

**COMMUNICATIONS
ALLIANCE LTD**



INDUSTRY SPECIFICATION

G557.5:2014

PUSH MOBILE LOCATION INFORMATION (MoLI)
INTERFACE TO ENHANCED CALLING LINE
IDENTIFICATION PROCESSING SYSTEM (ECLIPS)

**G557.5:2014 Push Mobile Location Information (MoLI)
Interface to Enhanced Calling Line Identification
Processing System (ECLIPS) Industry Specification**

Communications Alliance Ltd (formerly Australian Communications Industry Forum Ltd) was formed in 2006 to provide a unified voice for the Australian communications industry and to lead it into the next generation of converging networks, technologies and services.

Disclaimers

- 1) Notwithstanding anything contained in this draft Industry Specification:
 - a) Communications Alliance disclaims responsibility (including where Communications Alliance or any of its officers, employees, agents or contractors has been negligent) for any direct or indirect loss, damage, claim, or liability any person may incur as a result of any:
 - i) reliance on or compliance with this draft Industry Specification;
 - ii) inaccuracy or inappropriateness of this draft Industry Specification; or
 - iii) inconsistency of this draft Industry Specification with any law; and
 - b) Communications Alliance disclaims responsibility (including where Communications Alliance or any of its officers, employees, agents or contractors has been negligent) for ensuring compliance by any person with this draft Industry Specification.
- 2) The above disclaimers will not apply to the extent they are inconsistent with any relevant legislation.

Copyright

© Communications Alliance Ltd 2014

This document is copyright and must not be used except as permitted below or under the Copyright Act 1968. You may reproduce and publish this document in whole or in part for your or your organisation's own personal or internal compliance, educational or non-commercial purposes. You must not alter or amend this document in any way. You must not reproduce or publish this document for commercial gain without the prior written consent of Communications Alliance. Organisations wishing to reproduce or publish this document for commercial gain (i.e. for distribution to subscribers to an information service) should apply to Communications Alliance by contacting the Communications Alliance Commercial Manager at info@commsalliance.com.au.

INTRODUCTORY STATEMENT

The ***Push Mobile Location Information (MoLI) Interface to Enhanced Calling Line Identification Processing System (ECLIPS)*** Specification (G557.5:2014):

- defines an interface for the transfer of Push MoLI between a Mobile Carrier and ECLIPS for an Emergency Call to 000 or 112 originating from Customer Equipment (CE) that communicates with the macro Base Transceiver (BTS) of a Mobile Carrier while the Emergency Call is in progress; and
- defines a test plan template to enable a Mobile Carrier to conduct an end-to-end test to validate the delivery of Push MoLI to ECLIPS while an Emergency Call to 000 or 112 is in progress.

James Duck
Chair

Push Mobile Location Information Working Committee

MARCH 2014

TABLE OF CONTENTS

1	GENERAL	2
1.1	Introduction	2
1.2	Scope	3
1.3	Objective	4
1.4	Specification review	4
2	ACRONYMS, DEFINITIONS AND INTERPRETATIONS	5
2.1	Acronyms	5
2.2	Definitions	7
2.3	Interpretations	10
3	SOLUTION REQUIREMENTS AND OVERVIEW	11
3.1	Introduction	11
3.2	Solution Requirements	11
3.3	Recommended ECLIPS Failover Process	12
3.4	Alternate ECLIPS Failover Process	13
3.5	Solution Overview	26
3.6	Commencement	27
4	PUSH MOBILE LOCATION DATA SHAPES AND FIELDS	29
4.1	Circular Area Shape	29
4.2	CircularArc Area Shape	30
4.3	Point Shape	31
4.4	Polygon Shape	31
4.5	Elliptical Area Shape	32
5	REFERENCES	34
A	PUSH MOLI: ECLIPS – MOBILE CARRIER DATA TRANSMISSION	37
B	TEST PLAN TEMPLATE	38
C	EXAMPLES OF SAMPLE XML CODES FOR PUSH MOLI	44
D	SEQUENCE DIAGRAMS	48

1 GENERAL

1.1 Introduction

- 1.1.1 The Push Mobile Location Information (MoLI) Interface to Enhanced Calling Line Identification Processing System (ECLIPS) Specification (the Specification) provides the technical requirements to enable a Mobile Carrier to deliver Push MoLI to ECLIPS while an Emergency Call to 000 or 112 is in progress.

<p><i>NOTE: Refer to Section 3 for the technical requirements and to Appendix B for a template for a test plan.</i></p>

- 1.1.2 At present, while delivering Emergency Calls XPOI, the Mobile Carrier's network appends a Standardised Mobile Service Area (SMSA) code (refer to G557.2) to provide MoLI. The SMSA code is derived from the SMSA Register (refer to G557.2). These SMSAs can range in size from 2,000 to 500,000 square kilometres and are not granular enough by themselves to assist Emergency Service Organisations (ESOs) to find someone in an emergency.
- 1.1.3 Due to advances in mobile technology, it is now possible to address this situation through the implementation of one or more techniques that can provide location information about Customer Equipment (CE) that communicates with the macro Base Transceiver (BTS) of a Mobile Carrier with a higher degree of accuracy than that provided by the SMSA based MoLI.
- 1.1.4 The Australian Communications and Media Authority (ACMA) amended the *Telecommunications (Emergency Call Service) Determination 2009* (the Determination) in April 2011 so that when an ESO asks the Mobile Carrier to provide location information about an Emergency Call a Mobile Carrier must give the ESO *"the most precise MoLI information available about the location of the customer equipment from which the emergency call originated, as soon as possible after the request is received"*.
- 1.1.5 This most precise MoLI to meet the requirement in s52 (A) of the Determination has been made available to ESOs on a "Pull" basis (refer to G557.4) i.e. upon request by the ESO for a specific Emergency Call. This requirement in the Determination is in addition to the existing provision of SMSA based MoLI for each Emergency Call.
- 1.1.6 The telecommunications industry is implementing a supplementary solution to the current SMSA solution, for a Mobile Carrier to send Push MoLI to ECLIPS.
- 1.1.7 The development of the Specification has been facilitated by Communications Alliance through a Working Committee comprised of representatives from the telecommunications industry.

- 1.1.8 The Specification should be read in the context of other relevant codes, specifications and documents, including the other parts of G557.
- 1.1.9 The Specification should be read in conjunction with related legislation and regulation, including:
 - (a) the Act; and
 - (b) the Determination.
- 1.1.10 If there is a conflict between the requirements of the Specification and any requirements imposed on a Mobile Carrier by legislation, the Mobile Carrier will not be in breach of the Specification by complying with the requirements of the legislation.
- 1.1.11 Compliance with this Specification does not guarantee compliance with any legislation. The Specification is not a substitute for legal advice.
- 1.1.12 Statements in boxed text are a guide to interpretation only and not binding as Specification rules.

1.2 Scope

- 1.2.1 The Specification applies to:
 - (a) the Emergency Call Person (ECP) for 000 and 112;
 - (b) Mobile Carriers; and
 - (c) Mobile Virtual Network Operators (MVNOs).
- 1.2.2 The Specification does not apply to the ECP for 106.
- 1.2.3 The Specification defines an interface for the transfer of Push MoLI between a Mobile Carrier and ECLIPS for an Emergency Call to 000 or 112 originating from a CE that communicates with the macro BTS of a Mobile Carrier while the Emergency Call is in progress.
- 1.2.4 The Specification does not deal with Push MoLI requirements for Emergency Calls originating from CE that communicates with a non-macro BTS of a Mobile Carrier including a:
 - (a) Femtocell;
 - (b) Portable BTS; and
 - (c) In-building repeater.

NOTE: Some Mobile Carriers do not assign a unique identifier to their non-macro BTS. However, where a Mobile Carrier is able to supply Push MoLI for non-macro BTS based services, it should do so consistent with this Specification.

- 1.2.5 The Specification does not deal with Push MoLI requirements for Emergency Calls:
- (a) to 106;
 - (b) from services which are not PMTS;
 - (c) from VoIP services that are PMTS but operate independently of a Mobile Services Switching Centre (MSC) (e.g. 'over the top' of an underlying mobile data service);
 - (d) from Voice over LTE PMTS;
 - (e) from CE for which the Mobile Carrier is unable to determine the unique CLI, e.g. No SIM or SIM not authorised to roam on the visited PLMN;
 - (f) International Authorised Roamers (inbound or outbound); and
 - (g) National outbound Authorised Roamers.
- 1.2.6 The Specification does not deal with situations where a Mobile Carrier is technically unable to provide Push MoLI due to a matter beyond its control, including:
- (a) when the network(s) of the Mobile Carrier are experiencing major faults such as the failure of a MSC, a GMLC, or data links to ECLIPS; or
 - (b) there is a level of Emergency Call traffic above the forecast of a Mobile Carrier.

<p><i>NOTE: When a Mobile Carrier is unable to provide Push MoLI, the MoLI based on G557.2 and G557.4 would still be available as per Clauses 1.1.2 and 1.1.5.</i></p>
--

- 1.2.7 The Specification does not deal with the specification and testing of Push MoLI requirements between the ECP and ESOs.

1.3 Objective

The objective of the Specification is to define an interface for the transfer of Push MoLI between a Mobile Carrier and ECLIPS for an Emergency Call to 000 or 112 originating from CE that communicates with the macro BTS of a Mobile Carrier while the Emergency Call is in progress.

1.4 Specification review

The Specification will be reviewed after 5 years and every 5 years subsequently, or earlier in the event of significant developments that affect the Specification or a chapter within the Specification.

2 ACRONYMS, DEFINITIONS AND INTERPRETATIONS

2.1 Acronyms

For the purposes of the Specification:

ACM

means Address Complete Message.

ACMA

means the Australian Communications and Media Authority.

BTS

means Base Transceiver Station.

CE

means Customer Equipment.

CLI

means Calling Line Identification.

CSP

means Carriage Service Provider.

DMSH

means Degrees Minutes Seconds Hemisphere.

ECLIPS

means Enhanced Calling Line Identification Processing System.

ECP

means Emergency Call Person.

ESO

means Emergency Service Organisation.

FQDN

means Fully Qualified Domain Name.

GMLC

means Gateway Mobile Location Centre.

HTTP

means Hypertext Transfer Protocol.

HTTPS

means Secure Hypertext Transfer Protocol.

ID

means Identifier.

IMSI

means International Mobile Subscriber Identity.

LCS

means Location Client Service.

LTE

means Long Term Evolution.

MLP

means Mobile Location Protocol.

MoLI

means Mobile Location Information.

MSC

means Mobile Services Switching Centre.

MSISDN

means Mobile Services Integrated Services Digital Number.

MVNO

means Mobile Virtual Network Operator.

NI-LR

means Network Induced Location Request.

OMA

means Open Mobile Alliance.

PLMN

Means Public Land Mobile Network.

PMTS

means Public Mobile Telecommunications Service.

RAN

means Radio Access Network.

SIM

means Subscriber Identity Module.

SMSA

means Standardised Mobile Service Area.

SSL

means Secure Sockets Layer.

USIM

means Universal SIM.

UTC

means Coordinated Universal Time .

VoIP

means Voice over the Internet Protocol.

VPN

means Virtual Private Network.

XML

means Extensible Markup Language.

XPOI

means across the point of interconnect.

2.2 Definitions

For the purposes of the Specification:

Act

means the *Telecommunications Act 1997 (Cth)*.

Authorised Roamer

means a subscriber whose PLMN is present in roaming agreements at the gateway station to which the subscriber is attempting to reregister.

NOTE: Refer to ETSI TS 101 376-3-19.

Carriage Service Provider

has the meaning given by section 87 of the Act.

Carrier

has the meaning given by section 7 of the Act.

Customer Equipment

has the meaning given by section 21 of the Act.

Determination

means the *Telecommunications (Emergency Call Service) Determination 2009 (Cth)*.

Degrees Minutes Seconds Hemisphere

means a coordinate for latitude or longitude where:

- (a) Degrees is an integer in the range 0 to 360;
- (b) Minutes is an integer in the range 0 to 60;
- (c) Seconds is a real number of 5 digits with 3 decimal points in the range 00.000 to 60.000; and
- (d) Hemisphere is a single letter, either N, S, E or W.

NOTES: The value of 'Hemisphere' for Emergency Calls within Australia is expected to be either 'E' or 'S' only. All four compass points are possible values, for consistency with OMA TS-MLP V3.2.

Enhanced Calling Line Identification Processing System

means the system used by the ECP for Emergency Calls to 000 and 112 to extract CLI associated with an Emergency Call.

Emergency Call

has the meaning given by the Determination.

Emergency Call Person

has the meaning given by section 7 of the Act.

Emergency Call Person for 106

has the meaning given by the Determination.

NOTE: At time of publication, the ECP for 106 is Australian Communication Exchange (ACE).

Emergency Call Person for 000 and 112

has the meaning given by the Determination.

NOTE: At time of publication, the ECP for 000 and 112 is Telstra.

Emergency Service Organisation

has the meaning given by the Determination.

First Delivery Attempt Duration

means the elapsed time (t_1-t_0) between:

(a) when an Emergency Call is first detected by the MSC as recorded by the MSC (t_0); and

(b) the time of sending XML code from the GMLC to ECLIPS for a first delivery attempt (t_1).

Gateway Mobile Location Centre (GMLC)

(a) has the meaning given by 3GPP TS 23.078, or

(b) means a platform, or group of platforms, used by a Mobile Carrier to resolve or provide MoLI.

