

ETSI TS 102 164 V1.3.1 (2006-09)

Technical Specification

Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Emergency Location Protocols

[OMA-TS-MLP-V3_2-20051124-C]



Reference

RTS/TISPAN-03071-EMTEL

Keywords

Emergency, location, mobile, protocol,
endorsement

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN).

The present document:

- Identifies the clauses of the OMA-TS-MLP-V3_2 [1] that are applicable to the emergency location information services.
- Does not identify how the mobile network operator determines location.
- Does not identify how the location information is passed between the emergency operator and the appropriate emergency authority.
- Does not describe how the emergency call is established.

Figure 1 shows diagrammatically the scope of the present document.

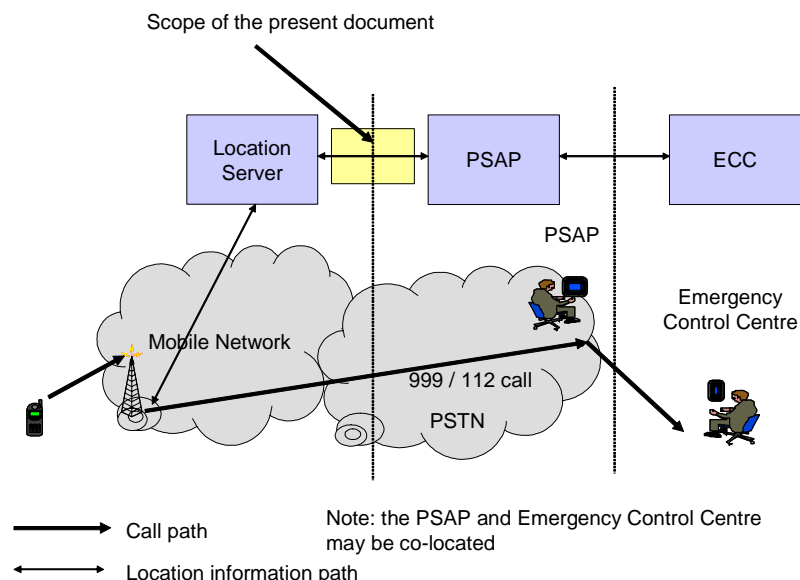


Figure 1: Scope of the present document

Please see OMA-TS-MLP-V3_2 Specification [1] full OMA MLP specification at http://www.openmobilealliance.org/release_program/index.html for further details and information.

Note that in this implementation of the OMA MLP protocol:

- ALL compulsory OMA elements are compulsory.
- Some optional OMA elements are compulsory.

1 Scope

The present document specifies the protocol that is used by the local emergency operator to obtain the location information that is registered on the operator location server, see figure 1. It endorses and defines a profile of the OMA specification OMA-TS-MLP-V3_2-20051124-C [1] that are applicable to the emergency location information services.

NOTE: The LI Forum has been affiliated and its work subsumed into the OMA; the LIF TS 101 Specification has been succeeded by OMA-TS-MLP-V3_2.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication and/or edition number or version number) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

Referenced documents which are not found to be publicly available in the expected location might be found at <http://docbox.etsi.org/Reference>.

NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

[1] OMA TS-MLP-V3-2-20051124-C: "Mobile Location Protocol 3.2".

NOTE: Available at http://www.openmobilealliance.org/release_program/index.html

[2] EPSG Geodesy Parameters: "EPSG Geodetic Parameter Data Set Version 6.3".

NOTE: Available at <http://www.epsg.org/>.

[3] NICC Specification ND1013:2002/11: "Emergency Location Information Interface".

NOTE: Available at: <http://www.nicc.org.uk/>.

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

emergency location immediate service: service used for querying of the location of a mobile subscriber that has initiated an emergency call

NOTE: The response to this service is required immediately (within a set time).

emergency location reporting service: service that is used when the wireless network automatically initiates the positioning at an emergency call

NOTE: The position and related data is then sent to the emergency application from the location server. Which application and its address are defined in the location server.

local emergency operator: designated emergency operator that can use the a Mobile Location Protocol operated by a location-based application to request MS location information from an operator location server

operator location server: location server with in the PLMN that, in the event of an emergency situation, a designated emergency operator can use the a Mobile Location Protocol (MLP) to request MS location information from.

NOTE: An Operator Location Server may be a GMLC/MPC or other entity in the wireless network.

