

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

NP-030231

Source: TSG CN WG4
Title: Corrections on LCS2
Agenda item: 9.19
Document for: APPROVAL

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
29.002	608	1	N4-030608	Rel-6	Addition of LCS capability sets to MAP_SRI_for_LCS response	B	6.1.0
29.002	624	1	N4-030609	Rel-6	Addition of Privacy Check Related Action to Provide Subscriber Location request	F	6.10

CHANGE REQUEST

⌘ **29.002 CR 608** ⌘ rev **1** ⌘ 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 LCS capability sets to MAP_SRI_for_LCS response		
Source:	⌘ CN4		
Work item code:	⌘ LCS2	Date:	⌘ 8 th /May/2003
Category:	⌘ B	Release:	⌘ Rel-6
	<i>Use <u>one</u> 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 <u>one</u> 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 the Rel-6 enhancements to TS23.271 v6.3.0 chapter 9.1.1, LCS capability sets need to be included in the MAP_SRI_for_LCS response.		
Summary of change:	⌘ LCS capability sets is added to MAP_SRI_for_LCS response message.		
Consequences if not approved:	⌘ LCS Stage 3 specification is not alligned with LCS stage 2 specification.		

Clauses affected:	⌘ 7.6, 7.11, 13A.1.2, 13A.1.3, 17.7.13										
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> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table>	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other core specifications Test specifications O&M Specifications	⌘
Y	N										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
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.

<< First Changes >>

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	Location Information for GPRS	7.6.2.30a
Access connection status	7.6.9.3	Location update type	7.6.9.6
Access signalling information	7.6.9.5	Long Forwarded-to Number	7.6.2.22A
Additional Absent Subscriber Diagnostic SM	7.6.8.12	Long FTN Supported	7.6.2.22B
Additional LCS Capability Sets	7.6.11.XX		
Additional Location Estimate	7.6.11.21	Lower Layer Compatibility	7.6.3.42
Additional number	7.6.2.46	LSA Information	7.6.3.56
Additional signal info	7.6.9.10	LSA Information Withdraw	7.6.3.58
Additional SM Delivery Outcome	7.6.8.11	MC Information	7.6.4.48
Age Indicator	7.6.3.72	MC Subscription Data	7.6.4.47
Alert Reason	7.6.8.8	Mobile Not Reachable Reason	7.6.3.51
Alert Reason Indicator	7.6.8.10	Modification request for CSI	7.6.3.81
Alerting Pattern	7.6.3.44	Modification request for SS Information	7.6.3.82
All GPRS Data	7.6.3.53	More Messages To Send	7.6.8.7
All Information Sent	7.6.1.5	MS ISDN	7.6.2.17
AN-apdu	7.6.9.1	MSC number	7.6.2.11
APN	7.6.2.42	MSIsdn-Alert	7.6.2.29
Authentication set list	7.6.7.1	Multicall Bearer Information	7.6.2.52
B-subscriber Address	7.6.2.36	Multiple Bearer Requested	7.6.2.53
B subscriber Number	7.6.2.48	Multiple Bearer Not Supported	7.6.2.54
B subscriber subaddress	7.6.2.49	MWD status	7.6.8.3
Basic Service Group	7.6.4.40	NbrUser	7.6.4.45
Bearer service	7.6.4.38	Network Access Mode	7.6.3.50
BSSMAP Service Handover	7.6.6.5	Network node number	7.6.2.43
BSSMAP Service Handover List	7.6.6.5A	Network resources	7.6.10.1
Call Barring Data	7.6.3.83	Network signal information	7.6.9.8
Call barring feature	7.6.4.19	New password	7.6.4.20
Call barring information	7.6.4.18	No reply condition timer	7.6.4.7
Call barring support indicator	7.6.3.92	North American Equal Accesspreferred Carrier Id	7.6.2.34
Call Direction	7.6.5.8	Number Portability Status	7.6.5.14
Call Forwarding Data	7.6.3.84	ODB Data	7.6.3.85
Call Info	7.6.9.9	ODB General Data	7.6.3.9
Call reference	7.6.5.1	ODB HPLMN Specific Data	7.6.3.10
Call Termination Indicator	7.6.3.67	OMC Id	7.6.2.18
Called number	7.6.2.24	Originally dialled number	7.6.2.26
Calling number	7.6.2.25	Originating entity number	7.6.2.10
CAMEL Subscription Info	7.6.3.78	Override Category	7.6.4.4
CAMEL Subscription Info Withdraw	7.6.3.38	P-TMSI	7.6.2.47
Cancellation Type	7.6.3.52	PDP-Address	7.6.2.45
Category	7.6.3.1	PDP-Context identifier	7.6.3.55
CCBS Feature	7.6.5.8	PDP-Type	7.6.2.44
CCBS Request State	7.6.4.49		