Inner Radius

has the meaning given by Sec 5.3.28 of OMA TS-MLP V3.2 and is an integer in metres.

Mobile Carrier

has the meaning given by section 52A (1) of the Determination.

Mobile Virtual Network Operator

means, in the context of Push MoLI, a CSP that supplies a PMTS and

(a) uses some or part of the controlled network or controlled facility of a Mobile Carrier; and

(b) requires the use of the controlled network or controlled facility owned or operated by that CSP to deliver Push MoLI.

Network Induced Location Request

has the meaning given by 3GPP TS 23.271.

Outer Radius

has the meaning given by Sec 5.3.59 of OMA TS-MLP V3.2 and is an integer in metres.

Public Mobile Telecommunications Service

has the meaning given by section 32 of the Act.

Push MoLI

means MoLI associated with an Emergency Call that is pushed from the Mobile Carrier to the ECP.

Radius

has the meaning given by Sec 5.3.52 of OMA TS-MLP V3.2 and is an integer in metres.

Second Delivery Attempt Duration

means the elapsed time (t_2-t_1) between:

(a) the time of sending XML code from the GMLC to ECLIPS for the first delivery attempt (t_1).

(b) the time of sending XML code from the GMLC to ECLIPS a second delivery attempt (t_2).

StartAngle

has the meaning given by Sec 5.3.53 of OMA TS-MLP V3.2 and is an integer in degrees.

StopAngle

has the meaning given by Sec 5.3.54 of OMA TS-MLP V3.2 and is an integer in degrees.

2.3 Interpretations

In the Specification, unless the contrary appears:

- (a) headings are for convenience only and do not affect interpretation;
- (b) a reference to a statute, ordinance, code or other law includes regulations and other instruments under it and consolidations, amendments, re-enactments or replacements of any of them;
- (c) words in the singular includes the plural and vice versa;
- (d) words importing persons include a body whether corporate, politic or otherwise;
- (e) where a word or phrase is defined, its other grammatical forms have a corresponding meaning;
- (f) mentioning anything after include, includes or including does not limit what else might be included;
- (g) words and expressions which are not defined have the meanings given to them in the Act; and
- (h) a reference to a person includes a reference to the person's executors, administrators, successors, agents, assignees and novatees.

3 SOLUTION REQUIREMENTS AND OVERVIEW

3.1 Introduction

- 3.1.1 The responsibility for producing Push MoLI lies with the mobile network operator on whose PLMN the Emergency Call to 000 or 112 originates. This includes Emergency Calls made by national inbound Authorised Roamers. In the case of national inbound authorised roaming, the responsibility for producing Push MoLI lies with the visited PLMN not the home PLMN.
- 3.1.2 An MVNO has a responsibility to utilise the capabilities of their supporting Mobile Carrier to produce Push MoLI for an Emergency Call to 000 or 112.
- 3.1.3 A Mobile Carrier has a responsibility to make available its capabilities to produce Push MoLI for an Emergency Call to 000 or 112 to MVNOs using its PLMN.

NOTE: This is subject to interconnect agreements between the participating Mobile Carriers for national inbound authorised roaming and between Mobile Carriers and their MVNOs.

- 3.1.4 At the time of publication, the basic Push MoLI expected to be consistently available from all Mobile Carriers are the latitude and longitude values of the first macro BTS associated with an Emergency Call to 000 or 112 plus a radius value (for coverage area of that macro BTS) i.e. Circular Area shape.
- 3.1.5 Alternate information with more precision than the Circular Area shape (such as CircularArc area shape (inner and outer radius, start and stop angles) or Polygon shape related to the cell coverage area associated with an Emergency Call to 000 or 112) is typically not expected to be consistently available from all Mobile Carriers. However, this alternate information may be made available on an optional basis in specific circumstances by some Mobile Carriers depending upon the technical capabilities of their respective networks.
- 3.1.6 Alternate information with more precision than the Circular Area shape (such as Point or Elliptical area) related to the geographic or physical location of the CE from which the Emergency Call to 000 or 112 originated) is typically not expected to be consistently available from all Mobile Carriers. However, this alternate information may be made available on an optional basis in specific circumstances by some Mobile Carriers depending upon the technical capabilities of their respective networks

3.2 Solution Requirements

- 3.2.1 Refer to Tables 1 to 11 for a list of solution requirements for Push MoLI.
- 3.2.2 Refer to sections 3.3 and 3.4 for details of the recommended and alternate ECLIPS failover processes, respectively.

3.2.3 Refer to Figure 1 for a simplified ECLIPS failover process flow.

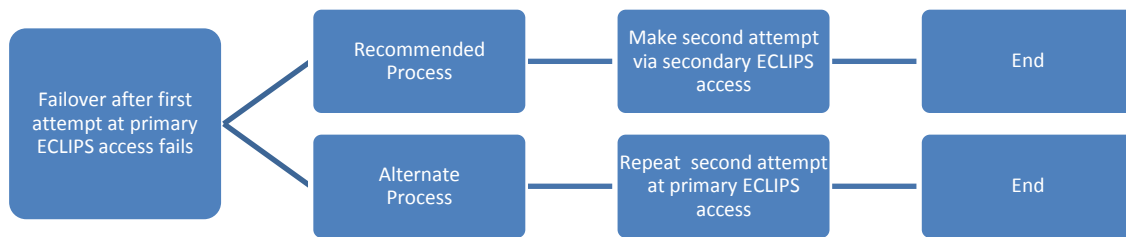


FIGURE 1

Failover Process Flow for ECLIPS Access on an Emergency Call

3.3 Recommended ECLIPS Failover Process

- 3.3.1 The GMLC is to attempt delivery of Push MoLI data to an ECLIPS server for each Emergency Call.
- 3.3.2 If, within 3 seconds, the GMLC's first attempt to deliver Push MoLI data to an ECLIPS server fails, then the GMLC is to make a second attempt to deliver Push MoLI data to the secondary ECLIPS server.
- 3.3.3 After the second delivery attempt, no further delivery attempt is required for that Emergency Call.

NOTES:

1. It has been estimated that an Emergency Call will take approximately 6 seconds to reach the ECP terminal, followed by the terminal application query to the ECLIPS server for Push MoLI data.

2. To allow for a three seconds timeout between the first delivery attempt and the second delivery attempt, the target timeout duration for the first delivery attempt (t_1-t_0) should be less than or equal to three seconds.

3. While Mobile Carriers will make best endeavours to meet the 3 seconds target for the delivery of Push MoLI, it may not be possible for every Emergency Call due to factors such as:

(a) extra time required to setup the data tunnel between GMLC and ECLIPS if the session has remained inactive or has been broken; and

(b) the number of sessions supported by the GMLC. Refer to Appendix A for more information on how each Mobile Carrier needs to dimension the number of sessions required on its GMLC as per the number of simultaneous Emergency Calls in its network.

(c) transmission delays in the cases of:
(i) long terrestrial distances between a remote BTS site and a MSC; or
(ii) a remote BTS site connected to a MSC via satellite backhaul link(s).

4. The ECP operates two ECLIPS servers.
The GMLC may access any available ECLIPS server of these two ECLIPS servers for the delivery of Push MoLI for an Emergency Call. The ECLIPS server which is accessed for the first Push MoLI delivery attempt for a specific Emergency Call by the GMLC is treated as the primary ECLIPS server by the GMLC. The other ECLIPS server is treated as the secondary ECLIPS server by the GMLC for the second Push MoLI delivery attempt if a retry is required.

3.3.4 Examples of failures (refer Appendix D) that would result in failover include:

- (a) Unable to connect to ECLIPS server;
- (b) Unsuccessful response from ECLIPS; and
- (c) No response from ECLIPS within the timeout period.

3.4 Alternate ECLIPS Failover Process

3.4.1 The GMLC is to attempt delivery of Push MoLI data to the primary ECLIPS server for each Emergency Call.

3.4.2 If, within 3 seconds, the GMLC's first attempt to deliver Push MoLI data to the primary ECLIPS server fails, then the GMLC is to make a second attempt to deliver Push MoLI data to the primary ECLIPS server.

3.4.3 After the second delivery attempt, no further delivery attempt is required for that Emergency Call.

NOTE: Refer to the notes under clause 3.3.3.

3.4.4 Examples of failures (refer Appendix D) that would result in failover include:

- (a) Unable to connect to ECLIPS server;
- (b) Unsuccessful response from ECLIPS; and
- (c) No response from ECLIPS within the timeout period.

TABLE 1
Mobile Carrier Requirements for Push MoLI

Component Name	Description	Requirements
Mobile Subscriber ID	Field with a mobile subscriber ID (e.g. a mobile phone number) sent by the GMLC to ECLIPS as the CLI for the associated Emergency Call. The ECP Terminal application queries the ECLIPS Server using the mobile subscriber ID of an Emergency Call as a unique CLI key to extract the associated Push MoLI data.	<p>Refer to OMA TS-MLP V3.2 Sec 5.3.42 msid.</p> <p>Mobile Carrier to deliver the mobile subscriber ID to ECLIPS as either:</p> <ul style="list-style-type: none"> - a 9 digit national mobile number; - a 10 digit national mobile number including a leading zero; - a 10 digit national local number (Note 2); or - a full international (i.e. E.164) MSISDN (Note 3) <p>Note 1: ECLIPS stores number data as 10 digit number i.e. with a leading 0.</p> <p>Note 2: Some Fixed-to-Mobile convergence voice telephony services are PMTS but are based on a 10 digit national local number instead of a national mobile number.</p> <p>Note 3: ACIF G500:2000 requirement is for Mobile Carriers to send a default dummy CLI in the call signalling to the ECP for all international inbound Roamer Emergency Call cases instead of the full international (i.e. E.164) MSISDN. In this case the ECP terminal application would not have the full international number to query for the Push MoLI data in ECLIPS.</p> <p>Note 4: Where an Emergency Call is made under emergency camping from a SIM-less or USIM-less CE or CE equipped with a damaged, faulty or blocked SIM or USIM, some GMLC solutions will be unable to deliver the mobile subscriber ID to ECLIPS.</p>

Component Name	Description	Requirements
Date and Time	Field with year, month, date, hour, minute and second. Time zone may be included, as an offset from UTC or if not included defaults to UTC.	Refer to OMA TS-MLP V3.2 Sec 5.3.78 time. Date and time of sending XML code from the GMLC to ECLIPS as recorded in the XML code timestamp. The GMLC time must be synchronised to UTC.
Geodetic Datum	Field for the datum, either WGS84 or GDA94.	Refer to OMA TS-MLP V3.2 Sec 5.3.7.2 srsName.
Shape	Field with a shape of the identified area. This shape can be either Circular Area or Point or CircularArc Area or Polygon or Elliptical Area.	Refer to OMA TS-MLP V3.2: Sec 5.3.12 Circular Area, Sec 5.3.55 Point, Sec 5.3.11 CircularArc Area, Sec 5.3.56 Polygon; or Sec 5.3.20 Elliptical Area Note: Also refer to corresponding Tables 2, 3, 4, 5 or 6.

TABLE 2

**Additional Mobile Carrier Requirements for Push MoI where Shape field is Circular Area
(Centre and Radius only) (refer Figure 3)**

Attribute Name	Description	Requirements
Latitude Coordinate X	Field with the latitude of the first macro BTS from where the Emergency Call originated in DMSH e.g. 24 52 33.052S.	Refer to OMA TS-MLP V3.2 Sec 5.3.85 X.
Longitude Coordinate Y	Field with the longitude of the first macro BTS from where the Emergency Call originated (in DMSH) e.g. 152 21 28.231E.	Refer to OMA TS-MLP V3.2 Sec 5.3.86 Y.
Radius	If using Shape value of "Circular Area", then this is a field with radius of the cell coverage, in metres e.g. 2000 m.	Refer to OMA TS-MLP V3.2 Sec 5.3.52 radius.

TABLE 3

**Additional Mobile Carrier Requirements for Push MoI where Shape field is Point
(Centre only) (refer Figure 3)**

Attribute Name	Description	Requirements
Latitude Coordinate X	Field with the latitude of the approximate location of the CE from where the Emergency Call originated (in DMSH). e.g. 24 52 33.052S.	Refer to OMA TS-MLP V3.2 Sec 5.3.85 X.
Longitude Coordinate Y	Field with the longitude of the approximate location of the CE from where the Emergency Call originated (in DMSH) e.g. 152 21 28.231E.	Refer to OMA TS-MLP V3.2 Sec 5.3.86 Y.

TABLE 4

**Additional Mobile Carrier Requirements for Push MoLI where Shape field is 'CircularArc Area'
(refer Figure 4)**

Attribute Name	Description	Requirements
Latitude Coordinate X	Field with the latitude of the first macro BTS from where the Emergency Call originated (DMSH) e.g. 24 52 33.052S.	Refer to OMA TS-MLP V3.2 Sec 5.3.85 X.
Longitude Coordinate Y	Field with the longitude of the first macro BTS from where the Emergency Call originated (DMSH) e.g. 152 21 28.231E.	Refer to OMA TS-MLP V3.2 Sec 5.3.86 Y.
Inner Radius	If using Shape value of "CircularArc Area", then this is a field with inner radius of the cell coverage, in metres e.g. 500 m.	Refer to OMA TS-MLP V3.2 Sec 5.3.28 inRadius and Sec 5.3.11 CircularArc Area.
Outer Radius	If using Shape value of "CircularArc Area", then this is a field with outer radius of the cell coverage, in metres e.g. 1000 m.	Refer to OMA TS-MLP V3.2 Sec 5.3.59 outRadius and Sec 5.3.11 CircularArc Area.
Start Angle	If using Shape value of "CircularArc Area", then this is a field with start angle, in degrees measured from True North.	Refer to OMA TS-MLP V3.2 Sec 5.3.53 startAngle and Sec 5.3.11 CircularArc Area.
Stop Angle (Included Angle)	If using Shape value of "CircularArc Area", then this is a field with stop angle between the first and second defined radius in degrees.	Refer to OMA TS-MLP V3.2 Sec 5.3.54 stopAngle and Sec 5.3.11 CircularArc Area.

