

3GPP TSG CN Plenary Meeting #20
4th – 6th June 2003 Hämeenlinna, FINLAND.

NP-030218

Source: TSG CN WG4
Title: Corrections on LCS1
Agenda item: 8.4
Document for: APPROVAL

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
29.002	598		N4-030438	Rel-5	LCS Client external ID	F	5.5.0
29.002	599		N4-030439	Rel-6	LCS Client external ID	A	6.1.0
29.002	500	5	N4-030657	Rel-5	Addition of Positioning Data IE to Provide Subscriber Location and Send Location Report	F	5.5.0
29.002	568	4	N4-030658	Rel-6	Addition of Positioning Data IE to Provide Subscriber Location and Send Location Report	A	6.1.0

CHANGE REQUEST

⌘ **29.002 CR 500** ⌘ rev **5** ⌘ Current version: **5.5.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	⌘	Addition of Positioning Data IE to Provide Subscriber Location and Send Location Report
Source:	⌘	CN4
Work item code:	⌘	LCS
		Date: ⌘ 11/04/2003
Category:	⌘	F
		Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900 .
		Release: ⌘ Rel-5 Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	⌘	When reporting location information for emergency calls, there is no way of knowing what method was used to obtain the longitude and latitude that has been returned. This information would be useful as it would give an indication as to the relative accuracy of that information to the emergency services, should they have to rely on it. This information could also be used to provide the ability for operators to provide value add services based on accurate location reporting.
Summary of change:	⌘	The Positioning Data parm is included in Provide Subscriber Location Res and Send Location Report Res. This parm is defined in 49.031.
Consequences if not approved:	⌘	There is no indication of the method used to obtain Location information or the relative accuracy of that information available in the network.

Clauses affected:	⌘	7.6, 7.6.11 (new subsection added – 7.6.11.11A), 13A.2, 13A.3, 17.7.3									
Other specs affected:	⌘	<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 20px;">Y</td> <td style="width: 20px;">N</td> </tr> <tr> <td>X</td> <td></td> </tr> <tr> <td></td> <td>X</td> </tr> <tr> <td></td> <td>X</td> </tr> </table> Other core specifications Test specifications O&M Specifications	Y	N	X			X		X	⌘ 23.271 CR 181
Y	N										
X											
	X										
	X										
Other comments:	⌘										

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <http://www.3gpp.org/specs/CR.htm>. Below is a brief summary:

7. Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
7. Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
7. With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

7.6 Definition of parameters

Following is an alphabetic list of parameters used in the common MAP-services in clause 7.3:

Application context name	7.3.1	Refuse reason	7.3.1
Destination address	7.3.1	Release method	7.3.2
Destination reference	7.3.1	Responding address	7.3.1
Diagnostic information	7.3.4	Result	7.3.1
Originating address	7.3.1	Source	7.3.5
Originating reference	7.3.1	Specific information	7.3.1/7.3.2/7.3.4
Problem diagnostic	7.3.6	User reason	7.3.4
Provider reason	7.3.5		

Following is an alphabetic list of parameters contained in this clause:

Absent Subscriber Diagnostic SM	7.6.8.9	Invoke Id	7.6.1.1
Access connection status	7.6.9.3	ISDN Bearer Capability	7.6.3.41
		IST Alert Timer	7.6.3.66
		IST Information Withdrawn	7.6.3.68
		IST Support Indicator	7.6.3.69
		LCS Codeword	7.6.11.18
		LCS Information	7.6.3.60
		LCS Service Type Id	7.6.11.15
Access signalling information	7.6.9.5	Kc	7.6.7.4
Additional Absent Subscriber Diagnostic SM	7.6.8.12	Linked Id	7.6.1.2
Additional Location Estimate	7.6.11.21	LMSI	7.6.2.16
Additional number	7.6.2.46	Location Information	7.6.2.30
		Location Information for GPRS	7.6.2.30a
Additional signal info	7.6.9.10	Location update type	7.6.9.6
Additional SM Delivery Outcome	7.6.8.11	Long Forwarded-to Number	7.6.2.22A
		Long FTN Supported	7.6.2.22B
Age Indicator	7.6.3.72	Lower Layer Compatibility	7.6.3.42
		LSA Information	7.6.3.56
		LSA Information Withdraw	7.6.3.58
Alert Reason	7.6.8.8	MC Information	7.6.4.48
Alert Reason Indicator	7.6.8.10	MC Subscription Data	7.6.4.47
Alerting Pattern	7.6.3.44	Mobile Not Reachable Reason	7.6.3.51
All GPRS Data	7.6.3.53	Modification request for CSI	7.6.3.81
All Information Sent	7.6.1.5	Modification request for SS Information	7.6.3.82
AN-apdu	7.6.9.1	More Messages To Send	7.6.8.7
APN	7.6.2.42	MS ISDN	7.6.2.17
Authentication set list	7.6.7.1	MSC number	7.6.2.11
B-subscriber Address	7.6.2.36	MSISdn-Alert	7.6.2.29
B subscriber Number	7.6.2.48	Multicall Bearer Information	7.6.2.52
B subscriber subaddress	7.6.2.49	Multiple Bearer Requested	7.6.2.53
Basic Service Group	7.6.4.40	Multiple Bearer Not Supported	7.6.2.54
Bearer service	7.6.4.38	MWD status	7.6.8.3

BSSMAP Service Handover	7.6.6.5	NbrUser	7.6.4.45
BSSMAP Service Handover List	7.6.6.5A	Network Access Mode	7.6.3.50
Call Barring Data	7.6.3.83	Network node number	7.6.2.43
Call barring feature	7.6.4.19	Network resources	7.6.10.1
Call barring information	7.6.4.18	Network signal information	7.6.9.8
Call Direction	7.6.5.8	New password	7.6.4.20
Call Forwarding Data	7.6.3.84	No reply condition timer	7.6.4.7
Call Info	7.6.9.9		
Call reference	7.6.5.1	North American Equal Access	7.6.2.34
Call Termination Indicator	7.6.3.67	preferred Carrier Id	
Called number	7.6.2.24	Number Portability Status	7.6.5.14
		ODB Data	7.6.3.85
Calling number	7.6.2.25	ODB General Data	7.6.3.9
CAMEL Subscription Info	7.6.3.78	ODB HPLMN Specific Data	7.6.3.10
CAMEL Subscription Info Withdraw	7.6.3.38	OMC Id	7.6.2.18
Cancellation Type	7.6.3.52	Originally dialled number	7.6.2.26
Category	7.6.3.1	Originating entity number	7.6.2.10
CCBS Feature	7.6.5.8	Override Category	7.6.4.4
CCBS Request State	7.6.4.49	P-TMSI	7.6.2.47
Channel Type	7.6.5.9	PDP-Address	7.6.2.45
Chosen Channel	7.6.5.10	PDP-Context identifier	7.6.3.55
Chosen Radio Resource Information	7.6.6.10B	PDP-Type	7.6.2.44
Ciphering mode	7.6.7.7	Positioning Data	7.6.11.11A
Cksn	7.6.7.5	Pre-paging supported	7.6.5.15
		Previous location area Id	7.6.2.4
CLI Restriction	7.6.4.5	Protocol Id	7.6.9.7
CM service type	7.6.9.2	Provider error	7.6.1.3
Complete Data List Included	7.6.3.54	PS LCS Not Supported by UE	7.6.11.10
CS Allocation Retention priority	7.6.3.87	QoS-Subscribed	7.6.3.47
CS LCS Not Supported by UE	7.6.11.9	Radio Resource Information	7.6.6.10
CUG feature	7.6.3.26	Radio Resource List	7.6.6.10A
CUG index	7.6.3.25	RANAP Service Handover	7.6.6.6
CUG info	7.6.3.22	Rand	7.6.7.2
		LCS-Reference Number	7.6.11.23
CUG interlock	7.6.3.24	Regional Subscription Data	7.6.3.11
		Regional Subscription Response	7.6.3.12
CUG Outgoing Access indicator	7.6.3.8	Relocation Number List	7.6.2.19A
CUG subscription	7.6.3.23	Requested Info	7.6.3.31
CUG Subscription Flag	7.6.3.37	Requested Subscription Info	7.6.3.86
Current location area Id	7.6.2.6	Roaming number	7.6.2.19
		Roaming Restricted In SGSN Due To	7.6.3.49
Current password	7.6.4.21	Unsupported Feature	
		Roaming Restriction Due To	7.6.3.13
Deferred MT-LR Data	7.6.11.3	Unsupported Feature	
		Current Security Context	7.6.7.8
Deferred MT-LR Response Indicator	7.6.11.2	Selected RAB ID	7.6.2.56
eMLPP Information	7.6.4.41	Service centre address	7.6.2.27
Encryption Information	7.6.6.9	Serving Cell Id	7.6.2.37
Equipment status	7.6.3.2	SGSN address	7.6.2.39
Extensible Basic Service Group	7.6.3.5	SGSN CAMEL Subscription Info	7.6.3.75
Extensible Bearer service	7.6.3.3	SGSN number	7.6.2.38
Extensible Call barring feature	7.6.3.21	SIWF Number	7.6.2.35
Extensible Call barring information	7.6.3.20	SoLSA Support Indicator	7.6.3.57
		SM Delivery Outcome	7.6.8.6
Extensible Call barring information for CSE	7.6.3.79		
Extensible Forwarding feature	7.6.3.16	SM-RP-DA	7.6.8.1
Extensible Forwarding info	7.6.3.15	SM-RP-MTI	7.6.8.16
Extensible Forwarding information for CSE	7.6.3.80	SM-RP-OA	7.6.8.2
Extensible Forwarding Options	7.6.3.18		
Extensible No reply condition timer	7.6.3.19	SM-RP-PRI	7.6.8.5
Extensible QoS-Subscribed	7.6.3.74	SM-RP-SMEA	7.6.8.17
Extensible SS-Data	7.6.3.29	SM-RP-UI	7.6.8.4
Extensible SS-Info	7.6.3.14	Sres	7.6.7.3
Extensible SS-Status	7.6.3.17	SS-Code	7.6.4.1
Extensible Teleservice	7.6.3.4	SS-Data	7.6.4.3
External Signal Information	7.6.9.4	SS-Event	7.6.4.42
		SS-Event-Data	7.6.4.43