Channel Type	7.6.5.9	Pre-paging supported	7.6.5.15
Chosen Channel	7.6.5.10	Previous location area Id	7.6.2.4
Chosen Radio Resource Information	7.6.6.10B	Protocol Id	7.6.9.7
Ciphering mode	7.6.7.7	Provider error	7.6.1.3
Cksn	7.6.7.5	PS LCS Not Supported by UE	7.6.11.10
CLI Restriction	7.6.4.5	QoS-Subscribed	7.6.3.47
CM service type	7.6.9.2	Radio Resource Information	7.6.6.10
Complete Data List Included	7.6.3.54	Radio Resource List	7.6.6.10A
CS Allocation Retention priority	7.6.3.87	RANAP Service Handover	7.6.6.6
CS LCS Not Supported by UE	7.6.11.9	Rand	7.6.7.2
CUG feature	7.6.3.26	LCS-Reference Number	7.6.11.23
CUG index	7.6.3.25	Regional Subscription Data	7.6.3.11
CUG info	7.6.3.22	Regional Subscription Response	7.6.3.12
CUG interlock	7.6.3.24	Relocation Number List	7.6.2.19A
CUG Outgoing Access indicator	7.6.3.8	Requested Info	7.6.3.31
CUG subscription	7.6.3.23	Requested Subscription Info	7.6.3.86
CUG Subscription Flag	7.6.3.37	Roaming number	7.6.2.19
Current location area Id	7.6.2.6	Roaming Restricted In SGSN Due To Unsupported Feature	7.6.3.49
Current password	7.6.4.21	Roaming Restriction Due To Unsupported Feature	7.6.3.13
Deferred MT-LR Data	7.6.11.3	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
Extensible Call barring information for CSE	7.6.3.79	SM Delivery Outcome	7.6.8.6
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	SM-RP-PRI	7.6.8.5
Extensible No reply condition timer	7.6.3.19	SM-RP-SMEA	7.6.8.17
Extensible QoS-Subscribed	7.6.3.74	SM-RP-UI	7.6.8.4
Extensible SS-Data	7.6.3.29	Sres	7.6.7.3
Extensible SS-Info	7.6.3.14	SS-Code	7.6.4.1
Extensible SS-Status	7.6.3.17	SS-Data	7.6.4.3
Extensible Teleservice	7.6.3.4	SS-Event	7.6.4.42
External Signal Information	7.6.9.4	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	Super-Charger Supported in Serving Network Entity	7.6.3.71
GGSN address	7.6.2.40	Offered Camel4 CSIs	7.6.3.36D
GGSN number	7.6.2.41	Offered Camel4 CSIs in GMSC	7.6.3.36E
GMSC CAMEL Subscription Info	7.6.3.34	Offered Camel4 CSIs in VMSC	7.6.3.36F
GPRS enhancements support indicator	7.6.3.73	Offered Camel4 CSIs in VLR	7.6.3.36B
GPRS Node Indicator	7.6.8.14	Offered Camel4 CSIs in SGSN	7.6.3.36C
GPRS Subscription Data	7.6.3.46	Offered Camel4 Functionalities	7.6.3.36G
GPRS Subscription Data Withdraw	7.6.3.45	Supported CAMEL Phases in VLR	7.6.3.36
GPRS Support Indicator	7.6.8.15	Supported CAMEL Phases in SGSN	7.6.3.36A
Group Id	7.6.2.33	Supported GAD Shapes	7.6.11.20
GSM bearer capability	7.6.3.6	Supported LCS Capability Sets	7.6.11.17
gsmSCF Address	7.6.2.58	Suppress Incoming Call Barring	7.6.3.b
gsmSCF Initiated Call	7.6.3.c	Suppress T-CSI	7.6.3.33
Guidance information	7.6.4.22	Suppress VT-CSI	7.6.3.a
Handover number	7.6.2.21	Suppression of Announcement	7.6.3.32
High Layer Compatibility	7.6.3.43	Target cell Id	7.6.2.8
HLR Id	7.6.2.15	Target location area Id	7.6.2.7
HLR number	7.6.2.13		