TABLE 5
Additional Mobile Carrier Requirements for Push MoII where Shape field is 'Polygon'
(refer Figure 5)

Attribute Name	Description	Requirements
Polygon Coordinate X	Field with the latitude of a polygon coordinate for the cell coverage from where the Emergency Call originated (in DMSH) e.g. 24 52 33.052S.	Refer to OMA TS-MLP V3.2 Sec 5.3.85 X.
Polygon Coordinate Y	Field with the longitude of a polygon coordinate for the cell coverage from where the Emergency Call originated (in DMSH) e.g. 152 21 28.231E.	Refer to OMA TS-MLP V3.2 Sec 5.3.86 Y.

NOTE: The number of vertices used to define a polygon is a minimum of 3 and maximum of 15. For each Push MoII event, the number of pairs of X and Y coordinates passed across the Mobile Carrier-ECLIPS interface is a minimum of 4 and maximum of 16. Refer to clause 5.7.5.5 of OMA TS-MLP V3.2 which states in part "The last coordinate must be coincident with the first coordinate and at least four coordinates are required (the three to define a ring plus the fourth duplicated one)," and "... to conform to [23.032] the maximum number of points allowed in an exterior boundary is 15."

TABLE 6

**Additional Mobile Carrier Requirements for Push Moll where Shape field is 'Elliptical Area'
(refer Figure 6)**

Attribute Name	Description	Requirements
Latitude Coordinate X	Field with the latitude of the approximate location of the CE from where the Emergency Call originated (in DMSH) e.g. 24 52 33.052S.	Refer to OMA TS-MLP V3.2 Sec 5.3.85 X.
Longitude Coordinate Y	Field with the longitude of approximate location of the CE from where the Emergency Call originated (in DMSH) e.g. 152 21 28.231E.	Refer to OMA TS-MLP V3.2 Sec 5.3.86 Y.
Angle	If using Shape value of "Elliptical Area", then this is a field with the angle of rotation of an ellipse, in degrees measured clockwise between True North and Semi-Major Axis.	Refer to OMA TS-MLP V3.2 Sec 5.3.5 angle and Sec 5.7.5.3 Ellipsoid point with uncertainty ellipse.
Semi-Major Axis (r1)	If using Shape value of "Elliptical Area", then this is a field with the length of the Semi-Major Axis of an ellipse, in metres, as shown in figure 6.	Refer to OMA TS-MLP V3.2 Sec 5.3.66 semiMajor and Sec 5.7.5.3 Ellipsoid point with uncertainty ellipse.
Semi-Minor Axis (r2)	If using Shape value of "Elliptical Area", then this is a field with the length of the Semi-Minor Axis of an ellipse, in metres, as shown in figure 6.	Refer to OMA TS-MLP V3.2 Sec 5.3.67 semiMinor and Sec 5.7.5.3 Ellipsoid point with uncertainty ellipse.

TABLE 7
Requirements for Mobile Carrier Access to ECLIPS Servers

Component Name	Description	Requirements
Primary ECLIPS Server Access	Access to the ECLIPS server designated as the Primary ECLIPS server by the ECP.	Required - refer to Sec 3.3 and 3.4
Secondary ECLIPS Server Access	Back up access to the second ECLIPS server designated as the Secondary ECLIPS server by the ECP.	Optional - refer to Sec 3.3 and 3.4.
Delivery Attempt	GMLC to attempt delivery of Push MoI data to the Primary ECLIPS server for each Emergency Call.	Required - refer to Sec 3.3 and 3.4.
ECLIPS Failover Process	Failover process for ECLIPS server access by a Mobile Carrier for each Emergency Call.	Required - refer to Sec 3.3 and 3.4.
Primary Access Session Capability	Number of simultaneous Sessions between the GMLC and the Primary ECLIPS server.	Each Mobile Carrier needs to dimension the number of sessions required on its GMLC as per the number of simultaneous Emergency Calls in its network - refer Appendix A.
Secondary Access Session Capability	Number of simultaneous sessions between the GMLC and the Secondary ECLIPS server (applies to Mobile Carriers implementing the "recommended" process in Sec 3.3).	Each Mobile Carrier needs to dimension the number of sessions required on its GMLC as per the number of simultaneous Emergency Calls in its network- refer Appendix A.
Session Hold Time	Maximum holding time per Session.	6 seconds (3 seconds Primary Access + 3 seconds Secondary/ Primary Access, if required).

TABLE 8

Mobile Carriers' Requirements for Data Delivery, Failover processes, Data Format and Data Structure

Component Name	Description	Requirements
Number of delivery attempts	Number of attempts to deliver Push MoLI to ECLIPS for an Emergency Call.	Maximum of two attempts.
First Delivery Attempt Duration	Duration for the first delivery attempt of Push MoLI to ECLIPS for an Emergency Call.	Less than or equal to 3 seconds. Refer to Sections 3.3 and 3.4.
Second Delivery Attempt Duration	Duration for the second delivery attempt of Push MoLI to ECLIPS for an Emergency Call.	Less than or equal to 3 seconds. Refer to Sections 3.3 and 3.4.
Total duration for delivery attempt(s)	Total duration for multiple attempts to deliver Push MoLI to ECLIPS for an Emergency Call.	Less than or equal to 6 seconds. Refer to Sections 3.3 and 3.4.
XML format	Format of Mobile Carrier network initiated Push MoLI data delivered to ECLIPS. (Refer to Note).	Refer to OMA TS-MLP V3.2.
XML code	Data structure for communicating Push MoLI between a Mobile Carrier and ECLIPS. (Refer to Note).	Refer to OMA TS-MLP V3.2 Document Type Definition.

NOTE: Refer to Appendix C for examples of XML format and XML code.

TABLE 9
ECP Requirements for Push MoLI Data performance

Component Name	Description	Requirements
Send time	Carrier Push MoLI Data GMLC send time as recorded in the XML code timestamp	The ECP records the send time as part of the customer call records. Date and time of sending XML code from the GMLC to ECLIPS as recorded in the XML code timestamp.
Received time	ECLIPS Push MoLI data received time.	The ECP records the received time as part of the customer call records. The ECLIPS time must be synchronised to UTC.
Querying time	ECLIPS Push MoLI data querying time. Note: This time is the same as the arrival time of the Emergency Call at the ECP terminal.	The ECP records the querying time as part of the customer call records. The ECLIPS time must be synchronised to UTC.
Query result	A 'successful query' is where Push MoLI data is found in a query of ECLIPS from the ECP Terminal, when the ECP Terminal receives an Emergency Call, using the unique mobile subscriber ID for the Emergency Call as the key. An 'unsuccessful query' is a query that is not a successful query.	The ECP records the query result (i.e. either a successful query or an unsuccessful query) as part of the customer call records.

NOTES:

1. This table addresses the availability of Push MoLI data delivered from a Mobile Carrier network, while the Emergency Call is in progress.
2. Emergency Calls will be delivered via the ECLIPS voice network to the ECP terminal and Push MoLI data will be directly delivered to the ECLIPS server over the Mobile Carrier – ECLIPS interface.

TABLE 10

Requirements for Data Transport between Mobile Carriers and ECLIPS

Component Name	Description	Requirements
Network Connectivity	For communicating Push MoLI between a Mobile Carrier and ECLIPS (see Appendix A).	<p>IP Sec VPN over the Internet for data layer security between a Mobile Carrier's GMLC and ECLIPS.</p> <p>Separate VPNs will be established between:</p> <ul style="list-style-type: none"> - a Mobile Carrier's Model GMLC and Model ECLIPS; and - a Mobile Carrier's Production GMLC and Primary Production ECLIPS. <p>A Mobile Carrier implementing the recommended failover process in section 3.3 may establish a VPN between its Production GMLC and Secondary Production ECLIPS.</p> <p>Written bilateral agreement between Mobile Carriers and Telstra for a formal variation of their current Telstra E000 Interconnect Service Definition (ISD) to include Push MoLI (this would define the agreed data link architecture issues such as IPSec VPN, HTTPS etc. as well as the associated Telstra Operations and Maintenance (OAM) documents to support Push MoLI to define the agreed fault reporting and rectification procedures).</p>

Component Name	Description	Requirements
Data Transport	The transport layer mapping to be used to transfer the Push MoLI data between GMLC and ECLIPS.	<p>Push MoLI will use the default HTTP transport mapping defined in OMA TS-MLP V3.2</p> <p>A 200 (i.e. 'OK' status code in RFC 2616) response will be used by ECLIPS to indicate a successful response.</p> <p>A 5xx (i.e. 'server error' status code in RFC 2616), response will be used by ECLIPS to indicate a unsuccessful response requiring retry of Push MoLI data delivery by GMLC.</p> <p>The HTTPS mapping must be used if the Push MoLI data contains real location information for a real user.</p> <p>The HTTP mapping may only be used in the case of testing using Push MoLI test data not related to real users.</p>
Port Choice	ECLIPS TCP/IP Port to be used for Push MoLI communication by GMLC.	<p>For HTTPS, Push MoLI will use Port 50006 (for production).</p> <p>For HTTP, Push MoLI will use Port 50005 (for testing).</p> <p>Notes:</p> <ol style="list-style-type: none"> 1. The default ports specified in OMA TS-MLP V3.2 will not be supported for Push MoLI. 2. All Mobile Carriers will need to use the same ECLIPS ports as above. 3 No Mobile Carrier specific ports will be made available on ECLIPS.
URLs	URLs to be used by the GMLC for addressing the two ECLIPS servers.	<p>The ECP will advise each Mobile Carrier the URLs to be used for the two ECLIPS servers.</p> <p>Note: These URLs may be changed at some future time. Any change to the URLs will be done as a planned change with each Mobile Carrier, allowing adherence to each Mobile Carrier's requirements for change management control in accordance with their associated Telstra Operations and Maintenance (OAM) documents to support Push MoLI.</p>

Component Name	Description	Requirements
HTTPS	ECLIPS security requirements for the HTTPS connection between the GMLC and the ECLIPS server.	<ul style="list-style-type: none">- SSL (Secure Sockets Layer) v3.0 will be used to establish a secure connection between a client (i.e. Carrier GMLC) and the server (i.e. ECLIPS server);- Certificate based client (i.e. GMLC) – server (i.e. ECLIPS server) mutual (i.e. two way) authentication will be used;- The ECLIPS server certificate will be signed by VeriSign CA (i.e. a globally trusted CA) and the GMLC client certificates will be signed by Telstra RSS CA; and- Telstra will manage the certificates, renewal and revocation process in line with the Telstra RSS CA Certification Practice Statement (CPS) V 1.3; and- The client (i.e. the GMLC) is not required to support server (i.e. ECLIPS server) certificate revocation lists.

NOTE:

1. Refer to Appendix A for more information on the delivery of Push MoLI between a Mobile Carrier and ECLIPS.

2. Refer to the Symantec document 'Symantec Trust Network (STN) Certification Practice Statement' and the Telstra document 'Telstra RSS CA Certification Practice Statement (CPS) V 1.3' for more information on the processes to sign, manage, renew and revoke certificates.

3. Updates to the processes to sign, manage, renew and revoke certificates will be managed by via the bilateral operations and maintenance agreements between Telstra and the Mobile Carrier.

3.5 Solution Overview

3.5.1 Figure 2 below illustrates how the Push MoLI is determined when an Emergency Call is in progress. The steps in Figure 2 are:

- (a) A mobile user calls 000 or 112. The Emergency Call is picked up by a macro BTS of a Mobile Carrier and flagged as an Emergency Call to the MSC. (step 1)
- (b) The MSC routes the Emergency Call to Telstra (as the ECP) in line with the current Emergency Call routing procedure as per ACIF G500:2000 along with SMSA based MoLI (refer to G557.2). (step 2)
- (c) At or before receipt of the Address Complete Message (ACM) signaling message in accordance with ACIF G500:2000, Part D (see Figure B.3/Q.764) XPOI from Telstra , the MSC derives location information based upon either a Network Induced Location Request (NI-LR) or any other method and forwards it to the GMLC. Location information includes data specified in Table 1 requirements.
- (d) The GMLC acknowledges receipt of the location information to the MSC and delivers the Push MoLI to the ECLIPS Server via the IP Sec VPN connection (step 5);
 - (i) The MSC sends another message to the GMLC, which includes an indication of the Emergency Call termination; and
 - (ii) The GMLC acknowledges the MSC server notification.

