efficient location method, use cached data, etc.). The age of the delivered information MUST still be indicated through the time stamp (unless unknown).

3. Depending on what is available, the actual delivered maximum age MAY be larger than the requested maximum age. It is recommended that applications check the time stamp of the delivered location information, if the age of the location information is important. Any Location Server which only passes on the result MUST not change the result it received.

Accuracy of location information:

1. Any delivered accuracy information MUST relate to the point in time when the location information was originally determined, as specified by the time stamp.

2. If no specific accuracy was requested, then the accuracy of the delivered location information is up to the Location Server of the target's serving network (e.g., it can do a best effort, use the most efficient or the most accurate location method, etc.). The Location Server MUST return accuracy information in the response to indicate the actual delivered accuracy (unless unknown).

Depending on what is available, the actual delivered accuracy MAY be less than the requested accuracy. Even if the delivered accuracy of the Location Server of the target's serving network is less than the requested one any intermediate Location Server MUST pass the result unchanged, and MUST NOT translate it into, e.g. an error message such as "QOP NOT ATTAINABLE". Note: If accuracy is important, it is recommended that applications check the actual accuracy of the delivered location information.

Confidence of accuracy information:

A Location Server MAY indicate a confidence level for delivered accuracy information, e.g. "with 65% confidence". The level of confidence is indicated in answer and report messages using the `lev_conf` element. If no `lev_conf` element is present in an answer or report message, then the level of confidence is unspecified.

The level of confidence applies to all accuracy elements within a `pd` element.

Requested quality of position cannot be provided:

The behaviour of the Location Server of the target's serving network when a requested quality of position cannot be provided depends on the class of QoP requested (qop_class). Any other Location Server which only passes on the result MUST NOT change the result it received.

6.4 Types of Location Information

The RLP specification allows a Location Server to request several different types of location information, such as various coordinate reference systems. In addition to location information an implementation MAY support additional information such as speed, direction and altitude.

All implementations MUST support the following location information:

• The coordinate reference system 4326 of the EPSG database

Implementations MAY support:

• Other coordinate reference systems

• speed

• direction

• altitude

6.4.1 Location Information in Request Messages

Location Servers may request that the location information is returned in a specific coordinate reference system, by including a `geo_info` element in request messages.

6.4.2 Location Information in Answer and Report Messages

1. If no specific location information was requested in a corresponding request message, then the Location Server MUST return the result in terms of the coordinate reference system 4326 of the EPSG database.

2. If the speed, direction and altitude are known the Location Server SHOULD return the information together with the location information.

6.5 Priority

Location Servers may specify a requested priority by including a `prio` element in request messages with the exception of emergency request, which are always treated with the highest priority.

It is up to the Location Server of the network that finally performs the positioning what actual priority is given to any particular request. Any intermediate Location Server MUST NOT change the priority it received prior to forwarding it. A requested priority SHOULD be honoured if possible. Emergency request MUST be handled with the highest priority possible.

If a specific priority is not specified in a request message (no `prio` element is included) - except emergency requests -, it defaults to "NORMAL".

6.6 Target Identities

Location Servers MUST specify the identity of the target device in the `msid` element. This element allows that the target device is uniquely addressed in multiple ways including MSISDN, IMSI, IP address, etc.

All implementations deployed in a 3GPP environment MUST support the following identities:

- MSISDN

All implementations deployed in a 3GPP2 environment MUST support the following identities:

- MDN

7. Mobile Location Service Definitions

7.1   Transport Protocol Layer Definitions

Transport Protocol Layer Definitions are found in [OMA-MLP].

7.2   Element Layer Definitions

7.2.1   Identity Element Definitions

RLP can be implemented using various transport mechanisms. The following mappings are specified for RLP:

Mapping	Section
HTTP	11 HTTP Mapping

7.2.2   Function Element Definitions

```
<!-- RLP_FUNC -->
<!--
RLP V1.0 Document Type Definition

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RLP is an XML language. Typical usage:
   <?xml version="1.0"?>
   <!DOCTYPE rlp_svc_init PUBLIC "-//OMA//DTD {abbrev x.y}//EN"
           "http://www.openmobilealliance.org/DTD/{filename}"
           [<?oma-{ref}-ver supported-versions="{versions}"?>]>
   <rlp_svc_init>
     ...
   </rlp_svc_init>

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Open Mobile Alliance Ltd. web site at
http://www.openmobilealliance.org/
-->

<!ELEMENT   eme_event                                       (eme_pos+)>
<!ATTLIST   eme_event
            eme_trigger (EME_ORG | EME_REL)                 #REQUIRED>
<!ELEMENT   tlrr_event                                      (ms_action | change_area)>
<!ELEMENT   ms_action                                       EMPTY>
<!ATTLIST   ms_action
            type (MS_AVAIL)                                 #REQUIRED>
<!ELEMENT   change_area                                     (target_area, no_of_reports?)>
<!ATTLIST   change_area
            type (MS_ENTERING | MS_LEAVING | MS_WITHIN_AREA)   #REQUIRED
            loc_estimates (TRUE | FALSE)                    #REQUIRED>
<!ELEMENT   target_area                                     ((shape, cc?) | cc | plmn+)>
<!ELEMENT   no_of_reports                                   (#PCDATA)>
<!ELEMENT   name_area                                       (#PCDATA)>
<!ELEMENT   plmn                                            (mcc, mnc)>
<!ELEMENT   interval                                        (#PCDATA)>
<!ELEMENT   loc_type                                        EMPTY>
<!ATTLIST   loc_type
```

```
            type (CURRENT | LAST |CURRENT_OR_LAST |              "CURRENT">
            CURRENT_OR_LAST_AS_FALLBACK | INITIAL)
<!ELEMENT   prio                                                 EMPTY>
<!ATTLIST   prio
            type (NORMAL | HIGH)                                 "NORMAL">
<!ELEMENT   pushaddr                                             (url, id?, pwd?)>
<!ELEMENT   req_id                                               (#PCDATA)>
<!ELEMENT   lcs_ref                                              (#PCDATA)>
<!ELEMENT   start_time                                           (#PCDATA)>
<!ATTLIST   start_time
            utc_off CDATA                                        "0000">
<!ELEMENT   stop_time                                            (#PCDATA)>
<!ATTLIST   stop_time
            utc_off CDATA                                        "0000">
<!ELEMENT   duration                                             (#PCDATA)>
<!ELEMENT   url                                                  (#PCDATA)>
<!ELEMENT   time_remaining                                       (#PCDATA)>
```

7.2.3   Location Element Definitions

```
<!-- RLP_LOC -->
<!--
RLP V1.0 Document Type Definition

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RLP is an XML language. Typical usage:
   <?xml version="1.0"?>
   <!DOCTYPE rlp_svc_xxx PUBLIC "-//OMA//DTD {abbrev x.y}//EN"
            "http://www.openmobilealliance.org/DTD/{filename}"
            [<?oma-{ref}-ver supported-versions="{versions}"?>]>
   <rlp_svc_xxx>
      ...
   </rlp_svc_xxx>

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http://www.openmobilealliance.org/
-->

<!ELEMENT   pos                                              (msid, (pd | poserr))>
<!ATTLIST   pos
            pos_method (CELL | OTDOA | GPS | A-GPS | E-OTD    #IMPLIED>
            | U-TDOA | OTHER)
<!ELEMENT   eme_pos                                          (msid, (pd | poserr), esrd?,
                                                             esrk?)>
<!ATTLIST   eme_pos
            pos_method (CELL | OTDOA | GPS | A-GPS | E-OTD    #IMPLIED>
            | U-TDOA | OTHER)
<!ELEMENT   pd                                               (time, shape, (alt, alt_unc?)?,
                                                             speed?, direction?,
                                                             lev_conf?, qop_not_met?)>
<!ELEMENT   trl_pos                                          (msid, (pd | poserr | time))>
<!ATTLIST   trl_pos
            trl_trigger (MS_AVAIL | CHANGE_AREA)              #REQUIRED
            pos_method (CELL | OTDOA | GPS | A-GPS | E-OTD    #IMPLIED>
            | U-TDOA | OTHER)
<!ELEMENT   poserr                                           (result, add_info?, time)>
```

```
<!ELEMENT    time                                    (#PCDATA)>
<!ATTLIST    time
             utc_off CDATA                           "0000">
<!ELEMENT    alt                                     (#PCDATA)>
<!ELEMENT    alt_unc                                 (#PCDATA)>
<!ELEMENT    qop_not_met                             EMPTY>
<!ELEMENT    direction                               (#PCDATA)>
<!ELEMENT    speed                                   (#PCDATA)>
<!ELEMENT    lev_conf                                (#PCDATA)>
<!ELEMENT    geo_info                                (CoordinateReferenceSystem)>
<!ELEMENT    CoordinateReferenceSystem               (Identifier)>
<!ELEMENT    Identifier                              (code, codeSpace, edition)>
<!ELEMENT    code                                    (#PCDATA)>
<!ELEMENT    codeSpace                               (#PCDATA)>
<!ELEMENT    edition                                 (#PCDATA)>
<!ELEMENT    service_coverage                        ((cc, ndc*)+)>
<!ENTITY     % mlp_res.dtd                           SYSTEM "MLP_RES_300.DTD">
%mlp_res.dtd;
```

7.2.4   Result Element Definitions

Result Element Definitions are found in [OMA-MLP].

7.2.5   Shape Element Definitions

Shape Element Definitions are found in [OMA-MLP].

7.2.6   Quality of Position Element Definitions

Quality of Position Element Definitions are found in [OMA-MLP].

7.2.7   Network Parameters Element Definitions

```
<!-- RLP_NET -->
<!--
RLP V1.0 Document Type Definition

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RLP is an XML language. Typical usage:
    <?xml version="1.0"?>
    <!DOCTYPE rlp_svc_xxx PUBLIC "-//OMA//DTD {abbrev x.y}//EN"
            "http://www.openmobilealliance.org/DTD/{filename}"
            [<?oma-{ref}-ver supported-versions="{versions}"?>]>
    <rlp_svc_xxx>
        ...
    </rlp_svc_xxx>

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-->
<!ELEMENT    net_param                  (h_ls?, v_ls?, pce?, neid?, imsi?, (gsm_net_param |
                                        wcdma_net_param | cdma_net_param)?)>
<!ELEMENT    gsm_net_param              (cgi?, nmr?, ta?, lmsi?)>
<!ELEMENT    wcdma_net_param            (global_uc_id?, frequencyinfo?, primaryscramblingcode?, sai?)>
```

```
<!ELEMENT   cdma_net_param              (nid, sid, base_id, base_lat?, base_long?, ref_pn?)>
<!ELEMENT   neid                        (vmscid?, sgsnid?, vlrid?)>
<!ELEMENT   vmscid                      (cc?, ndc?, vmscno)>
<!ATTLIST   vmscid
            capability (1 | 2 | 3 |     #IMPLIED>
            4)
<!ELEMENT   vlrid                       (cc?, ndc?, vlrno)>
<!ATTLIST   vlrid
            capability (1 | 2 | 3 |     #IMPLIED>
            4)
<!ELEMENT   sgsnid                      (cc?, ndc?, sgsnno)>
<!ATTLIST   sgsnid
            capability (1 | 2 | 3 |     #IMPLIED>
            4)
<!ELEMENT   imsi                        (#PCDATA)>
<!ELEMENT   h_ls                        (#PCDATA)>
<!ELEMENT   v_ls                        (#PCDATA)>
<!ELEMENT   pce                         (#PCDATA)>
<!ELEMENT   cgi                         (mcc, mnc, lac, cellid)>
<!ELEMENT   nmr                         (nmr_element+)>
<!ELEMENT   nmr_element                 (arfcn, bsic, rxlev)>
<!ELEMENT   arfcn                       (#PCDATA)>
<!ELEMENT   bsic                        (#PCDATA)>
<!ELEMENT   rxlev                       (#PCDATA)>
<!ELEMENT   mcc                         (#PCDATA)>
<!ELEMENT   mnc                         (#PCDATA)>
<!ELEMENT   ndc                         (#PCDATA)>
<!ELEMENT   cc                          (#PCDATA)>
<!ELEMENT   vmscno                      (#PCDATA)>
<!ELEMENT   vlrno                       (#PCDATA)>
<!ELEMENT   lac                         (#PCDATA)>
<!ELEMENT   cellid                      (#PCDATA)>
<!ELEMENT   ta                          (#PCDATA)>
<!ELEMENT   lmsi                        (#PCDATA)>
<!ELEMENT   global_uc_id                (mcc, mnc, uc_id)>
<!ELEMENT   uc_id                       (#PCDATA)>
<!ATTLIST   uc_id
            status (STALE | CURRENT |   "CURRENT">
            UNKNOWN)
<!ELEMENT   sai                         (mcc, mnc, lac, sac)>
<!ELEMENT   sac                         (#PCDATA)>
<!ELEMENT   frequencyinfo               (uarfcn_ul?, uarfcn_dl?, uarfcn_nt?)>
<!ELEMENT   primaryscramblingcode       (#PCDATA)>
<!ELEMENT   uarfcn_ul                   (#PCDATA)>
<!ELEMENT   uarfcn_dl                   (#PCDATA)>
<!ELEMENT   uarfcn_nt                   (#PCDATA)>
<!ELEMENT   nid                         (#PCDATA)>
<!ELEMENT   sid                         (#PCDATA)>
<!ELEMENT   base_id                     (#PCDATA)>
<!ELEMENT   base_lat                    (#PCDATA)>
<!ELEMENT   base_long                   (#PCDATA)>
<!ELEMENT   ref_pn                      (#PCDATA)>
```

Note: This information may be considered operator sensitive

7.2.8   Roaming Context and Privacy Element Definitions

```
<!-- RLP_CTXT -->
```

```
<!--
RLP V1.0 Document Type Definition

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RLP is an XML language. Typical usage:
   <?xml version="1.0"?>
   <!DOCTYPE rlp_svc_xxx PUBLIC "-//OMA//DTD {abbrev x.y}//EN"
            "http://www.openmobilealliance.org/DTD/{filename}"
            [<?oma-{ref}-ver supported-versions="{versions}"?>]>
   <rlp svc xxx>
      ...
   </rlp_svc_xxx>

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-->
<!ELEMENT    client                      (servicetype, id?, serviceid?,  requestmode?, clientname?,
                                         pseudoid?, poi?)>
<!ATTLIST    client
             type (1 | 2 | 3)            "1">
<!ELEMENT    id                          (#PCDATA)>
<!ELEMENT    requestor                   (#PCDATA)>
<!ATTLIST    requestor
             type (MSISDN | NAME | E-     "MSISDN">
             MAIL | URL | SIPURL |
             IMS)
<!ELEMENT    pwd                         (#PCDATA)>
<!ELEMENT    serviceid                   (#PCDATA)>
<!ELEMENT    requestmode                 (requestor | session)?>
<!ATTLIST    requestmode
             type (ACTIVE | PASSIVE)     "PASSIVE">
<!ELEMENT    locationserver              (id, pwd?)>
<!ELEMENT    clientname                  (#PCDATA)>
<!ELEMENT    serving_node_action         EMPTY>
<!ATTLIST    serving_node_action
             passive_type                #REQUIRED
             (POSITION NOT ALLOWED |
             POSITION |
             NOTIFY AND POSITION |
             POSITION_IF_NOT_DISALLOWE
             D | POSITION_IF_ALLOWED)
             active type                 "POSITION_NOT_ALLOWED">
             (POSITION_NOT_ALLOWED |
             POSITION |
             NOTIFY_AND_POSITION |
             POSITION_IF_NOT_DISALLOWE
             D | POSITION_IF_ALLOWED)
<!ELEMENT    poi                         EMPTY>
<!ATTLIST    poi
             flag (ON | OFF)             "OFF">
<!ELEMENT    pseudoid                    (#PCDATA)>
<!ELEMENT    servicetype                 (#PCDATA)>
<!ELEMENT    supported_shapes            EMPTY>
<!ATTLIST    supported_shapes
             Point  (NO | YES)           "NO"
             LineString (NO | YES)       "NO"
             Polygon (NO | YES)          "NO"
             Box (NO | YES)              "NO"
             CircularArea (NO | YES)     "NO"
             CircularArcArea (NO |       "NO"
             YES)
             EllipticalArea (NO | YES)   "NO"
             MultiLineString (NO |       "NO"
             YES)
             MultiPoint (NO | YES)       "NO"
             MultiPolygon (NO | YES)     "NO"
             LinearRing (NO | YES)       "NO"
             Altitude (NO | YES)         "NO">
```

7.2.9   SUPL Element Definitions

```
<!-- RLP_SUPL -->
<!--
RLP V1.0 Document Type Definition

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RLP is an XML language. Typical usage:
    <?xml version="1.0"?>
    <!DOCTYPE rlp_svc_init PUBLIC "-//OMA//DTD {abbrev x.y}//EN"
             "http://www.openmobilealliance.org/DTD/{filename}"
             [<?oma-{ref}-ver supported-versions="{versions}"?>]>
    <rlp svc init>
       ...
    </rlp svc init>

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-->

<!ELEMENT   supl_message               (#PCDATA)>
<!ELEMENT   supl_session_id            (#PCDATA)>
```

7.3 Service Layer Definitions

Service layer definitions specific to inter-Location Server interface are covered in this chapter. Additional information regarding service layer definitions is found in [OMA-MLP].