HO-Number Not Required	7.6.6.7	Target RNC Id	7.6.2.8A
IMEI	7.6.2.3	Target MSC number	7.6.2.12
IMSI	7.6.2.1	Teleservice	7.6.4.39
Integrity Protection Information	7.6.6.8	TMSI	7.6.2.2
Inter CUG options	7.6.3.27	Trace reference	7.6.10.2
Intra CUG restrictions	7.6.3.28	Trace type	7.6.10.3
Invoke Id	7.6.1.1	User error	7.6.1.4
ISDN Bearer Capability	7.6.3.41	USSD Data Coding Scheme	7.6.4.36
IST Alert Timer	7.6.3.66	USSD String	7.6.4.37
IST Information Withdrawn	7.6.3.68	UU Data	7.6.5.12
IST Support Indicator	7.6.3.69	UUS CF Interaction	7.6.5.13
LCS Codeword	7.6.11.18	VBS Data	7.6.3.40
LCS Information	7.6.3.60	VGCS Data	7.6.3.39
LCS Service Type Id	7.6.11.15	VLR CAMEL Subscription Info	7.6.3.35
Kc	7.6.7.4	VLR number	7.6.2.14
Linked Id	7.6.1.2	VPLMN address allowed	7.6.3.48
LMSI	7.6.2.16	Zone Code	7.6.2.28
Location Information	7.6.2.30		

<< Next Changes >>

7.6.11.23 LCS-Reference Number

This parameter represents a reference between a request and a response of a deferred mt-lr procedure as described in 3GPP TS 23.271 [26a].

[7.6.11.XX Additional LCS Capability Sets](#)

[This parameter indicates which capability sets of LCS are supported in the VLR or SGSN.](#)

<< Next Changes >>

13A Location Service Management Services

13A.1 MAP-SEND-ROUTING-INFO-FOR-LCS Service

13A.1.1 Definition

This service is used between the GMLC and the HLR to retrieve the routing information needed for routing a location service request to the servicing VMSC or SGSN. The MAP-SEND-ROUTING-INFO-FOR-LCS is a confirmed service using the primitives from table 13A.1/1.

13A.1.2 Service Primitives

Table 13A.1/1: MAP-SEND-ROUTING-INFO-FOR-LCS

Parameter name	Request	Indication	Response	Confirm
Invoke Id	M	M(=)	M(=)	M(=)
MLC Number	M	M(=)		
MSISDN	C	C(=)	C	C(=)
IMSI	C	C(=)	C	C(=)
LMSI			C	C(=)
Network Node Number			C	C(=)
GPRS Node Indicator			C	C(=)

Additional Number			C	C(=)
Supported LCS Capability Sets			<u>C</u>	<u>C(=)</u>
Additional LCS Capability Sets			<u>C</u>	<u>C(=)</u>
V-GMLC Address			U	C(=)
H-GMLC Address			C	C(=)
PPR Address			U	C(=)
User error			C	C(=)
Provider error				O

13A.1.3 Parameter Use

Invoke id

See definition in clause 7.6.1.