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

EPSPG	European Petroleum Survey Group
FFS	For Further Study
ISO	International Standards Organization
LCS	Location Service
LIF	Location Interoperability Forum
MLP	Mobile Location Protocol
MS	Mobile Station
MSISDN	Mobile Subscriber ISDN
OMA	Open Mobile Alliance

4 Name and address data

The OMA MLP [1] standard does not include name and address type fields but does include an extension mechanism to allow additional elements to be added.

A name and address extension is included in this specification to enable fixed line operators to adopt the same protocol as mobile operators to provide location information to emergency services:

- Potential data sources to populate these fields include:
 - installation address for fixed lines phones;
 - addresses "reverse geocoded" from latitude, longitude position of mobile handset;
 - location of pico cells within buildings.

Note that the referenced extension (and therefore the structure and elements within this extension) could be different for different countries, different operators and different emergency services.

EXAMPLE: If required the name and address fields and field formats could be defined differently to suit different countries, different operators or different emergency services.

NOTE: Liaison to include name and address data into OMA MLP was sent to OMA by TISPAN Plenary #10.

Endorsement notice

The present document endorses OMA TS-MLP-V3-2-20051124-C, the contents of which apply together with the addition of the modifications being covered herein.

Global modifications to OMA TS-MLP-V3-2-20051124-C

The present document is a profile of MLP and is based on the interface defined by the OMA. The following table identifies clauses within the OMA specification, and clarifies which options are applicable to a emergency location information service.

The present document identifies the minimum requirement. Elements not explicitly mentioned in this clause should be considered to be "Not required". Additional optional elements may be implemented on a bilateral basis.

NOTE: In the following table, the term: "is required to be supported" is equivalent to "shall contain". However, it is understood that the definition of "is required to be supported" provides more clarity and detail than the definition of "shall contain" as the definition is captured from clause 0.7.2 of the NICC Specification ND1013:2002/11.

Endorsed Profiles	Reference OMA MLP [1] section	Remarks
MLP structure	5.1.1	
MLP extension mechanism	5.1.2	
Transport Protocol Layer Definitions	5.2.1	See also HTTP mapping endorsement (5.6).
Identity Element Definitions	5.2.2.1	The following elements are required to be supported, and where an element is a construction, which elements are required to be supported within the construction: <ul style="list-style-type: none"> • msid • msids <ul style="list-style-type: none"> ○ msid+ One msid element shall be included in an msids element)
Location Element Definitions	5.2.2.3	The following elements are required to be supported, and where an element is a construction, which elements are required to be supported within the construction: <ul style="list-style-type: none"> • eme_pos <ul style="list-style-type: none"> ○ msid ○ pd ○ poserr • pd <ul style="list-style-type: none"> ○ time ○ shape ○ lev_conf • poserr <ul style="list-style-type: none"> ○ result ○ time • time • lev_conf
Shape Element Definitions	5.2.2.5	All shapes defined by [1] shall be supported. Depending from national regulation the type of shapes nationally required can be restricted.
Context Element Definitions	5.2.2.8	The following elements are required to be supported, and where an element is a construction, which elements are required to be supported within the construction: <ul style="list-style-type: none"> • Client <ul style="list-style-type: none"> ○ Id ○ Pwd ○ Requestmode • Id • Pwd • Requestmode • servicetype
Header DTD	5.2.3.1	The following elements are required to be supported, and where an element is a construction, which elements are required to be supported within the construction: <ul style="list-style-type: none"> • hdr <ul style="list-style-type: none"> ○ client
Emergency Location Immediate Service	5.2.3.3	Required
Emergency Location Immediate Request DTD	5.2.3.3.1	The " eme_lir " shall contain the following element: <ul style="list-style-type: none"> • msids
Emergency Location Immediate Answer DTD	5.2.3.3.2	The " eme_lia " shall contain the following elements: <ul style="list-style-type: none"> • eme_pos+ • caller_location (optional) <i>ed: not specified by [1]</i> or <ul style="list-style-type: none"> • result
Emergency Location Reporting Service	5.2.3.5	Required
Emergency Location Report DTD	5.2.3.5.1	The " emerep " shall contain the following elements: <ul style="list-style-type: none"> • eme_event • eme_pos • caller_location (optional) <i>ed: not specified by [1]</i>