7.3.1   Header Components

The general outline of the header in MLP location request is given in [OMA-MLP]. The specifics for the inter-Location Server interfaces are covered in this section.

7.3.1.1   Roaming Header DTD

```
<!-- RLP_HDR -->
<!-- RLP V1.0 Document Type Definition

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RLP is an XML language. Typical usage:
    <?xml version="1.0"?>
    <!DOCTYPE rlp_svc_init PUBLIC "-//OMA//DTD {abbrev x.y}//EN"
             "http://www.openmobilealliance.org/DTD/{filename}"
             [<?oma-{ref}-ver supported-versions="{versions}"?>]>
    <rlp svc init>
       ...
    </rlp_svc_init>

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-->
<!ELEMENT   rlp_hdr           (locationserver, client?, serving_node_action?, supported_shapes?,
                              net_param?)>
<!ATTLIST   rlp_hdr
            ver CDATA         #FIXED "1.0.0">
```

Example 7.3.1.1-1: ASP as Initiator

```
<rlp_svc_init>
  <rlp_hdr ver="1.0.0">
    <locationserver>
      <id>461018768787</id>
      <pwd>remoteLocationServer1</pwd>
    </locationserver>
    <client>
      <id>theasp</id>
      <serviceid>0005</serviceid>
      <requestmode type="PASSIVE"/>
      <clientname>TheClientName</clientname>
      <pseudoid>358401234567</pseudoid>
    </client>
    <net_param>
        <gsm_net_param>
          <neid>
            <vmscid capability="4">
                <cc>46</cc>
                <ndc>10</ndc>
                <vmscno>28544781612</vmscno>
            </vmscid>
          </neid>
          <imsi>217567810164</imsi>
        </gsm_net_param>
    </net_param>
  </rlp_hdr>
  ...
</rlp_svc_init>
```

Example 7.3.1.1-2: MS as Initiator

```
<rlp_svc_init>
    <rlp_hdr ver="1.0.0">
        <locationserver>
            <id>461018768787</id>
            <pwd>remoteLocationServer1</pwd>
        </locationserver>
        <client>
            <id>theasp</id>
            <serviceid>0005</serviceid>
            <requestmode type="ACTIVE"/>
            <clientname>TheClientName</clientname>
            <pseudoid>358401234567</pseudoid>
        </client>
        <net_param>
            <gsm_net_param>
                <neid>
                    <vmscid capability="4">
                        <cc>46</cc>
                        <ndc>10</ndc>
                        <vmscno>28544781612</vmscno>
                    </vmscid>
                </neid>
                <imsi>217567810164</imsi>
            </gsm_net_param>
        <net_param>
    </rlp_hdr>
...
</rlp_svc_init>
```

7.3.2   Standard Roaming Location Immediate Service

This is a standard service for requesting the location of one Mobile Subscriber while roaming. The service is used when a location response is required immediately (within a set time). This service may be initiated either synchronously or asynchronously.

The service consists of the following messages:

- Standard Roaming Location Immediate Request
- Standard Roaming Location Immediate Answer
- Standard Roaming Location Immediate Report

The Standard Roaming Location Immediate Service SHALL consist of a Standard Roaming Location Immediate Request followed by one Standard Roaming Location Immediate Answer and zero or one OPTIONAL Standard Roaming Location Immediate Reports.

The following message flow encapsulates this service:
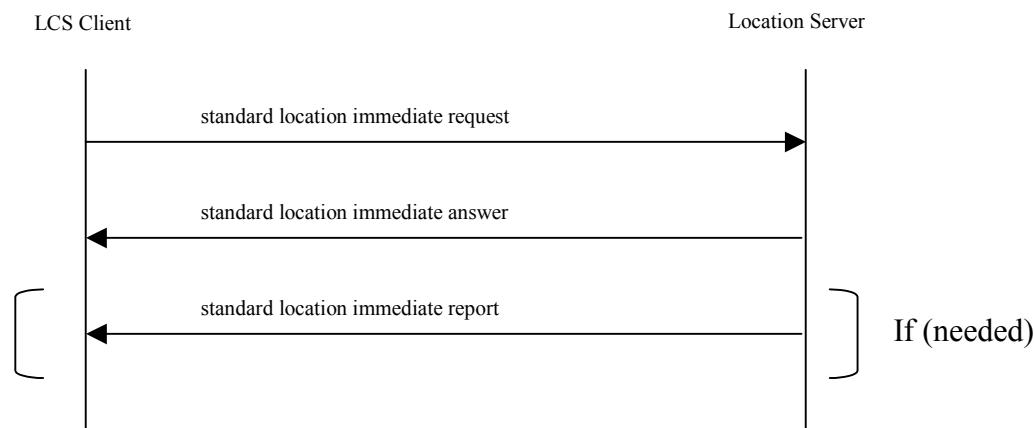
Figure 2 Standard roaming location immediate

7.3.2.1   Standard Roaming Location Immediate Request DTD

```
<!-- RLP_SRLIR -->
<!--
RLP V1.0 Document Type Definition

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   <?xml version="1.0"?>
   <!DOCTYPE rlp_svc_init PUBLIC "-//OMA//DTD {abbrev x.y}//EN"
            "http://www.openmobilealliance.org/DTD/{filename}"
            [<?oma-{ref}-ver supported-versions="{versions}"?>]>
   <rlp_svc_init>
      ...
   </rlp_svc_init>

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-->
```

```
<!ENTITY    % extension.param           "">

<!ELEMENT   srlir                       (msid, codeword?, eqop?, geo_info?, loc_type?, prio?,
                                        pushaddr?,service_coverage? %extension.param;)>
<!ATTLIST   srlir
            ver CDATA                   #FIXED "1.0.0"
            res_type (SYNC | ASYNC)     "SYNC"
            recv_role (HLS | VLS)       #REQUIRED>
```

Example 7.3.2.1-1

```
<srlir ver="1.0.0" res_type="SYNC" recv_role="HLS">
      <msid>461018765712</msid>
      <eqop>
              <resp_req type="LOW_DELAY"/>
              <hor_acc>1000</hor_acc>
      </eqop>
      <geo_info>
              <CoordinateReferenceSystem>
                      <Identifier>
                          <code>4004</code>
                          <codeSpace>EPSG</codeSpace>
                          <edition>6.1</edition>
                      </Identifier>
              </CoordinateReferenceSystem>
      </geo_info>
      <loc_type type="CURRENT_OR_LAST" />
      <prio type="HIGH" />
</srlir>
```

7.3.2.2   Standard Roaming Location Immediate Answer DTD

```
<!-- RLP_SRLIA -->
<!--
RLP V1.0 Document Type Definition

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    <?xml version="1.0"?>
    <!DOCTYPE rlp_svc_result PUBLIC "-//OMA//DTD {abbrev x.y}//EN"
            "http://www.openmobilealliance.org/DTD/{filename}"
            [<?oma-{ref}-ver supported-versions="{versions}"?>]>
    <roaming_svc_result>
      ...
    </roaming_svc_result>

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http://www.openmobilealliance.org/
-->

<!ENTITY    % extension.param           "">

<!ELEMENT   srlia                       ((pos | req_id | (result, add_info?)) %extension.param;)>
<!ATTLIST   srlia
            ver CDATA                   #FIXED "1.0.0">
```

Example 7.3.2.2-1: Successful positioning of roaming subscriber (Synchronous response)

```
<srlia ver="1.0.0" >
  <pos>
    <msid>461011334411</msid>
    <pd>
      <time utc_off="+0200">20020623134453</time>
      <shape>
        <CircularArea srsName="www.epsg.org#4326">
            <coord>
             <X>30 16 28.308N</X>
             <Y>45 15 33.444E</Y>
            </coord>
            <radius>240</radius>
        </CircularArea>
      </shape>
    </pd>
  </pos>
</srlia>
```

Example 7.3.2.2-2: Asynchronous response

```
<srlia ver="1.0.0" >
  <req_id>25267</req_id>
</srlia>
```

7.3.2.3   Standard Roaming Location Immediate Report DTD

```
<!-- RLP_SRLIREP -->
<!--
RLP V1.0 Document Type Definition

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   <?xml version="1.0"?>
   <!DOCTYPE rlp_svc_result PUBLIC "-//OMA//DTD {abbrev x.y}//EN"
            "http://www.openmobilealliance.org/DTD/{filename}"
            [<?oma-{ref}-ver supported-versions="{versions}"?>]>
   <rlp_svc_result>
      ...
   </rlp_svc_result>

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-->


<!ENTITY    % extension.param          "">

<!ELEMENT   srlirep                    (req_id, pos %extension.param;)>
<!ATTLIST   srlirep
            ver CDATA                  #FIXED "1.0.0">
```

Example 7.3.2.3-1: Asynchronous Report

```
<srlirep ver="1.0.0">
  <req_id>25267</req_id>
  <pos>
    <msid>461011334411</msid>
    <pd>
      <time utc_off="+0300">20020813010423</time>
      <shape>
```

```
            <CircularArea srsName="www.epsg.org#4326">
              <coord>
                <X>35 03 28.244N</X>
                <Y>135 47 08.711E</Y>
              </coord>
              <radius>15</radius>
            </CircularArea>
          </shape>
        </pd>
      </pos>
    </srlirep>
```

7.3.3   Triggered Roaming Location Reporting Service

The triggered roaming location reporting service is used when an application wants to get the position of MS to be tracked while roaming. The triggers could be:

- An MS action, defined as the event "UE available" in 3GPP [23.271].

- A Change of Area, defined as the event "change of area" in 3GPP [23.271].

The report will be triggered when one of the pre-defined MS's actions occurred or one of specific events occurred. The service consists of the following messages:

- Triggered Roaming Location Reporting Request

- Triggered Roaming Location Reporting Answer

- Triggered Roaming Location Report

- Triggered Roaming Location Report Stop Request

- Triggered Roaming Location Reporting Stop Answer

The Triggered Roaming Location Reporting Service SHALL consist of a Triggered Roaming Location Reporting Request followed by one Triggered Roaming Location Reporting Answer and zero, one or more OPTIONAL Triggered Roaming Location Reports.

The Triggered Roaming Location Reporting Service MAY also include a Triggered Roaming Location Reporting Stop Request that, then SHALL be followed by one Triggered Roaming Location Reporting Stop Answer. Additionally a Triggered Roaming Location Reporting Stop Answer MAY be sent without preceeding Triggered Roaming Location Reporting Stop Request.

The following message flow encapsulates this service:

Location Server   Location Server
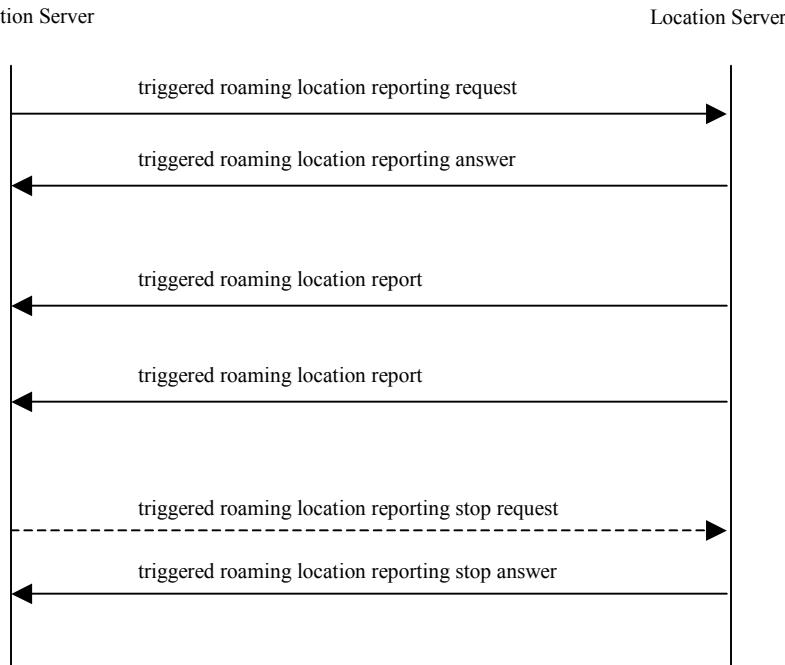
Figure 3 Triggered roaming location reporting

In addition, if a target MS roams from Visited Location Server A to Visited Location Server B, the Home Location Server should release the resources in Location Server A and start a new triggered location service with Visited Location Server B as appropriate.

For a roaming case of triggered location service, the lcs_ref SHALL be assigned and maintained by the Home Location Server. The lcs_ref SHALL be sent to Visited Location Server in the Triggered Roaming Location Reporting Request. In addition, the lcs_ref MAY be sent to the Requesting Location Server in the Triggered Roaming Location Reporting Answer. When the report is returned, the lcs_ref MAY be included in order to correlate the previous request. In all cases the Location Server SHALL include the rlp_hdr element and SHALL assign a unique value for the req_id element.

If the network unilaterally decides to terminate the location reporting, the stop reporting information SHALL be carried in a trlrep.

The cancellation of triggered roaming location reporting request could be initiated by any Location Server for some reasons, for example such as privacy profile update. It means that a trlrsa may have to be sent without a preceding trlrsr.

7.3.3.1   Triggered Roaming Location Reporting Request DTD

```
<!-- RLP_TRLRR -->
```

```
<!--
RLP V1.0 Document Type Definition


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   <?xml version="1.0"?>
   <!DOCTYPE rlp_svc_init PUBLIC "-//OMA//DTD {abbrev x.y}//EN"
            "http://www.openmobilealliance.org/DTD/{filename}"
            [<?oma-{ref}-ver supported-versions="{versions}"?>]>
   <rlp_svc_init>
      ...
   </rlp_svc_init>


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-->


<!ENTITY    % extension.param       "">

<!ELEMENT   trlrr                   (msid, lcs_ref?, codeword?, interval?, start_time?,
                                    stop_time?, duration?, tlrr_event?, qop?, geo_info?,
                                    pushaddr?, loc_type?, prio? %extension.param;)>
<!ATTLIST   trlrr
            ver CDATA               #FIXED "1.0.0"
            recv_role (HLS | VLS)   #REQUIRED>
```

The following rules apply to the use of 'start_time', 'stop_time', 'interval' , 'duration' and 'tlrr_event':

- TRLRR with 'tlrr_event' SHALL be interpreted as a request for a location report on the occurrence of a specific event. 'interval' and 'tlrr_event' MAY be combined. When 'tlrr_event' is not specified in TRLRR, the Location Server MUST reject the request with an error indication '106' to the client.

- If no START_TIME is specified reporting SHALL start immediately.

- If no STOP_TIME is specified the reporting SHOULD occur until explicitly canceled with 'Triggered Roaming Location Stop Request' or a time out occurs (depending on system configuration). Timeout MAY be reported to the LCS client by 'time_remaining' in triggered roaming location report.

- If STOP_TIME and Duration are both presented in one request, the Location Server MUST reject the request with an error indication '110' to the client.

- If START_TIME is 'older' than current time the Location Server MUST reject the request with an error indication '110' to the client.

- If STOP_TIME is 'older' than current time the Location Server MUST reject the request with an error indication '110' to the client.

- If STOP_TIME is earlier than START_TIME the implementation MUST reject the request with an error indication '110' to the client.

- If STOP_TIME is equal to START_TIME the Location Server MUST return a single location report to the client at the specified time. Any interval specified MUST be ignored.

- If Duration is specified as zero the Location Server MUST return a single location report to the client at the specified time. Any interval specified MUST be ignored.