Failure Cause	7.6.7.9	SS-Info	7.6.4.24
Forwarded-to number	7.6.2.22	SS-Status	7.6.4.2
Forwarded-to subaddress	7.6.2.23	Stored location area Id	7.6.2.5
Forwarding feature	7.6.4.16	Subscriber State	7.6.3.30
Forwarding information	7.6.4.15	Subscriber Status	7.6.3.7
Forwarding Options	7.6.4.6	Super-Charger Supported in HLR	7.6.3.70
GERAN Classmark	7.6.6.4		
GGSN address	7.6.2.40	Super-Charger Supported in Serving Network Entity	7.6.3.71
		Offered Camel4 CSIs	7.6.3.36D
		Offered Camel4 CSIs in GMSC	
		Offered Camel4 CSIs in VMSC	7.6.3.36E
		Offered Camel4 CSIs in VLR	
		Offered Camel4 CSIs in SGSN	7.6.3.36F
		Offered Camel4 Functionalities	7.6.3.36B
			7.6.3.36C
			7.6.3.36G
GGSN number	7.6.2.41	Supported CAMEL Phases in VLR	7.6.3.36
GMSC CAMEL Subscription Info	7.6.3.34	Supported CAMEL Phases in SGSN	7.6.3.36A
GPRS enhancements support indicator	7.6.3.73	Supported GAD Shapes	7.6.11.20
GPRS Node Indicator	7.6.8.14	Supported LCS Capability Sets	7.6.11.17
		Suppress Incoming Call Barring	7.6.3.b
GPRS Subscription Data	7.6.3.46	Suppress T-CSI	7.6.3.33
		Suppress VT-CSI	7.6.3.a
GPRS Subscription Data Withdraw	7.6.3.45	Suppression of Announcement	7.6.3.32
GPRS Support Indicator	7.6.8.15	Target cell Id	7.6.2.8
Group Id	7.6.2.33	Target location area Id	7.6.2.7
GSM bearer capability	7.6.3.6	Target RNC Id	7.6.2.8A
gsmSCF Address	7.6.2.58		
gsmSCF Initiated Call	7.6.3.c		
Guidance information	7.6.4.22	Target MSC number	7.6.2.12
Handover number	7.6.2.21	Teleservice	7.6.4.39
High Layer Compatibility	7.6.3.43	TMSI	7.6.2.2
HLR Id	7.6.2.15	Trace reference	7.6.10.2
HLR number	7.6.2.13	Trace type	7.6.10.3
HO-Number Not Required	7.6.6.7	User error	7.6.1.4
IMEI	7.6.2.3	USSD Data Coding Scheme	7.6.4.36
IMSI	7.6.2.1	USSD String	7.6.4.37
Integrity Protection Information	7.6.6.8	UU Data	7.6.5.12
Inter CUG options	7.6.3.27	UUS CF Interaction	7.6.5.13
Intra CUG restrictions	7.6.3.28	VBS Data	7.6.3.40
		VGCS Data	7.6.3.39
		VLR CAMEL Subscription Info	7.6.3.35
		VLR number	7.6.2.14
		VPLMN address allowed	7.6.3.48
		Zone Code	7.6.2.28

***** *Text removed for clarity* *****

7.6.11 Location Service Parameters

7.6.11.1 Age of Location Estimate

This parameter indicates how long ago the location estimate was obtained.

7.6.11.2 Deferred MT-LR Response Indicator

This parameter shows that this is a response to a deferred mt-lr request.

7.6.11.3 Deferred MT-LR Data

This parameter is used to report the deferred location event type, the location information and reason why the serving node aborted monitoring the event to the GMLC. The termination cause mt-lrRestart shall be used to trigger the GMLC to restart the location procedure in all the cases where the sending node detects that the location procedure cannot be successfully performed anymore by the sending node and that it could be successfully performed by another node (as for example when Cancel Location or Send Identification has been received). The location information shall be included only if the termination cause is mt-lrRestart. The network node number contained in the location information refers to the node where the MS/UE has moved to and shall be included if available, like in case Send Identification has been received.

7.6.11.4 LCS Client ID

This parameter provides information related to the identity of an LCS client.

7.6.11.5 LCS Event

This parameter identifies an event associated with the triggering of a location estimate.

7.6.11.6 Void

7.6.11.7 LCS Priority

This parameter gives the priority of the location request.

7.6.11.8 LCS QoS

This parameter defines the Quality of Service (QoS) for any location request. It is composed of the following elements.

1) Response Time

Indicates the category of response time – “low delay” or “delay tolerant”.

2) Horizontal Accuracy

Indicates the required horizontal accuracy of the location estimate.

3) Vertical Coordinate

Indicates if a vertical coordinate is required (in addition to horizontal coordinates).

4) Vertical Accuracy

Indicates the required vertical accuracy of the location estimate (inclusion is optional).

7.6.11.9 CS LCS Not Supported by UE

This parameter is used by the VLR to indicate to the HLR that the UE does not support neither UE Based nor UE Assisted positioning methods for Circuit Switched Location Services. VLR defines the presence of this parameter on the basis of the Classmark 3 information.

7.6.11.10 PS LCS Not Supported by UE

This parameter is used by the SGSN to indicate to the HLR that the UE does not support neither UE Based nor UE Assisted positioning methods for Packet Switched Location Services. SGSN defines the presence of this parameter on the basis of the UE capability information.

7.6.11.11 Location Estimate

This parameter gives an estimate of the location of an MS in universal coordinates and the accuracy of the estimate. The estimate is expressed in terms of the geographical shapes defined by 3GPP TS 23.032 [122], and is composed of the type of shape plus the encoding of the shape itself. Any type of shape defined in 3GPP TS 23.032 [122] can be filled in the Location Estimate parameter, but only the encoding of the following shapes shall be carried by Location Estimate:

- Ellipsoid point with uncertainty circle
- Ellipsoid point with uncertainty ellipse
- Ellipsoid point with altitude and uncertainty ellipsoid
- Ellipsoid arc
- Ellipsoid point

The encoding for the remaining types of shape, defined in the 3GPP TS 23.032 [122], shall be filled in the Additional Location Estimate parameter.

7.6.11.11A Positioning Data

This parameter provides positioning data associated with a successful or unsuccessful location attempt for a target MS as described in 3G TS 49.031 [59a]. ~~Note that the type and length indicator assigned in 49.031 are removed from the parameter.~~

7.6.11.12 Location Type

This parameter indicates the type of location estimate required by the LCS client. Possible location estimate types include:

- current location;
- current or last known location;
- initial location for an emergency services call;
- deferred location event type.

7.6.11.13 NA-ESRD

This parameter only applies to location for an emergency services call in North America and gives the North American Emergency Services Routing Digits.

7.6.11.14 NA-ESRK

This parameter only applies to location for an emergency services call in North America and gives the North American Emergency Services Routing Key.

7.6.11.15 LCS Service Type Id

This parameter defines the LCS Service Type of the current positioning request. The possible values are defined in 3GPP TS 22.071 [123]

7.6.11.16 Privacy Override

This parameter indicates if MS privacy is overridden by the LCS client when the GMLC and VMSC/SGSN for an MT-LR are in the same country.

7.6.11.17 Supported LCS Capability Sets

This parameter indicates which capability sets of LCS are supported in the VLR or SGSN.

7.6.11.18 LCS Codeword

This parameter contains the codeword associated to current positioning request as described in 3GPP TS 23.271 [26a].

7.6.11.19 LCS Codeword Applicability

This parameter indicates if codeword checks are applicable as described in 3GPP TS 23.271 [26a].

7.6.11.20 Supported GAD Shapes

This parameter indicates which of the shapes defined in 3GPP TS 23.032 [122] are supported. If the parameter is not provided then the receiving node shall assume that the sending entity supports the following shapes:

- Ellipsoid point with uncertainty circle
- Ellipsoid point with uncertainty ellipse
- Ellipsoid point with altitude and uncertainty ellipsoid
- Ellipsoid arc
- Ellipsoid point

7.6.11.21 Additional Location Estimate

This parameter gives an estimate of the location of an MS/UE in universal coordinates and the accuracy of the estimate. This parameter allows the location estimate to be expressed in any of the geographical shapes defined in 3GPP TS 23.032 [122].

7.6.11.22 LCS Codeword Notification

This parameter indicates if codeword shall be sent to the subscriber as described in 3GPP TS 23.271 [26a]

****** Next changed section ******

13A.2 MAP-PROVIDE-SUBSCRIBER-LOCATION Service

13A.2.1 Definition

This service is used by a GMLC to request the location of a target MS from the visited MSC or SGSN at any time. This is a confirmed service using the primitives from table 13A.2/1.

13A.2.2 Service Primitives

Table 13A.2/1: Provide_Subscriber_Location

Parameter name	Request	Indication	Response	Confirm
Invoke id	M	M(=)	M(=)	M(=)
Location Type	M	M(=)		
MLC Number	M	M(=)		

LCS Client ID	M	M(=)		
Privacy Override	U	C(=)		
IMSI	C	C(=)		
MSISDN	C	C(=)		
LMSI	C	C(=)		
LCS Priority	C	C(=)		
LCS QoS	C	C(=)		
IMEI	U	C(=)		
Supported GAD Shapes	C	C(=)		
LCS Codeword	C	C(=)		
LCS Service Type Id	C	C(=)		
Location Estimate			M	M(=)
Positioning Data			C	C(=)
Age of Location Estimate			C	C(=)
Additional Location Estimate			C	C(=)
Deferred MT-LR Response Indicator			C	C(=)
User error			C	C(=)
Provider error				O

13A.2.3 Parameter Definition and Use

All parameters are defined in clause 7.6. The use of these parameters and the requirements for their presence are specified in. 3GPP TS 23.271 [26a]

Location Type

This parameter identifies the type of location information requested.

MLC Number

This is the E.164 number of the requesting GMLC.

LCS Client ID

This parameter provides information related to the identity of an LCS client.

Privacy Override

This parameter indicates if MS privacy is overridden by the LCS client when the GMLC and VMSC or SGSN for an MT-LR are in the same country.

IMSI

The IMSI is provided to identify the target MS. At least one of the IMSI or MSISDN is mandatory.

MSISDN

The MSISDN is provided to identify the target MS. At least one of the IMSI or MSISDN is mandatory.

LMSI

The LMSI shall be provided if previously supplied by the HLR. This parameter is only used in the case of the MT-LR for CS domain.

LCS Priority

This parameter indicates the priority of the location request.

LCS QoS

This parameter indicates the required quality of service in terms of response time and accuracy.

IMEI

Inclusion of the IMEI is optional.

Supported GAD Shapes

This parameter indicates which of the shapes defined in 3GPP TS 23.032 [122] are supported.

LCS Codeword

See definition in clause 7.6.11.18. The requirements for its presence are specified in 3GPP TS 23.271 [26a].

LCS Service Type Id

See definition in clause 7.6.11.15. The requirements for its presence are specified in 3GPP TS 23.271 [26a].

Location Estimate

This parameter provides the location estimate if this is encoded in one of the supported geographical shapes. Otherwise this parameter shall consist of one octet, which shall be discarded by the receiving node.

Positioning Data

[This parameter indicates the usage of each positioning method that was attempted to determine the location estimate either successfully or unsuccessfully. It may ~~shall only~~ be included in the message only if the access network is GERAN, see ~~3G TS~~ 3GPP TS 23.271 \[26a\].](#)

Age of Location Estimate

This parameter indicates how long ago the location estimate was obtained.

Additional Location Estimate

This parameter provides the location estimate when not provided by the Location Estimate parameter. It may be sent only if the parameter Supported GAD Shapes has been received in the Provide Subscriber Location indication and the shape to be included is supported by the GMLC.

Deferred MT-LR Response Indicator

See definition in clause 7.6.11.2.

User error

This parameter is sent by the responder when the location request has failed or cannot proceed and if present, takes one of the following values defined in clause 7.6.1.

- System Failure;
- Data Missing;
- Unexpected Data Value;
- Facility Not Supported;
- Unidentified Subscriber;
- Illegal Subscriber;
- Illegal Equipment;
- Absent Subscriber (diagnostic information may also be provided);
- Unauthorised requesting network;
- Unauthorised LCS Client with detailed reason;
- Position method failure with detailed reason.

Provider error

These are defined in clause 7.6.1.

13A.3 MAP-SUBSCRIBER-LOCATION-REPORT Service

13A.3.1 Definition

This service is used by a VMSC or SGSN to provide the location of a target MS to a GMLC when a request for location is either implicitly administered or made at some earlier time. This is a confirmed service using the primitives from table 13A.3/1.