<i>NOTE: Some GMLC solutions also send an Emergency Call release notification to the ECLIPS server.</i>

- (e) The ECLIPS Server stores the Push MoLI in a table.
- (f) The ECP Terminal application queries the ECLIPS Server using the mobile subscriber ID (refer Table 1) as a unique key and extracts the CLI data with the Push MoLI. (step 6)
- (g) The ECP Terminal conferences the call with the caller requested ESO. (step 7a)
- (h) The ECP Terminal sends the CLI data with the Push MoLI to the ESO via Telstra's wide area network as per the current process. (step 7b)

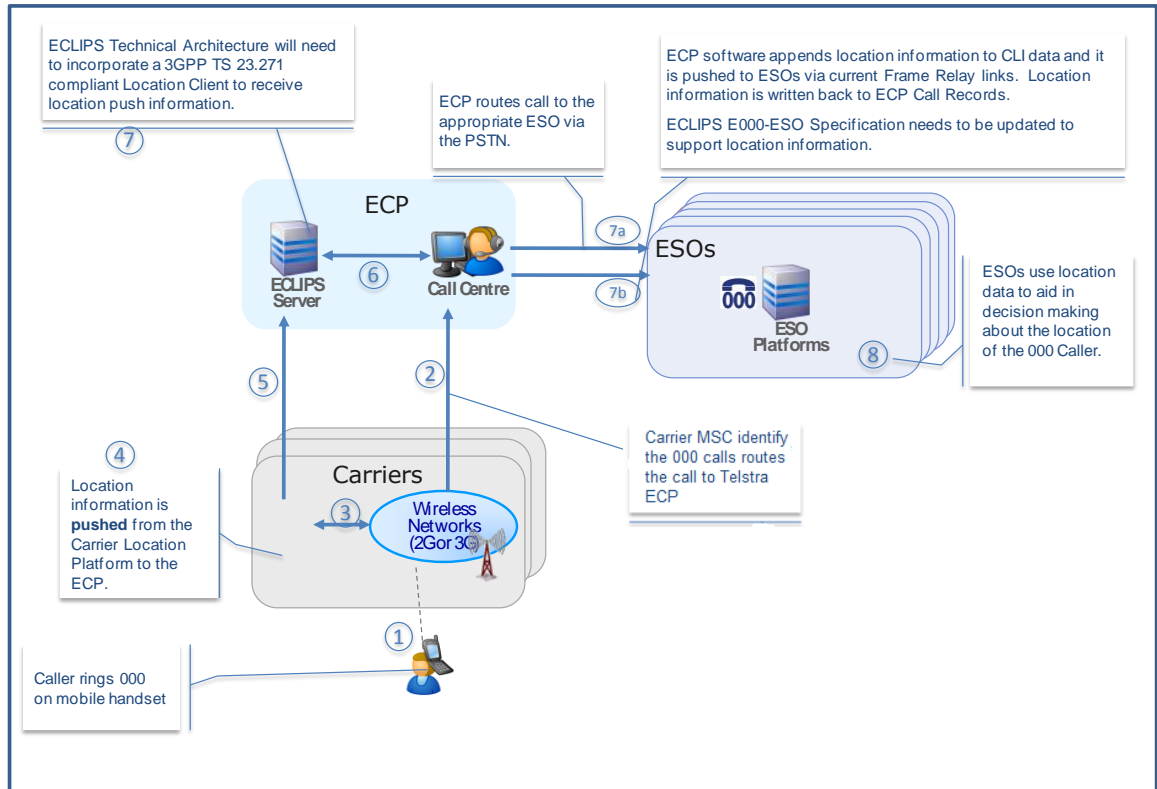


FIGURE 2
End to End Push MoLI Data Overview

3.6 Commencement

- 3.6.1 The ECP is to make available by 23 May 2014 to Mobile Carriers the updated Production ECLIPS system for production testing, subject to the successful completion of the 2013 ECLIPS Lifecycle Management Project.

NOTE: The ECP has notified that the 2013 ECLIPS Lifecycle Management Project which was due for completion by mid-March will now be delivered in late April 2014.

- 3.6.2 A Mobile Carrier should be able to deliver Push MoLI to the ECP by no later than 90 days after the updated Production ECLIPS system has been made available by the ECP to the Mobile Carrier in order to conduct production testing.
- 3.6.3 A Mobile Carrier should be able to deliver Push MoLI to the ECP, subject to:
- (a) clause 3.6.1;
 - (b) clause 3.6.2;
 - (c) the Mobile Carrier being able to satisfactorily complete:

- (i) development of its Push MoLI implementation solution;
 - (ii) production tests of its Push MoLI implementation solutions with the updated Production ECLIPS system;
- (d) resolution and testing of any matters arising from the production testing process including:
- (i) technical issues,
 - (ii) operational issues,
 - (iii) load testing; or
 - (iv) other issues;
- (e) any changes to this draft specification arising from the:
- (i) testing results;
 - (ii) ECP operational arrangements; or
 - (iii) any other reason.
- (f) The completion of written agreement between the Mobile Carrier and Telstra in support of its role as ECP for a formal variation of the current E000 Interconnect Service Definition (ISD) between them to include Push MoLI.

NOTES:

1. The ISD would define the following items between Telstra and the Mobile Carrier:

(a) the agreed data link architecture issues (e.g. IPSec VPN, HTTPS etc.); and

(b) the associated Operations and Maintenance (O and M) documents to support Push MoLI (e.g. the agreed fault reporting and rectification procedures).

2. Mobile Carriers will make every effort to deliver Push MoLI by 30 June 2014. However due to the delays in the delivery of the ECLIPS Lifecycle Management Project this may not be achievable as new safeguards must be developed and the appropriate testing must be conducted prior to launch to ensure the reliability and integrity of the ECS is maintained.

4 PUSH MOBILE LOCATION DATA SHAPES AND FIELDS

4.1 Circular Area Shape

- 4.1.1 For Circular Area shape, the ECLIPS Server will store the following information:
- (a) CircularArea -> Shape,
 - (b) Mobile Subscriber ID,
 - (c) UTC_TIME_STAMP,
 - (d) Centre; X[latitude of the BTS],
 - (e) Centre Y[longitude of the BTS],
 - (f) Outer Radius in meters, and
 - (g) Geodetic Datum.
- 4.1.2 Refer to Figure 3 for a pictorial view of the Push MoLI where Circular Area shape information is only the centre point coordinates and an outer radius (for ECLIPS recording purpose).

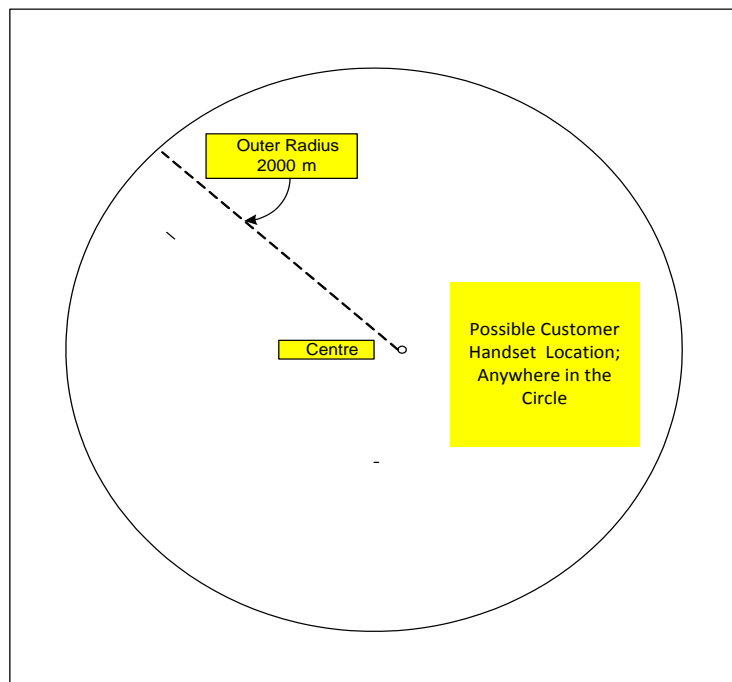


FIGURE 3

Pictorial View of Push MoLI with point coordinates and Outer radius

4.2 CircularArc Area Shape

4.2.1 For CircularArc Area shape, the ECLIPS server will store the following information:

- (a) CircularArc Area -> Shape,
- (b) Mobile Subscriber ID,
- (c) UTC_TIME_STAMP,
- (d) Centre; X[latitude of the BTS],
- (e) Centre Y[longitude of the BTS],
- (f) Inner Radius in meters,
- (g) Outer Radius in meters,
- (h) Start Angle in degrees,
- (i) Stop Angle in degrees, and
- (j) Geodetic Datum.

4.2.2 Refer to Figure 4 for a pictorial view of the Push MoLI where CircularArc Area shape information is available.

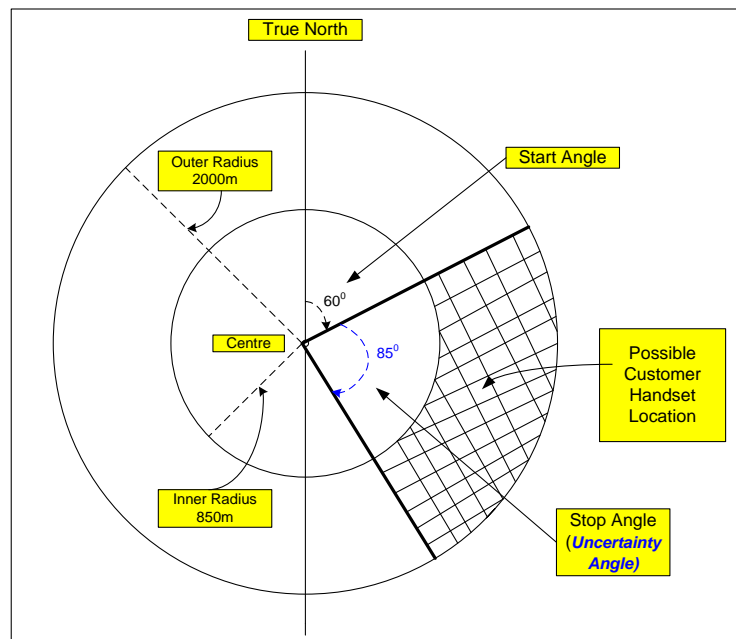


FIGURE 4

Pictorial View of Push MoLI with point coordinates, radii and angles

4.3 Point Shape

4.3.1 For Point shape, the ECLIPS Server will store the following information:

- (a) Point -> Shape,
- (b) Mobile Subscriber ID,
- (c) UTC_TIME_STAMP,
- (d) Centre X [latitude of the CE],
- (e) Centre Y [longitude of the CE] and
- (f) Geodetic Datum.

4.4 Polygon Shape

4.4.1 For Polygon shape, the ECLIPS Server will store the following information:

- (a) Polygon -> Shape,
- (b) Mobile Subscriber ID,
- (c) UTC_TIME_STAMP,
- (d) Point 1 of the Polygon; X [latitude],
- (e) Point 1 of the Polygon Y [longitude],
- (f) Point 2 of the Polygon; X [latitude],
- (g) Point 2 of the Polygon Y [longitude],
- (h) Point 3 of the Polygon; X [latitude],
- (i) Point 3 of the Polygon Y [longitude],
- (j) Point 4 of the Polygon; X [latitude],
- (k) Point 4 of the Polygon Y [longitude],
- (l) Point 5 of the Polygon; X [latitude],
- (m) Point 5 of the Polygon Y [longitude],
- (n) Point 6 of the Polygon; X [latitude],
- (o) Point 6 of the Polygon Y [longitude], and
- (p) Geodetic Datum.

NOTE: A polygon can consist of between 3 and 15 Vertices points (inclusive). These Points are derived from cell coverage area.

- 4.4.2 Refer to Figure 5 for a pictorial view of the Push MoLI where Polygon information is available.

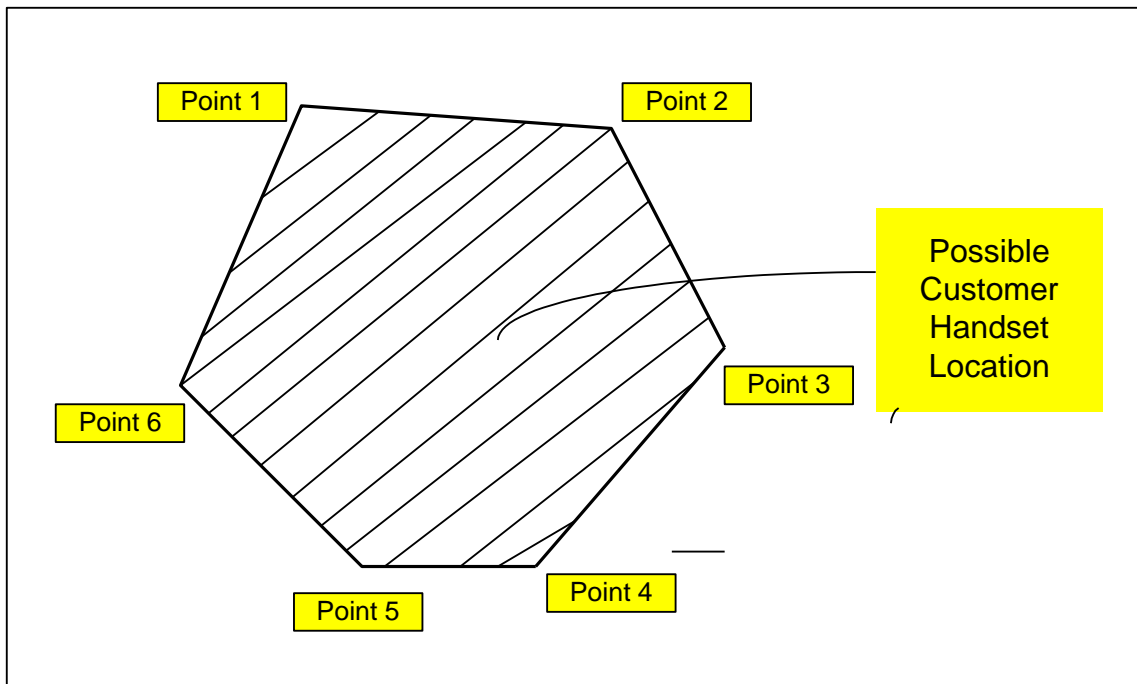


FIGURE 5

Pictorial View of Push MoLI with Polygon coordinates

4.5 Elliptical Area Shape

- 4.5.1 For the Elliptical Area shape, the ECLIPS Server will store the following information:

- (a) Elliptical Area -> Shape,
- (b) Mobile Subscriber ID,
- (c) UTC_TIME_STAMP,
- (d) Centre; X[latitude of the CE],
- (e) Centre Y[longitude of the CE],
- (f) Semi-Major axis of length (r1) in meters,
- (g) Semi-Minor axis of length (r2) in meters,
- (h) Angle in degrees, and
- (i) Geodetic Datum.