Example 7.3.3.1-1: TRLRR for a location report on the occurrence of a MS_AVAIL event after a specified time.

```
<trlrr ver="1.0.0" recv_role="HLS">
      <msid>461011678298</msid>
```

```
    <start_time utc_off="+0300">20021003112700</start_time>
  <trlrr_event>
<ms_action type="MS_AVAIL"/>
</trlrr_event>
  <qop>
    <hor_acc>100</hor_acc>
  </qop>
  <geo_info>
    <CoordinateReferenceSystem>
      <Identifier>
        <code>4326</code>
        <codeSpace>EPSG</codeSpace>
        <edition>6.1</edition>
      </Identifier>
    </CoordinateReferenceSystem>
  </geo_info>
  <pushaddr>
    <url>http://location.application.com</url>
  </pushaddr>
  <loc_type type="CURRENT" />
  <prio type="HIGH" />
</trlrr>
```

Example 7.3.3.1-2: TRLRR for a change_area report on the occurrence of a MS_ENTERING event

```
<trlrr ver="1.0.0" recv_role="HLS">
    <msid>461011678298</msid>
    <lcs_ref>50</lcs_ref>
  <tlrr_event>
  <change_area type="MS_ENTERING" loc_estimates="TRUE">
    <target_area>
      <name_area>Seoul</name_area>
    </target_area>
  </change_area>
  </tlrr_event>
  <qop>
    <hor_acc>100</hor_acc>
  </qop>
  <geo_info>
    <CoordinateReferenceSystem>
      <Identifier>
        <code>4326</code>
        <codeSpace>EPSG</codeSpace>
        <edition>6.1</edition>
      </Identifier>
    </CoordinateReferenceSystem>
  </geo_info>
  <pushaddr>
    <url>http://location.application.com</url>
  </pushaddr>
  <loc_type type="CURRENT" />
  <prio type="HIGH" />
</trlrr>
```

Example 7.3.3.1-3: TRLRR for a change_area report on the occurrence of a MS_WITHIN_AREA within a geographical area.

```
<trlrr ver="1.0.0" recv_role="HLS">
    <msid>461011678298</msid>
    <lcs_ref>50</lcs_ref>
  <tlrr_event>
    <change_area type="MS_WITHIN_AREA" loc_estimates="FALSE">
      <target_area>
        <shape>
          <CircularArea srsName="www.epsg.org#4326">
            <coord>
              <X>35 35 24.139N</X>
              <Y>139 35 24.754E</Y>
            </coord>
            <radius>15</radius>
```

```
            </CircularArea>
          </shape>
        </target_area>
        <no_of_reports>10</no_of_reports>
      </change_area>
    </tlrr_event>
    <pushaddr>
        <url>http://location.application.com</url>
    </pushaddr>
  </trlrr>
```

7.3.3.2   Triggered Roaming Location Reporting Answer DTD

```
<!-- RLP_TRLRA -->
<!--
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   <?xml version="1.0"?>
   <!DOCTYPE rlp_svc_result PUBLIC "-//OMA//DTD {abbrev x.y}//EN"
            "http://www.openmobilealliance.org/DTD/{filename}"
            [<?oma-{ref}-ver supported-versions="{versions}"?>]>
   <rlp_svc_result>
      ...
   </rlp_svc_result>

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-->


<!ENTITY    % extension.param         "">

<!ELEMENT    trlra                    (((req_id, lcs_ref?) | (result, add_info?))
                                      %extension.param;)>
<!ATTLIST    trlra
            ver CDATA                 #FIXED "1.0.0">
```

Example 7.3.3.2-1: TRLRA if corresponding TRLRR was successful

```
      <trlra ver="1.0.0">
        <req_id>25293</req_id>
      </trlra>
```

Example 7.3.3.1-2: TRLRA if corresponding TRLRR was in error

```
      <trlra ver="1.0.0">
        <result resid="4">UNKNOWN SUBSCRIBER</result>
      </trlra>
```

7.3.3.3   Triggered Roaming Location Report DTD

```
<!-- RLP_TRLREP -->
```

```
<!--
RLP V1.0 Document Type Definition


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    <?xml version="1.0"?>
    <!DOCTYPE rlp_svc_result PUBLIC "-//OMA//DTD {abbrev x.y}//EN"
              "http://www.openmobilealliance.org/DTD/{filename}"
              [<?oma-{ref}-ver supported-versions="{versions}"?>]>
    <rlp_svc_result>
       ...
    </rlp_svc_result>


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-->


<!ENTITY    % extension.param          "">


<!ELEMENT   trlrep                     (req_id, lcs_ref?, trl_pos, time_remaining?
                                       %extension.param;)>
<!ATTLIST   trlrep
            ver CDATA                  #FIXED "1.0.0">
```

Example 7.3.3.3-1: Successful positioning of periodic location report

```
<trlrep ver="1.0.0">
  <req_id>25267</req_id>
        <lcs_ref>50</lcs_ref>
  <trl_pos trl_trigger="MS_AVAIL">
    <msid>461011678298</msid>
    <pd>
      <time utc_off="+0300">20020813010423</time>
      <shape>
        <CircularArea srsName="www.epsg.org#4326">
          <coord>
            <X>35 35 24.139N</X>
            <Y>139 35 24.754E</Y>
          </coord>
          <radius>15</radius>
        </CircularArea>
      </shape>
    </pd>
  </trl_pos>
  <time_remaining>00010000</time_remaining>
</trlrep>
```

Example 7.3.3.3-2: Cancellation of triggered location report

```
<trlrep ver="1.0.0">
  <req_id>25267</req_id>
        <lcs_ref>50</lcs_ref>
  <trl_pos trl_trigger="PERIODIC">
    <msid>461011678298</msid>
    <poserr>
        <result resid="114"> CANCELLATION OF TRIGGERED LOCATION REQUEST</result>
        <time utc_off="+0200">20041007110237</time>
    </poserr>
  </trl_pos>
</trlrep>
```

7.3.3.4   Triggered Roaming Location Reporting Stop Request DTD

```
<!-- RLP_TRLRSR -->
<!--
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   <?xml version="1.0"?>
   <!DOCTYPE rlp_svc_init PUBLIC "-//OMA//DTD {abbrev x.y}//EN"
            "http://www.openmobilealliance.org/DTD/{filename}"
            [<?oma-{ref}-ver supported-versions="{versions}"?>]>
   <rlp_svc_init>
      ...
   </rlp_svc_init>

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-->

<!ENTITY    % extension.param         "">

<!ELEMENT   trlrsr                     (req_id, lcs_ref? %extension.param;)>
<!ATTLIST   trlrsr
            ver CDATA                  #FIXED "1.0.0"
            Recv_role (HLS | VLS)      #REQUIRED>
```

Example 7.3.3.4-1

```
    <trlrsr ver="1.0.0" recv_role="HLS">
      <req_id>25293</req_id>
      <lcs_ref>50</lcs_ref>
    </trlrsr>
```

7.3.3.5   Triggered Roaming Location Reporting Stop Answer DTD

```
<!-- RLP_TRLRSA -->
```

```
<!--
RLP V1.0 Document Type Definition


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   <?xml version="1.0"?>
   <!DOCTYPE rlp_svc_result PUBLIC "-//OMA//DTD {abbrev x.y}//EN"
            "http://www.openmobilealliance.org/DTD/{filename}"
            [<?oma-{ref}-ver supported-versions="{versions}"?>]>
   <rlp_svc_result>
      ...
   </rlp_svc_result>


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-->


<!ENTITY    % extension.param          "">

<!ELEMENT   trlrsa                     ((req_id | (result, add_info?)) %extension.param;)>
<!ATTLIST   trlrsa
            ver CDATA                  #FIXED "1.0.0">
```

Example 7.3.3.5-1

```
<trlrsa ver="1.0.0">
   <req_id>25293</req_id>
</trlrsa>
```

7.3.4   Emergency Roaming Location Immediate Service

When Mobile Number Portability is supported the MSISDN is not always enough to deterministically determine the HPLMN of the subscriber.

The emergency roaming location immediate service is used to retrieve the position of a mobile subscriber when Mobile Number Portability is in use. In this case the MSISDN points to the original network before the subscriber changed his/her operator. The purpose of this service is to transparently forward the location request to the network currently serving the subscriber.

The service consists of the following messages:

- Emergency Roaming Location Immediate Request
- Emergency Roaming Location Immediate Answer

The Emergency Roaming Location Immediate Service SHALL consist of a Emergency Roaming Location Immediate Request followed by one Emergency Roaming Location Immediate Answer.

The following message flow encapsulates this service:

Location Server 1   Location Server 2

```
                    emergency roaming location immediate request
```

```
                    emergency roaming location immediate answer
```
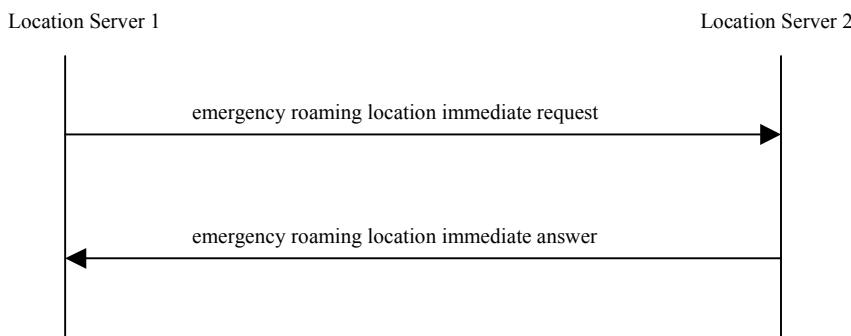
Figure 4 Emergency roaming location immediate

7.3.4.1 Emergency Roaming Location Immediate Request DTD

```
<!-- RLP_ERLIR -->
<!--
RLP V1.0 Document Type Definition

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RLP is an XML language. Typical usage:
   <?xml version="1.0"?>
   <!DOCTYPE rlp_svc_init PUBLIC "-//OMA//DTD {abbrev x.y}//EN"
            "http://www.openmobilealliance.org/DTD/{filename}"
            [<?oma-{ref}-ver supported-versions="{versions}"?>]>
   <rlp_svc_init>
      ...
   </rlp_svc_init>

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http://www.openmobilealliance.org/
-->

<!ENTITY    % extension.param          "">

<!ELEMENT   erlir                      (msid, esrd?, esrk?, eqop?, geo_info?, loc_type?
                                       %extension.param;)>
<!ATTLIST   erlir
            ver CDATA                  #FIXED "1.0.0"
            recv_role (HLS | VLS)      #REQUIRED>
```

Example 7.3.4.1-1

```
        <erlir ver="1.0.0" recv_role="HLS">
                <msid type="MSISDN">461011334411</msid>
                <geo_info>
                        <CoordinateReferenceSystem>
                                <Identifier>
                                    <code>4004</code>
                                    <codeSpace>EPSG</codeSpace>
                                    <edition>6.1</edition>
                                </Identifier>
                        </CoordinateReferenceSystem>
                </geo_info>
                <loc_type type="CURRENT_OR_LAST"/>
```

```
</erlir>
```

7.3.4.2   Emergency Location Immediate Answer DTD

```
<!-- RLP_ERLIA -->
<!--
RLP V1.0 Document Type Definition


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RLP is an XML language. Typical usage:
   <?xml version="1.0"?>
   <!DOCTYPE rlp_svc_result PUBLIC "-//OMA//DTD {abbrev x.y}//EN"
            "http://www.openmobilealliance.org/DTD/{filename}"
            [<?oma-{ref}-ver supported-versions="{versions}"?>]>
   <rlp_svc_result>
      ...
   </rlp_svc_result>


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-->


<!ENTITY    % extension.param         "">


<!ELEMENT   erlia                     ((eme_pos | (result, add_info?)) %extension.param;)>
<!ATTLIST   erlia
            ver CDATA                 #FIXED "1.0.0">
```

Example 7.3.4.2-1

```
<erlia ver="1.0.0">
  <eme_pos>
    <msid type="MSISDN">461011334411</msid>
    <pd>
      <time utc_off="+0300">20020623134453</time>
      <shape>
        <CircularArea srsName="www.epsg.org#4326">
          <coord>
            <X>30 24 43.53N</X>
            <Y>45 28 09.534W</Y>
          </coord>
          <radius>15</radius>
        </CircularArea>
      </shape>
    </pd>
    <esrk>7839298236</esrk>
  </eme_pos>
</erlia>
```

7.3.5   Standard SUPL Roaming Location Immediate Service

This is a SUPL standard service for using the Lr reference point to transfer SUPL messages between two SUPL enabled networks to determine the location of one Mobile Subscriber while roaming. The service is used when a location response is required immediately (within a set time).

The service consists of the following messages:

- Standard SUPL Roaming Location Immediate Request
- Standard SUPL Roaming Location Immediate Answer
- Standard SUPL Roaming Position

The Standard SUPL Roaming Location Immediate Service SHALL consist of a Standard SUPL Roaming Location Immediate Request followed by one Standard SUPL Roaming Location Immediate Answer and zero, one or more OPTIONAL Standard SUPL Roaming Positions.

The following message flow encapsulates this service:

H-SLP   V-SLP

standard supl roaming location immediate request

standard supl roaming location immediate answer

standard supl roaming position

Multiple If (needed)

standard supl roaming position
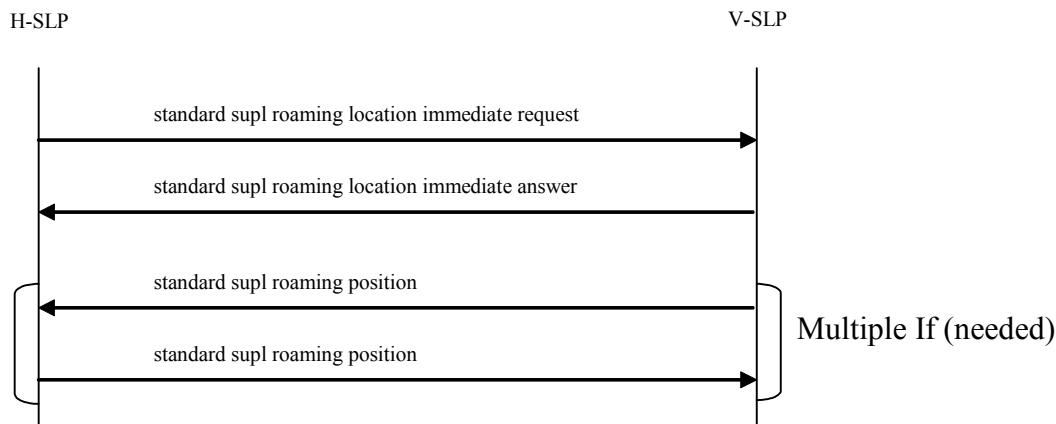
Figure 5 Standard SUPL roaming location immediate

7.3.5.1   Standard SUPL Roaming Location Immediate Request DTD

```
<!-- RLP_SSRLIR -->
<!--
RLP V1.0 Document Type Definition


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RLP is an XML language. Typical usage:
   <?xml version="1.0"?>
   <!DOCTYPE rlp_svc_init PUBLIC "-//OMA//DTD {abbrev x.y}//EN"
            "http://www.openmobilealliance.org/DTD/{filename}"
            [<?oma-{ref}-ver supported-versions="{versions}"?>]>
   <rlp_svc_init>
     ...
   </rlp_svc_init>

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http://www.openmobilealliance.org/
-->


<!ENTITY    % extension.param    "">

<!ELEMENT   ssrlir               (supl_session_id, supl_message %extension.param;)>
<!ATTLIST   ssrlir
            ver CDATA            #FIXED "1.0.0">
```

Example 7.3.5.1-1

```
<ssrlir ver="1.0.0">
        <supl_session_id>ABH98560</supl_session_id>
        <supl_message>ABH98560NV45867054387604785 6B0435678B03468570V68735406</supl_message>
</ssrlir>
```

7.3.5.2   Standard SUPL Roaming Location Immediate Answer DTD

```
<!-- RLP_SSRLIA -->
<!--
RLP V1.0 Document Type Definition

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RLP is an XML language. Typical usage:
   <?xml version="1.0"?>
   <!DOCTYPE rlp_svc_result PUBLIC "-//OMA//DTD {abbrev x.y}//EN"
            "http://www.openmobilealliance.org/DTD/{filename}"
            [<?oma-{ref}-ver supported-versions="{versions}"?>]>
   <roaming_svc_result>
      ...
   </roaming_svc_result>

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http://www.openmobilealliance.org/
-->


<!ENTITY    % extension.param        "">

<!ELEMENT   ssrlia                   (supl_session_id, result, add_info?, supl_message
                                     %extension.param;)>
<!ATTLIST   ssrlia
            ver CDATA                #FIXED "1.0.0">
```

Example 7.3.5.2-1: Successful positioning of roaming subscriber

```
<ssrlia ver="1.0.0">
    <supl_session_id>ABH98560</supl_session_id>
        <result resid="0">OK</result>
     <supl_message>SDH1030DAEGU20050115CYS0719CHEONGJU8570V68735406</supl_message>
</ssrlia>
```

7.3.5.3   Standard SUPL Roaming Position DTD

```
<!-- RLP_SSRP -->
```

```
<!--
RLP V1.0 Document Type Definition


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RLP is an XML language. Typical usage:
   <?xml version="1.0"?>
   <!DOCTYPE rlp_svc_init PUBLIC "-//OMA//DTD {abbrev x.y}//EN"
             "http://www.openmobilealliance.org/DTD/{filename}"
             [<?oma-{ref}-ver supported-versions="{versions}"?>]>
   <rlp_svc_init>
     ...
   </rlp_svc_init>


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http://www.openmobilealliance.org/
-->


<!ENTITY    % extension.param        "">


<!ELEMENT   ssrp                     (supl_session_id, supl_message %extension.param;)>
<!ATTLIST   ssrp
            ver CDATA                #FIXED "1.0.0">
```

Example 7.3.5.3-1

```
            <ssrp ver="1.0.0">
               <supl_session_id>ABH98560</supl_session_id>

               <supl_message>ABH97869786LUHGKSGDHFKSDFH85467POUIHG97697KHGKH</supl_message>
            </ssrp>
```

7.3.6   Standard Roaming Location Reporting Service

This is a standard location reporting service when a mobile subscriber wants an LCS client to receive the MS location, i.e. in the MO-LR case, while the Mobile Subscriber is roaming.

The service consists of the following messages:

-    Standard Roaming Location Report
-    Standard Roaming Location Report Answer

The Standard Roaming Location Reporting Service SHALL consist of a Standard Roaming Location Report followed by one Standard Roaming Location Report Answer.