13A.3.2 Service Primitives

Table 13A.3/1: Subscriber_Location_Report

Parameter name	Request	Indication	Response	Confirm
Invoke id	M	M(=)	M(=)	M(=)
LCS Event	M	M(=)		
LCS Client ID	M	M(=)		
Network Node Number	M	M(=)		
IMSI	C	C(=)		
MSISDN	C	C(=)		
NA-ESRD	C	C(=)		
NA-ESRK	C	C(=)		
IMEI	U	C(=)		
Location Estimate	C	C(=)		
Positioning Data	C	C(=)		
Age of Location Estimate	C	C(=)		
LMSI	U	C(=)		
GPRS Node Indicator	C	C(=)		
Additional Location Estimate	C	C(=)		
Deferred MT-LR Data	C	C(=)		
User error			C	C(=)
Provider error				O

13A.3.3 Parameter Definition and Use

All parameters are defined in clause 7.6. The use of these parameters and the requirements for their presence are specified in 3GPP TS 23.271 [26a].

LCS Event

This parameter indicates the event that triggered the Subscriber Location Report.

LCS Client ID

This parameter provides information related to the identity of the recipient LCS client.

Network Node Number

See definition in clause 7.6.2. This parameter provides the address of the sending node.

IMSI

The IMSI shall be provided if available to the VMSC or SGSN.

MSISDN

The MSISDN shall be provided if available to the VMSC or SGSN.

NA-ESRD

If the target MS has originated an emergency service call in North America, the NA-ESRD shall be provided by the VMSC if available.

NA-ESRK

If the target MS has originated an emergency service call in North America, the NA-ESRK shall be provided by the VMSC if assigned.

IMEI

Inclusion of the IMEI is optional.

Location Estimate

This parameter provides the location estimate. The absence of this parameter implies that a location estimate was not available or could not be successfully obtained. If the obtained location estimate is not encoded in one of the supported geographical shapes then this parameter shall consist of one octet, which shall be discarded by the receiving node.

Positioning Data

[This parameter indicates the usage of each positioning method that was attempted to determine the location estimate either successfully or unsuccessfully. It may ~~shall only~~ be included in the message only if the access network is GERAN, see ~~3G-TS~~ 3GPP TS 23.271 \[26a\].](#)

Age of Location Estimate

This parameter indicates how long ago the location estimate was obtained.

LMSI

The LMSI may be provided if assigned by the VLR.

GPRS Node Indicator

See definition in clause 7.6.8. This presence of this parameter is mandatory only if the SGSN number is sent in the Network Node Number.

Additional Location Estimate

This parameter provides the location estimate when not provided by the Location Estimate parameter..

Deferred MT-LR Data

See definition in clause 7.6.11.3.

User error

This parameter is sent by the responder when the received message contains an error, cannot be forwarded or stored for an LCS client or cannot be accepted for some other reason and if present, takes one of the following values defined in clause 7.6.1.

- System Failure;
- Data Missing;
- Unexpected Data Value;
- Resource Limitation;
- Unknown Subscriber;
- Unauthorised requesting network;
- Unknown or unreachable LCS Client.

Provider error

These are defined in clause 7.6.1.

17.7.13 Location service data types

```

MAP-LCS-DataTypes {
  ccitt identified-organization (4) etsi (0) mobileDomain (0)
  gsm-Network (1) modules (3) map-LCS-DataTypes (25) version8 (8)}

DEFINITIONS
IMPLICIT TAGS
 ::=
BEGIN

EXPORTS
  RoutingInfoForLCS-Arg,
  RoutingInfoForLCS-Res,
  ProvideSubscriberLocation-Arg,
  ProvideSubscriberLocation-Res,
  SubscriberLocationReport-Arg,
  SubscriberLocationReport-Res,
  LocationType,
  LCSClientName,
  LCS-QoS,
  Horizontal-Accuracy,
  ResponseTime,
  Ext-GeographicalInformation,
  SupportedGADShapes,
  Add-GeographicalInformation,
  LCSRequestorID,
  LCSCodeword
;

IMPORTS
  AddressString,
  ISDN-AddressString,
  IMEI,
  IMSI,
  LMSI,
  SubscriberIdentity,
  AgeOfLocationInformation,
  LCSClientExternalID,
  LCSClientInternalID,
  LCSServiceTypeID
FROM MAP-CommonDataTypes {
  ccitt identified-organization (4) etsi (0) mobileDomain (0)
  gsm-Network (1) modules (3) map-CommonDataTypes (18) version8 (8)}

  ExtensionContainer
FROM MAP-ExtensionDataTypes {
  ccitt identified-organization (4) etsi (0) mobileDomain (0)
  gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version8 (8)}

  USSD-DataCodingScheme,
  USSD-String
FROM MAP-SS-DataTypes {
  ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
  map-SS-DataTypes (14) version8 (8)}

  APN
FROM MAP-MS-DataTypes {
  ccitt identified-organization (4) etsi (0) mobileDomain (0)
  gsm-Network (1) modules (3) map-MS-DataTypes (11) version8 (8)}

  Additional-Number
FROM MAP-SM-DataTypes {
  ccitt identified-organization (4) etsi (0) mobileDomain (0)
  gsm-Network (1) modules (3) map-SM-DataTypes (16) version8 (8)}
;

```

RoutingInfoForLCS-Arg ::= SEQUENCE {			
mlcNumber	[0]	ISDN-AddressString,	
targetMS	[1]	SubscriberIdentity,	
extensionContainer	[2]	ExtensionContainer	OPTIONAL,
...			
lcsCodewordApplicability	[3]	LCSCodewordApplicability	OPTIONAL }

```

LCSCodewordApplicability ::= ENUMERATED {
  codewordCheckApplicable          (0),
  codewordCheckNotApplicable      (1),
  ...}
-- exception handling:
-- unrecognized values shall be ignored by the receiver.

```

```

RoutingInfoForLCS-Res ::= SEQUENCE {
  targetMS                [0] SubscriberIdentity,
  lcsLocationInfo         [1] LCSLocationInfo,
  extensionContainer      [2] ExtensionContainer      OPTIONAL,
  ...,
  lcsCodewordNotification [3] NULL                  OPTIONAL
-- lcsCodewordNotification may be present only if
-- lcsCodewordApplicability was present in RoutingInfoForLCS-Arg.
-- If received when lcsCodewordApplicability was not present in
-- RoutingInfoForLCS-Arg then lcsCodewordNotification shall be ignored.
}

```

```

LCSLocationInfo ::= SEQUENCE {
  networkNode-Number      ISDN-AddressString,
-- NetworkNode-number can be either msc-number or sgsn-number
  lmsi                    [0] LMSI                  OPTIONAL,
  extensionContainer      [1] ExtensionContainer      OPTIONAL,
  ...,
  gprsNodeIndicator       [2] NULL                  OPTIONAL,
-- gprsNodeIndicator is set only if the SGSN number is sent as the Network Node Number
  additional-Number       [3] Additional-Number      OPTIONAL
}

```

```

ProvideSubscriberLocation-Arg ::= SEQUENCE {
  locationType            LocationType,
  mlc-Number              ISDN-AddressString,
  lcs-ClientID            [0] LCS-ClientID          OPTIONAL,
  privacyOverride        [1] NULL                  OPTIONAL,
  imsi                   [2] IMSI                  OPTIONAL,
  msisdn                  [3] ISDN-AddressString    OPTIONAL,
  lmsi                    [4] LMSI                  OPTIONAL,
  imei                    [5] IMEI                  OPTIONAL,
  lcs-Priority            [6] LCS-Priority          OPTIONAL,
  lcs-QoS                 [7] LCS-QoS              OPTIONAL,
  extensionContainer      [8] ExtensionContainer      OPTIONAL,
  ...,
  supportedGADShapes     [9] SupportedGADShapes    OPTIONAL,
  lcsServiceTypeID       [10] LCSServiceTypeID     OPTIONAL,
  lcsCodeword            [11] LCSCodeword          OPTIONAL }
-- one of imsi or msisdn is mandatory

```

```

LocationType ::= SEQUENCE {
  locationEstimateType    [0] LocationEstimateType,
  ...,
  deferredLocationEventType [1] DeferredLocationEventType OPTIONAL }

```

```

LocationEstimateType ::= ENUMERATED {
  currentLocation          (0),
  currentOrLastKnownLocation (1),
  initialLocation         (2),
  ...,
  activateDeferredLocation (3),
  cancelDeferredLocation   (4) }
-- exception handling:
-- a ProvideSubscriberLocation-Arg containing an unrecognized LocationEstimateType
-- shall be rejected by the receiver with a return error cause of unexpected data value

```

```

DeferredLocationEventType ::= BIT STRING {
  msAvailable              (0) } (SIZE (1..16))
-- exception handling
-- a ProvideSubscriberLocation-Arg containing other values than listed above in
-- DeferredLocationEventType shall be rejected by the receiver with a return error cause of
-- unexpected data value.

```

```

LCS-ClientID ::= SEQUENCE {
  lcsClientType           [0] LCSClientType,
  lcsClientExternalID     [1] LCSClientExternalID   OPTIONAL,
  lcsClientDialedByMS     [2] AddressString         OPTIONAL,
  lcsClientInternalID     [3] LCSClientInternalID   OPTIONAL,
  lcsClientName           [4] LCSClientName         OPTIONAL,

```

...		
lcsAPN	[5] APN	OPTIONAL,
lcsRequestorID	[6] LCSRequestorID	OPTIONAL }

```

LCSCClientType ::= ENUMERATED {
  emergencyServices           (0),
  valueAddedServices         (1),
  plmnOperatorServices       (2),
  lawfulInterceptServices    (3),
  ... }
-- exception handling:
-- unrecognized values may be ignored if the LCS client uses the privacy override
-- otherwise, an unrecognized value shall be treated as unexpected data by a receiver
-- a return error shall then be returned if received in a MAP invoke

```

```

LCSCClientName ::= SEQUENCE {
  dataCodingScheme           [0] USSD-DataCodingScheme,
  nameString                 [2] NameString,
  ...}
-- The USSD-DataCodingScheme shall indicate use of the default alphabet through the
-- following encoding
-- bit 7 6 5 4 3 2 1 0
--      0 0 0 0 1 1 1 1

```

```

NameString ::= USSD-String (SIZE (1..maxNameStringLength))

```

```

maxNameStringLength INTEGER ::= 63

```

```

LCSRequestorID ::= SEQUENCE {
  dataCodingScheme           [0] USSD-DataCodingScheme,
  requestorIDString         [1] RequestorIDString,
  ...}

```

```

RequestorIDString ::= USSD-String (SIZE (0..maxRequestorIDStringLength))

```

```

maxRequestorIDStringLength INTEGER ::= 127

```

```

LCS-Priority ::= OCTET STRING (SIZE (1))
-- 0 = highest priority
-- 1 = normal priority
-- all other values treated as 1

```

```

LCS-QoS ::= SEQUENCE {
  horizontal-accuracy        [0] Horizontal-Accuracy           OPTIONAL,
  verticalCoordinateRequest  [1] NULL                         OPTIONAL,
  vertical-accuracy          [2] Vertical-Accuracy             OPTIONAL,
  responseTime               [3] ResponseTime                 OPTIONAL,
  extensionContainer         [4] ExtensionContainer            OPTIONAL,
  ...}

```

```

Horizontal-Accuracy ::= OCTET STRING (SIZE (1))
-- bit 8 = 0
-- bits 7-1 = 7 bit Uncertainty Code defined in 3GPP TS 23.032. The horizontal location
-- error should be less than the error indicated by the uncertainty code with 67%
-- confidence.