MLC Number

See definition in clause 7.6.2.

MSISDN

See definition in clause 7.6.2. The request shall carry either the IMSI or MSISDN. The response shall carry whichever of these was not included in the request (see 3GPP TS 23.271 for details).

IMSI

See definition in clause 7.6.2.

LMSI

See definition in clause 7.6.2. It is an operator option to provide this parameter from the VLR; it is mandatory for the HLR to include the LMSI in a successful response, if the VLR has used the LMSI.

Network Node Number

See definition in clause 7.6.2. This parameter is provided in a successful response. If the "Network Node Number" and "Additional Number" are received in the GMLC, the "Network Node Number" is used in preference to the "Additional Number".

GPRS Node Indicator

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

Additional Number

See definition in clause 7.6.2. This parameter is provided in a successful response. If the "Network Node Number" and "Additional Number" are received in the GMLC, the "Network Node Number" is used in preference to the "Additional Number".

[Supported LCS Capability Sets](#)

[See definition in clause 7.6.11. This parameter indicates the LCS capability of the serving node that is indicated by the "Network Node Number". This parameter is provided only if LCS capability sets are available in HLR and "Network Node Number" is present in this message.](#)

[Additional LCS Capability Sets](#)

[See definition in clause 7.6.11. This parameter indicates the LCS capability of the serving node that is indicated by the "Additional Number". This parameter is provided only if LCS capability sets are available in HLR and "Additional Number" is present in this message.](#)

[V-GMLC address](#)

See definition in clause 7.6.2.

H-GMLC address

See definition in clause 7.6.2. The requirements for its presence are specified in 3GPP TS 23.271 [26a].

PPR address

See definition in clause 7.6.2.

User error

The following errors defined in clause 7.6.1 may be used, depending on the nature of the fault:

- Unknown subscriber;
- Absent Subscriber;
- Facility Not Supported;
- System failure;
- Unexpected Data Value;
- Data missing;
- Unauthorised requesting network.

Provider error

For definition of provider errors see clause 7.6.1.

[<< Next Changes >>](#)

17.7.13 Location service data types


```

MAP-LCS-DataTypes {
    itu-t identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-LCS-DataTypes (25) version9 (9)}

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 {
    itu-t identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-CommonDataTypes (18) version9 (9)}

    ExtensionContainer
FROM MAP-ExtensionDataTypes {
    itu-t identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version9 (9)}

    USSD-DataCodingScheme,
    USSD-String
FROM MAP-SS-DataTypes {
    itu-t identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
    map-SS-DataTypes (14) version9 (9)}

    APN,
    GSN-Address,
    SupportedLCS-CapabilitySets
FROM MAP-MS-DataTypes {
    itu-t identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-MS-DataTypes (11) version9 (9)}

    Additional-Number
FROM MAP-SM-DataTypes {
    itu-t identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-SM-DataTypes (16) version9 (9)}
;

```

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

```

RoutingInfoForLCS-Res ::= SEQUENCE {
    targetMS                               [0] SubscriberIdentity,
    lcsLocationInfo                        [1] LCSLocationInfo,
    extensionContainer                      [2] ExtensionContainer          OPTIONAL,
    ... ,
    v-gmlc-Address                         [3] GSN-Address              OPTIONAL,
    h-gmlc-Address                         [4] GSN-Address              OPTIONAL,
    ppr-Address                            [5] GSN-Address              OPTIONAL }
    
```

```

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,
    supportedLCS-CapabilitySets            [4] SupportedLCS-CapabilitySets OPTIONAL,
    additional-LCS-CapabilitySets          [5] SupportedLCS-CapabilitySets OPTIONAL
}
    
```