The following message flow encapsulates this service:

Location Server   Location Server
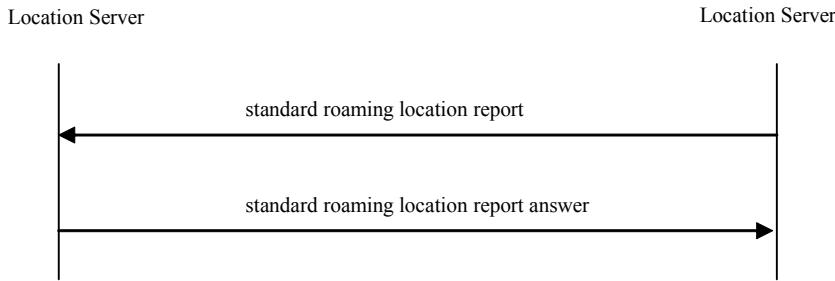
Figure 6 Standard roaming location report

7.3.6.1   Standard Roaming Location Report DTD

```
<!-- RLP_SRLREP -->
<!--
RLP V1.0 Document Type Definition

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RLP is an XML language. Typical usage:
   <?xml version="1.0"?>
   <!DOCTYPE rlp_svc_result PUBLIC "-//OMA//DTD {abbrev x.y}//EN"
             "http://www.openmobilealliance.org/DTD/{filename}"
             [<?oma-{ref}-ver supported-versions="{versions}"?>]>
   <rlp_svc_result>
      ...
   </rlp_svc_result>

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-->


<!ENTITY    % extension.param          "">

<!ELEMENT   srlrep                     (pos %extension.param;)>
<!ATTLIST   srlrep
            ver CDATA                  #FIXED "1.0.0">
```

Example 7.3.6.1-1:

```
<srlrep ver="1.0.0">
  <pos>
    <msid>461011678298</msid>
    <pd>
      <time utc_off="+0300">20041031074711</time>
      <shape>
        <CircularArea srsName="www.epsg.org#4326">
          <coord>
            <X>35 35 24.139N</X>
            <Y>139 35 24.754E</Y>
          </coord>
          <radius>15</radius>
        </CircularArea>
      </shape>
    </pd>
  </pos>
```

```
        </srlrep >
```

7.3.6.2   Standard Roaming Location Report Answer DTD

```
<!-- RLP_SRLRA -->
<!--
RLP V1.0 Document Type Definition


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RLP is an XML language. Typical usage:
    <?xml version="1.0"?>
    <!DOCTYPE rlp_svc_result PUBLIC "-//OMA//DTD {abbrev x.y}//EN"
             "http://www.openmobilealliance.org/DTD/{filename}"
             [<?oma-{ref}-ver supported-versions="{versions}"?>]>
    <roaming_svc_result>
      ...
    </roaming_svc_result>


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http://www.openmobilealliance.org/
-->


<!ENTITY    % extension.param          "">


<!ELEMENT   srlra                      (result, add_info? %extension.param;)>
<!ATTLIST   srlra
            ver CDATA                  #FIXED "1.0.0">
```

Example 7.3.6.2-1: SRLRA in case the handling of corresponding SRLREP was successful

```
<srlra ver="1.0.0" >
  <result resid="0">OK</result>
</srlra>
```

Example 7.3.6.2-2: SRLRA in case the handling of corresponding SRLREP was in error

```
<srlra ver="1.0.0" >
  <result resid="4">UNKNOWN SUBSCRIBER</result>
  <add_info> the subscriber is not registered in the LCS Client</add_info>
</srlra>
```

7.3.7   General Error Message Definition

Error handling mechanism is described in [OMA-MLP].

8. Elements and attributes in DTD

Elements and attributes that are common with [OMA-MLP] are described in [OMA-MLP].

8.1 cc

Description:	
Specifies the country code	
Type:	Element
Format:	Char String
Defined values:	1-3 digits e.g. 355 for Albania
Default value:	-
Example:	<cc>355</cc>
Note:	

8.2 pseudoid

Description:	
Pseudoid is used for backwards compatibility purposes to force the correct privacy action in the VPLMN when receiving network element doesn't support 3GPP Release 6 (for more information see [23.271]. In the 3GPP system this element is specified as being an E.164 number.	
Type:	Element
Format:	Char string
Defined values:	
Default value:	-
Example:	<pseudoid>358401234567</pseudoid>
Note:	-

8.3 cellid

Description:	
Identifies the Cell identity in a GSM network	
Type:	Element
Format:	Char String
Defined values:	0-65535
Default value:	-
Example:	<cellid>546</cellid>
Note:	

8.4 uc_id

Description:	
Identifies the Cell identity within a WCDMA network	
Type:	Element
Format:	Char String
Defined values:	0-268435455

Default value:	-
Example:	<uc_id>228435001</uc_id>
Note:	

8.4.1   status

Description:		
Defines the status of the uc_id element.		
Type:	Attribute	
Format:	Char String	
Defined values:	STALE	The value of uc_id is not may no longer be valid.
	CURRENT	The value of uc_id is valid.
	UNKNOWN	The staus of of uc_id is not known.
Default value:	CURRENT	
Example:	<uc_id status="CURRENT">228435001</uc_id status>	
Note:		

8.5   sac

Description:	
Identifies the service area code within a WCDMA network	
Type:	Element
Format:	Char String
Defined values:	0-65535
Default value:	-
Example:	<sac>548</sac>
Note:	

8.6   client

Description:	
This element holds information regarding Client. To be used for privacy checking procedures.	
Type:	Element
Format:	Char String
Defined values:	-
Default value:	-
Example:	-
Note:	

8.6.1   type

Description:	
The type of the client, i.e. Commercial, internal, emergency or lawful intercept.	
Type:	Attribute

Format:	Char String	
Defined values:	1	Commercial or Value added client
	2	Lawful Intercept client
	3	Emergency Services Client
Default value:	-	
Example:	<client type="1"> <id>SomeId</id> </client>	
Note:		

8.7   clientname

Description:	
The name of the LCS Client stored in the Requesting Location Server. To be used for notification and verification purposes to the target UE.	
Type:	Element
Format:	Char String
Defined values:	-
Default value:	-
Example:	<clientname>MLPFriendFinder</clientname>
Note:	

8.8   id

Description:	
A string defining the name of a registered user performing a location request. In this context the user may either be a Client or a Location Server. In the 3GPP system this element corresponds to an external client id and is specified as being an E.164 number.	
Type:	Element
Format:	Char string
Defined values:	
Default value:	
Example:	<id>358401234567</id>
Note:	

8.9   imsi

Description:	
The International Mobile Subscriber Identity number as specified in 3GPP TS 23.003 and ITU-T E212 Recommendation. This will only be provided and used in roaming cases.	
Type:	Element
Format:	Char string
Defined values:	-
Default value:	-
Example:	<imsi>2344512344565</imsi>
Note:	The IMSI consists of not more than 15 digits.

8.10 lac

Description:	
Identifies the Location Area Code	
Type:	Element
Format:	Char String
Defined values:	1-65535
Default value:	-
Example:	<lac>234</lac>
Note:	

8.11 lmsi

Description:	
A local identity allocated by the VLR to a given subscriber for internal management of data in the VLR as defined in 29.002	
Type:	Element
Format:	Char String
Defined values:	-
Default value:	-
Example:	<lmsi>234</lmsi>
Note:	

8.12 mcc

Description:	
Specifies the mobile country code	
Type:	Element
Format:	Char String
Defined values:	Up to 3 digits, e.g. 234 for the UK
Default value:	-
Example:	<mcc>234</lmcc>
Note:	

8.13 mnc

Description:	
Specifies the mobile network code.	
Type:	Element
Format:	Char String
Defined values:	Up to 3 digits e.g. 15 for Vodafone
Default value:	-
Example:	<mnc>215</mnci>
Note:	

8.14   ndc

Description:	
Specifies the national destination code.	
Type:	Element
Format:	Char String
Defined values:	Variable length depending upon the requirements of the destination country.
Default value:	-
Example:	\<ndc\>215\</ndc\>
Note:	

8.15   nmr_element

Description:	
If NMR is sent then this element shall be repeated 1 to 15 times for each channel for which measurements are available. The measurements shall be ordered by decreasing channel numbers.	
Type:	Element
Format:	(arfcn, bsic, rxlev)
Defined values:	-
Default value:	-
Example:	-
Note:	-

8.15.1   arfcn

Description:	
ARFCN of the channel. This is an integer in the interval (0..1023)	
Type:	Element
Format:	Char string
Defined values:	-
Default value:	-
Example:	\<arfcn\>3\</arfcn\>
Note:	

8.15.2   bsic

Description:	
BSIC of the channel. This is an integer in the interval (0..63)	
Type:	Element
Format:	Char string
Defined values:	-
Default value:	-
Example:	\<bsic\>7\</bsic\>
Note:	

8.15.3   rxlev

Description:	
Measured power of the channel. This is an integer in the interval (0..63). The actual measured power X in dBm is derived from this value N by using the formula X = N-110.	
Type:	Element
Format:	Char string
Defined values:	-
Default value:	-
Example:	<rxlev>12</rxlev>
Note:	

8.16   pce

Description:	
Holds the address to the Privacy Checking Entity of the target subscriber.	
Type:	Element
Format:	Char string
Defined values:	-
Default value:	-
Example:	<pce>http://host:port/pce/</pce>
Note:	-

8.17   poi

Description:	
Privacy Override Inidicator. This element indicates whether the POI flag should be set in the PROVIDE_SUBSCRIBER_LOCATION message to override the privacy checks in the serving node. Details related to this parameter is found in [23.271] Rel 6.	
Type:	Element
Format:	Char string
Defined values:	-
Default value:	
Example:	<poi flag="ON">
Note:	-

8.17.1   flag

Description:		
Flag indicates whether the POI must be set or not.		
Type:	Attribute	
Format:	Char string	
Defined values:	ON	The POI must be set
	OFF	The POI must not be set
Default value:	OFF	

Example:	<poi flag="ON">
Note:	-

8.18 serving_node_action

Description:	
Indicates the action to be taken by the serving node for LCS Notification Invoke procedure depending on the privacy settings of the target subscriber, i.e. whether the subscriber should be notified or if verification from the subscriber is required. Details related to this parameter is found in [23.271] Rel 6.	
Type:	Element
Format:	Char string
Defined values:	-
Default value:	-
Example:	<serving_node_action passive_type="POSTION_IF_ALLOWED active_type="POSITION>
Note:	-

8.18.1 passive_type

Description:		
The action to be used by the serving node for the LCS Notification Invoke procedure if target subscriber is not originator of location request.		
Type:	Attribute	
Format:	Char string	
Defined values:	POSITION_NOT_ALLOWED	Positioning is not allowed.
	POSITION	Positioning allowed without notifying the UE user
	NOTIFY_AND_POSITION	Positioning allowed with notification to the UE user
	POSITION_IF_NOT_DISALLOWED	Positioning requires notification and verification by the UE user; positioning is allowed only if granted by the UE user or if there is no response to the notification
	POSITION_IF_ALLOWED	Positioning requires notification and verification by the UE user; positioning is allowed only if granted by the UE user.
Default value:		
Example:	<serving_node_action passive_type="POSITION_IF_ALLOWED">	
Note:	The "POSITION_NOT_ALLOWED" is needed when active_type is sent and a passive requesttype is not allowed.	

8.18.2 active_type

Description:		
The action to be used by the serving node for the LCS Notification Invoke procedure if target subscriber is originator of location request.		
Type:	Attribute	
Format:	Char string	
Defined values:	POSITION_NOT_ALLOWED	Positioning is not allowed.
	POSITION	Positioning allowed without notifying the UE user

	`NOTIFY_AND_POSITION`	Positioning allowed with notification to the UE user
	`POSITION_IF_NOT_DISALLOWED`	Positioning requires notification and verification by the UE user; positioning is allowed only if granted by the UE user or if there is no response to the notification
	`POSITION_IF_ALLOWED`	Positioning requires notification and verification by the UE user; positioning is allowed only if granted by the UE user.
Default value:	`POSITION_NOT_ALLOWED`	
Example:	<serving_node_action passive_type="POSITION_IF_ALLOWED" active_type="POSITION">	
Note:	-	

8.19 pwd

Description:	
The password for the registered user performing a location request. In this context the user may either be a Client or an Location Server.	
Type:	Element
Format:	Char string
Defined values:	
Default value:	-
Example:	<pwd>the5pwd</pwd>
Note:	-

8.20 serviceid

Description:	
Specifies an id that is used by an entity to identify the service or application that is accessing the network.	
Type:	Element
Format:	Char string
Defined values:	
Default value:	-
Example:	<serviceid>0005</serviceid>
Note:	A service provided by an MLS Client is identified by a Service Identifier. One MLS client may have one or more services. The combination of the MLS client Identifier and the Service Identifier constitutes a unique identification of a service.

8.21 servicetype

Description:	
This element indicates one of the service types as given in 3GPP 22.071 Rel 6.	
Type:	Element
Format:	Char string
Defined values:	
Default value:	-

Example:	<servicetype>0005</servicetype>
Note:	The location server assigns the servicetype based on serviceid and client.
	Following service types are defined according to 3GPP 22.071:
	- Emergency services
	- Emergency alert services
	- Person tracking
	- Fleet management
	- Asset management
	- Traffic congestion reporting
	- Roadside assistance
	- Routing to nearest commercial enterprise
	- Traffic and public transportation information
	- City sightseeing
	- Localized advertising
	- Mobile yellow pages
	- Weather
	- Asset and service finding
	- Gaming
	- Find your friend
	- Dating
	- Chatting
	- Route finding
	- Where-am-I

8.22 sgsnid

Description:	
Uniquely specifies a SGSN within a network.	
Type:	Element
Format:	Char string
Defined values:	In GSM/WCDMA, defined values shall be according to ITU-T E.164.
Default value:	-
Example:	<sgsnid capability="4">1541154871</sgsnid>
Note:	-

8.22.1 capability

Description:	
Defines the LCS capability of the serving node as specified in [23.271] Rel 6.	

Type:	Attribute
Format:	Char string
Defined values:	1 LCS capability set 1: R98 and R99 LCS (pre-Rel'4 LCS)
	2 LCS capability set 2: Rel'4 LCS
	3 LCS capability set 3: Rel'5 LCS
	4 LCS capability set 4: Rel'6 or later LCS
Default value:	-
Example:	<sgsnid capability="4">
	<cc>46</cc>
	<ndc>70</ndc>
	<sgsnno>1541154871</sgsnno >
	</sgsnid >
Note:	

8.23 ta

Description:	
This Radio Access Network element that can arguably be used to offer enhanced positioning. (Timing Advance)	
Type:	Element
Format:	Char String
Defined values:	0-63
Default value:	-
Example:	<ta>3</ta>
Note:	Further Information regarding this element can be found in the relevant GSM Specifications

8.24 requestmode

Description:	
Defines the type of the service that has been requested by the ASP.	
Type:	Element
Format:	Void
Defined values:	-
Default value:	-
Example:	<requestmode type="ACTIVE"/>
Note:	

8.24.1 type

Description:	
Defines the type of the service that has been requested by the ASP	
Type:	Attribute
Format:	Char string
Defined values:	PASSIVE The service is one that is not directly initiated by the user.
	ACTIVE The service is one that the user is initiating personally.

Default value:	PASSIVE
Example:	<requestmode type="ACTIVE" />
Note:	The default value is set to PASSIVE, as this is likely to be the one that is most restrictively defined by the user.

8.25 requestor

Description:	
Location requests from the external Clients may be originated by external entities (i.e. Requestor). The Client should authenticate the Requestor but this is outside the scope of this specification.	
Type:	Element
Format:	Char String
Defined values:	-
Default value:	-
Example:	<requestor type="MSISDN">461011334411</requestor>
Note:	

8.25.1 type

Description:		
Indicates the type of requestor		
Type:	Attribute	
Format:	Char string	
Defined values:	MSISDN	MSISDN number of the requestor
	NAME	A logical name of the requestor
	E-MAIL	E-mail address of the requestor
	URL	An URL of the requestor
	SIPURL	A SIP URL of the requestor
	IMS	An IMS Public Identity of the requestor
Default value:		
Example:	<requestor type="MSISDN">461011334411</requestor>	
Note:		

8.26 vlrid

Description:	
Uniquely specifies a VLR within a network.	
Type:	Element
Format:	Char String
Defined values:	In GSM/WCDMA, defined values shall be according to ITU-T E.164.
Default value:	
Example:	<vlrid capability="4"> <cc>46</cc> <ndc>70</ndc> <vlrno>1541154871</vlrno> </vlrid>

Note:	

8.26.1   capability

Description:	
Defines the LCS capability of the serving node as specified in [23.271] Rel 6.	
Type:	Attribute
Format:	Char string
Defined values:	1 LCS capability set 1: R98 and R99 LCS (pre-Rel'4 LCS)
	2 LCS capability set 2: Rel'4 LCS
	3 LCS capability set 3: Rel'5 LCS
	4 LCS capability set 4: Rel'6 or later LCS
Default value:	-
Example:	`<vlrid capability="4">`
	`<cc>46</cc>`
	`<ndc>70</ndc>`
	`<vlrno>1541154871</vlrno>`
	`</vlrid>`
Note:	

8.27   vlrno

Description:	
Uniquely specifies a VLR within a network.	
Type:	Element
Format:	Char String
Defined values:	In GSM/WCDMA, defined values shall be according to ITU-T E.164.
Default value:	
Example:	`<vlrno>1541154871</vlrno>`
Note:	

8.28   v_ls

Description:	
Address to the visited Location Server, i.e. a location server associated with the network the subscriber is currently roaming in.	
Type:	Element
Format:	Char String
Defined values:	-
Default value:	-
Example:	`<v_ls>http://host:port/LocationServer/</v_ls>`
Note:	

8.29 vmscid

Description:	
Uniquely specifies a VMSC within a network.	
Type:	Element
Format:	Char String
Defined values:	In GSM/WCDMA, defined values shall be according to ITU-T E.164.
Default value:	
Example:	<vmscid capability="4"> <cc>46</cc> <ndc>70</ndc> <vmscno>1541154871</vmscno> </vmscid>
Note:	