```

```

Vertical-Accuracy ::= OCTET STRING (SIZE (1))
-- bit 8 = 0
-- bits 7-1 = 7 bit Vertical Uncertainty Code defined in 3GPP TS 23.032.
-- The vertical location error should be less than the error indicated
-- by the uncertainty code with 67% confidence.

```

```

ResponseTime ::= SEQUENCE {
  responseTimeCategory      ResponseTimeCategory,
  ...}
-- note: an expandable SEQUENCE simplifies later addition of a numeric response time.

```

```

ResponseTimeCategory ::= ENUMERATED {
  lowdelay (0),
  delaytolerant (1),
  ... }
-- exception handling:
-- an unrecognized value shall be treated the same as value 1 (delaytolerant)

```



```
SupportedGADShapes ::= BIT STRING {
  ellipsoidPoint (0),
  ellipsoidPointWithUncertaintyCircle (1),
  ellipsoidPointWithUncertaintyEllipse (2),
  polygon (3),
  ellipsoidPointWithAltitude (4),
  ellipsoidPointWithAltitudeAndUncertaintyEllipsoid (5),
  ellipsoidArc (6) } (SIZE (7..16))
-- A node shall mark in the BIT STRING all Shapes defined in 3GPP TS 23.032 it supports.
-- exception handling: bits 7 to 15 shall be ignored if received.
```

```
LCSCodeword ::= SEQUENCE {
  dataCodingScheme [0] USSD-DataCodingScheme,
  lcsCodewordString [1] LCSCodewordString,
  ...}
```

```
LCSCodewordString ::= USSD-String (SIZE (1..maxLCSCodewordStringLength))
```

```
maxLCSCodewordStringLength INTEGER ::= 127
```

```
ProvideSubscriberLocation-Res ::= SEQUENCE {
  locationEstimate Ext-GeographicalInformation,
  ageOfLocationEstimate [0] AgeOfLocationInformation OPTIONAL,
  extensionContainer [1] ExtensionContainer OPTIONAL,
  ... ,
  add-LocationEstimate [2] Add-GeographicalInformation OPTIONAL,
  deferredmt-lrResponseIndicator [3] NULL OPTIONAL,
  positioningData [4] PositioningDataInformation OPTIONAL }
-- if deferredmt-lrResponseIndicator is set, locationEstimate is ignored.
-- the add-LocationEstimate parameter shall not be sent to a node that did not indicate the
-- geographic shapes supported in the ProvideSubscriberLocation-Arg
-- The locationEstimate and the add-locationEstimate parameters shall not be sent if
-- the supportedGADShapes parameter has been received in ProvideSubscriberLocation-Arg
-- and the shape encoded in locationEstimate or add-LocationEstimate is not marked
-- as supported in supportedGADShapes. In such a case ProvideSubscriberLocation
-- shall be rejected with error FacilityNotSupported with additional indication
-- shapeOfLocationEstimateNotSupported
```

```

Ext-GeographicalInformation ::= OCTET STRING (SIZE (1..maxExt-GeographicalInformation))
-- Refers to geographical Information defined in 3GPP TS 23.032.
-- This is composed of 1 or more octets with an internal structure according to
-- 3GPP TS 23.032
-- Octet 1: Type of shape, only the following shapes in 3GPP TS 23.032 are allowed:
--   (a) Ellipsoid point with uncertainty circle
--   (b) Ellipsoid point with uncertainty ellipse
--   (c) Ellipsoid point with altitude and uncertainty ellipsoid
--   (d) Ellipsoid Arc
--   (e) Ellipsoid Point
-- Any other value in octet 1 shall be treated as invalid
-- Octets 2 to 8 for case (a) - Ellipsoid point with uncertainty circle
--   Degrees of Latitude           3 octets
--   Degrees of Longitude          3 octets
--   Uncertainty code              1 octet
-- Octets 2 to 11 for case (b) - Ellipsoid point with uncertainty ellipse:
--   Degrees of Latitude           3 octets
--   Degrees of Longitude          3 octets
--   Uncertainty semi-major axis   1 octet
--   Uncertainty semi-minor axis   1 octet
--   Angle of major axis           1 octet
--   Confidence                     1 octet
-- Octets 2 to 14 for case (c) - Ellipsoid point with altitude and uncertainty ellipsoid
--   Degrees of Latitude           3 octets
--   Degrees of Longitude          3 octets
--   Altitude                      2 octets
--   Uncertainty semi-major axis   1 octet
--   Uncertainty semi-minor axis   1 octet
--   Angle of major axis           1 octet
--   Uncertainty altitude          1 octet
--   Confidence                     1 octet
-- Octets 2 to 13 for case (d) - Ellipsoid Arc
--   Degrees of Latitude           3 octets
--   Degrees of Longitude          3 octets
--   Inner radius                  2 octets
--   Uncertainty radius            1 octet
--   Offset angle                  1 octet
--   Included angle                1 octet
--   Confidence                     1 octet
-- Octets 2 to 7 for case (e) - Ellipsoid Point
--   Degrees of Latitude           3 octets
--   Degrees of Longitude          3 octets
--
-- An Ext-GeographicalInformation parameter comprising more than one octet and
-- containing any other shape or an incorrect number of octets or coding according
-- to 3GPP TS 23.032 shall be treated as invalid data by a receiver.
--
-- An Ext-GeographicalInformation parameter comprising one octet shall be discarded
-- by the receiver if an Add-GeographicalInformation parameter is received
-- in the same message.
--
-- An Ext-GeographicalInformation parameter comprising one octet shall be treated as
-- invalid data by the receiver if an Add-GeographicalInformation parameter is not
-- received in the same message.

```

```

maxExt-GeographicalInformation INTEGER ::= 20
-- the maximum length allows for further shapes in 3GPP TS 23.032 to be included in later
-- versions of 3GPP TS 29.002

```

```

PositioningDataInformation ::= OCTET STRING (SIZE (2+..maxPositioningDataInformation))
-- Refers to the Positioning Data defined in 3G TS3GPP TS 49.031.
-- This is composed of 2 or more octets with an internal structure according to
-- 3G TS3GPP TS 49.031. Note that the IEI and Length parts of Positioning Data as
-- defined in 49.031 are not included.

```

```

maxPositioningDataInformation INTEGER ::= 10
--

```

```

Add-GeographicalInformation ::= OCTET STRING (SIZE (1..maxAdd-GeographicalInformation))
-- Refers to geographical Information defined in 3GPP TS 23.032.
-- This is composed of 1 or more octets with an internal structure according to
-- 3GPP TS 23.032
-- Octet 1: Type of shape, all the shapes defined in 3GPP TS 23.032 are allowed:
-- Octets 2 to n (where n is the total number of octets necessary to encode the shape
-- according to 3GPP TS 23.032) are used to encode the shape itself in accordance with
the
-- encoding defined in 3GPP TS 23.032
--
-- An Add-GeographicalInformation parameter, whether valid or invalid, received
-- together with a valid Ext-GeographicalInformation parameter in the same message
-- shall be discarded.
--
-- An Add-GeographicalInformation parameter containing any shape not defined in
-- 3GPP TS 23.032 or an incorrect number of octets or coding according to
-- 3GPP TS 23.032 shall be treated as invalid data by a receiver if not received
-- together with a valid Ext-GeographicalInformation parameter in the same message.

```

```

maxAdd-GeographicalInformation INTEGER ::= 91
-- the maximum length allows support for all the shapes currently defined in 3GPP TS
-- 23.032

```

```

SubscriberLocationReport-Arg ::= SEQUENCE {
    lcs-Event                LCS-Event,
    lcs-ClientID             LCS-ClientID,
    lcsLocationInfo          LCSLocationInfo,
    msisdn                   [0] ISDN-AddressString           OPTIONAL,
    imsi                     [1] IMSI                         OPTIONAL,
    imei                     [2] IMEI                         OPTIONAL,
    na-ESRD                  [3] ISDN-AddressString           OPTIONAL,
    na-ESRK                  [4] ISDN-AddressString           OPTIONAL,
    locationEstimate         [5] Ext-GeographicalInformation  OPTIONAL,
    ageOfLocationEstimate    [6] AgeOfLocationInformation     OPTIONAL,
    extensionContainer        [7] ExtensionContainer           OPTIONAL,
    ... ,
    add-LocationEstimate     [8] Add-GeographicalInformation  OPTIONAL,
    deferredmt-lrData        [9] Deferredmt-lrData            OPTIONAL,
    positioningData         [10] PositioningDataInformation  OPTIONAL }
-- one of msisdn or imsi is mandatory
-- a location estimate that is valid for the locationEstimate parameter should
-- be transferred in this parameter in preference to the add-LocationEstimate.
-- the deferredmt-lrData parameter shall be included if and only if the lcs-Event
-- indicates a deferredmt-lrResponse.
-- if the lcs-Event indicates a deferredmt-lrResponse then the locationEstimate
-- and the add-LocationEstimate parameters shall not be sent if the
-- supportedGADShapes parameter had been received in ProvideSubscriberLocation-Arg
-- and the shape encoded in locationEstimate or add-LocationEstimate was not marked
-- as supported in supportedGADShapes. In such a case terminationCause
-- in deferredmt-lrData shall be present with value
-- shapeOfLocationEstimateNotSupported.

```

```

Deferredmt-lrData ::= SEQUENCE {
    deferredLocationEventType DeferredLocationEventType,
    terminationCause         [0] TerminationCause           OPTIONAL,
    lcsLocationInfo          [1] LCSLocationInfo             OPTIONAL,
    ... }
-- lcsLocationInfo may be included only if a terminationCause is present
-- indicating mt-lrRestart.

```

```

LCS-Event ::= ENUMERATED {
    emergencyCallOrigination (0),
    emergencyCallRelease (1),
    mo-lr (2),
    ... ,
    deferredmt-lrResponse (3) }
-- exception handling:
-- a SubscriberLocationReport-Arg containing an unrecognized LCS-Event
-- shall be rejected by a receiver with a return error cause of unexpected data value

```

```
TerminationCause ::= ENUMERATED {
    normal (0),
    errorundefined (1),
    internalTimeout (2),
    congestion (3),
    mt-lrRestart (4),
    privacyViolation (5),
    ...,
    shapeOfLocationEstimateNotSupported (6) }
-- mt-lrRestart shall be used to trigger the GMLC to restart the location procedure,
-- either because the sending node knows that the terminal has moved under coverage
-- of another MSC or SGSN (e.g. Send Identification received), or because the subscriber
-- has been deregistered due to a Cancel Location received from HLR.
--
-- exception handling
-- an unrecognized value shall be treated the same as value 1 (errorundefined)
```

```
SubscriberLocationReport-Res ::= SEQUENCE {
    extensionContainer ExtensionContainer OPTIONAL,
    ...}
```

END

CHANGE REQUEST

⌘ **29.002 CR 568** ⌘ rev **4** ⌘ Current version: **6.1.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	⌘	Addition of Positioning Data IE to Provide Subscriber Location and Send Location Report
Source:	⌘	CN4
Work item code:	⌘	LCS
		Date: ⌘ 11/04/2003
Category:	⌘	A
		Use <u>one</u> of the following categories:
		F (correction)
		A (corresponds to a correction in an earlier release)
		B (addition of feature),
		C (functional modification of feature)
		D (editorial modification)
		Detailed explanations of the above categories can be found in 3GPP TR 21.900 .
		Release: ⌘ Rel-6
		Use <u>one</u> of the following releases:
		2 (GSM Phase 2)
		R96 (Release 1996)
		R97 (Release 1997)
		R98 (Release 1998)
		R99 (Release 1999)
		Rel-4 (Release 4)
		Rel-5 (Release 5)
		Rel-6 (Release 6)

Reason for change:	⌘	When reporting location information for emergency calls, there is no way of knowing what method was used to obtain the longitude and latitude that has been returned. This information would be useful as it would give an indication as to the relative accuracy of that information to the emergency services, should they have to rely on it. This information could also be used to provide the ability for operators to provide value add services based on accurate location reporting.
Summary of change:	⌘	The Positioning Data parm is included in Provide Subscriber Location Res and Send Location Report Res. This parm is defined in 49.031.
Consequences if not approved:	⌘	There is no indication of the method used to obtain Location information or the relative accuracy of that information available in the network.