CR-Form-v7

CHANGE REQUEST

⌘ **29.002 CR 624** ⌘ rev **1** ⌘ 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 Privacy Check Related Action to Provide Subscriber Location request		
Source:	⌘ CN4		
Work item code:	⌘ LCS2	Date:	⌘ 22/05/2003
Category:	⌘ F	Release:	⌘ Rel-6
	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 .		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:	⌘ Privacy Check Related Action is needed to be included to the Provide Subscriber Location request to make it possible to indicate the result of privacy check made in H-GMLC/PPR to MSC/SGSN. This is needed to align stage 3 with stage 2.		
Summary of change:	⌘ LCS Privacy Check parameter is added to the Provide Subscriber Location request.		
Consequences if not approved:	⌘ Stage 3 definitions for the introduction of the Privacy Profile Register will be incomplete.		

Clauses affected:	⌘ 7.6.11, 13A.2, 17.7.13										
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> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table>	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other core specifications Test specifications O&M Specifications	⌘
Y	N										
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<input type="checkbox"/>	<input checked="" type="checkbox"/>										
Other comments:	⌘										

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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.

**** FOR INFORMATION ****

From 23.271 v6.3.0:

9.1.2 Circuit Switched Mobile Terminating Location Request (CS-MT-LR)

Figure 9.2 illustrates general network positioning for LCS clients external to the PLMN. In this scenario, it is assumed that the target UE is identified using either an MSISDN or IMSI.