8.29.1 capability

Description:	
Defines the LCS capability of the serving node as specified in [23.271] Rel 6.	
Type:	Attribute
Format:	Char string
Defined values:	1 LCS capability set 1: R98 and R99 LCS (pre-Rel'4 LCS)
	2 LCS capability set 2: Rel'4 LCS
	3 LCS capability set 3: Rel'5 LCS
	4 LCS capability set 4: Rel'6 or later LCS
Default value:	-
Example:	<vmscid capability="4"> <cc>46</cc> <ndc>70</ndc> <vmscno>1541154871</vmscno> </vmscid>
Note:	

8.30 vmscno

Description:	
Uniquely specifies a VMSC within a network.	
Type:	Element
Format:	Char String
Defined values:	In GSM/WCDMA, defined values shall be according to ITU-T E.164.
Default value:	
Example:	<vmscno>1541154871</vmscno>
Note:	

8.31 trl_pos

Description:	
Specifies the position of the MS at a triggered location report.	
Type:	Element
Format:	
Defined values:	
Default value:	
Example:	```<tlr_pos trl_trigger="MS_AVAIL"> <msid>4711</msid> <poserr> <result resid="1">SYSTEM FAILURE</result> <time utc_off="0100">20011127104532</time> </poserr> </trl_pos>```
Note:	

8.31.1 trl_trigger

Description:		
Specifies the trigger that initiated the positioning of the MS at a triggered location report.		
Type:	Attribute	
Format:	Char string	
Defined values:	MS_AVAIL	The positioning is triggered by the MS presence notification
	CHANGE_AREA	The positioning is triggered by the mobility event of the location of MS
Default value:		
Example:	`<tlr_pos trl_trigger="MS_AVAIL">`	
Note:		

8.31.2 pos_method

See section 8.34.1

8.32 change_area

Description:	
Specifies the event that initiated the positioning of the MS	
Type:	Element
Format:	
Defined values:	
Default value:	
Example:	```<change_area type="MS_ENTERING"> <target_area> <cc>355</cc> </targer_area> </change_area>```
Note:	

8.32.1 type

Description:	
Specifies the trigger that initiated the positioning of the MS	
Type:	Attribute
Format:	Char string
Defined values:	MS_ENTERING
	MS_LEAVING
	MS_WITHIN_AREA
Default value:	
Example:	`<change_area type="MS_ENTERING">`
Note:	

8.32.2 loc_estimates

Description:	
Specifies whether location estimates is required or not	
Type:	Attribute
Format:	Char string
Defined values:	TRUE
	FALSE
Default value:	
Example:	`<change_area loc_estimates="TRUE">`
Note:	

8.33 target_area

Description:	
Specify the target area in change_area event.	
Type:	Element
Format:	
Defined values:	
Default value:	

Example:	`<target_area>`
	`    <cc>355</cc>`
	`</target_area>`

Note:	

8.34 pos

Description:	
Specifies the position of the MS in an immediate location service response.	
Type:	Element
Format:	
Defined values:	
Default value:	

Example:	```<pos> <msid>4711</msid> <poserr> <result resid="1">SYSTEM FAILURE</result> <time utc_off="0200">20040617143232</time> </poserr> </pos>```
Note:	

8.34.1   pos_method

Description:		
Specifies the positioning method used to obtain the associated location estimate		
Type:	Attribute	
Format:	Char string	
Defined values:	`CELL`	Cell coverage based positioning method
	`OTDOA`	Observed Time Difference of Arrival (OTDOA) positioning method
	`GPS`	Global Positioning System (GPS) based positioning method
	`A-GPS`	Assisted GPS based positioning method
	`E-OTD`	Enhanced Observed Time Difference (E-OTD) positioning method
	`U-TDOA`	Uplink Time Difference of Arrival (U-TDOA) positioning method
	`OTHER`	Any other positioning method
Default value:		
Example:	`<pos pos_method="A-GPS"> …. </pos>`	
Note:		

8.35   eme_pos

Description:	
Specifies the position of the MS in an emergency location service response.	
Type:	Element
Format:	
Defined values:	
Default value:	
Example:	```<eme_pos> <msid>4711</msid> <poserr> <result resid="1">SYSTEM FAILURE</result> <time utc_off="0200">20040617144558</time> </poserr> </eme_pos>```
Note:	

8.35.1   pos_method

See section 8.34.1

8.36 qop_not_met

Description:	
Indication that the requested QoP (Quality of Position) was not met, if needed.	
Type:	Element
Format:	Void
Defined values:	
Default value:	
Example:	
Note:	Only applicable if the request was for best effort class, i.e. a location estimate is returned (rather than an error) although the requested QoP requirement could not be fulfilled.

8.37 alt_acc

Description:	
Accuracy of altitude in meters	
Type:	Element
Format:	Char String
Defined values:	[0-9]+
Default value:	
Example:	`<alt_acc>200</alt_acc>`
Note:	

8.37.1   qop_class

Description:		
Defines the requested degree of adherence by the Location Service to the quality of service parameter specified in the request. In the RLP context this refers to the XML "parent" element, i.e alt_acc.		
Type:	Attribute	
Format:	Char string	
Defined values:	ASSURED	defines the most stringent requirement on the accuracy achieved for a location request. If a location estimate obtained does not fulfil the 'alt_acc' requirements, then it shall be discarded and an appropriate error cause sent.
	BEST_EFFORT	defines the least stringent requirement on the QoP achieved for a location request. If a location estimate obtained does not fulfil the other QoP requirements, it should still be returned but with an appropriate indication that the requested QoP was not met. If no location estimate is obtained, an appropriate error cause is sent..
Default value:		
Example:	`<alt_acc qop_class="BEST_EFFORT">200</alt_acc>`	
Note:	For details see 3GPP TS 23.271, v6.8.0, clause 6.5.1	

8.37.2   h_ls

Description:

Specifies the H-GMLC address as specified in 3GPP TS 23.271	
Type:	Element
Format:	Char string
Defined values:	
Default value:	
Example:	<h_ls>http://host:port/LocationServer/</h_ls>
Note:	-

8.38   supl_message

Description:	
Element which contains a SUPL message defined in [SUPL AD].	
Type:	Element
Format:	Base64
Defined values:	
Default value:	

Example:	`<supl_message>`
	`DFGHDSGHDLGH0546YT045867T5LHGLSDFY76T047`
	`</supl_message>`

Note:	

8.39   supl_session_id

Description:	
Element that identifies a RLP SUPL session between a H-SLP and a V-SLP. Only used in Standard SUPL Roaming Location Immediate Service	
Type:	Element
Format:	Base64
Defined values:	
Default value:	
Example:	`<supl_session_id>ABH98560</supl_session_id>`
Note:	supl_session_id is only used between two SLP and it need not to be identical to the session identifier carried in the supl_message

8.40   lcs_ref

Description:	
The LCS reference number received from Home Location Server. For more information see [23.271]	
Type:	Element
Format:	Char String
Defined values:	Two decimal digits, 00-64
Default value:	-
Example:	<lcs_ref>50</lcs_ref>
Note:	Lcs_ref SHALL be sent in the deferred request and the combined periodical and deferred request cases. The LCS reference number is received as one octet and shall be encoded to the decimal

numbers 00 to 64.

8.41 service attributes

In addition to the service_attributes specified in [OMA-MLP] this specification introduces the recv_role attribute to indicate the role a Location Server should play when receiving a location request over RLP.

8.41.1 recv_role

Description:		
This attribute indicates the role the receiving Location Server should assume when receiving a location request over RLP.		
Type:	Attribute	
Format:	Char String	
Defined values:	HLS	Home Location Server
	VLS	Visited Location Server
Default value:	N/A	
Example:	<srlir ver="1.0.0" recv_role="HLS">…</srlir>	
Note:		

8.42 supported_shapes

Description:	
Defines the shapes that are supported by the Location Server. In an 3GPP environment details related to this parameter can be found in [23.271] and [29.002] Rel 6. Also refer to section 10.2.	
Type:	Element
Format:	Void
Defined values:	-
Default value:	-
Example:	<supported_shapes Point="YES" Polygon="YES" Altitude="YES" />
Note:	If the element is not sent, the receiving Location Server may, according to section 7.6.11.20 in [29.002], assume certain shapes are supported. In other environments other assumption may be defined.

8.42.1 Point

Description:	
Indicates if the shape Point is supported.	
Type:	Attribute
Format:	Char string
Defined values:	NO
	YES
Default value:	NO
Example:	<supported_shapes Point="YES"/>
Note:	

8.42.2   Linestring

Description:	
Indicates if the shape LineString is supported.	
Type:	Attribute
Format:	Char string
Defined values:	NO
	YES
Default value:	NO
Example:	<supported_shapes LineString="YES"/>
Note:	

8.42.3   Polygon

Description:	
Indicates if the shape Polygon is supported.	
Type:	Attribute
Format:	Char string
Defined values:	NO
	YES
Default value:	NO
Example:	<supported_shapes Polygon="YES"/>
Note:	

8.42.4   Box

Description:	
Indicates if the shape Box is supported.	
Type:	Attribute
Format:	Char string
Defined values:	NO
	YES
Default value:	NO
Example:	<supported_shapes Box="YES"/>
Note:	

8.42.5   CircularArea

Description:	
Indicates if the shape CircularArea is supported.	
Type:	Attribute
Format:	Char string
Defined values:	NO
	YES
Default value:	NO

Example:	<supported_shapes CircularArea="YES"/>
Note:	

8.42.6   CircularArcArea

Description:	
Indicates if the shape CircularArcArea is supported.	
Type:	Attribute
Format:	Char string
Defined values:	NO
	YES
Default value:	NO
Example:	<supported_shapes CircularArcArea="YES"/>
Note:	

8.42.7   EllipticalArea

Description:	
Indicates if the shape EllipticalArea is supported.	
Type:	Attribute
Format:	Char string
Defined values:	NO
	YES
Default value:	NO
Example:	<supported_shapes EllipticalArea="YES"/>
Note:	

8.42.8   MultiLineString

Description:	
Indicates if the shape MultiLineString is supported.	
Type:	Attribute
Format:	Char string
Defined values:	NO
	YES
Default value:	NO
Example:	<supported_shapes MultiLineString="YES"/>
Note:	

8.42.9   MultiPoint

Description:	
Indicates if the shape MultiPoint is supported.	
Type:	Attribute
Format:	Char string
Defined values:	NO

	YES
Default value:	NO
Example:	<supported_shapes MultiPoint="YES"/>
Note:	

8.42.10 MultiPolygon

Description:	
Indicates if the shape MultiPolygon is supported.	
Type:	Attribute
Format:	Char string
Defined values:	NO
	YES
Default value:	NO
Example:	<supported_shapes MultiPolygon="YES"/>
Note:	

8.42.11 LinearRing

Description:	
Indicates if the shape LinearRing is supported.	
Type:	Attribute
Format:	Char string
Defined values:	NO
	YES
Default value:	NO
Example:	<supported_shapes LinearRing="YES"/>
Note:	

8.42.12 Altitude

Description:	
Indicates if the element Altitude is supported in combination with the supported shapes.	
Type:	Attribute
Format:	Char string
Defined values:	NO
	YES
Default value:	NO
Example:	<supported_shapes Altitude="YES"/>
Note:	

8.43 primaryscramblingcode

Description:	
Specifies the primary scrambling code WCDMA.	
Type:	Element

Format:	Char String
Defined values:	0-511
Default value:	-
Example:	< primaryscramblingcode >2345</ primaryscramblingcode>
Note:	

8.44 uarfcn_ul

Description:	
Specifies the uplink frequency for WCDMA, FDD.	
Type:	Element
Format:	Char String
Defined values:	0-16383
Default value:	-
Example:	<uarfcn_ul>2345</ uarfcn_ul >
Note:	

8.45 uarfcn_dl

Description:	
Specifies the downlink frequency for WCDMA, FDD.	
Type:	Element
Format:	Char String
Defined values:	0-16383
Default value:	-
Example:	<uarfcn_dl>2345</ uarfcn_dl >
Note:	

8.46 uarfcn_nt

Description:	
Specifies the frequency for WCDMA, TDD.	
Type:	Element
Format:	Char String
Defined values:	0-16383
Default value:	-
Example:	<uarfcn_nt>2345</ uarfcn_nt >
Note:	

8.47 nid

Description:	
Specifies the network identity for CDMA.	

Type:	Element
Format:	Char String
Defined values:	0-65535
Default value:	-
Example:	<nid>2345</ nid >
Note:	

8.48   sid

Description:	
Specifies the system identity for CDMA.	
Type:	Element
Format:	Char String
Defined values:	0-32767
Default value:	-
Example:	<sid>2345</ sid >
Note:	

8.49   base_id

Description:	
Specifies the base station identity for CDMA.	
Type:	Element
Format:	Char String
Defined values:	0-65535
Default value:	-
Example:	<base_id>2345</ base_id >
Note:	

8.50   base_lat

Description:	
Specifies the Base Station Latitude for CDMA.	
Type:	Element
Format:	Char String
Defined values:	0-41943035
Default value:	-
Example:	<base_lat>2345678</ base_lat >
Note:	

8.51   base_long

Description:	
Specifies the Base Station Longitude for CDMA.	
Type:	Element
Format:	Char String

Defined values:	0-8388607
Default value:	-
Example:	<base_long>234567</ base_long >
Note:	

8.52 ref_pn

Description:	
Specifies the Base Station PN Code for CDMA.	
Type:	Element
Format:	Char String
Defined values:	0-511
Default value:	-
Example:	<ref_pn>2345</ ref_pn >
Note:	

8.53 sgsnno

Description:	
Uniquely specifies a SGSN within a network.	
Type:	Element
Format:	Char String
Defined values:	In GSM/WCDMA, defined values shall be according to ITU-T E.164.
Default value:	
Example:	<sgsnno>1541154871</sgsnno>
Note:	

9. Result codes

9.1   Result codes

Result codes are defined in [OMA-MLP]. Result codes specific to inter-Location Server interface are given in the table below.

Resid	Slogan	Description
208	TARGET MOVED TO NEW MSC/SGSN	The triggered Location Request has been aborted due to that target has moved to another MSC/SGSN. This result code SHALL only be used towards The Home Location Server. Restrictions: - This code SHALL only be used in RLP.

10. Adaptation to 3GPP LCS: (informative)

10.1 Version mapping between 3GPP TS23.271 and this specification

The following table shows the version number of this specification fully conforming to a certain version of [TS23.271], i.e. the version of this specification for the correct reference in a certain version of the 3GPP specification.

3GPP TS23.271 version number	Conforming version number of this specification
Release 6	Version 1.0

10.2 The terminology mapping table with 3GPP LCS Specifications

A terminology mapping can be found in [OMA-MLP].

The following is a list of the terms in RLP used differently from the ones defined for 3GPP:

RLP	3GPP	Notes
Point	Ellipsoid Point	Altitude element not supported
CircularArea	Ellipsoid point with uncertainty Circle	Altitude element not supported
EllipticalArea	Ellipsoid point with uncertainty Ellipse	Altitude element not supported
Polygon	Polygon	Altitude element not supported
Point	Ellipsoid point with altitude	Altitude element supported
EllipticalArea	Ellipsoid point with altitude and uncertainty Ellipsoid	Altitude element supported
CircularArcArea	Ellipsoid Arc	Altitude element not supported

10.3 The corresponding terms used for the location procedures in 3GPP LCS Definition

The following is a list of terms defined in RLP corresponding to the 3GPP LCS definition in TS23.271 for the location procedures.

Location procedures defined in 3GPP(23.271)		Services defined in RLP
Circuit Switched Mobile Terminating Location Request CS-MT-LR	LCS Service Request	Standard Roaming Location Immediate Request
	LCS Service Response	Standard Roaming Location Immediate Answer
CS-MT-LR without HLR Query - applicable to North America Emergency Calls only	LCS Service Request	Not applicable to RLP
	LCS Service Response	Not applicable to RLP
Packet Switched Mobile Terminating Location Request PS-MT-LR	LCS Service Request	Standard Roaming Location Immediate Request
	LCS Service Response	Standard Roaming Location Immediate Answer

Location procedures defined in 3GPP(23.271)		Services defined in RLP
Network Induced Location Request NI-LR	Location Information	Not applicable to RLP
Packet Switched Network Induced Location Request PS-NI-LR	Location Information	Not applicable to RLP
Mobile Terminating Deferred Location Request	LCS Service Request	Triggered Roaming Location Reporting Request
	LCS Service Response(Provide Subscriber Location ack)	Triggered Roaming Location Reporting Answer
	LCS Service Response(Subscriber Location Report)	Triggered Roaming Location Report
Combined Periodical/Deferred Mobile Terminating Location Request	LCS Service Request	Periodical reporting not supported over RLP.
	LCS Service Response(Provide Subscriber Location ack)	Periodical reporting not supported over RLP.
	LCS Service Response(Subscriber Location Report)	Periodical reporting not supported over RLP.
Cancellation of a Deferred Location Request	LCS Cancel Service Request	Triggered Roaming Location Reporting Stop Request
	LCS Cancel Service Response	Triggered Roaming Location Reporting Stop Answer
Mobile Originating Location Request, Circuit Switched CS-MO-LR	MO-LR Location Information	Standard Roaming Location Report
	MO-LR Location Information Ack	Standard Roaming Location Report Answer
Mobile Originating Location Request, Packet Switched PS-MO-LR	MO-LR Location Information	Standard Roaming Location Report
	MO-LR Location Information Ack	Standard Roaming Location Report Answer

10.4 Error Mapping (informative)

Error mapping can be found in [OMA-MLP]

11. HTTP Mapping

This section describes how to use RLP over the HTTP transport mechanism using "HTTP/1.1".