Clauses affected:	⌘	7.6, 7.6.11 (new subsection added – 7.6.11.11A), 13A.2, 13A.3, 17.7.3								
Other specs affected:	⌘	<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 20px;">Y</td> <td style="width: 20px;">N</td> </tr> <tr> <td>X</td> <td></td> </tr> <tr> <td></td> <td>X</td> </tr> <tr> <td></td> <td>X</td> </tr> </table> Other core specifications ⌘ 23.271 CR 182 Test specifications O&M Specifications	Y	N	X			X		X
Y	N									
X										
	X									
	X									
Other comments:	⌘									

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <http://www.3gpp.org/specs/CR.htm>. Below is a brief summary:

7. Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
7. Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
7. With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

7.6 Definition of parameters

Following is an alphabetic list of parameters used in the common MAP-services in clause 7.3:

Application context name	7.3.1	Refuse reason	7.3.1
Destination address	7.3.1	Release method	7.3.2
Destination reference	7.3.1	Responding address	7.3.1
Diagnostic information	7.3.4	Result	7.3.1
Originating address	7.3.1	Source	7.3.5
Originating reference	7.3.1	Specific information	7.3.1/7.3.2/7.3.4
Problem diagnostic	7.3.6	User reason	7.3.4
Provider reason	7.3.5		

Following is an alphabetic list of parameters contained in this clause:

Absent Subscriber Diagnostic SM	7.6.8.9	Invoke Id	7.6.1.1
Access connection status	7.6.9.3	ISDN Bearer Capability	7.6.3.41
		IST Alert Timer	7.6.3.66
		IST Information Withdrawn	7.6.3.68
		IST Support Indicator	7.6.3.69
		LCS Codeword	7.6.11.18
		LCS Information	7.6.3.60
		LCS Service Type Id	7.6.11.15
Access signalling information	7.6.9.5	Kc	7.6.7.4
Additional Absent Subscriber Diagnostic SM	7.6.8.12	Linked Id	7.6.1.2
Additional Location Estimate	7.6.11.21	LMSI	7.6.2.16
Additional number	7.6.2.46	Location Information	7.6.2.30
		Location Information for GPRS	7.6.2.30a
Additional signal info	7.6.9.10	Location update type	7.6.9.6
Additional SM Delivery Outcome	7.6.8.11	Long Forwarded-to Number	7.6.2.22A
		Long FTN Supported	7.6.2.22B
Age Indicator	7.6.3.72	Lower Layer Compatibility	7.6.3.42
		LSA Information	7.6.3.56
Alert Reason	7.6.8.8	LSA Information Withdraw	7.6.3.58
Alert Reason Indicator	7.6.8.10	MC Information	7.6.4.48
Alerting Pattern	7.6.3.44	MC Subscription Data	7.6.4.47
All GPRS Data	7.6.3.53	Mobile Not Reachable Reason	7.6.3.51
All Information Sent	7.6.1.5	Modification request for CSI	7.6.3.81
AN-apdu	7.6.9.1	Modification request for SS Information	7.6.3.82
APN	7.6.2.42	More Messages To Send	7.6.8.7
Authentication set list	7.6.7.1	MS ISDN	7.6.2.17
B-subscriber Address	7.6.2.36	MSC number	7.6.2.11
B subscriber Number	7.6.2.48	MSISdn-Alert	7.6.2.29
B subscriber subaddress	7.6.2.49	Multicall Bearer Information	7.6.2.52
Basic Service Group	7.6.4.40	Multiple Bearer Requested	7.6.2.53
Bearer service	7.6.4.38	Multiple Bearer Not Supported	7.6.2.54
		MWD status	7.6.8.3

BSSMAP Service Handover	7.6.6.5	NbrUser	7.6.4.45
BSSMAP Service Handover List	7.6.6.5A	Network Access Mode	7.6.3.50
Call Barring Data	7.6.3.83	Network node number	7.6.2.43
Call barring feature	7.6.4.19	Network resources	7.6.10.1
Call barring information	7.6.4.18	Network signal information	7.6.9.8
Call Direction	7.6.5.8	New password	7.6.4.20
Call Forwarding Data	7.6.3.84	No reply condition timer	7.6.4.7
Call Info	7.6.9.9		
Call reference	7.6.5.1		
Call Termination Indicator	7.6.3.67	North American Equal Access	7.6.2.34
Called number	7.6.2.24	preferred Carrier Id	
		Number Portability Status	7.6.5.14
Calling number	7.6.2.25	ODB Data	7.6.3.85
CAMEL Subscription Info	7.6.3.78	ODB General Data	7.6.3.9
CAMEL Subscription Info Withdraw	7.6.3.38	ODB HPLMN Specific Data	7.6.3.10
Cancellation Type	7.6.3.52	OMC Id	7.6.2.18
Category	7.6.3.1	Originally dialled number	7.6.2.26
CCBS Feature	7.6.5.8	Originating entity number	7.6.2.10
CCBS Request State	7.6.4.49	Override Category	7.6.4.4
Channel Type	7.6.5.9	P-TMSI	7.6.2.47
Chosen Channel	7.6.5.10	PDP-Address	7.6.2.45
Chosen Radio Resource Information	7.6.6.10B	PDP-Context identifier	7.6.3.55
Ciphering mode	7.6.7.7	PDP-Type	7.6.2.44
Cksn	7.6.7.5	Positioning Data	7.6.11.11A
		Pre-paging supported	7.6.5.15
CLI Restriction	7.6.4.5	Previous location area Id	7.6.2.4
CM service type	7.6.9.2	Protocol Id	7.6.9.7
Complete Data List Included	7.6.3.54	Provider error	7.6.1.3
CS Allocation Retention priority	7.6.3.87	PS LCS Not Supported by UE	7.6.11.10
CS LCS Not Supported by UE	7.6.11.9	QoS-Subscribed	7.6.3.47
CUG feature	7.6.3.26	Radio Resource Information	7.6.6.10
CUG index	7.6.3.25	Radio Resource List	7.6.6.10A
CUG info	7.6.3.22	RANAP Service Handover	7.6.6.6
		Rand	7.6.7.2
CUG interlock	7.6.3.24	LCS-Reference Number	7.6.11.23
		Regional Subscription Data	7.6.3.11
CUG Outgoing Access indicator	7.6.3.8	Regional Subscription Response	7.6.3.12
CUG subscription	7.6.3.23	Relocation Number List	7.6.2.19A
CUG Subscription Flag	7.6.3.37	Requested Info	7.6.3.31
Current location area Id	7.6.2.6	Requested Subscription Info	7.6.3.86
		Roaming number	7.6.2.19
Current password	7.6.4.21	Roaming Restricted In SGSN Due To	7.6.3.49
		Unsupported Feature	
Deferred MT-LR Data	7.6.11.3	Roaming Restriction Due To	7.6.3.13
		Unsupported Feature	
Deferred MT-LR Response Indicator	7.6.11.2	Current Security Context	7.6.7.8
eMLPP Information	7.6.4.41	Selected RAB ID	7.6.2.56
Encryption Information	7.6.6.9	Service centre address	7.6.2.27
Equipment status	7.6.3.2	Serving Cell Id	7.6.2.37
Extensible Basic Service Group	7.6.3.5	SGSN address	7.6.2.39
Extensible Bearer service	7.6.3.3	SGSN CAMEL Subscription Info	7.6.3.75
Extensible Call barring feature	7.6.3.21	SGSN number	7.6.2.38
Extensible Call barring information	7.6.3.20	SIWF Number	7.6.2.35
		SoLSA Support Indicator	7.6.3.57
Extensible Call barring information for CSE	7.6.3.79	SM Delivery Outcome	7.6.8.6
Extensible Forwarding feature	7.6.3.16		
Extensible Forwarding info	7.6.3.15	SM-RP-DA	7.6.8.1
Extensible Forwarding information for CSE	7.6.3.80	SM-RP-MTI	7.6.8.16
		SM-RP-OA	7.6.8.2
Extensible Forwarding Options	7.6.3.18		
Extensible No reply condition timer	7.6.3.19	SM-RP-PRI	7.6.8.5
Extensible QoS-Subscribed	7.6.3.74	SM-RP-SMEA	7.6.8.17
Extensible SS-Data	7.6.3.29	SM-RP-UI	7.6.8.4
Extensible SS-Info	7.6.3.14	Sres	7.6.7.3
Extensible SS-Status	7.6.3.17	SS-Code	7.6.4.1
Extensible Teleservice	7.6.3.4	SS-Data	7.6.4.3
External Signal Information	7.6.9.4	SS-Event	7.6.4.42
		SS-Event-Data	7.6.4.43

Failure Cause	7.6.7.9	SS-Info	7.6.4.24
Forwarded-to number	7.6.2.22	SS-Status	7.6.4.2
Forwarded-to subaddress	7.6.2.23	Stored location area Id	7.6.2.5
Forwarding feature	7.6.4.16	Subscriber State	7.6.3.30
Forwarding information	7.6.4.15	Subscriber Status	7.6.3.7
Forwarding Options	7.6.4.6	Super-Charger Supported in HLR	7.6.3.70
GERAN Classmark	7.6.6.4		
GGSN address	7.6.2.40	Super-Charger Supported in Serving Network Entity	7.6.3.71
		Offered Camel4 CSIs	7.6.3.36D
		Offered Camel4 CSIs in GMSC	
		Offered Camel4 CSIs in VMSC	7.6.3.36E
		Offered Camel4 CSIs in VLR	
		Offered Camel4 CSIs in SGSN	7.6.3.36F
		Offered Camel4 Functionalities	7.6.3.36B
			7.6.3.36C
			7.6.3.36G
GGSN number	7.6.2.41	Supported CAMEL Phases in VLR	7.6.3.36
GMSC CAMEL Subscription Info	7.6.3.34	Supported CAMEL Phases in SGSN	7.6.3.36A
GPRS enhancements support indicator	7.6.3.73	Supported GAD Shapes	7.6.11.20
GPRS Node Indicator	7.6.8.14	Supported LCS Capability Sets	7.6.11.17
		Suppress Incoming Call Barring	7.6.3.b
GPRS Subscription Data	7.6.3.46	Suppress T-CSI	7.6.3.33
		Suppress VT-CSI	7.6.3.a
GPRS Subscription Data Withdraw	7.6.3.45	Suppression of Announcement	7.6.3.32
GPRS Support Indicator	7.6.8.15	Target cell Id	7.6.2.8
Group Id	7.6.2.33	Target location area Id	7.6.2.7
GSM bearer capability	7.6.3.6	Target RNC Id	7.6.2.8A
gsmSCF Address	7.6.2.58		
gsmSCF Initiated Call	7.6.3.c		
Guidance information	7.6.4.22	Target MSC number	7.6.2.12
Handover number	7.6.2.21	Teleservice	7.6.4.39
High Layer Compatibility	7.6.3.43	TMSI	7.6.2.2
HLR Id	7.6.2.15	Trace reference	7.6.10.2
HLR number	7.6.2.13	Trace type	7.6.10.3
HO-Number Not Required	7.6.6.7	User error	7.6.1.4
IMEI	7.6.2.3	USSD Data Coding Scheme	7.6.4.36
IMSI	7.6.2.1	USSD String	7.6.4.37
Integrity Protection Information	7.6.6.8	UU Data	7.6.5.12
Inter CUG options	7.6.3.27	UUS CF Interaction	7.6.5.13
Intra CUG restrictions	7.6.3.28	VBS Data	7.6.3.40
		VGCS Data	7.6.3.39
		VLR CAMEL Subscription Info	7.6.3.35
		VLR number	7.6.2.14
		VPLMN address allowed	7.6.3.48
		Zone Code	7.6.2.28

***** *Text removed for clarity* *****

7.6.11 Location Service Parameters

7.6.11.1 Age of Location Estimate

This parameter indicates how long ago the location estimate was obtained.