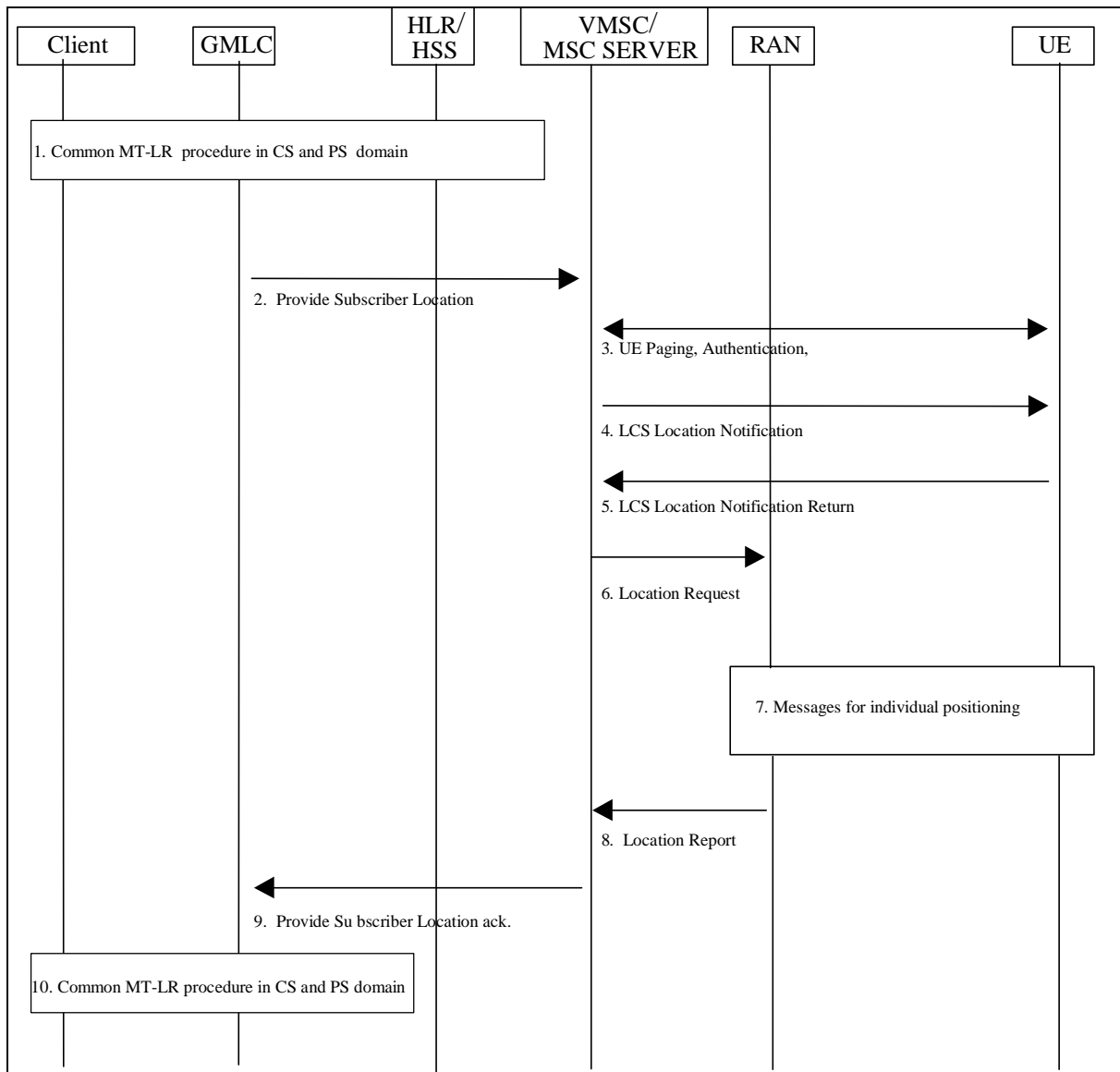


Figure 9.2: Network Positioning for a CS-MT-LR

9.1.2.1 Location Preparation Procedure

- 1) Common PS and CS MT-LR procedure as described in 9.1.1.
 - 2) The GMLC sends a PROVIDE_ SUBSCRIBER_ LOCATION message to the MSC/MSC server indicated by the HLR/HSS. This message carries the type of location information requested (e.g. current location), the UE subscriber's IMSI, LCS QoS information (e.g. accuracy, response time) and an indication of whether the LCS client has the override capability. For a call related location request, the message also carries the LCS client's called party number. For a value added LCS client, the message shall carry the client name, the external identity of the LCS client and the Requestor Identity (if that is both supported and available). Also the message may carry the type of the LCS client name and also the type of the Requestor identity if the requestor identity was included. For a PLMN operator LCS client, the message shall carry the internal identity of the LCS client. Moreover the message may also carry the Service Type. If the result of the privacy check at H-GMLC/PPR indicated that the codeword shall be sent to the UE user, the message may carry also the codeword received from the LCS client. For a PLMN operator LCS client, the message shall carry the internal identity of the LCS client. If the Requestor Identity is provided, the GMLC shall send it as separate information. In addition, in order to display the requestor identity in case of pre rel-5 network elements (i.e. MSC and/or UE), the requestor identity may be also added to the LCS client name by the GMLC. When the Requestor identity is added to the LCS client name the practise described in the Annex D should be followed. **The message also shall carry the indication of the requested privacy related action (i.e. checking the on-going call/session and/or notification/verification procedures) in the MSC, which is provided by H-GMLC.**
 - 3) If the GMLC is located in another PLMN or another country, the VMSC/MSC server first authenticates that a location request is allowed from this PLMN or from this country. If not, an error response is returned. If the PSL message from the GMLC does not include the indication of the requested privacy related action, the VMSC/MSC server then verifies LCS barring restrictions in the UE user's subscription profile in the MSC server. In verifying the barring restrictions, barring of the whole location request is assumed if any part of it is barred or any requisite condition is not satisfied. If LCS is to be barred without notifying the target UE and a LCS client accessing a GMLC in the same country does not have the override capability, an error response is returned to the GMLC.
Otherwise, if the UE is in idle mode, the Core Network performs paging, authentication and ciphering. The MSC will page a GPRS attached UE either through A/Iu or Gs interface, depending on the presence of the Gs interface (see Note). The UE will inform the network about its LCS capabilities, as described in chapter 6.3.4.. If the UE is instead in dedicated mode, the VMSC/MSC server will already have UE classmark information. In GSM this is supported by controlled early classmark sending.
- [Note 1: In GSM, if the target UE has an established circuit call other than speech, the location request may be denied and an error response is then returned to the GMLC. If the location request is allowed for a non-speech circuit call, it shall be up to RAN to decide, on the basis of the applicable position methods and requested QoS, whether positioning is possible. This is FFS]
- Note: In some network mode of operation, a GPRS capable UE may not receive the CS paging. In addition, upon receipt of a CS paging, a GPRS capable UE may immediately answer to the Paging Request or delay the answer, as defined in 3GPP TS 22.060 and 23.060. A GPRS UE in class B mode may also suspend its GPRS traffic, sending a GPRS Suspension Request to the network.
- 4) If the location request comes from a value added LCS client and the requested privacy action or the UE subscription profile indicates that the UE must either be notified or notified with privacy verification and the UE supports notification of LCS (according to the UE Capability information), an LCS Location Notification Invoke message is sent to the target UE indicating the type of location request (e.g. current location) and the identity of the LCS client, the Requestor Identity (if that is both supported and available) and whether privacy verification is required. Also the message may indicate the type of the LCS client name and also the type of the Requestor identity if the requestor identity was included. Moreover, the message may carry also the service type and the codeword.