HTTP is a request/response protocol involving a server and a client. In the context of RLP, the client may be referred to as the Requesting Location Server and the server the Home or Visiting Location Server (GMLC/MPC). For more information about HTTP, refer to [RFC2616] and http://www.w3.org.

A Location Server MAY provide two socket ports for operation, one for encryption with SSL/TLS and one without. The reason for having one insecure port is that encryption can consume resources, and if the Location Servers are in a secure domain there might not be a need for encryption. Location Servers residing in an insecure domain, i.e. on the Internet, may use the secure port to ensure the security and privacy of the location information.

For further information about SSL/TLS see [RFC2246].

Two port numbers out of the range of dynamic and/or Private IANA Ports range have been selected and proposed as standard ports for location servers implementing RLP. These ports may later be replaced by ports registered with IANA (Internet Assigned Numbers Authority, see [IANA]). The two port numbers are:

oma-rlp	59518/tcp	OMA Roaming Location Protocol
oma-rlp	59518/udp	OMA Roaming Location Protocol
oma-rlp-s	59519/tcp	OMA Roaming Location Protocol Secure
oma-rlp-s	59519/udp	OMA Roaming Location Protocol Secure

A Location Server MAY choose to introduce any other socket based or HTTP transparent technology for secure transfers. Any such technology SHALL be provided over a different port than the two mentioned above.

11.1 Location Services using HTTP

An Requesting Location Server SHALL request a Location Service by issuing an HTTP POST request towards the Home or Visiting Location Server. For more information about HTTP POST, see [RFC2616]. The request line syntax is shown below.

```
Request-line:           POST SP host SP HTTP/1.1 CRLF
```

The request MUST include the entity-header Content-length field as part of the request. The message body of the request SHALL include the XML formatted request and SHALL have the length specified by the Requesting Location Server in the Content-length field.

If the request is a deferred request (triggered or periodic) the result SHALL be delivered to the Requesting Location Server through an HTTP POST operation issued by the Visiting or Home Location Server.

All Location Services are invoked by sending a request using HTTP POST to a certain URI. An example of an URI is shown below.

http://host:port/LocationQueryService/

The response to the invocation of a Location Service SHALL be returned using an HTTP response.

If the Requesting Location Server requests standard location of asynchronous mode, triggered or periodic reporting of location, the Location Server SHALL return the report by performing an HTTP POST operation towards the Requesting Location Server. The Requesting Location Server must specify the URI that the answer should be posted to. This is done in the service request or by having it in a Requesting Location Server profile that can be stored in the Location Server.

The report SHALL be included in the message body and the Content-length entity SHALL be set to the length of the answer.

When an Requesting Location Server attempts to invoke a service request that is not defined in this specification, the Location Server SHALL return a General Error Message (GEM) in a HTTP '404' error reponse:

```
Status-Line: HTTP/1.1 SP 404 SP Not Found CRLF
```

11.2 Request and Response Encapsulation

A request SHALL have a header part and a body part. A response MAY have a header part and SHALL have a body part. To be able to make a location request with a single XML document the header and the body are encapsulated in the same service initiation DTD. The context header holds the authentication and authorization data pertinent to a particular location request. The body part is described in section 7.3.2 – 7.3.5.

11.2.1 Inter-Location Server Service Initiation DTD

```
<!-- RLP_SVC_INIT -->
<!--
RLP V1.0 Document Type Definition


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MLP is an XML language. Typical usage:
   <?xml version="1.0"?>
   <!DOCTYPE rlp_svc_init PUBLIC "-//OMA//DTD {abbrev x.y}//EN"
             "http://www.openmobilealliance.org/DTD/{filename}"
             [<?oma-{ref}-ver supported-versions="{versions}"?>]>
   <rlp_svc_init>
      ...
   </rlp_svc_init>


Terms and conditions of use are available from the
Open Mobile Alliance Ltd. web site at
http://www.openmobilealliance.org/
-->
<!ENTITY   % extension.message       "">

<!ELEMENT   rlp_svc_init                (rlp_hdr, (srlir | trlrr | trlrsr | erlir | ssrlir | ssrp
                                        %extension.message;))>
<!ATTLIST   rlp_svc_init
            ver CDATA                 #FIXED "1.0.0">

<!ENTITY   % rlp_ctxt.dtd             SYSTEM "RLP_CTXT_100.DTD">
%rlp_ctxt.dtd;
<!ENTITY   % mlp_id.dtd               SYSTEM "MLP_ID_320.DTD">
%mlp_id.dtd;
<!ENTITY   % mlp_func.dtd             SYSTEM "RLP_FUNC_100.DTD">
%mlp_func.dtd;
<!ENTITY   % mlp_qop.dtd              SYSTEM "MLP_QOP_320.DTD">
%mlp_qop.dtd;
<!ENTITY   % rlp_loc.dtd              SYSTEM "RLP_LOC_100.DTD">
%rlp_loc.dtd;
<!ENTITY   % mlp_shape.dtd            SYSTEM "MLP_SHAPE_320.DTD">
%mlp_shape.dtd;
<!ENTITY   % rlp_net.dtd              SYSTEM "RLP_NET_100.DTD">
%rlp_net.dtd;
<!ENTITY   % rlp_hdr.dtd              SYSTEM "RLP_HDR_100.DTD">
%rlp_hdr.dtd;
<!ENTITY   % rlp_srlir.dtd            SYSTEM "RLP_SRLIR_100.DTD">
%rlp_srlir.dtd;
<!ENTITY    % rlp_trlrr.dtd           SYSTEM "RLP_TRLRR_100.DTD">
%rlp_trlrr.dtd;
<!ENTITY    % rlp_trlrsr.dtd          SYSTEM "RLP_TRLRSR_100.DTD">
%rlp_trlrsr.dtd;
<!ENTITY    % rlp_erlir.dtd           SYSTEM "RLP_ERLIR_100.DTD">
```

```
%rlp_erlir.dtd;
<!ENTITY    % rlp_ssrlir.dtd            SYSTEM "RLP_SSRLIR_100.DTD">
%rlp_ssrlir.dtd;
<!ENTITY    % rlp_ssrp.dtd              SYSTEM "RLP_SSRP_100.DTD">
%rlp_ssrp.dtd;
<!ENTITY    % rlp_supl.dtd              SYSTEM "RLP_SUPL_100.DTD">
%rlp_supl.dtd;
```

Example 1

```
<?xml version="1.0" ?>
<!DOCTYPE rlp_svc_init SYSTEM "RLP_SVC_INIT_100.DTD">
<rlp_svc_init ver="1.0.0">
  <rlp_hdr ver="1.0.0">
    ...
  </rlp_hdr>
  <srlir ver="1.0.0">
    ...
  </srlir>
</rlp_svc_init>
```

11.2.2   Inter-Location Server Service Result DTD

```
<!-- RLP_SVC_RESULT -->
<!--
RLP V1.0 Document Type Definition

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RLP is an XML language. Typical usage:
   <?xml version="1.0"?>
   <!DOCTYPE rlp_svc_result PUBLIC "-//OMA//DTD {abbrev x.y}//EN"
            "http://www.openmobilealliance.org/DTD/{filename}"
            [<?oma-{ref}-ver supported-versions="{versions}"?>]>
   <rlp_svc_result>
     ...
   </rlp_svc_result}>


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http://www.openmobilealliance.org/
-->

<!ENTITY    % extension.message        "">
<!ELEMENT   rlp_svc_result             (rlp_hdr?, (srlia | srlirep | trlra | trlrep | trlrsa |
                                       srlrep | srlra | erlia | ssrlia | ssrp
                                       %extension.message;)))>


<!ATTLIST   rlp_svc_result
            ver CDATA                  #FIXED "1.0.0">

<!ENTITY    % rlp_ctxt.dtd             SYSTEM "RLP_CTXT_100.DTD">
%rlp_ctxt.dtd;
<!ENTITY    % mlp_id.dtd               SYSTEM "MLP_ID_320.DTD">
%mlp_id.dtd;
<!ENTITY    % mlp_func.dtd             SYSTEM "RLP_FUNC_100.DTD">
%mlp_func.dtd;
<!ENTITY    % mlp_qop.dtd              SYSTEM "MLP_QOP_320.DTD">
%mlp_qop.dtd;
```

```
<!ENTITY   % rlp_loc.dtd              SYSTEM "RLP_LOC_100.DTD">
%rlp_loc.dtd;
<!ENTITY   % mlp_shape.dtd            SYSTEM "MLP_SHAPE_320.DTD">
%mlp_shape.dtd;
<!ENTITY   % rlp_net.dtd              SYSTEM "RLP_NET_100.DTD">
%rlp_net.dtd;
<!ENTITY   % rlp_hdr.dtd              SYSTEM "RLP_HDR_100.DTD">
%rlp_hdr.dtd;
<!ENTITY   % rlp_srlia.dtd            SYSTEM "RLP_SRLIA_100.DTD">
%rlp_srlia.dtd;
<!ENTITY   % rlp_srlirep.dtd          SYSTEM "RLP_SRLIREP_100.DTD">
%rlp_srlirep.dtd;
<!ENTITY   % rlp_trlra.dtd            SYSTEM "RLP_TRLRA_100.DTD">
%rlp_trlra.dtd;
<!ENTITY   % rlp_trlrep.dtd           SYSTEM "RLP_TRLREP_100.DTD">
%rlp_trlrep.dtd;
<!ENTITY   % rlp_trlrsa.dtd           SYSTEM "RLP_TRLRSA_100.DTD">
%rlp_trlrsa.dtd;
<!ENTITY   % rlp_srlrep.dtd           SYSTEM "RLP_SRLREP_100.DTD">
%rlp_srlrep.dtd;
<!ENTITY   % rlp_srlra.dtd            SYSTEM "RLP_SRLRA_100.DTD">
%rlp_srlra.dtd;
<!ENTITY   % rlp_erlia.dtd            SYSTEM "RLP_ERLIA_100.DTD">
%rlp_erlia.dtd;
<!ENTITY   % rlp_ssrlia.dtd           SYSTEM "RLP_SSRLIA_100.DTD">
%rlp_ssrlia.dtd;
<!ENTITY   % rlp_ssrp.dtd             SYSTEM "RLP_SSRP_100.DTD">
%rlp_ssrp.dtd;
<!ENTITY   % rlp_supl.dtd             SYSTEM "RLP_SUPL_100.DTD">
%rlp_supl.dtd;
```

Example 1

```
<?xml version="1.0" ?>
<!DOCTYPE rlp_svc_result SYSTEM "RLP_SVC_RESULT_100.DTD">
<rlp_svc_result ver="1.0.0">
  <srlia ver="1.0.0">
    ...
  </srlia>
</rlp_svc_result>
```

Appendix A.   Static Conformance Requirements   (Normative)

The notation used in this appendix is specified in [IOPPROC].

A.1   Server side requirements (Normative)

A.1.1   General Requirements

Item	Function	Reference	Status	Requirement
RLP-A-S-001	Parsing of DTDs	6.1	M	
RLP-A-S-002	Invalid values	6.3	M	
RLP-A-S-003	Support of EPSPG 4326	6.5	M	
RLP-A-S-004	Version handling	6.2	M	
RLP-A-S-005	Quality of Position	6.4	O	
RLP-A-S-006	Target Identities, support of MSISDN	6.7	M	
RLP-A-S-007	Priority	6.6	O	

A.1.2   Inter-Location Server Service Initiation DTD

Item	Function	Reference	Status	Requirement
RLP-B-S-001	Inter-Location Server Service Initiation	11.2.1	M	RLP-B-S-002 AND RLP-B-S-003
RLP-B-S-002	RLP Header	11.2.1	M	
RLP-B-S-003	Standard Roaming Location Immediate Request	11.2.1	M	RLP-C-S-003
RLP-B-S-004	Triggered Roaming Location Reporting Request	11.2.1	O	RLP-C-S-005 AND RLP-C-S-006 AND RLP-C-S-007
RLP-B-S-005	Triggered Roaming Location Reporting Stop Request	11.2.1	O	RLP-C-S-007 RLP-F-S-002
RLP-B-S-006	Emergency Roaming Location Immediate Request	11.2.1	O	RLP-C-S-008
RLP-B-S-007	Standard SUPL Roaming Location Immediate Request	11.2.1	O	RLP-C-S-009
RLP-B-S-008	Standard SUPL Roaming Position	11.2.1	O	RLP-C-S-010
RLP-B-S-009	Extension Message	11.2.1	O	

A.1.3   Inter-Location Server Service Result DTD

Item	Function	Reference	Status	Requirement
RLP-C-S-001	Inter-Location Server Service Result	11.2.2	M	RLP-C-S-002 AND RLP-C-S-003
RLP-C-S-002	RLP Header	11.2.2	O	
RLP-C-S-003	Standard Roaming Location Immediate	11.2.2	M	

Item	Function	Reference	Status	Requirement
	Answer			
RLP-C-S-004	Standard Roaming Location Immediate Report	11.2.2	O	RLP-F-S-002
RLP-C-S-005	Triggered Roaming Location Reporting Answer	11.2.2	O	RLP-C-S-006 RLP-F-S-002
RLP-C-S-006	Triggered Roaming Location Report	11.2.2	O	RLP-C-S-005 RLP-F-S-002
RLP-C-S-007	Triggered Roaming Location Reporting Stop Answer	11.2.2	O	RLP-F-S-002
RLP-C-S-008	Standard Roaming Location Report	11.2.2	O	
RLP-C-S-009	Standard Roaming Location Report Answer	11.2.2	O	
RLP-C-S-010	Emergency Roaming Location Immediate Answer	11.2.2	O	
RLP-C-S-011	Standard SUPL Roaming Location Immediate Answer	11.2.2	O	
RLP-C-S-012	Standard SUPL Roaming Position	11.2.2	O	RLP-B-S-008
RLP-C-S-013	Extension Message	11.2.2	M	

A.1.4   Roaming Header

Item	Function	Reference	Status	Requirement
RLP-D-S-001	locationserver	7.3.1.1	M	
RLP-D-S-002	client	7.3.1.1	M	
RLP-D-S-003	serving_node_action	7.3.1.1	M	
RLP-D-S-004	net_param	7.3.1.1	O	
RLP-D-S-005	supported_shapes	7.3.1.1	M	

A.1.5   Standard Roaming Location Immediate Request

Item	Function	Reference	Status	Requirement
RLP-E-S-001	msid	7.3.2.1.1	M	
RLP-E-S-002	codeword	7.3.2.1.1	O	
RLP-E-S-003	eqop	7.3.2.1.1	O	
RLP-E-S-004	geo_info	7.3.2.1.1	O	
RLP-E-S-005	loc_type	7.3.2.1.1	O	
RLP-E-S-006	prio	7.3.2.1.1	O	
RLP-E-S-007	pushaddr	7.3.2.1.1	O	
RLP-E-S-008	Extension parameters	7.3.2.1.1	O	

A.1.6   Standard Roaming Location Immediate Answer

Item	Function	Reference	Status	Requirement
RLP-F-S-001	pos	7.3.2.1.2	M	

Item	Function	Reference	Status	Requirement
RLP-F-S-002	req_id	7.3.2.1.2	O	
RLP-F-S-003	result	7.3.2.1.2	M	
RLP-F-S-004	add_info	7.3.2.1.2	O	
RLP-F-S-005	Extension parameters	7.3.2.1.2	O	

A.1.7 Standard Roaming Location Immediate Report

Item	Function	Reference	Status	Requirement
RLP-G-S-001	req_id	7.3.2.1.3	M	
RLP-G-S-002	pos	7.3.2.1.3	M	
RLP-G-S-003	Extension parameters	7.3.2.1.3	O	

A.1.8 Triggered Roaming Location Reporting Request

Item	Function	Reference	Status	Requirement
RLP-H-S-001	msid	7.3.3.1.1	M	
RLP-H-S-002	codeword	7.3.3.1.1	O	
RLP-H-S-003	interval	7.3.3.1.1	O	
RLP-H-S-004	start_time	7.3.3.1.1	O	
RLP-H-S-005	stop_time	7.3.3.1.1	O	
RLP-H-S-006	duration	7.3.3.1.1	O	
RLP-H-S-007	tlrr_event	7.3.3.1.1	M	
RLP-H-S-008	qop	7.3.3.1.1	O	
RLP-H-S-009	geo info	7.3.3.1.1	O	
RLP-H-S-010	pushaddr	7.3.3.1.1	O	
RLP-H-S-011	loc type	7.3.3.1.1	O	
RLP-H-S-012	prio	7.3.3.1.1	O	
RLP-H-S-013	Extension parameters	7.3.3.1.1	O	
RLP-H-S-014	lcs_ref	7.3.3.1.1	O	

A.1.9 Triggered Roaming Location Reporting Answer

Item	Function	Reference	Status	Requirement
RLP-I-S-001	req_id	7.3.3.1.2	M	
RLP-I-S-002	lcs_ref	7.3.3.1.2	O	
RLP-I-S-003	result	7.3.3.1.2	M	
RLP-I-S-004	add_info	7.3.3.1.2	O	