Endorsed Profiles	Reference OMA MLP [1] section	Remarks
General Error Message Definition	5.2.3.7	The " gem " shall contain the following elements: <ul style="list-style-type: none"> • result
angle	5.3.5	Required
angularUnit	5.3.6	Required
EllipticalArea	5.3.20	Required
eme_event	5.3.21	Required
eme_trigger	5.3.21.1	Required
eme_pos	5.3.22	Required
id	5.3.26	Required
lev_conf	5.3.32	Required
msid	5.3.42	Required
Type	5.3.42.1	Type shall be "MSISDN"
enc	5.3.42.2	Enc shall be "ASC"
pwd	5.3.58	Required
result	5.3.65	Required
semiMajor	5.3.66	Required
semiMinor	5.3.67	Required
requestmode	5.3.69	Required
type	5.3.69.1	Type shall be "PASSIVE"
time	5.3.78	Required
X	5.3.85	Required
Y	5.3.86	Required
ver	5.3.88.2	Required
Result codes	5.4.1	Required
HTTP mapping	5.6	The lif-mlp-s (9211/tcp) port or the lif-mlp (9210/tcp) port shall be used. Location client shall use separate HTTP posts and NOT use pipelining for time critical requests to avoid that one request delays other requests. Location Server shall process and respond to the separate HTTP posts out of order.
Service Initiation DTD	5.6.2.1	The " svc_init " shall contain the following elements: hdr eme_lir
Service Result DTD	9.2.2	The " svc "_result shall contain the following elements: eme_lia emerep

Result codes

This table defines the result codes that indicate the result of the request or individual positioning.

The codes are divided in ranges:

0 to 99	Location server specific errors
100 to 199	Request specific errors
200 to 299	Network specific errors
300 to 499	Reserved for future use
500 to 599	Vendor specific errors
600 to 699	MLS Client specific errors

NOTE: For privacy reasons it might be needed to not report certain specific errors. In this case it is up to the implementation or configuration of the location server which errors will be reported.

For the detailed codes chapter 5.4 of OMA MLP V3.2 [1] is referred.

"Add the following clause:"

5.1.3.1 MLP extension

This clause details an optional MLP extension. This provides a simple mechanism to transport name information, as described in [1]. Furthermore it can be used to handle a freeform textual description of location, see [3].

Support of this extension is not mandatory.

NOTE: Liaison to include name and address data into OMA MLP was sent to OMA by TISPAN Plenary #10.

5.1.3.1.1 Data type definition

```

<!--pno-isc_MLP_extension -->

<!ENTITY      % extension.param      'caller_location?>

<!ELEMENT     caller_location        (customer_name?, Address_line1?, Address_line2?,
Address_line3?, Address_line4?, Address_line5?, Address_line6?, postcode?)>
<!ELEMENT     customer_name          (#PCDATA)>
<!ELEMENT     Address_line1          (#PCDATA)>
<!ELEMENT     Address_line2          (#PCDATA)>
<!ELEMENT     Address_line3          (#PCDATA)>
<!ELEMENT     Address_line4          (#PCDATA)>
<!ELEMENT     Address_line5          (#PCDATA)>
<!ELEMENT     Address_line6          (#PCDATA)>
<!ELEMENT     postcode               (#PCDATA)>

```

Elements and attributes

Customer_name

Description:	
Specifies the name of the customer associated with the geographic info	
Format:	Char String
Defined values:	-
Default value:	-
Example:	<customer_name>Mr Benn</customer_name>

Address_line

Description:	
Specifies a line of text providing a freeform textual description of the associated location information	
Format:	Char String
Defined values:	-
Default value:	-
Example 1:	<line1>52 Festive Road</line1>
Example 2:	<line1>Heathrow Terminal 4 Check In Desks</line1>
NOTE: No formatting of the address should be assumed i.e. a full postal address could be defined using one line element, or split over several lines using the line1, line2, line3 etc elements.	

Postcode

Description:	
Specifies the postcode associated with the location information	
Format:	Char String
Defined values:	-
Default value:	-
Example:	<postcode>SW1 1AA</postcode>
NOTE:	Can be used in the case that the postcode is known (e.g. in-building, pico cell coverage).

Examples of usage

For examples of the use of this MLP profile and extensions, see annex ZA.

Annex ZA (informative): Example messages

This annex provides example message formats associated with the defined sub-set of the OMA specification described in the present document.