7.6.11.2 Deferred MT-LR Response Indicator

This parameter shows that this is a response to a deferred mt-lr request.

7.6.11.3 Deferred MT-LR Data

This parameter is used to report the deferred location event type, the location information and reason why the serving node aborted monitoring the event to the GMLC. The termination cause mt-lrRestart shall be used to trigger the GMLC to restart the location procedure in all the cases where the sending node detects that the location procedure cannot be successfully performed anymore by the sending node and that it could be successfully performed by another node (as for example when Cancel Location or Send Identification has been received). The location information shall be included only if the termination cause is mt-lrRestart. The network node number contained in the location information refers to the node where the MS/UE has moved to and shall be included if available, like in case Send Identification has been received.

7.6.11.4 LCS Client ID

This parameter provides information related to the identity of an LCS client.

7.6.11.5 LCS Event

This parameter identifies an event associated with the triggering of a location estimate.

7.6.11.6 Void

7.6.11.7 LCS Priority

This parameter gives the priority of the location request.

7.6.11.8 LCS QoS

This parameter defines the Quality of Service (QoS) for any location request. It is composed of the following elements.

1) Response Time

Indicates the category of response time – “low delay” or “delay tolerant”.

2) Horizontal Accuracy

Indicates the required horizontal accuracy of the location estimate.

3) Vertical Coordinate

Indicates if a vertical coordinate is required (in addition to horizontal coordinates).

4) Vertical Accuracy

Indicates the required vertical accuracy of the location estimate (inclusion is optional).

7.6.11.9 CS LCS Not Supported by UE

This parameter is used by the VLR to indicate to the HLR that the UE does not support neither UE Based nor UE Assisted positioning methods for Circuit Switched Location Services. VLR defines the presence of this parameter on the basis of the Classmark 3 information.

7.6.11.10 PS LCS Not Supported by UE

This parameter is used by the SGSN to indicate to the HLR that the UE does not support neither UE Based nor UE Assisted positioning methods for Packet Switched Location Services. SGSN defines the presence of this parameter on the basis of the UE capability information.

7.6.11.11 Location Estimate

This parameter gives an estimate of the location of an MS in universal coordinates and the accuracy of the estimate. The estimate is expressed in terms of the geographical shapes defined by 3GPP TS 23.032 [122], and is composed of the type of shape plus the encoding of the shape itself. Any type of shape defined in 3GPP TS 23.032 [122] can be filled in the Location Estimate parameter, but only the encoding of the following shapes shall be carried by Location Estimate:

- Ellipsoid point with uncertainty circle
- Ellipsoid point with uncertainty ellipse
- Ellipsoid point with altitude and uncertainty ellipsoid
- Ellipsoid arc
- Ellipsoid point

The encoding for the remaining types of shape, defined in the 3GPP TS 23.032 [122], shall be filled in the Additional Location Estimate parameter.

7.6.11.11A Positioning Data

This parameter provides positioning data associated with a successful or unsuccessful location attempt for a target MS as described in 3G TS 49.031 [59a]. ~~Note that the type and length indicator assigned in 49.031 are removed from the parameter.~~

7.6.11.12 Location Type

This parameter indicates the type of location estimate required by the LCS client. Possible location estimate types include:

- current location;
- current or last known location;
- initial location for an emergency services call;
- deferred location event type.

7.6.11.13 NA-ESRD

This parameter only applies to location for an emergency services call in North America and gives the North American Emergency Services Routing Digits.

7.6.11.14 NA-ESRK

This parameter only applies to location for an emergency services call in North America and gives the North American Emergency Services Routing Key.

7.6.11.15 LCS Service Type Id

This parameter defines the LCS Service Type of the current positioning request. The possible values are defined in 3GPP TS 22.071 [123]

7.6.11.16 Privacy Override

This parameter indicates if MS privacy is overridden by the LCS client when the GMLC and VMSC/SGSN for an MT-LR are in the same country.

7.6.11.17 Supported LCS Capability Sets

This parameter indicates which capability sets of LCS are supported in the VLR or SGSN.

7.6.11.18 LCS Codeword

This parameter contains the codeword associated to current positioning request as described in 3GPP TS 23.271 [26a].

7.6.11.19 LCS Codeword Applicability

This parameter indicates if codeword checks are applicable as described in 3GPP TS 23.271 [26a].

7.6.11.20 Supported GAD Shapes

This parameter indicates which of the shapes defined in 3GPP TS 23.032 [122] are supported. If the parameter is not provided then the receiving node shall assume that the sending entity supports the following shapes:

- Ellipsoid point with uncertainty circle
- Ellipsoid point with uncertainty ellipse
- Ellipsoid point with altitude and uncertainty ellipsoid
- Ellipsoid arc
- Ellipsoid point

7.6.11.21 Additional Location Estimate

This parameter gives an estimate of the location of an MS/UE in universal coordinates and the accuracy of the estimate. This parameter allows the location estimate to be expressed in any of the geographical shapes defined in 3GPP TS 23.032 [122].

7.6.11.22 LCS Codeword Notification

This parameter indicates if codeword shall be sent to the subscriber as described in 3GPP TS 23.271 [26a]

****** Next changed section ******

13A.2 MAP-PROVIDE-SUBSCRIBER-LOCATION Service

13A.2.1 Definition

This service is used by a GMLC to request the location of a target MS from the visited MSC or SGSN at any time. This is a confirmed service using the primitives from table 13A.2/1.

13A.2.2 Service Primitives

Table 13A.2/1: Provide_Subscriber_Location

Parameter name	Request	Indication	Response	Confirm
Invoke id	M	M(=)	M(=)	M(=)
Location Type	M	M(=)		
MLC Number	M	M(=)		

LCS Client ID	M	M(=)		
Privacy Override	U	C(=)		
IMSI	C	C(=)		
MSISDN	C	C(=)		
LMSI	C	C(=)		
LCS Priority	C	C(=)		
LCS QoS	C	C(=)		
IMEI	U	C(=)		
Supported GAD Shapes	C	C(=)		
LCS Codeword	C	C(=)		
LCS Service Type Id	C	C(=)		
Location Estimate			M	M(=)
Positioning Data			C	C(=)
Age of Location Estimate			C	C(=)
Additional Location Estimate			C	C(=)
Deferred MT-LR Response Indicator			C	C(=)
User error			C	C(=)
Provider error				O

13A.2.3 Parameter Definition and Use

All parameters are defined in clause 7.6. The use of these parameters and the requirements for their presence are specified in. 3GPP TS 23.271 [26a]

Location Type

This parameter identifies the type of location information requested.

MLC Number

This is the E.164 number of the requesting GMLC.

LCS Client ID

This parameter provides information related to the identity of an LCS client.

Privacy Override

This parameter indicates if MS privacy is overridden by the LCS client when the GMLC and VMSC or SGSN for an MT-LR are in the same country.

IMSI

The IMSI is provided to identify the target MS. At least one of the IMSI or MSISDN is mandatory.

MSISDN

The MSISDN is provided to identify the target MS. At least one of the IMSI or MSISDN is mandatory.

LMSI

The LMSI shall be provided if previously supplied by the HLR. This parameter is only used in the case of the MT-LR for CS domain.

LCS Priority

This parameter indicates the priority of the location request.

LCS QoS

This parameter indicates the required quality of service in terms of response time and accuracy.

IMEI

Inclusion of the IMEI is optional.

Supported GAD Shapes

This parameter indicates which of the shapes defined in 3GPP TS 23.032 [122] are supported.

LCS Codeword

See definition in clause 7.6.11.18. The requirements for its presence are specified in 3GPP TS 23.271 [26a].

LCS Service Type Id

See definition in clause 7.6.11.15. The requirements for its presence are specified in 3GPP TS 23.271 [26a].

Location Estimate

This parameter provides the location estimate if this is encoded in one of the supported geographical shapes. Otherwise this parameter shall consist of one octet, which shall be discarded by the receiving node.

Positioning Data

[This parameter indicates the usage of each positioning method that was attempted to determine the location estimate either successfully or unsuccessfully. It may ~~shall only~~ be included in the message only if the access network is GERAN, see ~~3G TS~~ 3GPP TS 23.271 \[26a\].](#)

Age of Location Estimate

This parameter indicates how long ago the location estimate was obtained.

Additional Location Estimate

This parameter provides the location estimate when not provided by the Location Estimate parameter. It may be sent only if the parameter Supported GAD Shapes has been received in the Provide Subscriber Location indication and the shape to be included is supported by the GMLC.

Deferred MT-LR Response Indicator

See definition in clause 7.6.11.2.

User error

This parameter is sent by the responder when the location request has failed or cannot proceed and if present, takes one of the following values defined in clause 7.6.1.

- System Failure;
- Data Missing;
- Unexpected Data Value;
- Facility Not Supported;
- Unidentified Subscriber;
- Illegal Subscriber;
- Illegal Equipment;
- Absent Subscriber (diagnostic information may also be provided);
- Unauthorised requesting network;
- Unauthorised LCS Client with detailed reason;
- Position method failure with detailed reason.

Provider error

These are defined in clause 7.6.1.

13A.3 MAP-SUBSCRIBER-LOCATION-REPORT Service

13A.3.1 Definition

This service is used by a VMSC or SGSN to provide the location of a target MS to a GMLC when a request for location is either implicitly administered or made at some earlier time. This is a confirmed service using the primitives from table 13A.3/1.

13A.3.2 Service Primitives

Table 13A.3/1: Subscriber_Location_Report

Parameter name	Request	Indication	Response	Confirm
Invoke id	M	M(=)	M(=)	M(=)
LCS Event	M	M(=)		
LCS Client ID	M	M(=)		
Network Node Number	M	M(=)		
IMSI	C	C(=)		
MSISDN	C	C(=)		
NA-ESRD	C	C(=)		
NA-ESRK	C	C(=)		
IMEI	U	C(=)		
Location Estimate	C	C(=)		
Positioning Data	C	C(=)		
Age of Location Estimate	C	C(=)		
LMSI	U	C(=)		
GPRS Node Indicator	C	C(=)		
Additional Location Estimate	C	C(=)		
Deferred MT-LR Data	C	C(=)		
User error			C	C(=)
Provider error				O

13A.3.3 Parameter Definition and Use

All parameters are defined in clause 7.6. The use of these parameters and the requirements for their presence are specified in 3GPP TS 23.271 [26a].

LCS Event

This parameter indicates the event that triggered the Subscriber Location Report.

LCS Client ID

This parameter provides information related to the identity of the recipient LCS client.