A.1.10 Triggered Roaming Location Report

Item	Function	Reference	Status	Requirement
RLP-J-S-001	req_id	7.3.3.1.3	M	
RLP-J-S-002	lcs_ref	7.3.3.1.3	O	
RLP-J-S-003	trl_pos	7.3.3.1.3	M	
RLP-J-S-004	time_remaining	7.3.3.1.3	O	
RLP-J-S-005	Extension parameters	7.3.3.1.3	O	

A.1.11 Triggered Roaming Location Reporting Stop Request

Item	Function	Reference	Status	Requirement
RLP-K-S-001	req_id	7.3.3.1.4	M	
RLP-K-S-002	Extension parameters	7.3.3.1.4	O	

Item	Function	Reference	Status	Requirement
RLP-K-S-003	lcs_ref	7.3.3.1.4	O	

A.1.12   Triggered Roaming Location Reporting Stop Answer

Item	Function	Reference	Status	Requirement
RLP-L-S-001	req_id	7.3.3.1.5	M	
RLP-L-S-002	result	7.3.3.1.5	M	
RLP-L-S-003	add_info	7.3.3.1.5	O	
RLP-L-S-004	Extension parameters	7.3.3.1.5	O	

A.1.13   Emergency Roaming Location Immediate Request

Item	Function	Reference	Status	Requirement
RLP-M-S-001	msid	7.3.4.1.1	M	
RLP-M-S-002	esrd	7.3.4.1.1	O	
RLP-M-S-003	esrk	7.3.4.1.1	O	
RLP-M-S-004	eqop	7.3.4.1.1	O	
RLP-M-S-005	geo_info	7.3.4.1.1	O	
RLP-M-S-006	loc_type	7.3.4.1.1	O	
RLP-M-S-007	Extension parameters	7.3.4.1.1	O	

A.1.14   Emergency Roaming Location Immediate Answer

Item	Function	Reference	Status	Requirement
RLP-N-S-001	eme_pos	7.3.4.1.2	M	
RLP-N-S-002	result	7.3.4.1.2	M	
RLP-N-S-003	add_info	7.3.4.1.2	O	
RLP-N-S-004	Extension parameters	7.3.4.1.2	O	

A.1.15   Support for Identity Elements

Item	Function	Reference	Status	Requirement
RLP-O-S-001	msid	[OMA-MLP] 5.2.2.1	M	
RLP-O-S-002	codeword	[OMA-MLP] 5.2.2.1	O	
RLP-O-S-003	esrd	[OMA-MLP] 5.2.2.1	O	
RLP-O-S-004	esrk	[OMA-MLP] 5.2.2.1	O	
RLP-O-S-005	session	[OMA-MLP] 5.2.2.1	O	

A.1.16   Support for Function Elements

Item	Function	Reference	Status	Requirement
RLP-P-S-001	eme_event	7.2.2	O	
RLP-P-S-002	tlrr_event	7.2.2	O	
RLP-P-S-003	ms_action	7.2.2	O	
RLP-P-S-004	interval	7.2.2	O	
RLP-P-S-005	loc_type	7.2.2	O	
RLP-P-S-006	prio	7.2.2	O	
RLP-P-S-007	pushaddr	7.2.2	O	

Item	Function	Reference	Status	Requirement
RLP-P-S-008	req_id	7.2.2	O	
RLP-P-S-009	lcs_ref	7.2.2	O	
RLP-P-S-010	start_time	7.2.2	O	
RLP-P-S-011	stop_time	7.2.2	O	
RLP-P-S-012	url	7.2.2	O	
RLP-P-S-013	time_remaining	7.2.2	O	

A.1.17   Support for Location Elements

Item	Function	Reference	Status	Requirement
RLP-Q-S-001	pos	7.2.3	M	
RLP-Q-S-002	eme_pos	7.2.3	O	
RLP-Q-S-003	pd	7.2.3	M	
RLP-Q-S-004	poserr	7.2.3	M	
RLP-Q-S-005	time	7.2.3	M	
RLP-Q-S-006	alt	7.2.3	O	
RLP-Q-S-007	alt_unc	7.2.3	O	
RLP-Q-S-008	direction	7.2.3	O	
RLP-Q-S-009	speed	7.2.3	O	
RLP-Q-S-010	lev_conf	7.2.3	O	
RLP-Q-S-011	qop_not_met	7.2.3	O	
RLP-Q-S-012	geo_info	7.2.3	O	

A.1.18   Support for Result Elements

Item	Function	Reference	Status	Requirement
RLP-R-S-001	add_info	[OMA-MLP] 5.2.2.4	O	
RLP-R-S-002	result	[OMA-MLP] 5.2.2.4	M	

A.1.19   Support for Shape Elements

Item	Function	Reference	Status	Requirement
RLP-S-S-S01	shape	[OMA-MLP] 5.2.2.5	M	RLP-S-S-S02 OR RLP-S-S-S03 OR RLP-S-S-S04 OR RLP-S-S-S05 OR RLP-S-S-S06 OR RLP-S-S-S07 OR RLP-S-S-S08 OR RLP-S-S-S09 OR RLP-S-S-S10 OR RLP-S-S-S11
RLP-S-S-S02	Point	[OMA-MLP] 5.2.2.5	O	
RLP-S-S-S03	LineString	[OMA-MLP] 5.2.2.5	O	
RLP-S-S-S04	Box	[OMA-MLP] 5.2.2.5	O	
RLP-S-S-S05	LinearRing	[OMA-MLP]	O	

Item	Function	Reference	Status	Requirement
		5.2.2.5		
RLP-S-S-S06	Polygon	[OMA-MLP] 5.2.2.5	O	
RLP-S-S-S07	CircularArcArea	[OMA-MLP] 5.2.2.5	O	
RLP-S-S-S08	EllipticalArea	[OMA-MLP] 5.2.2.5	O	
RLP-S-S-S09	MultiLineString	[OMA-MLP] 5.2.2.5	O	
RLP-S-S-S10	MultiPoint	[OMA-MLP] 5.2.2.5	O	
RLP-S-S-S11	MultiPolygon	[OMA-MLP] 5.2.2.5	O	

A.1.20   Support for Quality of Position Elements

Item	Function	Reference	Status	Requirement
RLP-T-S-001	eqop	[OMA-MLP] 5.2.2.6	O	
RLP-T-S-002	qop	[OMA-MLP] 5.2.2.6	O	
RLP-T-S-003	ll_acc	[OMA-MLP] 5.2.2.6	O	
RLP-T-S-004	hor_acc	[OMA-MLP] 5.2.2.6	O	
RLP-T-S-005	max_loc_age	[OMA-MLP] 5.2.2.6	O	
RLP-T-S-006	resp_req	[OMA-MLP] 5.2.2.6	O	
RLP-T-S-007	resp_timer	[OMA-MLP] 5.2.2.6	O	
RLP-T-S-07	alt_acc	[OMA-MLP] 5.2.2.6	O	

A.1.21   Support for Network Parameter Elements

Item	Function	Reference	Status	Requirement
RLP-U-S-001	net_param	7.2.7	O	
RLP-U-S-002	gsm_net_param	7.2.7	O	RLP-U-S-005
RLP-U-S-003	wcdma_net_param	7.2.7	O	RLP-U-S-005
RLP-U-S-004	cdma_net_param	7.2.7	O	
RLP-U-S-005	neid	7.2.7	O	RLP-U-S-006 OR RLP-U-S-008
RLP-U-S-006	vmcscid	7.2.7	O	
RLP-U-S-007	vlrid	7.2.7	O	
RLP-U-S-008	sgsnid	7.2.7	O	
RLP-U-S-009	imsi	7.2.7	O	
RLP-U-S-010	h_ls	7.2.7	O	
RLP-U-S-011	v_ls	7.2.7	O	

Item	Function	Reference	Status	Requirement
RLP-U-S-012	pce	7.2.7	O	

A.1.22　Support for Roaming Context and Privacy Elements

Item	Function	Reference	Status	Requirement
RLP-V-S-001	client	7.2.8	M	
RLP-V-S-002	id	7.2.8	M	
RLP-V-S-003	requestor	7.2.8	O	
RLP-V-S-004	pwd	7.2.8	O	
RLP-V-S-005	serviceid	7.2.8	O	
RLP-V-S-006	requestmode	7.2.8	M	
RLP-V-S-007	locationserver	7.2.8	M	
RLP-V-S-008	clientname	7.2.8	O	
RLP-V-S-009	serving_node_action	7.2.8	M	
RLP-V-S-010	poi	7.2.8	M	
RLP-V-S-011	pseudoid	7.2.8	M	
RLP-V-S-012	servicetype	7.2.8	M	
RLP-V-S-013	supported_shapes	7.2.8	O	

A.1.23　Service attributes

Item	Function	Reference	Status	Requirement
RLP-W-S-001	res_type	[OMA-MLP] 5.3.85	M	
RLP-W-S-002	ver	[OMA-MLP] 5.3.85	M	
RLP-W-S-003	recv_role	8.41	M	

A.1.24　Standard SUPL Roaming

Item	Function	Reference	Status	Requirement
RLP-X-S-001	supl_session_id	7.3.5	M	
RLP-X-S-002	supl_message	7.3.5	M	
RLP-X-S-003	result	7.3.5	M	
RLP-X-S-004	add_info	7.3.5	O	
RLP-X-S-005	Extension parameters	7.3.5	O	

A.1.25　Standard Roaming Location Report Answer

Item	Function	Reference	Status	Requirement
RLP-Y-S-001	result	7.3.6.1.2	M	
RLP-Y-S-002	add_info	7.3.6.1.2	O	
RLP-Y-S-003	Extension parameters	7.3.6.1.2	O	

A.1.26　Standard Roaming Location Report

Item	Function	Reference	Status	Requirement
RLP-Z-S-001	pos	7.3.6.1.1	M	
RLP-Z-S-002	Extension parameters	7.3.6.1.1	O	

A.1.27　Transport mechanisms

Item	Function	Reference	Status	Requirement
RLP-AA-S-001	Support of HTTP	7.1	M	

Item	Function	Reference	Status	Requirement
	mapping			
RLP-AA-S-002	Support of port 59518	11	O	
RLP-AA-S-003	Support of port 59519	11	O	
RLP-AA-S-004	Support of transfer over other ports	11	O	

A.1.28 Services

Item	Function	Reference	Status	Requirement
RLP-BB-S-001	Standard Roaming Location Immediate Service	7.3.2	M	RLP-B-S-003 AND RLP-C-S-003 AND RLP-C-S-004
RLP-BB-S-002	Triggered Roaming Location Reporting Service	7.3.3	O	RLP-B-S-004 AND RLP-B-S-005 AND RLP-C-S-005 AND RLP-C-S-006 AND RLP-C-S-007
RLP-BB-S-002	Emergency Roaming Location Immediate Service	7.3.4	O	RLP-B-S-006 AND RLP-C-S-010
RLP-BB-S-003	Standard SUPL Roaming Location Immediate Service	7.3.5	O	RLP-B-S-007 AND RLP-B-S-008 AND RLP-C-S-011 AND RLP-C-S-012
RLP-BB-S-004	Standard Roaming Location Reporting Service	7.3.6	O	RLP-C-S-008 AND RLP-C-S-009

A.2   Client side requirements

A.2.1   General Requirements

Item	Function	Reference	Status	Requirement
RLP-A-C-001	Parsing of DTDs	6.1	M	
RLP-A-C-002	Invalid values	6.3	M	
RLP-A-C-003	Support of ESPG 4326	6.5	M	
RLP-A-C-004	Version handling	6.2	M	
RLP-A-C-005	Quality of Position	6.4	O	
RLP-A-C-006	Target Identities, support of MSISDN	6.7	M	
RLP-A-C-007	Priority	6.6	O	

A.2.2   Inter-Location Server Service Initiation DTD

Item	Function	Reference	Status	Requirement
RLP-B-C-001	Inter-Location Server Service Initiation	11.2.1	M	RLP-B-C-002 AND RLP-B-C-003
RLP-B-C-002	RLP Header	11.2.1	M	
RLP-B-C-003	Standard Roaming Location Immediate Request	11.2.1	M	RLP-C-C-003
RLP-B-C-004	Triggered Roaming Location Reporting	11.2.1	O	RLP-C-C-005 AND

Item	Function	Reference	Status	Requirement
	Request			RLP-C-C-006 AND RLP-C-C-007
RLP-B-C-005	Triggered Roaming Location Reporting Stop Request	11.2.1	O	RLP-C-C-007
RLP-B-C-006	Emergency Roaming Location Immediate Request	11.2.1	O	RLP-C-C-008
RLP-B-C-007	Standard SUPL Roaming Location Immediate Request	11.2.1	O	RLP-C-C-009
RLP-B-C-008	Standard SUPL Roaming Location Position	11.2.1	O	RLP-C-C-010
RLP-B-C-010	Extension Message	11.2.1	O	

A.2.3   Inter-Location Server Service Result DTD

Item	Function	Reference	Status	Requirement
RLP-C-C-001	Inter-Location Server Service Result	11.2.2	M	RLP-C-C-002 AND RLP-C-C-003
RLP-C-C-002	RLP Header	11.2.2	O	
RLP-C-C-003	Standard Roaming Location Immediate Answer	11.2.2	M	
RLP-C-C-004	Standard Roaming Location Immediate Report	11.2.2	O	RLP-F-C-002
RLP-C-C-005	Triggered Roaming Location Reporting Answer	11.2.2	O	RLP-C-C-006
RLP-C-C-006	Triggered Roaming Location Report	11.2.2	O	RLP-C-C-005
RLP-C-C-007	Triggered Roaming Location Reporting Stop Answer	11.2.2	O	
RLP-C-C-008	Standard Roaming Location Report	11.2.2	O	
RLP-C-C-009	Standard Roaming Location Report Answer	11.2.2	O	
RLP-C-C-010	Emergency Roaming Location Immediate Answer	11.2.2	O	
RLP-C-C-011	Standard SUPL Roaming Location Immediate Answer	11.2.2	O	
RLP-C-C-012	Standard SUPL Roaming Position	11.2.2	O	RLP-B-C-008
RLP-C-C-013	Extension Message	11.2.2	O	

A.2.4　Roaming Header

Item	Function	Reference	Status	Requirement
RLP-D-C-001	locationserver	7.3.1.1	M	
RLP-D-C-002	client	7.3.1.1	O	
RLP-D-C-003	serving_node_action	7.3.1.1	M	
RLP-D-C-004	net_param	7.3.1.1	O	
RLP-D-C-005	supported_shapes	7.3.1.1	M	

A.2.5　Standard Roaming Location Immediate Request

Item	Function	Reference	Status	Requirement
RLP-E-C-001	msid	7.3.2.1.1	M	
RLP-E-C-002	codeword	7.3.2.1.1	O	
RLP-E-C-003	eqop	7.3.2.1.1	O	
RLP-E-C-004	geo_info	7.3.2.1.1	O	
RLP-E-C-005	loc_type	7.3.2.1.1	O	
RLP-E-C-006	prio	7.3.2.1.1	O	
RLP-E-C-007	pushaddr	7.3.2.1.1	O	
RLP-E-C-008	Extension parameters	7.3.2.1.1	O	

A.2.6　Standard Roaming Location Immediate Answer

Item	Function	Reference	Status	Requirement
RLP-F-C-001	pos	7.3.2.1.2	M	
RLP-F-C-002	req_id	7.3.2.1.2	O	
RLP-F-C-003	result	7.3.2.1.2	M	
RLP-F-C-004	add_info	7.3.2.1.2	O	
RLP-F-C-005	Extension parameters	7.3.2.1.2	O	

A.2.7　Standard Roaming Location Immediate Report

Item	Function	Reference	Status	Requirement
RLP-G-C-001	req_id	7.3.2.1.3	O	
RLP-G-C-002	pos	7.3.2.1.3	M	
RLP-G-C-003	Extension parameters	7.3.2.1.3	O	

A.2.8　Triggered Roaming Location Reporting Request

Item	Function	Reference	Status	Requirement
RLP-H-C-001	msid	7.3.3.1.1	M	
RLP-H-C-002	codeword	7.3.3.1.1	O	
RLP-H-C-003	interval	7.3.3.1.1	O	
RLP-H-C-004	start_time	7.3.3.1.1	O	
RLP-H-C-005	stop_time	7.3.3.1.1	O	
RLP-H-C-006	duration	7.3.3.1.1	O	
RLP-H-C-007	tlrr_event	7.3.3.1.1	M	
RLP-H-C-008	qop	7.3.3.1.1	O	
RLP-H-C-009	geo info	7.3.3.1.1	O	
RLP-H-C-010	pushaddr	7.3.3.1.1	O	
RLP-H-C-011	loc type	7.3.3.1.1	O	
RLP-H-C-012	prio	7.3.3.1.1	O	

Item	Function	Reference	Status	Requirement
RLP-H-C-013	Extension parameters	7.3.3.1.1	O	
RLP-H-C-014	lcs_ref	7.3.3.1.1	O	

A.2.9 Triggered Roaming Location Reporting Answer

Item	Function	Reference	Status	Requirement
RLP-I-C-001	req_id	7.3.3.1.2	M	
RLP-I-C-002	lcs_ref	7.3.3.1.2	O	
RLP-I-C-003	result	7.3.3.1.2	M	
RLP-I-C-004	add_info	7.3.3.1.2	O	