ZA.1 Emergency location immediate request

<?xml version="1.0" ?>	
<!DOCTYPE svc_init SYSTEM "MLP_SVC_INIT_300.DTD">	
<svc_init ver="3.2.0">	Service initiation for MLP Version 3.2.0
<hdr ver="3.2.0">	Header for MLP Version 3.2.0
<client>	Who is requesting this location fix
<id>emergency operator</id>	Emergency operator registered user name for login
<pwd>bigcrash</pwd>	Emergency operator password for login
<requestmode type="PASSIVE"/>	Its not the ACTIVE user requesting a location fix
</client>	
</hdr>	
<eme_lir ver="3.2.0">	Emergency Location Immediate Request for MLP Version 3.2.0
<msids>	Identifier of device to be located
<msid type="MSISDN">447770123123</msid>	Identifier is a MSISDN formatted as Country Code + Phone Number (GSM/3GPP should conform to TS 123 003)
</msids>	
</eme_lir>	
</svc_init>	

ZA.2 Emergency location immediate answer - valid response

<?xml version="1.0" ?>	
<!DOCTYPE svc_result SYSTEM "MLP_SVC_RESULT_300.DTD" [<!ENTITY pno-isc_MLP_extension 'pno-isc_MLP_extension.dtd'>]>	
<svc_result ver="3.2.0">	Service result for MLP Version 3.2.0
<eme_lia ver="3.2.0">	Emergency Location Immediate Answer for MLP Version 3.2.0
<eme_pos>	Position answer
<msid type="MSISDN">447770123123</msid>	Position is for this MSISDN (formatted as Country Code + Phone Number) (GSM/3GPP should conform to TS 123 003)
<pd>	Position description
<time utc_off="+0100">20020702115712</time>	Local Date and Time of phone when position was measured
<shape>	Shape of uncertainty area
<EllipticalArea>	An ellipse (on the WGS-84 co-ordinate reference system as default)
<coord>	Coordinate of the centre of the ellipse
<X>N51.514</X>	Latitude in decimal degrees prefixed with N or S
<Y>W0.102</Y>	Longitude in decimal degrees prefixed with E or W
</coord>	
<angle>90.00</angle>	Angle in degrees of rotation of the ellipse measured clockwise from north
<semiMajor>50</semiMajor>	Length of semiMajor axis in metres

<semiMinor>25</semiMinor>	Length of semiMinor axis in metres
<angularUnit>00</angularUnit>	Length of angularUnit in degrees
<distanceUnit>00</distanceUnit>	Length of distanceUnit in metres
</EllipticalArea >	
</shape>	
<lev_conf>80</lev_conf>	Indicates the probability as a percentage that the phone is located within the position area defined
</pd>	
</eme_pos>	
<caller_location>	
<Address_line1>2nd Floor</Address_line1>	Freeform textual description of location
<Address_line2>Oftel</Address_line2>	(e.g derived from pico cell coverage)
<Address_line3>50 Ludgate Hill</Address_line3>	
<Address_line4>London</Address_line4>	
<postcode>EC4M 7JJ</postcode>	
</caller_location>	
</eme_lia>	
</svc_result>	

ZA.3 Emergency location immediate answer - error response

<?xml version="1.0" ?>	
<!DOCTYPE svc_result SYSTEM "MLP_SVC_RESULT_300.DTD">	
<svc_result ver="3.2.0">	Service result for MLP Version 3.2.0
<eme_lia ver="3.2.0">	Emergency Location Immediate Answer for MLP Version 3.2.0
<eme_pos>	Position answer
<msid type="MSISDN">447770123123</msid>	Position is for this MSISDN (formatted as Country Code + Phone Number) (GSM/3GPP should conform to TS 123 003)
<poserr>	
<result resid="004"> UNKNOWN SUBSCRIBER	Error code number and error code text
</result>	
<add_info>This space left blank</add_info>	Additional information about the result
<time utc_off="+0100">20020702115712</time>	Local Date and Time of phone when position attempt was made
</poserr>	
</eme_pos>	
</eme_lia>	
</svc_result>	

ZA.4 Example usage Emergency Location Report

This example shows the usage of the shape "MultiPolygon" to support the transfer of more than one Elliptical Area based location estimation of an emergency caller within the same message to the PSAP