Network Node Number

See definition in clause 7.6.2. This parameter provides the address of the sending node.

IMSI

The IMSI shall be provided if available to the VMSC or SGSN.

MSISDN

The MSISDN shall be provided if available to the VMSC or SGSN.

NA-ESRD

If the target MS has originated an emergency service call in North America, the NA-ESRD shall be provided by the VMSC if available.

NA-ESRK

If the target MS has originated an emergency service call in North America, the NA-ESRK shall be provided by the VMSC if assigned.

IMEI

Inclusion of the IMEI is optional.

Location Estimate

This parameter provides the location estimate. The absence of this parameter implies that a location estimate was not available or could not be successfully obtained. If the obtained location estimate is not encoded in one of the supported geographical shapes then this parameter shall consist of one octet, which shall be discarded by the receiving node.

Positioning Data

[This parameter indicates the usage of each positioning method that was attempted to determine the location estimate either successfully or unsuccessfully. It may ~~shall only~~ be included in the message only if the access network is GERAN, see ~~3G-TS~~ 3GPP TS 23.271 \[26a\].](#)

Age of Location Estimate

This parameter indicates how long ago the location estimate was obtained.

LMSI

The LMSI may be provided if assigned by the VLR.

GPRS Node Indicator

See definition in clause 7.6.8. This presence of this parameter is mandatory only if the SGSN number is sent in the Network Node Number.

Additional Location Estimate

This parameter provides the location estimate when not provided by the Location Estimate parameter..

Deferred MT-LR Data

See definition in clause 7.6.11.3.

User error

This parameter is sent by the responder when the received message contains an error, cannot be forwarded or stored for an LCS client or cannot be accepted for some other reason and if present, takes one of the following values defined in clause 7.6.1.

- System Failure;
- Data Missing;
- Unexpected Data Value;
- Resource Limitation;
- Unknown Subscriber;
- Unauthorised requesting network;
- Unknown or unreachable LCS Client.

Provider error

These are defined in clause 7.6.1.

17.7.13 Location service data types


```

MAP-LCS-DataTypes {
    ccitt identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-LCS-DataTypes (25) version8 (8)}

DEFINITIONS
IMPLICIT TAGS
::=
BEGIN

EXPORTS
    RoutingInfoForLCS-Arg,
    RoutingInfoForLCS-Res,
    ProvideSubscriberLocation-Arg,
    ProvideSubscriberLocation-Res,
    SubscriberLocationReport-Arg,
    SubscriberLocationReport-Res,
    LocationType,
    LCSClientName,
    LCS-QoS,
    Horizontal-Accuracy,
    ResponseTime,
    Ext-GeographicalInformation,
    SupportedGADShapes,
    Add-GeographicalInformation,
    LCSRequestorID,
    LCSCodeword
;

IMPORTS
    AddressString,
    ISDN-AddressString,
    IMEI,
    IMSI,
    LMSI,
    SubscriberIdentity,
    AgeOfLocationInformation,
    LCSClientExternalID,
    LCSClientInternalID,
    LCSServiceTypeID
FROM MAP-CommonDataTypes {
    ccitt identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-CommonDataTypes (18) version8 (8)}

    ExtensionContainer
FROM MAP-ExtensionDataTypes {
    ccitt identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version8 (8)}

    USSD-DataCodingScheme,
    USSD-String
FROM MAP-SS-DataTypes {
    ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
    map-SS-DataTypes (14) version8 (8)}

    APN
FROM MAP-MS-DataTypes {
    ccitt identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-MS-DataTypes (11) version8 (8)}

    Additional-Number
FROM MAP-SM-DataTypes {
    ccitt identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-SM-DataTypes (16) version8 (8)}
;

```

RoutingInfoForLCS-Arg ::= SEQUENCE {			
mlcNumber	[0]	ISDN-AddressString,	
targetMS	[1]	SubscriberIdentity,	
extensionContainer	[2]	ExtensionContainer	OPTIONAL,
...			
lcsCodewordApplicability	[3]	LCSCodewordApplicability	OPTIONAL }

```

LCSCodewordApplicability ::= ENUMERATED {
  codewordCheckApplicable          (0),
  codewordCheckNotApplicable       (1),
  ...}
-- exception handling:
-- unrecognized values shall be ignored by the receiver.

```

```

RoutingInfoForLCS-Res ::= SEQUENCE {
  targetMS                [0] SubscriberIdentity,
  lcsLocationInfo         [1] LCSLocationInfo,
  extensionContainer      [2] ExtensionContainer      OPTIONAL,
  ...,
  lcsCodewordNotification [3] NULL                  OPTIONAL
-- lcsCodewordNotification may be present only if
-- lcsCodewordApplicability was present in RoutingInfoForLCS-Arg.
-- If received when lcsCodewordApplicability was not present in
-- RoutingInfoForLCS-Arg then lcsCodewordNotification shall be ignored.
}

```

```

LCSLocationInfo ::= SEQUENCE {
  networkNode-Number      ISDN-AddressString,
-- NetworkNode-number can be either msc-number or sgsn-number
  lmsi                    [0] LMSI                  OPTIONAL,
  extensionContainer      [1] ExtensionContainer      OPTIONAL,
  ...,
  gprsNodeIndicator      [2] NULL                  OPTIONAL,
-- gprsNodeIndicator is set only if the SGSN number is sent as the Network Node Number
  additional-Number       [3] Additional-Number      OPTIONAL
}

```

```

ProvideSubscriberLocation-Arg ::= SEQUENCE {
  locationType            LocationType,
  mlc-Number              ISDN-AddressString,
  lcs-ClientID            [0] LCS-ClientID          OPTIONAL,
  privacyOverride        [1] NULL                  OPTIONAL,
  imsi                   [2] IMSI                  OPTIONAL,
  msisdn                 [3] ISDN-AddressString     OPTIONAL,
  lmsi                   [4] LMSI                  OPTIONAL,
  imei                   [5] IMEI                  OPTIONAL,
  lcs-Priority            [6] LCS-Priority          OPTIONAL,
  lcs-QoS                [7] LCS-QoS               OPTIONAL,
  extensionContainer      [8] ExtensionContainer      OPTIONAL,
  ...,
  supportedGADShapes     [9] SupportedGADShapes     OPTIONAL,
  lcsServiceTypeID       [10] LCSServiceTypeID      OPTIONAL,
  lcsCodeword            [11] LCSCodeword          OPTIONAL }
-- one of imsi or msisdn is mandatory

```

```

LocationType ::= SEQUENCE {
  locationEstimateType   [0] LocationEstimateType,
  ...,
  deferredLocationEventType [1] DeferredLocationEventType OPTIONAL }

```

```

LocationEstimateType ::= ENUMERATED {
  currentLocation        (0),
  currentOrLastKnownLocation (1),
  initialLocation        (2),
  ...,
  activateDeferredLocation (3),
  cancelDeferredLocation  (4) }
-- exception handling:
-- a ProvideSubscriberLocation-Arg containing an unrecognized LocationEstimateType
-- shall be rejected by the receiver with a return error cause of unexpected data value

```

```

DeferredLocationEventType ::= BIT STRING {
  msAvailable            (0) } (SIZE (1..16))
-- exception handling
-- a ProvideSubscriberLocation-Arg containing other values than listed above in
-- DeferredLocationEventType shall be rejected by the receiver with a return error cause of
-- unexpected data value.

```

```

LCS-ClientID ::= SEQUENCE {
  lcsClientType          [0] LCSClientType,
  lcsClientExternalID    [1] LCSClientExternalID    OPTIONAL,
  lcsClientDialedByMS    [2] AddressString          OPTIONAL,
  lcsClientInternalID    [3] LCSClientInternalID    OPTIONAL,
  lcsClientName          [4] LCSClientName          OPTIONAL,

```

...		
lcsAPN	[5] APN	OPTIONAL,
lcsRequestorID	[6] LCSRequestorID	OPTIONAL }

```

LCSCClientType ::= ENUMERATED {
  emergencyServices          (0),
  valueAddedServices        (1),
  plmnOperatorServices      (2),
  lawfulInterceptServices   (3),
  ... }
-- exception handling:
-- unrecognized values may be ignored if the LCS client uses the privacy override
-- otherwise, an unrecognized value shall be treated as unexpected data by a receiver
-- a return error shall then be returned if received in a MAP invoke

```

```

LCSCClientName ::= SEQUENCE {
  dataCodingScheme          [0] USSD-DataCodingScheme,
  nameString                [2] NameString,
  ...}
-- The USSD-DataCodingScheme shall indicate use of the default alphabet through the
-- following encoding
-- bit 7 6 5 4 3 2 1 0
--      0 0 0 0 1 1 1 1

```

```

NameString ::= USSD-String (SIZE (1..maxNameStringLength))

```

```

maxNameStringLength INTEGER ::= 63

```

```

LCSRequestorID ::= SEQUENCE {
  dataCodingScheme          [0] USSD-DataCodingScheme,
  requestorIDString        [1] RequestorIDString,
  ...}

```

```

RequestorIDString ::= USSD-String (SIZE (0..maxRequestorIDStringLength))

```

```

maxRequestorIDStringLength INTEGER ::= 127

```

```

LCS-Priority ::= OCTET STRING (SIZE (1))
-- 0 = highest priority
-- 1 = normal priority
-- all other values treated as 1

```

```

LCS-QoS ::= SEQUENCE {
  horizontal-accuracy       [0] Horizontal-Accuracy          OPTIONAL,
  verticalCoordinateRequest [1] NULL                       OPTIONAL,
  vertical-accuracy         [2] Vertical-Accuracy            OPTIONAL,
  responseTime              [3] ResponseTime                 OPTIONAL,
  extensionContainer        [4] ExtensionContainer            OPTIONAL,
  ...}

```

```

Horizontal-Accuracy ::= OCTET STRING (SIZE (1))
-- bit 8 = 0
-- bits 7-1 = 7 bit Uncertainty Code defined in 3GPP TS 23.032. The horizontal location
-- error should be less than the error indicated by the uncertainty code with 67%
-- confidence.

```

```

Vertical-Accuracy ::= OCTET STRING (SIZE (1))
-- bit 8 = 0
-- bits 7-1 = 7 bit Vertical Uncertainty Code defined in 3GPP TS 23.032.
-- The vertical location error should be less than the error indicated
-- by the uncertainty code with 67% confidence.

```

```

ResponseTime ::= SEQUENCE {
  responseTimeCategory      ResponseTimeCategory,
  ...}
-- note: an expandable SEQUENCE simplifies later addition of a numeric response time.

```

```

ResponseTimeCategory ::= ENUMERATED {
  lowdelay (0),
  delaytolerant (1),
  ... }
-- exception handling:
-- an unrecognized value shall be treated the same as value 1 (delaytolerant)

```

```

SupportedGADShapes ::= BIT STRING {
  ellipsoidPoint (0),
  ellipsoidPointWithUncertaintyCircle (1),
  ellipsoidPointWithUncertaintyEllipse (2),
  polygon (3),
  ellipsoidPointWithAltitude (4),
  ellipsoidPointWithAltitudeAndUncertaintyEllipsoid (5),
  ellipsoidArc (6) } (SIZE (7..16))
-- A node shall mark in the BIT STRING all Shapes defined in 3GPP TS 23.032 it supports.
-- exception handling: bits 7 to 15 shall be ignored if received.