A.2.10 Triggered Roaming Location Report

Item	Function	Reference	Status	Requirement
RLP-J-C-001	req_id	7.3.3.1.3	M	
RLP-J-C-002	lcs_ref	7.3.3.1.3	O	
RLP-J-C-003	trl_pos	7.3.3.1.3	M	
RLP-J-C-004	time_remaining	7.3.3.1.3	O	
RLP-J-C-005	Extension parameters	7.3.3.1.3	O	

A.2.11 Triggered Roaming Location Reporting Stop Request

Item	Function	Reference	Status	Requirement
RLP-K-C-001	req_id	7.3.3.1.4	M	
RLP-K-C-002	Extension parameters	7.3.3.1.4	O	
RLP-K-C-003	lcs_ref	7.3.3.1.4	O	

A.2.12 Triggered Roaming Location Reporting Stop Answer

Item	Function	Reference	Status	Requirement
RLP-L-C-001	req_id	7.3.3.1.5	M	
RLP-L-C-002	result	7.3.3.1.5	M	
RLP-L-C-003	add_info	7.3.3.1.5	O	
RLP-L-C-004	Extension parameters	7.3.3.1.5	O	

A.2.13 Emergency Roaming Location Immediate Request

Item	Function	Reference	Status	Requirement
RLP-M-C-001	msid	7.3.4.1.1	M	
RLP-M-C-002	esrd	7.3.4.1.1	O	
RLP-M-C-003	esrk	7.3.4.1.1	O	
RLP-M-C-004	eqop	7.3.4.1.1	O	
RLP-M-C-005	geo_info	7.3.4.1.1	O	
RLP-M-C-006	loc_type	7.3.4.1.1	O	
RLP-M-C-007	Extension parameters	7.3.4.1.1	O	

A.2.14 Emergency Roaming Location Immediate Answer

Item	Function	Reference	Status	Requirement
RLP-N-C-001	eme_pos	7.3.4.1.2	M	
RLP-N-C-002	result	7.3.4.1.2	M	
RLP-N-C-003	add_info	7.3.4.1.2	O	
RLP-N-C-004	Extension parameters	7.3.4.1.2	O	

A.2.15 Support for Identity Elements

Item	Function	Reference	Status	Requirement
RLP-O-C-001	msid	[OMA-MLP] 5.2.2.1	M	
RLP-O-C-002	codeword	[OMA-MLP] 5.2.2.1	O	
RLP-O-C-003	esrd	[OMA-MLP] 5.2.2.1	O	
RLP-O-C-004	esrk	[OMA-MLP] 5.2.2.1	O	
RLP-O-C-005	session	[OMA-MLP] 5.2.2.1	O	

A.2.16 Support for Function Elements

Item	Function	Reference	Status	Requirement
RLP-P-C-001	eme_event	7.2.2	O	
RLP-P-C-002	tlrr_event	7.2.2	O	
RLP-P-C-003	ms_action	7.2.2	O	
RLP-P-C-004	interval	7.2.2	O	
RLP-P-C-005	loc_type	7.2.2	O	
RLP-P-C-006	prio	7.2.2	O	
RLP-P-C-007	pushaddr	7.2.2	O	
RLP-P-C-008	req_id	7.2.2	O	
RLP-P-C-009	lcs_ref	7.2.2	O	
RLP-P-C-010	start_time	7.2.2	O	
RLP-P-C-011	stop_time	7.2.2	O	
RLP-P-C-012	url	7.2.2	O	
RLP-P-C-013	time_remaining	7.2.2	O	

A.2.17 Support for Location Elements

Item	Function	Reference	Status	Requirement
RLP-Q-C-001	pos	7.2.3	M	
RLP-Q-C-002	eme_pos	7.2.3	O	
RLP-Q-C-003	pd	7.2.3	M	
RLP-Q-C-004	poserr	7.2.3	M	
RLP-Q-C-005	time	7.2.3	M	
RLP-Q-C-006	alt	7.2.3	O	
RLP-Q-C-007	alt_unc	7.2.3	O	
RLP-Q-C-008	direction	7.2.3	O	
RLP-Q-C-009	speed	7.2.3	O	
RLP-Q-C-010	lev_conf	7.2.3	O	
RLP-Q-C-011	qop_not_met	7.2.3		
RLP-Q-C-012	geo_info	7.2.3	O	

A.2.18 Support for Result Elements

Item	Function	Reference	Status	Requirement
RLP-R-C-001	add_info	[OMA-MLP] 5.2.2.4	O	

Item	Function	Reference	Status	Requirement
RLP-R-C-002	result	[OMA-MLP] 5.2.2.4	M	

A.2.19   Support for Shape Elements

Item	Function	Reference	Status	Requirement
RLP-S-C-001	shape	[OMA-MLP] 5.2.2.5	M	RLP-S-C-002 OR RLP-S-C-003 OR RLP-S-C-004 OR RLP-S-C-005 OR RLP-S-C-006 OR RLP-S-C-007 OR RLP-S-C-008 OR RLP-S-C-009 OR RLP-S-C-010 OR RLP-S-C-011
RLP-S-C-002	Point	[OMA-MLP] 5.2.2.5	O	
RLP-S-C-003	LineString	[OMA-MLP] 5.2.2.5	O	
RLP-S-C-004	Box	[OMA-MLP] 5.2.2.5	O	
RLP-S-S-005	LinearRing	[OMA-MLP] 5.2.2.5	O	
RLP-S-C-006	Polygon	[OMA-MLP] 5.2.2.5	O	
RLP-S-C-007	CircularArcArea	[OMA-MLP] 5.2.2.5	O	
RLP-S-C-008	EllipticalArea	[OMA-MLP] 5.2.2.5	O	
RLP-S-C-009	MultiLineString	[OMA-0LP] 5.2.2.5	O	
RLP-S-C-010	MultiPoint	[OMA-0LP] 5.2.2.5	O	
RLP-S-C-011	MultiPolygon	[OMA-0LP] 5.2.2.5	O	

A.2.20   Support for Quality of Position Elements

Item	Function	Reference	Status	Requirement
RLP-T-C-001	eqop	[OMA-0LP] 5.2.2.6	O	
RLP-T-C-002	qop	[OMA-0LP] 5.2.2.6	O	
RLP-T-C-003	ll_acc	[OMA-0LP] 5.2.2.6	O	
RLP-T-C-004	hor_acc	[OMA-0LP] 5.2.2.6	O	
RLP-T-C-005	max_loc_age	[OMA-0LP] 5.2.2.6	O	
RLP-T-C-006	resp_req	[OMA-0LP] 5.2.2.6	O	

Item	Function	Reference	Status	Requirement
RLP-T-C-007	resp_timer	[OMA-0LP] 5.2.2.6	O	
RLP-T-C-007	alt_acc	[OMA-0LP] 5.2.2.6	O	

A.2.21   Support for Network Parameter Elements

Item	Function	Reference	Status	Requirement
RLP-U-C-001	net_param	7.2.7	O	
RLP-U-C-002	gsm_net_param	7.2.7	O	RLP-U-C-005
RLP-U-C-003	wcdma_net_param	7.2.7	O	RLP-U-C-005
RLP-U-C-004	cdma_net_param	7.2.7	O	
RLP-U-C-005	neid		O	RLP-U-C-006 OR RLP-U-C-008
RLP-U-C-006	vmcscid	7.2.7	O	
RLP-U-C-007	vlrid	7.2.7	O	
RLP-U-C-008	sgsnid	7.2.7	O	
RLP-U-C-009	imsi	7.2.7	O	
RLP-U-C-010	h_ls	7.2.7	O	
RLP-U-C-011	v_ls	7.2.7	O	
RLP-U-C-012	pce	7.2.7	O	

A.2.22   Support for Roaming Context and Privacy Elements

Item	Function	Reference	Status	Requirement
RLP-V-C-001	client	7.2.8	M	
RLP-V-C-002	id	7.2.8	M	
RLP-V-C-003	requestor	7.2.8	O	
RLP-V-C-004	pwd	7.2.8	O	
RLP-V-C-005	serviceid	7.2.8	O	
RLP-V-C-006	requestmode	7.2.8	M	
RLP-V-C-007	locationserver	7.2.8	M	
RLP-V-C-008	clientname	7.2.8	O	
RLP-V-C-009	serving_node_action	7.2.8	M	
RLP-V-C-010	poi	7.2.8	M	
RLP-V-C-011	pseudoid	7.2.8	M	
RLP-V-C-012	servicetype	7.2.8	M	
RLP-V-C-013	supported_shapes	7.2.8	O	

A.2.23   Service attributes

Item	Function	Reference	Status	Requirement
RLP-W-C-001	res_type	[OMA-MLP] 5.3.85	O	
RLP-W-C-002	ver	[OMA-MLP] 5.3.85	M	
RLP-W-C-003	recv_role	8.41	M	

A.2.24 Standard SUPL Roaming

Item	Function	Reference	Status	Requirement

Item	Function	Reference	Status	Requirement
RLP-X-C-001	supl_session_id	7.3.5	M	
RLP-X-C-002	supl_message	7.3.5	M	
RLP-X-C-003	result	7.3.5	M	
RLP-X-C-004	add_info	7.3.5	O	
RLP-X-C-005	Extension parameters	7.3.5	O	

A.2.24   Standard Roaming Location Report Answer

Item	Function	Reference	Status	Requirement
RLP-Y-C-001	result	7.3.6.1.2	M	
RLP-Y-C-002	add_info	7.3.6.1.2	O	
RLP-Y-C-003	Extension parameters	7.3.6.1.2	O	

A.2.25   Standard Roaming Location Report

Item	Function	Reference	Status	Requirement
RLP-Z-C-001	pos	7.3.6.1.1	M	
RLP-Z-C-002	Extension parameters	7.3.6.1.1	O	

A.2.26   Transport mechanisms

Item	Function	Reference	Status	Requirement
RLP-AA-C-001	Support of HTTP mapping	7.1	M	
RLP-AA-C-002	Support of port 59518	11	O	
RLP-AA-C-003	Support of port 59519	11	O	
RLP-AA-C-004	Support of transfer over other ports	11	O	

A.2.27   Services

Item	Function	Reference	Status	Requirement
RLP-BB-C-001	Standard Roaming Location Immediate Service	7.3.2	M	RLP-B-C-003 AND RLP-C-C-003 AND RLP-C-C-004
RLP-BB-C-002	Triggered Roaming Location Reporting Service	7.3.3	O	RLP-B-C-004 AND RLP-B-C-005 AND RLP-C-C-005 AND RLP-C-C-006 AND RLP-C-C-007
RLP-BB-C-002	Emergency Roaming Location Immediate Service	7.3.4	O	RLP-B-C-006 AND RLP-C-C-010
RLP-BB-C-003	Standard SUPL Roaming Location Immediate Service	7.3.5	O	RLP-B-C-007 AND RLP-B-C-008 AND RLP-C-C-011 AND RLP-C-C-012
RLP-BB-C-004	Standard Roaming Location Reporting Service	7.3.6	O	RLP-C-C-008 AND RLP-C-C-009

Appendix B.   Change History   (Informative)

Type of Change	Date	Section	Description
Class 0	20021105		The initial version of this document., based on LIF TS 102 v0.0.1
	20021114		Output from OMA#2 Kona meeting
	20030109		Output from telco 20030109
	20030122		Edtitorial changes and document identity change
	20030205		Approved at OMA#3 as basline
	20030313		Approved as baseline at OMA Location WG meeting in London
	20030414		Changes according to teleconference 20030403.
	20030916		Applied the following Berlin Approved CR's: • OMA-LOC-2003-0141-CR_id • OM A-LOC-2003-0142-CR_pseudoid • OMA-LOC-2003-0143-CR_requestmode • OMA-LOC-2003-0144-CR-_rlp_svc_init • OMA-LOC-2003-0145-CR_servicetype • OMA-LOC-2003-0146-CR_examples
Class 3	20031001		Editorial Changes on DTD Elements, Element Descriptions and update XML examples to reflect new applied CR's
Class 1	20031001		Applied Approved CR's: • OMA-LOC-2003-0165_CR_missing_servicetype_declaration • OMA-LOC-2003-0179R02-CR_ Static Conformance Requirements • OMA-LOC-2003-0180R01- Introduction of recv_role attribute • OMA-LOC-2003-0181R01-CR_Normative General Behaviour
Class 1	20031115		Applied Approved CR's: ▪ OMA-LOC-2003-0226R01-CR_Normative_General_Behaviour ▪ OMA-LOC-2003-0227R01-CR_Static_Conformance_Requirements
Class 1	20040712		Applied the Approved CRs: • OMA-LOC-2004-0206-LATE-CR_RLP • OMA-LOC-2004-0145r04-CR_Triggered_Roaming_Location_ Reporting_in_RLP
Class 1 and 3	20040709		Applied the Approved CRs • OMA-LOC-2004-0203R02-CR_positioning_method_in_RLP • OMA-LOC-2004-0204R02-CR_QoS_Class_for_accuracy_in_RLP • OMA-LOC-2004-0239R01-LATE-CR_HGMLC_address_RLP Applied to the 2004 template.
Class 1 and 3	20041018		Remove invalid link to /useterms in the DTDs Applied the Approved CRs • OMA-LOC-2004-0197R01-CR_serviceCoverage_in_RLP • OMA-LOC-2004-0223-CR_requestmode_bugfix_in_RLP • OMA-LOC-2004-0227R04-CR_RLP_SUPL_Roaming_Service • OMA-LOC-2004-0295-Subsequent-CR-H-GMLC_address_in_RLP

Type of Change	Date	Section	Description
Class 1	20041129		Applied the Approved CRs • OMA-LOC-2004-0298R01-Cancellation_Triggered_Location_Service_RLP • OMA-LOC-2004-0317-CR_RLP_LocType • OMA-LOC-2004-0320R01-LATE-CR_RLP_Actions • OMA-LOC-2004-0365-CR_RLP_correctionToPrivacyActionDTD • OMA-LOC-2004-0318R01-CR_RLP_AddElement_LCS_ref • OMA-LOC-2004-0326R03-CR_RLP_ introducing value_MO-LR_for trl_trigger • OMA-LOC-2004-0370-CR_RLP_addMissingTerms • OMA-LOC-2004-0371-CR_RLP_finalise_ScopeAndIntroduction • OMA-LOC-2004-0372-CR_RLP_cleanUp • OMA-LOC-2004-0369R01-CR_RLP_add_WCDMA_NetParameters • OMA-LOC-2004-0319R03-CR_RLP_adding_supported--shapes
Class 1	20041217		Applied the Approved CRs • OMA-LOC-2004-0471-CR_RLP_TS_MO_LR • 374r02-CR_Cancellation_Triggered_Location_Request_RLP
Class 1	20050114		Applied the Approved CR: • OMA-LOC-2004-0459R01-CR_RLP_TS_populate_SCR
Class 1 and 3	20050203		Move to the OMA TS 2004 template Applied the Approved CR: • OMA-LOC-2005-0082-CR_RLP_TS_RemoveEmptyParagraph • OMA-LOC-2005-0027R02-Standard-Roaming-Report-Service • OMA-LOC-2005-0077-CR_RLP_TS_moreNetworkParameters • OMA-LOC-2005-0068-CR_RLP_TS_capabilitySet • OMA-LOC-2005-0094-CR_RLP_TS_FormatForSUPL_elements • OMA-LOC-2005-0051-CR_RLP_TS_SURL_message • OMA-LOC-2005-0049-CR_RLP_TS_DTD_version_cleanup • OMA-LOC-2005-0048-CR_RLP_TS_cleanup • OMA-LOC-2005-0060-CR_RLP_TS_CS-MT-LR_without_HLR_Query • OMA-LOC-2005-0059-CR_RLP_TS_update_SCR Fix DTD Syntax errors
Class 1	20050309		Move to the OMA TS 2005 template Applied the Approved CR: • OMA-LOC-2005-118R01-Late-CR_RLP_TS-HTTP-Mapping • OMA-LOC-2005-0127R01-CR_RLP_Definition –of-NMR • OMA-LOC-2005-0153-LATE-CR_RLP_TS_Target_ Identities • OMA-LOC-2005-0139R03-LATE-Lcs_ref-in-RLP

Type of Change	Date	Section	Description
Class 1 and 3	20050504		Applied changes based on proposed resolution in MLS 1.0 CONRR
Class 1 and 3	20050512	All	Applied changes based on proposed resolution in MLS 1.0 CONRR Applied the Approved CR: • OMA-LOC-2005-0223R01-IC-ResolutionMLS_CONRR_ID070 • OMA-LOC-2005-0227R01-IC-ResolutionMLS_CONRR_ID098_099 • OMA-LOC-2005-0238-IC-ResolutionMLS_CONRR_ID046 • OMA-LOC-2005-0240-ResolutionMLS_CONRR_ID071 • OMA-LOC-2005-0222R01-ResolutionMLS_CONRR_ID054-055 • OMA-LOC-2005-0239-ResolutionMLS_CONRR_ID090&091 • OMA-LOC-2005-0235R01-ResolutionMLS_CONRR_ID065 • OMA-LOC-2005-0234R01-ResolutionMLS_CONRR_ID83 • OMA-LOC-2005-0233R01-ResolutionMLS_CONRR_ID51_52 • OMA-LOC-2005-0230R01-ResolutionMLS_CONRR_ID035_36_37_38 • OMA-LOC-2005-0237R02-IC-ResolutionMLS_CONRR_ID033 • OMA-LOC-2005-0226R02-ResolutionMLS_CONRR_ID018_019
Candidate Version: OMA-TS-RLP-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