<emerep ver="3.2.0">	EMEPEO for MLP Version 3.2.0
<eme_event eme_trigger="EME_ORG">	
<eme_pos>	Position answer
<msid>461011678298</msid>	Position is for this MSISDN (formatted as Country Code + Phone Number)
<pd>	Position description
<time utc_off="+0300">20020623010003</time>	Local Date and Time of phone when position was measured
<shape>	Shape of uncertainty area
<MultiPolygon>	More than 1 Elliptical arcs follow.
<Elliptical Aerea>	An ellipse (on the WGS-84 co-ordinate reference system as default)
<coord>	See clause ZA.2
<X>N51.514</X>	See clause ZA.2
<Y>W0.102</Y>	See clause ZA.2
</coord>	See clause ZA.2
<angle>90.00</angle>	See clause ZA.2
<semiMajor>50</semiMajor>	See clause ZA.2
<semiMinor>25</semiMinor>	See clause ZA.2
<angularUnit>00</angularUnit>	See clause ZA.2
<distanceUnit>00</distanceUnit>	See clause ZA.2
</EllipticalArea >	
<Elliptical Aerea>	An ellipse (on the WGS-84 co-ordinate reference system as default)
<coord>	See clause ZA.2
<X>N52.514</X>	See clause ZA.2
<Y>W0.103</Y>	See clause ZA.2
</coord>	See clause ZA.2
<angle>270.00</angle>	See clause ZA.2
<semiMajor>40</semiMajor>	See clause ZA.2
<semiMinor>66</semiMinor>	See clause ZA.2
<angularUnit>00</angularUnit>	See clause ZA.2
<distanceUnit>00</distanceUnit>	See clause ZA.2
</EllipticalArea >	
</MultiPolygon>	
</shape>	
</pd>	
</eme_pos>	
</eme_event>	
</emerep>	

ZA.5 Example usage of MLP extension

<?xml version="1.0" ?>	
<!DOCTYPE svc_result SYSTEM "MLP_SVC_RESULT_300.DTD" [
<!ENTITY pno-isc_mlp_extension 'pno-isc_mlp_extension.dtd'>	
<svc_result ver="3.2.0">	Service result for MLP Version 3.2.0
<eme_lia ver="3.2.0">	Emergency Location Immediate Answer for MLP Version 3.2.0
<eme_pos>	Position answer
<msid type="MSISDN">447770123123</msid>	Position is for this MSISDN (formatted as Country Code + Phone Number) (GSM/3GPP should conform to TS 123 003)
<pd>	Position description
<time utc_off="+0100">20020702115712</time>	Local Date and Time of phone when position attempt was made
<shape>	Shape of Location Area

<EllipticalArea>	An ellipse (on the WGS-84 co-ordinate reference system as default)
<coord>	Coordinate of the centre of the ellipse
<X>N51.459</X>	Latitude in decimal degrees prefixed with N or S
<Y>W0.448</Y>	Longitude in decimal degrees prefixed with E or W
</coord>	
<angle>90.00</angle>	Angle in degrees of rotation of the ellipse measured clockwise from north
<semiMajor>50</semiMajor>	Length of semiMajor axis in metres
<semiMinor>25</semiMinor>	Length of semiMinor axis in metres
<angularUnit>00</angularUnit>	Length of angularUnit in degrees
<distanceUnit>00</distanceUnit>	Length of distanceUnit in metres
</EllipticalArea>	
</shape>	
<lev_conf>80</lev_conf>	Indicates the probability as a percentage that the phone is located within the position area defined
</pd>	
</eme_pos>	
<caller_location>	
<Address_line1>Heathrow Terminal 4 check-in desks</Address_line1>	Freeform textual description of location
</caller_location>	(e.g derived from pico cell coverage)
</eme_lia>	
</svc_result>	

Annex ZB (informative): Bibliography

NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

- ETSI TS 123 003: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Numbering, Addressing and Identification (3GPP TS 23.003)".
- ETSI TS 122 071: "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); Location Services (LCS); Service description, Stage 1 (3GPP TS 22.071)".
- ETSI TS 129 002: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Mobile Application Part (MAP) specification (3GPP TS 29.002)".
- ETSI EN 300 356 (all parts): "Integrated Services Digital Network (ISDN); Signalling System No. 7 (SS7); ISDN User Part (ISUP) version 4 for the international interface".
- W3C rec-xml-19980210: "Extensible Markup Language (XML) 1.0".

NOTE: Available at <http://www.w3c.org>

- IETF RFC 2616: "Hypertext Transfer Protocol - HTTP/1.1".

NOTE: Available at <http://www.ietf.org>

History

Document history		
V1.1.1	April 2003	Publication
V1.2.1	May 2004	Publication
V1.2.2	May 2004	Publication
V1.3.1	September 2006	Publication