```

```

LCSCodeword ::= SEQUENCE {
  dataCodingScheme [0] USSD-DataCodingScheme,
  lcsCodewordString [1] LCSCodewordString,
  ...}

```

```

LCSCodewordString ::= USSD-String (SIZE (1..maxLCSCodewordStringLength))

```

```

maxLCSCodewordStringLength INTEGER ::= 127

```

```

ProvideSubscriberLocation-Res ::= SEQUENCE {
  locationEstimate Ext-GeographicalInformation,
  ageOfLocationEstimate [0] AgeOfLocationInformation OPTIONAL,
  extensionContainer [1] ExtensionContainer OPTIONAL,
  ... ,
  add-LocationEstimate [2] Add-GeographicalInformation OPTIONAL,
  deferredmt-lrResponseIndicator [3] NULL OPTIONAL,
  positioningData [4] PositioningDataInformation OPTIONAL }
-- if deferredmt-lrResponseIndicator is set, locationEstimate is ignored.
-- the add-LocationEstimate parameter shall not be sent to a node that did not indicate the
-- geographic shapes supported in the ProvideSubscriberLocation-Arg
-- The locationEstimate and the add-locationEstimate parameters shall not be sent if
-- the supportedGADShapes parameter has been received in ProvideSubscriberLocation-Arg
-- and the shape encoded in locationEstimate or add-LocationEstimate is not marked
-- as supported in supportedGADShapes. In such a case ProvideSubscriberLocation
-- shall be rejected with error FacilityNotSupported with additional indication
-- shapeOfLocationEstimateNotSupported

```

```

Ext-GeographicalInformation ::= OCTET STRING (SIZE (1..maxExt-GeographicalInformation))
-- Refers to geographical Information defined in 3GPP TS 23.032.
-- This is composed of 1 or more octets with an internal structure according to
-- 3GPP TS 23.032
-- Octet 1: Type of shape, only the following shapes in 3GPP TS 23.032 are allowed:
--   (a) Ellipsoid point with uncertainty circle
--   (b) Ellipsoid point with uncertainty ellipse
--   (c) Ellipsoid point with altitude and uncertainty ellipsoid
--   (d) Ellipsoid Arc
--   (e) Ellipsoid Point
-- Any other value in octet 1 shall be treated as invalid
-- Octets 2 to 8 for case (a) - Ellipsoid point with uncertainty circle
--   Degrees of Latitude           3 octets
--   Degrees of Longitude         3 octets
--   Uncertainty code             1 octet
-- Octets 2 to 11 for case (b) - Ellipsoid point with uncertainty ellipse:
--   Degrees of Latitude           3 octets
--   Degrees of Longitude         3 octets
--   Uncertainty semi-major axis  1 octet
--   Uncertainty semi-minor axis  1 octet
--   Angle of major axis          1 octet
--   Confidence                    1 octet
-- Octets 2 to 14 for case (c) - Ellipsoid point with altitude and uncertainty ellipsoid
--   Degrees of Latitude           3 octets
--   Degrees of Longitude         3 octets
--   Altitude                      2 octets
--   Uncertainty semi-major axis  1 octet
--   Uncertainty semi-minor axis  1 octet
--   Angle of major axis          1 octet
--   Uncertainty altitude         1 octet
--   Confidence                    1 octet
-- Octets 2 to 13 for case (d) - Ellipsoid Arc
--   Degrees of Latitude           3 octets
--   Degrees of Longitude         3 octets
--   Inner radius                  2 octets
--   Uncertainty radius            1 octet
--   Offset angle                  1 octet
--   Included angle                1 octet
--   Confidence                    1 octet
-- Octets 2 to 7 for case (e) - Ellipsoid Point
--   Degrees of Latitude           3 octets
--   Degrees of Longitude         3 octets
--
-- An Ext-GeographicalInformation parameter comprising more than one octet and
-- containing any other shape or an incorrect number of octets or coding according
-- to 3GPP TS 23.032 shall be treated as invalid data by a receiver.
--
-- An Ext-GeographicalInformation parameter comprising one octet shall be discarded
-- by the receiver if an Add-GeographicalInformation parameter is received
-- in the same message.
--
-- An Ext-GeographicalInformation parameter comprising one octet shall be treated as
-- invalid data by the receiver if an Add-GeographicalInformation parameter is not
-- received in the same message.

```

```

maxExt-GeographicalInformation INTEGER ::= 20
-- the maximum length allows for further shapes in 3GPP TS 23.032 to be included in later
-- versions of 3GPP TS 29.002

```

```

PositioningDataInformation ::= OCTET STRING (SIZE (2+..maxPositioningDataInformation))
-- Refers to the Positioning Data defined in 3G TS3GPP TS 49.031.
-- This is composed of 2 or more octets with an internal structure according to
-- 3G TS3GPP TS 49.031. Note that the IEI and Length parts of Positioning Data as
-- defined in 49.031 are not included.

```

```

maxPositioningDataInformation INTEGER ::= 10
--

```

```

Add-GeographicalInformation ::= OCTET STRING (SIZE (1..maxAdd-GeographicalInformation))
-- Refers to geographical Information defined in 3GPP TS 23.032.
-- This is composed of 1 or more octets with an internal structure according to
-- 3GPP TS 23.032
-- Octet 1: Type of shape, all the shapes defined in 3GPP TS 23.032 are allowed:
-- Octets 2 to n (where n is the total number of octets necessary to encode the shape
-- according to 3GPP TS 23.032) are used to encode the shape itself in accordance with
the
-- encoding defined in 3GPP TS 23.032
--
-- An Add-GeographicalInformation parameter, whether valid or invalid, received
-- together with a valid Ext-GeographicalInformation parameter in the same message
-- shall be discarded.
--
-- An Add-GeographicalInformation parameter containing any shape not defined in
-- 3GPP TS 23.032 or an incorrect number of octets or coding according to
-- 3GPP TS 23.032 shall be treated as invalid data by a receiver if not received
-- together with a valid Ext-GeographicalInformation parameter in the same message.

```

```

maxAdd-GeographicalInformation INTEGER ::= 91
-- the maximum length allows support for all the shapes currently defined in 3GPP TS
-- 23.032

```

```

SubscriberLocationReport-Arg ::= SEQUENCE {
    lcs-Event                LCS-Event,
    lcs-ClientID             LCS-ClientID,
    lcsLocationInfo          LCSLocationInfo,
    msisdn                   [0] ISDN-AddressString           OPTIONAL,
    imsi                     [1] IMSI                         OPTIONAL,
    imei                     [2] IMEI                         OPTIONAL,
    na-ESRD                  [3] ISDN-AddressString           OPTIONAL,
    na-ESRK                  [4] ISDN-AddressString           OPTIONAL,
    locationEstimate         [5] Ext-GeographicalInformation  OPTIONAL,
    ageOfLocationEstimate    [6] AgeOfLocationInformation     OPTIONAL,
    extensionContainer        [7] ExtensionContainer           OPTIONAL,
    ... ,
    add-LocationEstimate     [8] Add-GeographicalInformation  OPTIONAL,
    deferredmt-lrData        [9] Deferredmt-lrData            OPTIONAL,
    positioningData          [10] PositioningDataInformation  OPTIONAL }
-- one of msisdn or imsi is mandatory
-- a location estimate that is valid for the locationEstimate parameter should
-- be transferred in this parameter in preference to the add-LocationEstimate.
-- the deferredmt-lrData parameter shall be included if and only if the lcs-Event
-- indicates a deferredmt-lrResponse.
-- if the lcs-Event indicates a deferredmt-lrResponse then the locationEstimate
-- and the add-LocationEstimate parameters shall not be sent if the
-- supportedGADShapes parameter had been received in ProvideSubscriberLocation-Arg
-- and the shape encoded in locationEstimate or add-LocationEstimate was not marked
-- as supported in supportedGADShapes. In such a case terminationCause
-- in deferredmt-lrData shall be present with value
-- shapeOfLocationEstimateNotSupported.

```

```

Deferredmt-lrData ::= SEQUENCE {
    deferredLocationEventType DeferredLocationEventType,
    terminationCause          [0] TerminationCause           OPTIONAL,
    lcsLocationInfo           [1] LCSLocationInfo             OPTIONAL,
    ... }
-- lcsLocationInfo may be included only if a terminationCause is present
-- indicating mt-lrRestart.

```

```

LCS-Event ::= ENUMERATED {
    emergencyCallOrigination (0),
    emergencyCallRelease (1),
    mo-lr (2),
    ... ,
    deferredmt-lrResponse (3) }
-- exception handling:
-- a SubscriberLocationReport-Arg containing an unrecognized LCS-Event
-- shall be rejected by a receiver with a return error cause of unexpected data value

```

```
TerminationCause ::= ENUMERATED {
    normal (0),
    errorundefined (1),
    internalTimeout (2),
    congestion (3),
    mt-lrRestart (4),
    privacyViolation (5),
    ...,
    shapeOfLocationEstimateNotSupported (6) }
-- mt-lrRestart shall be used to trigger the GMLC to restart the location procedure,
-- either because the sending node knows that the terminal has moved under coverage
-- of another MSC or SGSN (e.g. Send Identification received), or because the subscriber
-- has been deregistered due to a Cancel Location received from HLR.
--
-- exception handling
-- an unrecognized value shall be treated the same as value 1 (errorundefined)
```

```
SubscriberLocationReport-Res ::= SEQUENCE {
    extensionContainer ExtensionContainer OPTIONAL,
    ...}
```

END

CHANGE REQUEST

⌘ **29.002 CR 598** ⌘ rev ⌘ Current version: **5.5.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	⌘ LCS Client external ID				
Source:	⌘ CN4				
Work item code:	⌘ LCS	Date:	⌘ 24/04/2003		
Category:	⌘ F	Release:	⌘ Rel-5		
	<i>Use one of the following categories:</i> F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		<i>Use one of the following releases:</i> 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)		

Reason for change:	⌘ According to 23.271 the address identifying an external LCS client is limited to international E.164 addresses. In MAP the ISDN-ADDRESSSTRING is the appropriate data type to carry E.164 address.
Summary of change:	⌘ Replace ADDRESSSTRING with ISDN-ADDRESSSTRING for the data type to carry the client's external address.
Consequences if not approved:	⌘ VLRs and SGSNs need to guard against receiving longer addresses at application level.

Clauses affected:	⌘ 17.7.8												
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> <td style="width: 20px;"></td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> <td>Other core specifications</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> <td>Test specifications</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> <td>O&M Specifications</td> </tr> </table>	Y	N		⌘	X	Other core specifications	⌘	X	Test specifications	⌘	X	O&M Specifications
Y	N												
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⌘	X	Test specifications											
⌘	X	O&M Specifications											
Other comments:	⌘												

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <http://www.3gpp.org/specs/CR.htm>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

17.7.8 Common data types

.....

```
LCSClientExternalID ::= SEQUENCE {  
    externalAddress          [0] ISDN-AddressString          OPTIONAL,  
    extensionContainer      [1] ExtensionContainer            OPTIONAL,  
    ... }  
|
```

CHANGE REQUEST

⌘ **29.002 CR 599** ⌘ rev ⌘ Current version: **6.1.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	⌘ LCS Client external ID		
Source:	⌘ CN4		
Work item code:	⌘ LCS	Date:	⌘ 24/04/2003
Category:	⌘ A	Release:	⌘ Rel-6
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17.7.8 Common data types

.....

```
LCSClientExternalID ::= SEQUENCE {  
    externalAddress          [0] ISDN-AddressString          OPTIONAL,  
    extensionContainer       [1] ExtensionContainer             OPTIONAL,  
    ... }  
|
```