[FFS: For a call related location request, the LCS client identity shall be set to the LCS client's called party number if no separate LCS client identity was received from the GMLC.] Optionally, the VMSC/MSC server may after sending the LCS Location Notification Invoke message continue in parallel the location process, i.e. continue to step 6 without waiting for a LCS Location Notification Return Result message in step 5.

NOTE 2: This step is for further study, it should be investigated e.g. which client identities to include in the Privacy Notification message to be shown to the end-user.

- 5) The target UE notifies the UE user of the location request. If privacy verification was requested, the target UE indicates to the UE user whether the location request will be allowed or not allowed in the absence of a response and waits for the user to grant or withhold permission. The UE then returns an LCS Location Notification Return Result to the VMSC/MSC server indicating, if privacy verification was requested, whether permission is granted or denied. Optionally, the LCS Location Notification Return Result message can be returned some time after step 4, but before step 9. If the UE user does not respond after a predetermined time period, the VMSC/MSC server shall infer a "no response" condition. The VMSC/MSC server shall return an error response to the GMLC if privacy verification was requested and either the UE user denies permission or there is no response with the UE subscription profile indicating barring of the location request in the absence of a response.
- 6) The MSC/MSC server sends a Location Request message to RAN. This message includes the type of location information requested and requested QoS and, in GSM, the UE's location capabilities.

9.1.2.2 Positioning Measurement Establishment Procedure

- 7) RAN determines the positioning method and instigates the particular message sequence for this method, as specified in UTRAN Stage 2, TS 25.305 [1] and GERAN Stage 2, TS 43.059 [16].

9.1.2.3 Location Calculation and Release Procedure

- 8) When a location estimate best satisfying the requested QoS has been obtained, RAN returns it to the MSC/MSC server in a Location Report message. If a location estimate could not be obtained, RAN returns a Location Report message containing a failure cause and no location estimate.
- 9) The MSC/MSC server returns the location information and its age to the GMLC, if the VMSC/MSC server has not initiated the Privacy Verification process in step 4. If step 4 has been performed for privacy verification, the VMSC/MSC server returns the location information only, if it has received a LCS Location Notification Return Result indicating that permission is granted. If a LCS Location Notification Return Result message indicating that permission is not granted is received, or there is no response, with the requested privacy action or the UE subscription profile indicating barring of location in the absence of a response, the VMSC/MSC server shall return an error response to the GMLC. If RAN did not return a successful location estimate, but the privacy checks in steps 4 - 5 were successfully executed, the VMSC/MSC server may return the last known location of the target UE if this is known and the LCS client is requesting the current or last known location. The MSC server may then release the Mobility Management connection to the UE, if the UE was previously idle, and the MSC/MSC server may record billing information.
- 10) Common MT-LR procedure in PS and CS domain as described in 9.1.1.