- 4.5.2 Refer to Figure 6 for a pictorial view of the Push MoLI where elliptical area information is available.

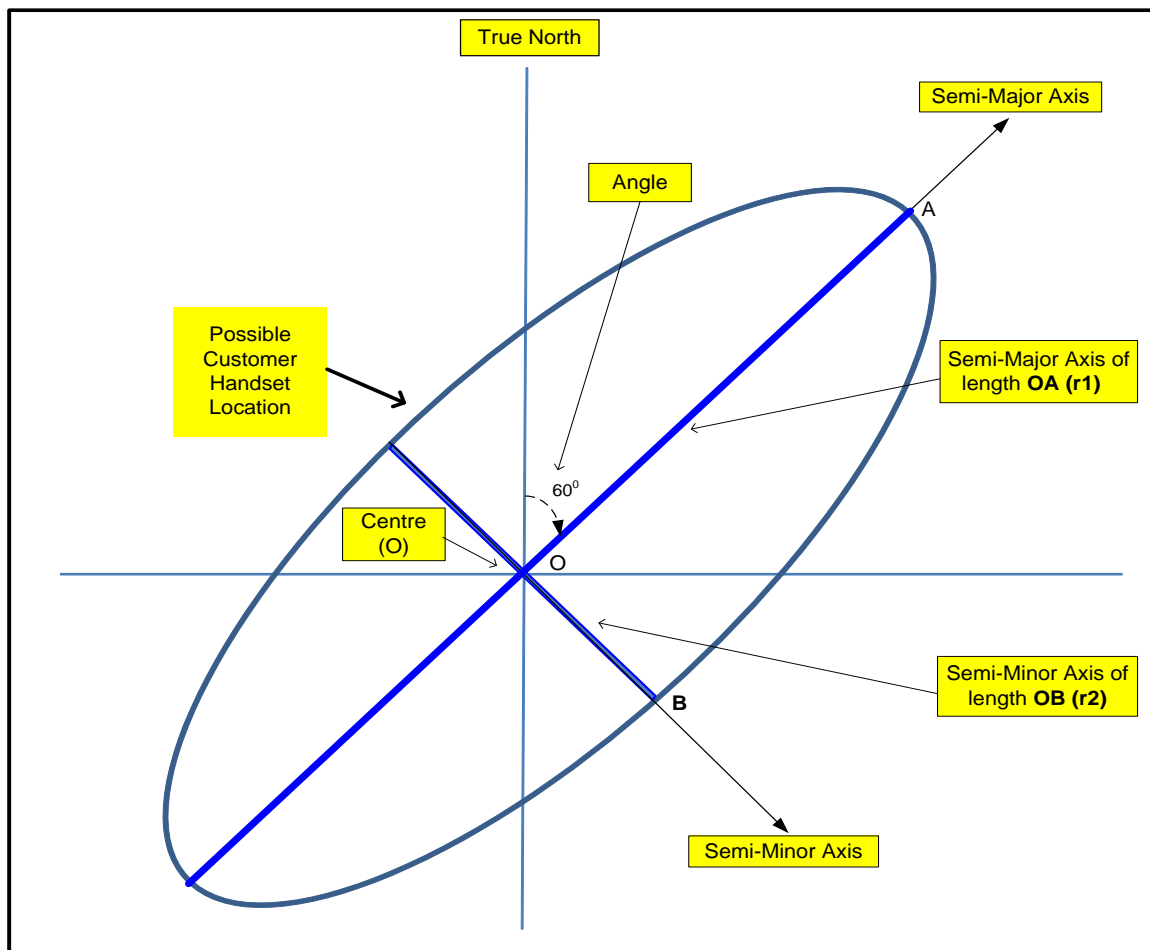


FIGURE 6

Pictorial View of Push MoI with Elliptical Area coordinates

5 REFERENCES

Publication	Title
International Specifications and Standards	
3GPP TS 23.078	Customised Applications for Mobile network Enhanced Logic (CAMEL) Phase 4; Stage 2 http://www.3gpp.org/DynaReport/23078.htm
3GPP TS 23.271	Technical Specification Group Services and System Aspects; Functional stage 2 description of Location Services (LCS) (Release 6). http://www.3gpp.org/DynaReport/23271.htm
3GPP TS 24.008	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Mobile radio interface Layer 3 specification; Core network protocols; Stage 3-3GPP TS 24.008 http://www.3gpp.org/DynaReport/24008.htm
ETSI TS 101 376-3-19 V2.2.1 (2005-03)	GEO-Mobile Radio Interface Specifications (Release 2) General Packet Radio Service; Part 3: Network specifications; Sub-part 19: Optimal Routing technical realization; GMPRS-1 03.297 http://www.etsi.org/deliver/etsi_ts/101300_101399/1013760319/02.02.01_60/ts_1013760319v020201p.pdf
GDA94	Geocentric Datum of Australia 1994 http://www.ga.gov.au/earth-monitoring/geodesy/geodetic-datums/GDA.html
ITU-T E.164 (11/2010)	The international public telecommunication numbering plan http://www.itu.int/ITU-T/recommendations/rec.aspx?rec=10688
OMA-TS-MLP V3.2	OMA Mobile Location Protocol (MLP) Candidate Version 3.2, dated 24 November 2005 http://technical.openmobilealliance.org/technical/release_program/mls_archive.aspx
IETF RFC 2616	Hypertext Transfer Protocol -- HTTP/1.1 https://tools.ietf.org/html/rfc2616

IETF RFC 2660	The Secure HyperText Transfer Protocol https://tools.ietf.org/html/rfc2660
WGS84	World Geodetic System 1984 http://www.ga.gov.au/earth-monitoring/geodesy/geodetic-datums/other/wgs84.html
<hr/> Industry Guidelines and Specifications <hr/>	
ACIF G500:2000	Signalling System No. 7 - Interconnection ISUP http://commsalliance.com.au/Documents/all/Specifications/G500_2000
G557:2014	Standardised Mobile Service Area and Location Indicator Specifications and Guidelines Part 1: Index Part 2: Standardised Mobile Service Area and Location Indicator Register Part 3: Location Independent Communications Service Location Indicator for Emergency Services Signalling Specification Part 4: Mobile Location Information (MoLI) Processes for Emergency Calling and Rescue Coordination Part 5: Push Mobile Location Information (MoLI) Interface To Enhanced Calling Line Identification Processing System (ECLIPS) http://commsalliance.com.au/Documents/all/guidelines/g557
<hr/> Other Industry Documents <hr/>	
Telstra RSS CA CPS	Telstra RSS CA Certification Practice Statement (CPS) V 1.3 http://www.telstra-pki.pki.telstra.com.au/Telstra_RSS_CPS.pdf
Symantec Trusted Network CPS	Symantec Trust Network (STN) Certification Practice Statement. Version 3.8.14 https://www.symantec.com/content/en/us/about/media/repository/stn-cps.pdf

Legislation and Regulation

Telecommunications Act 1997

<http://www.comlaw.gov.au/Series/C2004A05145>

Telecommunications (Emergency Call Service) Determination 2009

<http://www.comlaw.gov.au/Series/F2009L04720>

APPENDIX

A Push MoLI: ECLIPS – Mobile Carrier Data Transmission

Based on the Mobile Carriers call volume (approximately 500,000 Emergency Calls per month from mobile phones to 000 or 112) at the time of publication, each Mobile Carrier needs to dimension the number of sessions required on its GMLC as per the number of simultaneous Emergency Calls in its network for their GMLC to send Push MoLI data to ECLIPS as shown on Figure 7.

NOTE: Mobile Carriers implementing the "alternate process" in Sec 3.4 are not required to establish data links between their GMLC & the Secondary ECLIPS Server.

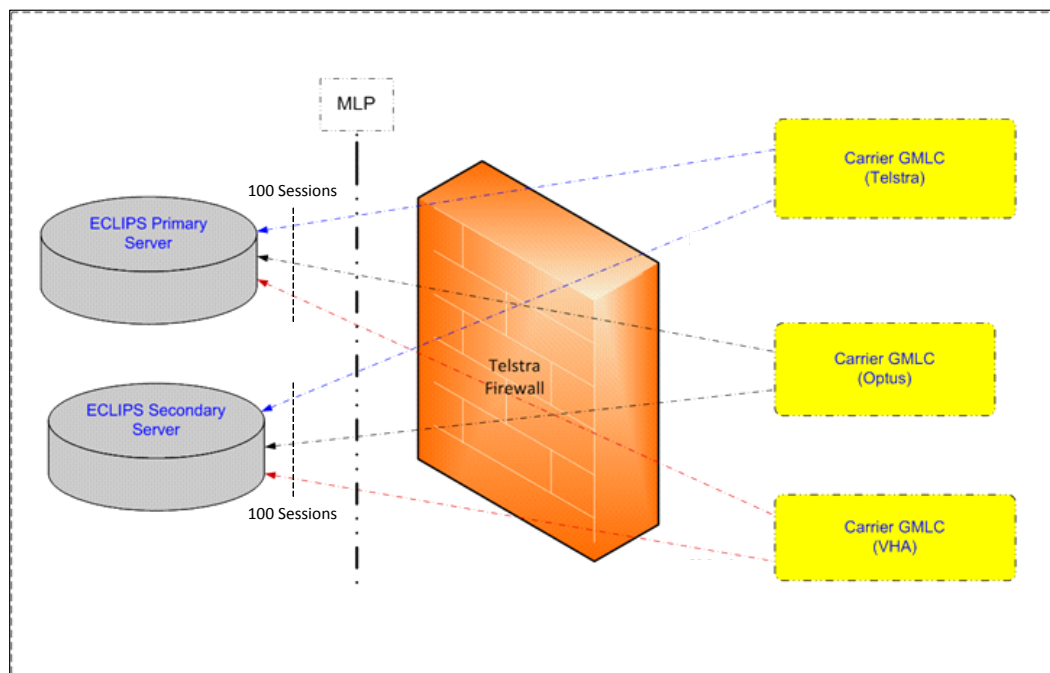


FIGURE 7

Push MoLI: ECLIPS – Mobile Carrier Data Transmission

APPENDIX

B Test Plan Template

B1 Introduction

B.1.1 Scope

This document is the detailed test plan for the Push MoLI project and addresses the testing to be performed.

This document specifies the test conditions, required as a pre-requisite to start testing and test cases required to meet the project requirements as defined in this Specification.

B.1.2 Objectives

The objectives of the Testing are to:

- (a) Validate the capability of a Mobile Carrier's networks and Global Mobile Location Centre (GMLC) to support the Push MoLI capability;
- (b) Confirm a Mobile Carrier can deliver the Push MoLI to ECLIPS within 6 secs from the time an Emergency Call was first detected by its MSC i.e. at or before the Mobile Carrier receives the ACM signaling message from the ECP; and
- (c) Confirm interoperability standards to support the Push MoLI capability. This will enable seamless integration between Mobile Carriers and ECLIPS.

B.1.3 Purpose

The purpose of this document is to provide:

- (a) Items for test;
- (b) Input specifications;
- (c) Output specifications;
- (d) Environment needs;
- (e) Configuration requirements;
- (f) Test case identifier; and
- (g) Test case traceability to requirements.

B2 Test Phases

The testing will be divided into 2 phases.

B.2.1 Test Phase 1 (Mobile Carrier test GMLC to ECLIPS Model)

Following the satisfactory completion of Phase 1, and once all firewall burns have been completed and data has been inserted into the test GMLC, and the model ECLIPS servers have been modified to accept Push MoLI, a subset of tests will be undertaken to ensure that 000 and 112 calls made in the Mobile Carrier's test GMLC environment result in transfer of the correct Push MoLI to ECLIPS.

B.2.2 Test Phase 2 (Mobile Carrier production GMLC to production ECLIPS)

Install all functionality and analysis into the Mobile Carrier production GMLC environment.

Confirm that the production GMLC is receiving a message to transfer Push MoLI, for all possible combinations that are "In Scope / Inclusions" as listed in Phase 1.

"Out of Scope / Exclusions" may also be tested, to establish what actually occurs in production, and noted in the findings.

Commencement of this phase requires that Phase 1 has been completed.

This phase will also allow the performance of MSCs, GMLC and network components to be observed and quantified, to ensure that the Mobile Carrier networks can actually handle Push MoLI in the form expected to be rolled out, should this prove successful.

No training or customer communications is required for this Project, as there will be no externally discernable changes.

B3 Testing Pre-requisites

B.3.1 Environment Requirements

The following table contains all the necessary environment requirements in order to perform testing, in each of the phases.

B.3.2 Phase 1

Refer to Table 11 for requirement descriptions for the test environment.

TABLE 11
Requirement Descriptions for Test Environment

Environment	Description of Requirements
Test MSCs	Each type of test MSC to be running with the same software version and release as its production equivalent, with the exception of Push MoI being enabled.
Test GMLC	Test GMLC to be running with the same software version and release as its production equivalent.
Test Core Network	Test Core network to be in full working order. Any variances to normal to be noted at the time of testing.
Model ECLIPS	Model ECLIPS to be running with the same software version and release as its production equivalent. .

B.3.3 Phase 2

Refer to Table 12 for requirement descriptions for the production Mobile Carrier network.

TABLE 12
Requirement Descriptions for Production Mobile Carrier Network and Production ECLIPS

Environment	Description of Requirements
Production MSCs	Each type of production MSC type to be running satisfactorily. Push MoI is enabled.
Production GMLC	GMLC to be running satisfactorily.
Production Core Networks	Production Core network to be in full working order.
Pre-Production and Production ECLIPS	Pre-Production and Production ECLIPS to be in full working order.

B.3.4 Test Resources

Refer to table 13 for descriptions of testing resource requirements.

TABLE 13
Descriptions of Testing Resource Requirements

Resource Role	No. Required
Mobile Test Manager, incorporating Test Environment Co-ordinator, Tester, Test Document Writer and Defect Manager.	1
ECLIPS Test Manager / Test Specialist	1
Assistance from platform and product specialists.	As required

B.3.5 Test Tools

Test tools are to include:

- (a) Specified hand held CE (4G, 3G, 2G and 2G "Old"), and
- (b) Specified services (SIM/USIM cards of Mobile Carriers).

B4 Test Case and Results

As this testing involves the same basic test setup, repeated numerous times with different individual components, a table will be used to illustrate all testing combinations.

In the case of non-compliance (or unexpected results), notes detailing the issue, and any appropriate prevailing conditions, will be added following the table.

B.4.1 Phase 1

The tests in Table 14 are to be repeated 3 times to confirm the reliability of the data.

TABLE 14
Phase 1 Test Cases

		MSC Location Data trigger for 000 Calls	MSC Location Data trigger for 112 Calls
Test Case	Test handset	Expected Results	Expected Results
1	Mobile Carrier's SIM + "OLD" 2G CE	Refer to Section 3.2	Refer to Section 3.2
2	Mobile Carrier's SIM + 2G CE	Refer to Section 3.2	Refer to Section 3.2
3	Wholesale Customer's SIM with 2G CE	Refer to Section 3.2	Refer to Section 3.2
4	Mobile Carrier's USIM + 3G/4G CE	Refer to Section 3.2	Refer to Section 3.2

NOTE: The term "OLD" 2G CE refers to CE which does not raise special flags or use special signalling protocols as required by 3GPP TS 24.008 when calling emergency numbers (i.e. 000 or 112).

B.4.2 Phase 2

The MSCs to be provisioned with the Push MoLI functionality is to be decided by the Mobile Carrier.

The tests in Table 15 are to be repeated 3 times to confirm the reliability of the data.

TABLE 15
Phase 2 Test Cases

		MSC Location Data trigger for 000 Calls	MSC Location Data trigger for 112 Calls
Test Case	Test Handset	Expected Results	Expected Results
1	Mobile Carrier's SIM + "OLD" 2G CE	Refer to Section 3.2	Refer to Section 3.2
2	Mobile Carrier's SIM + 2G CE	Refer to Section 3.2	Refer to Section 3.2
3	Wholesale Customer's SIM with 2G CE	Refer to Section 3.2	Refer to Section 3.2
4	Mobile Carrier's USIM + 3G/4G CE	Refer to Section 3.2	Refer to Section 3.2

NOTE: The term "OLD" 2G CE refers to CE which does not raise special flags or use special signalling protocols as required by 3GPP TS 24.008 when calling emergency numbers (i.e. 000 or 112).

APPENDIX

C Examples of Sample XML Codes for Push MoLI

C1 Circular Area Shape

C.1.1 Sample XML codes for Push MoLI that includes Circular Area shape information with centre coordinates and a radius are:

```
Example #1 (Telstra): <?xml version="1.0" encoding="UTF-8" ?><!DOCTYPE
svc_result SYSTEM "MLP_SVC_RESULT_320.DTD"><svc_result
ver="3.2.0"><emerep ver="3.0.0"><eme_event
eme_trigger="EME_ORG"><eme_pos pos_method="CELL"><msid
type="MSISDN" enc="ASC">61419450475</msid><pd><time
utc_off="+1100">20120213172519</time><shape><CircularArea
srsName="www.epsg.org#4283"><coord><X>33 49 07S</X><Y>151 00
26E</Y></coord><radius>2000</radius></CircularArea></shape><lev_con
f>0</lev_conf></pd></eme_pos></eme_event></emerep></svc_result>
```

```
Example #2 (Optus): <?xml version="1.0" ?><!DOCTYPE svc_result SYSTEM
"MLP_SVC_RESULT_320.DTD"><svc_result ver="3.2.0"><emerep ver
="3.0.0"><eme_event eme_trigger="EME_ORG"><eme_pos><msid
type="MSISDN" enc="ASC">61412917285</msid><pd><time
utc_off="+1100">20131114000303</time><shape><CircularArea
srsName="www.epsg.org#4326"><coord><X>33 47 06.261S</X><Y>151 07
17.064E</Y></coord><radius>201</radius><distanceUnit>meter</distance
Unit></CircularArea></shape></pd><esrd
type="NA">0000229501</esrd><esrk
type="NA">0411927</esrk></eme_pos></eme_event></emerep></svc_re
sult>
```

```
Example #3 (VHA): <?xml version="1.0"?><!DOCTYPE svc_result SYSTEM
"MLP_SVC_RESULT_320.DTD"><svc_result ver="3.2.0"><emerep
ver="3.0.0"><eme_event eme_trigger="EME_ORG"><eme_pos
pos_method="CELL"><msid type="MSISDN"
enc="ASC">61414132671</msid><pd><time
utc_off="+1100">20131205144113</time><shape><CircularArea
srsName="www.epsg.org#4326"><coord><X>9 00 00.000N</X><Y>99 00
00.000E</Y></coord><radius>100</radius><distanceUnit>meter</distance
Unit></CircularArea></shape></pd></eme_pos></eme_event></emerep
></svc_result>
```

C2 CircularArc Area Shape

- C.2.1 Sample XML code for Push MoLI that includes CircularArc Area shape information with point coordinates, radii and angles is:

```
<?xml version="1.0" encoding="UTF-8" ?><!DOCTYPE svc_result SYSTEM
"MLP_SVC_RESULT_320.DTD"><svc_result ver="3.2.0"><emerep
ver="3.0.0"><eme_event eme_trigger="EME_ORG"><eme_pos
pos_method="CELL"><msid type="MSISDN"
enc="ASC">61419450475</msid><pd><time
utc_off="+1100">20120213172519</time><shape><CircularArcArea
srsName="www.epsg.org#4326"><coord><X>33 49 07S</X><Y>151 00
26E</Y></coord><inRadius>850</inRadius><outRadius>2000</outRadius>
<startAngle>60</startAngle><stopAngle>85</stopAngle></CircularArcAre
a></shape><lev_conf>0</lev_conf></pd></eme_pos></eme_event></e
merep></svc_result>
```

NOTE: Where point, radii and angle information is not available, the Mobile Carrier will supply Circular Area shape information – refer to the examples in C.1.1.

C3 Point Shape

- C.3.1 Sample XML code for Push MoLI that includes Point shape information is :

```
<?xml version="1.0" encoding="UTF-8" ?><!DOCTYPE svc_result SYSTEM
"MLP_SVC_RESULT_320.DTD"><svc_result ver="3.2.0"><emerep
ver="3.0.0"><eme_event eme_trigger="EME_ORG"><eme_pos
pos_method="CELL"><msid type="MSISDN"
enc="ASC">61419450475</msid><pd><time
utc_off="+1100">20120213172519</time><shape><Point
srsName="www.epsg.org#4283"><coord><X>33 49 07S</X><Y>151 00
26E</Y></coord></Point></shape><lev_conf>0</lev_conf></pd></eme_
pos></eme_event></emerep></svc_result>
```

NOTE: Where point information is not available, the Mobile Carrier will supply Circular Area shape information – refer to the examples in C.1.1.

C4 Polygon Shape

C.4.1 Sample XML code for Push MoLI that includes Polygon shape information is :

```
<?xml version="1.0" encoding="UTF-8" ?><!DOCTYPE svc_result SYSTEM
"MLP_SVC_RESULT_320.DTD"><svc_result ver="3.2.0"><emerep
ver="3.0.0"><eme_event eme_trigger="EME_ORG"><eme_pos
pos_method="CELL"><msid type="MSISDN"
enc="ASC">61419450698</msid><pd><time
utc_off="+1100">20120319154843</time> <shape><Polygon
srsName="www.epsg.org#4326"><outerBoundaryIs><LinearRing><coord><
X>33 48 55S</X><Y>151 00 10E</Y></coord><coord><X>33 48
58S</X><Y>151 00 10E</Y></coord><coord><X>33 48 58S</X><Y>151 00
02E</Y></coord><coord><X>33 48 55S</X><Y>151 00
02E</Y></coord><coord><X>33 48 48S</X><Y>151 00
02E</Y></coord><coord><X>33 48 48S</X><Y>151 00
06E</Y></coord><coord><X>33 48 55S</X><Y>151 00
10E</Y></coord></LinearRing></outerBoundaryIs></Polygon></shape><l
ev_conf>0</lev_conf></pd></eme_pos></eme_event></emerep></svc_r
esult>
```

```
Example #2 (VHA): <?xml version="1.0"?><!DOCTYPE svc_result SYSTEM
"MLP_SVC_RESULT_320.DTD"><svc_result ver="3.2.0"><emerep
ver="3.0.0"><eme_event eme_trigger="EME_ORG"><eme_pos
pos_method="CELL"><msid type="MSISDN"
enc="ASC">61414132671</msid><pd><time
utc_off="+1100">20131205150234</time><shape><Polygon
srsName="www.epsg.org#4326"><outerBoundaryIs><LinearRing><coord><
X>30 45 28.408S</X><Y>152 02 51.378E</Y></coord><coord><X>30 36
54.173S</X><Y>152 13 33.845E</Y></coord><coord><X>30 36
54.173S</X><Y>152 17 00.132E</Y></coord><coord><X>30 36
00.148S</X><Y>152 18 14.483E</Y></coord><coord><X>30 43
12.947S</X><Y>152 19 36.498E</Y></coord><coord><X>30 45
28.408S</X><Y>152 02
51.378E</Y></coord></LinearRing></outerBoundaryIs></Polygon></shap
e><lev_conf>100</lev_conf></pd></eme_pos></eme_event></emerep>
</svc_result>
```

NOTE: Where Polygon information is not available, the Mobile Carrier will supply Circular Area shape information – refer to the examples in C.1.1.

C5 Elliptical Area Shape

C.5.1 Sample XML code for Push MoLI that includes Elliptical Area shape information is :

```
<?xml version="1.0" ?><!DOCTYPE svc_result SYSTEM
"MLP_SVC_RESULT_320.DTD"><svc_result ver="3.2.0"><emerep ver
="3.0.0"><eme_event eme_trigger="EME_ORG"><eme_pos><msid
type="MSISDN" enc="ASC">61411242270</msid><pd><time
utc_off="+1100">20131119032309</time><shape><EllipticalArea
srsName="www.epsg.org#4326"><coord><X>31 56 55.025S</X><Y>115 50
23.669E</Y></coord><angle>26.0</angle><semiMajor>299</semiMajor><
semiMinor>245</semiMinor><angularUnit>Degrees</angularUnit><distanc
eUnit>meter</distanceUnit></EllipticalArea></shape><lev_conf>0</lev_c
onf></pd><esrd type="NA">0000937450</esrd><esrk
type="NA">0411948</esrk></eme_pos></eme_event></emerep></svc_re
sult>
```

NOTES:

1: Where Elliptical area information is not available the Mobile Carrier will supply Circular Area shape information – refer to the examples in C.1.1.

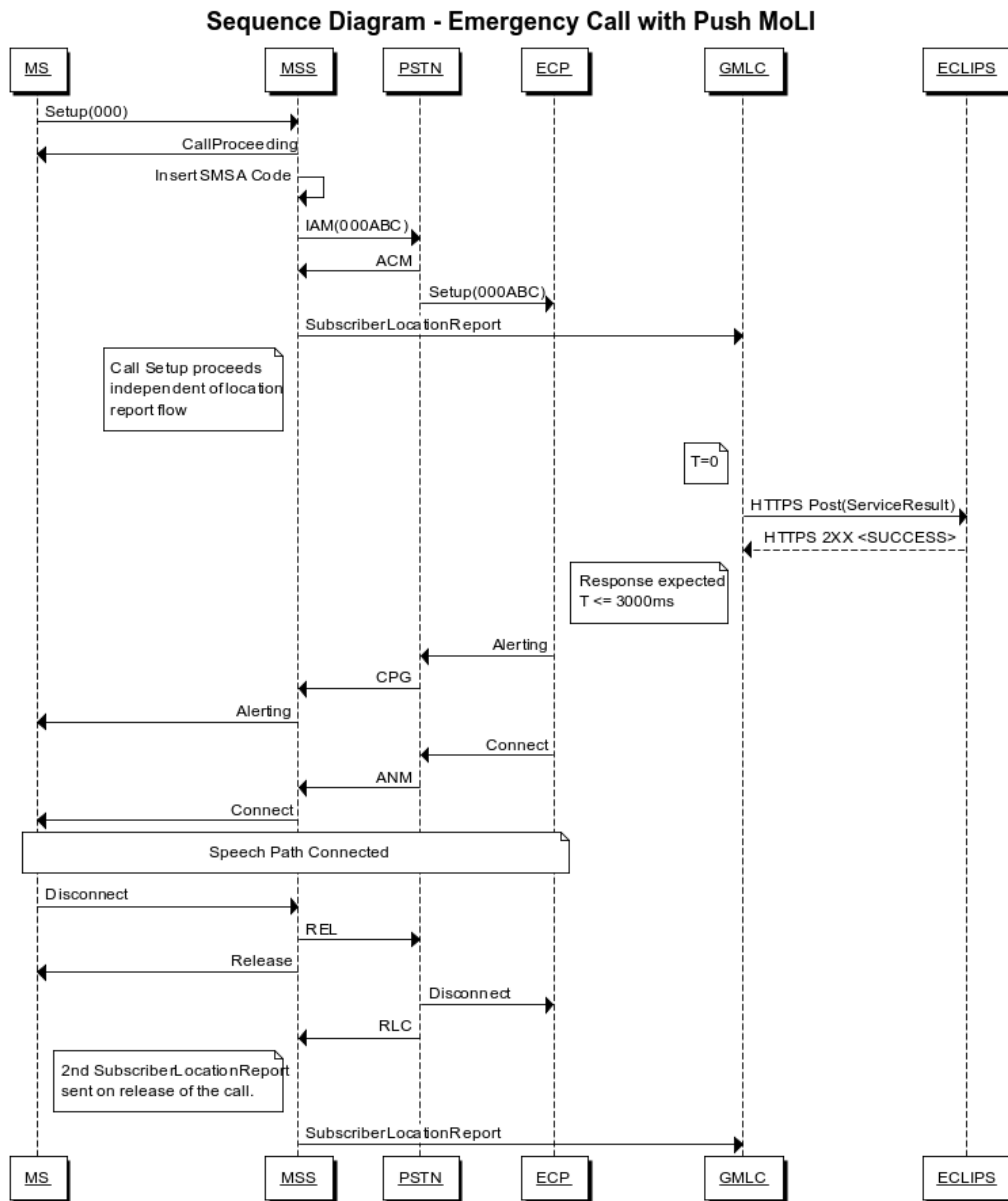
2. Some GMLC solutions will inject a default dummy numeric value which may be other than zero (e.g. 65 or 57) in the lev-conf parameter for elliptical area information which needs to be ignored by the ECP and ESO.

APPENDIX

D Sequence Diagrams

D.1.1 General call flow – Emergency call initiated from MS

Refer to Figure 8 for a high level call flow for an Emergency Call with Push MoLI, covering both the call setup to the ECP and the Push MoLI delivery to ECLIPS. Transfer of the call to an ESO is not included in the flow; from the Mobile Carrier's point of view, the responsibility is delivery of the Emergency Call and associated Push MoLI delivery to the ECP; delivery to the ESO is the responsibility of the ECP.



D.1.2 GMLC to ECLIPS Failover Scenarios

Connection failure to Primary ECLIPS Server

- (a) For Mobile Carriers implementing the "recommended process" in Section 3.3:
If the GMLC is unable to connect to the primary ECLIPS server, or if for any reason the connection fails, the GMLC will attempt to deliver Push MoLI to the secondary ECLIPS server instead. Note that there would be no further attempt at Push MoLI delivery if the attempt to the secondary ECLIPS server fails for any reason.
- (b) For Mobile Carriers implementing the "alternate process" in Section 3.4:
If the GMLC is unable to connect to the primary ECLIPS server, or if for any reason the connection fails, the GMLC will make a second attempt to deliver Push MoLI to the primary ECLIPS server. Note that there would be no further attempt at Push MoLI delivery if the second attempt to the primary ECLIPS server fails for any reason.

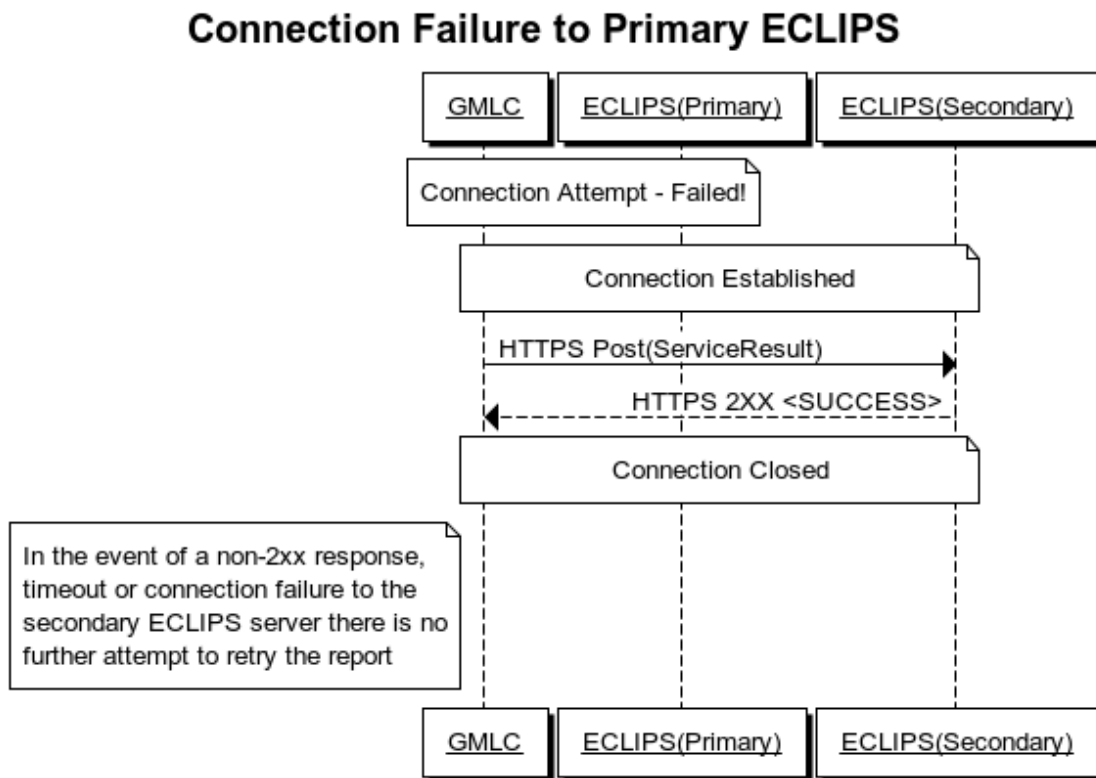


FIGURE 9
Connection Failure to Primary ECLIPS

Connection Failure to Primary ECLIPS - Alternate Failover

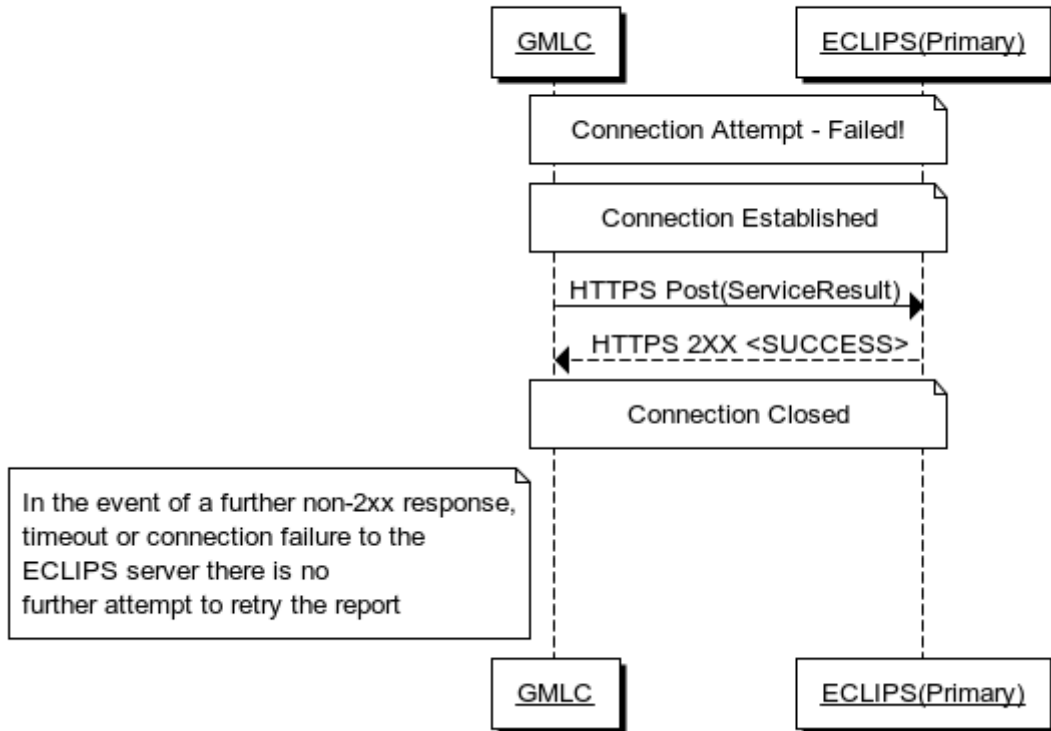


FIGURE 10

Connection Failure to Primary ECLIPS – Alternate Failover

Unsuccessful response from ECLIPS

- (a) For Mobile Carriers implementing the "recommended process" in Section 3.3:
In the event of failure in the processing of Push MoLI data, ECLIPS will flag the error to the GMLC using any HTTP 5XX response code for requiring retry. Such a response from the primary ECLIPS server would result in the GMLC attempting to deliver Push MoLI to the secondary ECLIPS server. Note that there would be no further attempt for Push MoLI delivery if the attempt to the secondary server fails
- (b) For Mobile Carriers implementing the "alternate process" in Section 3.4:
In the event of failure in the processing of Push MoLI data, ECLIPS will flag the error to the GMLC using any HTTP 5XX response code. Such a response from the primary ECLIPS server would result in the GMLC making a second attempt to deliver Push MoLI to the primary ECLIPS server. Note that there would be no further attempt at Push MoLI delivery if the second attempt to the primary ECLIPS server fails for any reason.

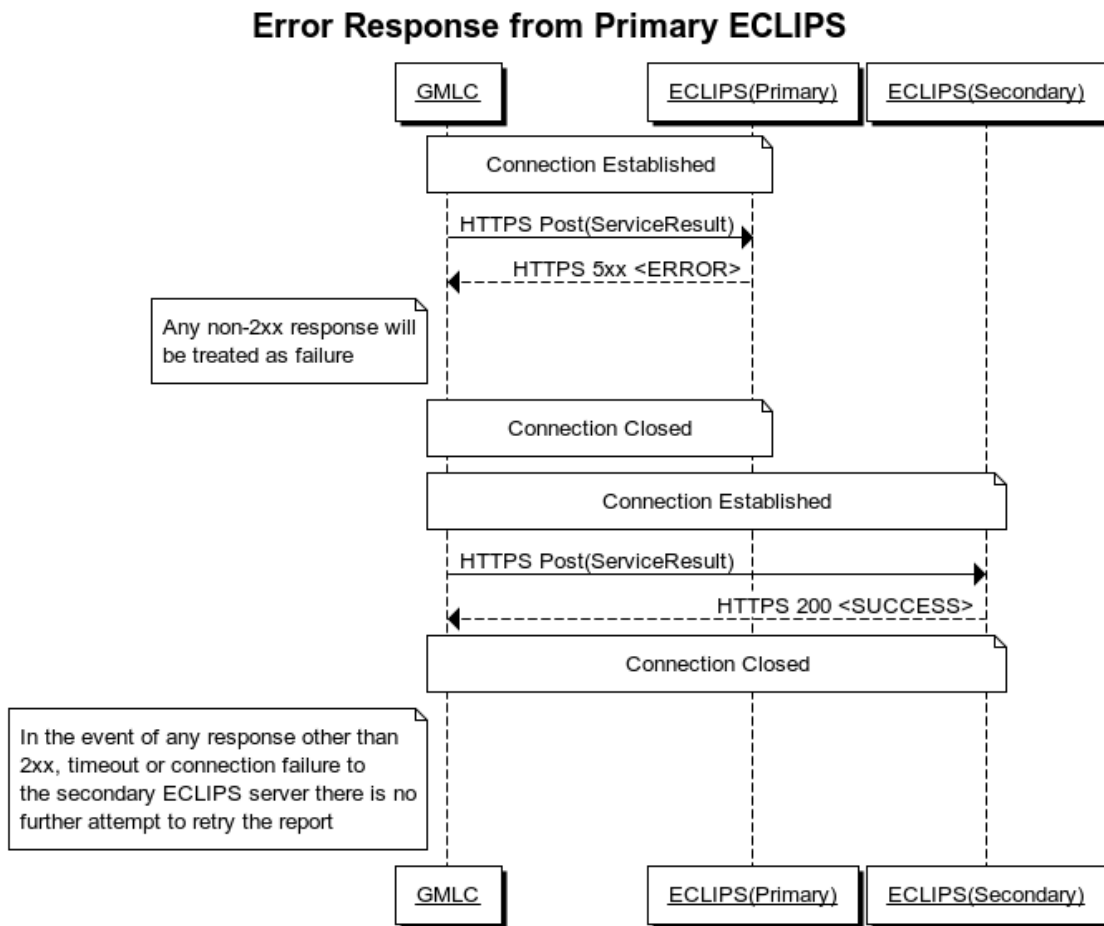


FIGURE 11
Error Response from Primary ECLIPS

Error Response from Primary ECLIPS - Alternate Failover

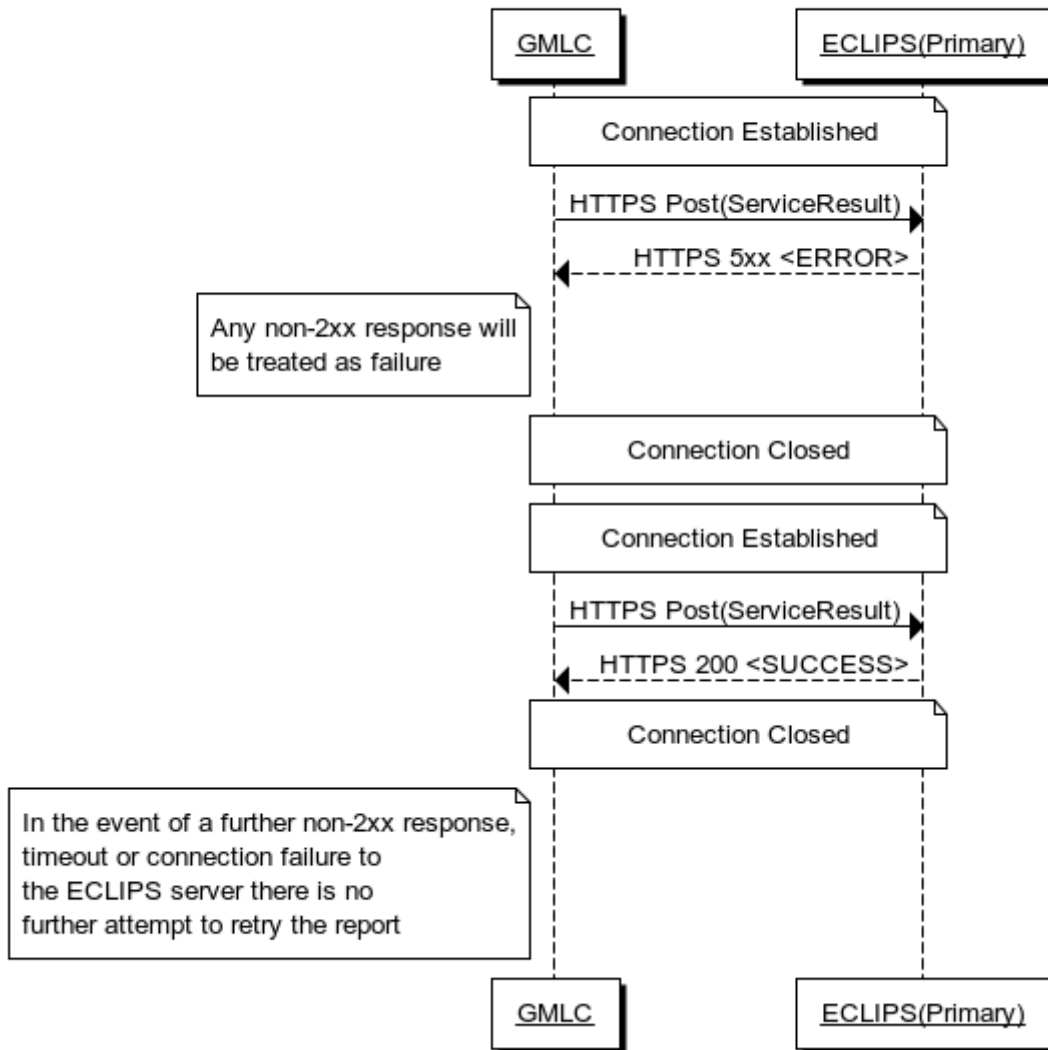


FIGURE 12

Error Response from Primary ECLIPS – Alternate Failover

Timeout on response from ECLIPS

- (a) For Mobile Carriers implementing the "recommended process" in Sec 3.3: The GMLC will monitor for a response from the primary ECLIPS server within a period of 3 seconds from when Push MoLI is initially sent by the GMLC. If a response is not seen within this period, the Push MoLI delivery will be reattempted by the GMLC to the secondary ECLIPS server. Note that there would be no further attempt at Push MoLI delivery if the attempt to the secondary ECLIPS server fails for any reason.
- (b) For Mobile Carriers implementing the "alternate process" in Sec 3.4: The GMLC will monitor for a response from the primary ECLIPS server within a period of 3 seconds from when Push MoLI is initially sent by the GMLC. If a response is not seen within this period, the Push MoLI delivery will be reattempted by the GMLC to the primary ECLIPS server. Note that there would be no further attempt at Push MoLI delivery if the second attempt to the primary ECLIPS server fails for any reason.

Timeout from Primary ECLIPS

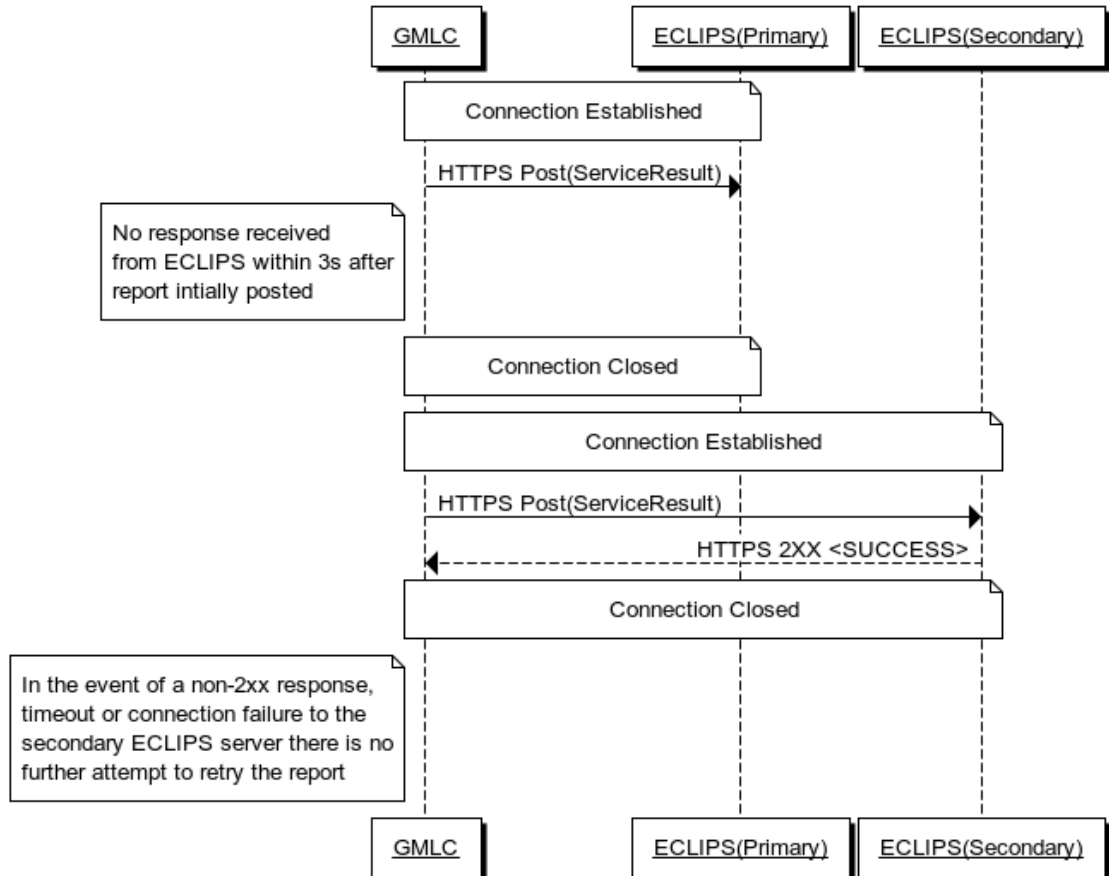


FIGURE 13

Timeout from Primary ECLIPS

Timeout from Primary ECLIPS - Alternate Failover

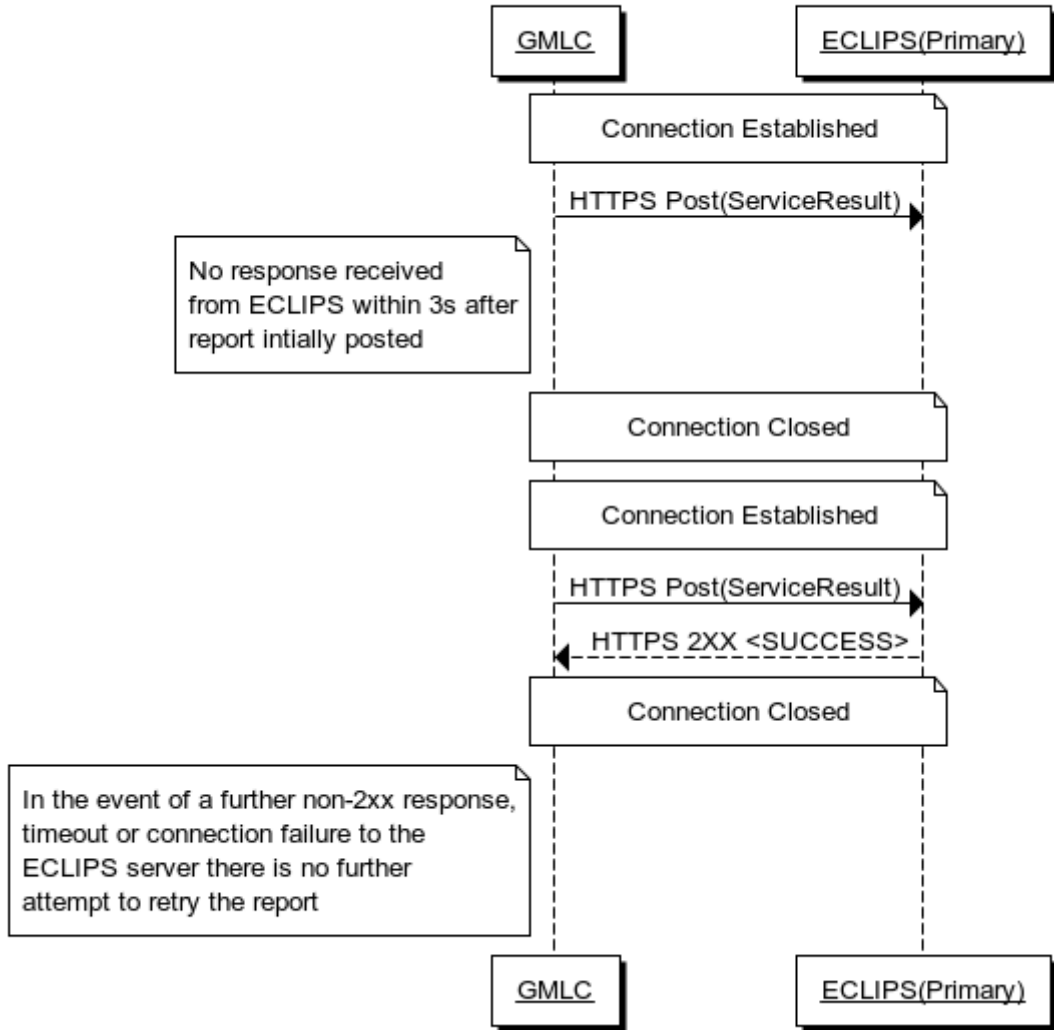


FIGURE 14

Timeout from Primary ECLIPS – Alternate Failover

PARTICIPANTS

The Working Committee that developed the Specification consisted of the following organisations and their representatives:

Organisation	Membership	Representative
Optus	Voting	Sam Mangar
Optus	Non-voting	Terry Gillespie
Optus	Non-voting	Michael Elsegood
Telstra	Voting	Jane Elkington
Telstra	Non-voting	Kandiah Arulventhan
Telstra	Non-voting	Michael Ryan
Vodafone Hutchison Australia	Voting	Alexander R. Osborne
Vodafone Hutchison Australia	Non-voting	Andrew Billiris
Vodafone Hutchison Australia	Non-voting	Jon Fripp

This Working Committee was chaired by James Duck of Communications Alliance who also provided project management support.

Communications Alliance was formed in 2006 to provide a unified voice for the Australian communications industry and to lead it into the next generation of converging networks, technologies and services.

In pursuing its goals, Communications Alliance offers a forum for the industry to make coherent and constructive contributions to policy development and debate.

Communications Alliance seeks to facilitate open, effective and ethical competition between service providers while ensuring efficient, safe operation of networks, the provision of innovative services and the enhancement of consumer outcomes.

It is committed to the achievement of the policy objective of the *Telecommunications Act 1997* - the greatest practicable use of industry self-regulation without imposing undue financial and administrative burdens on industry.



**Published by:
COMMUNICATIONS
ALLIANCE LTD**

**Level 12
75 Miller Street
North Sydney
NSW 2060 Australia**

**Correspondence
PO Box 444
Milsons Point
NSW 1565**

**T 61 2 9959 9111
F 61 2 9954 6136
E info@commsalliance.com.au
www.commsalliance.com.au
ABN 56 078 026 507**

Care should be taken to ensure the material used is from the current version of the Standard or Industry Code and that it is updated whenever the Standard or Code is amended or revised. The number and date of the Standard or Code should therefore be clearly identified. If in doubt please contact Communications Alliance