Annex A (normative): Privacy Class selection rule

If more than one privacy class are subscribed or in case Service Types and at least one privacy class are subscribed, privacy class for an MT-LR is selected according to the following flow diagram.

An MT-LR may be applied to more than one privacy class or to Service Types and one or more privacy classes. In this case, looser privacy setting shall be selected. All possible privacy setting values are listed in the table below. The privacy settings to be compared are the results of the privacy checks for each applicable class and Service Type. The interrelation among each privacy setting in terms of privacy strictness is shown as follows:

loose	Positioning allowed without notifying the UE user
↑	Positioning allowed with notification to the UE user
	Positioning requires notification and verification by the UE user; positioning is allowed only if granted by the UE user or if there is no response to the notification
	Positioning requires notification and verification by the UE user; positioning is allowed only if granted by the UE user
↓	
strict	Positioning not allowed

7.6.11 Location Service Parameters

...

7.6.11.xx LCS Privacy Check

This parameter refers to the requested privacy check related actions (call/session unrelated and/or call/session related) from MSC or SGSN provided by H-GMLC. Possible requested actions are:

- positioning allowed without notifying the UE user;
- positioning allowed with notification to the UE user;
- positioning requires notification and verification by the UE user; positioning is allowed only if granted by the UE user or if there is no response to the notification;
- positioning requires notification and verification by the UE user; positioning is allowed only if granted by the UE user;
- positioning not allowed.

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-Reference Number	C	C(=)		
LCS Codeword	C	C(=)		

LCS Service Type Id	C	C(=)		
LCS Privacy Check	C	C(=)		
Location Estimate			M	M(=)
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

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 are supported.

LCS-Reference Number

This parameter shall be included if a deferred mt-lr procedure is performed.

LCS Codeword

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

LCS Service Type Id

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

LCS Privacy Check

[See definition in clause 7.6.11. The requirements for its and its components presence are specified in 3GPP TS 23.271.](#)

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.

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.

****** NEXT MODIFIED SECTION ******

17.7.13 Location service data types

```
MAP-LCS-DataTypes {
    itu-t identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-LCS-DataTypes (25) version9 (9)}

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 {
    itu-t identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-CommonDataTypes (18) version9 (9)}

    ExtensionContainer
FROM MAP-ExtensionDataTypes {
    itu-t identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version9 (9)}

    USSD-DataCodingScheme,
    USSD-String
FROM MAP-SS-DataTypes {
    itu-t identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
    map-SS-DataTypes (14) version9 (9)}

    APN,
    GSN-Address
FROM MAP-MS-DataTypes {
    itu-t identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-MS-DataTypes (11) version9 (9)}

    Additional-Number
FROM MAP-SM-DataTypes {
    itu-t identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-SM-DataTypes (16) version9 (9)}
;
```

<pre>RoutingInfoForLCS-Arg ::= SEQUENCE { mlcNumber [0] ISDN-AddressString, targetMS [1] SubscriberIdentity, extensionContainer [2] ExtensionContainer ...}</pre>	OPTIONAL,
--	-----------

```

RoutingInfoForLCS-Res ::= SEQUENCE {
    targetMS                               [0] SubscriberIdentity,
    lcsLocationInfo                         [1] LCSLocationInfo,
    extensionContainer                      [2] ExtensionContainer           OPTIONAL,
    ... ,
    v-gmlc-Address                         [3] GSN-Address                OPTIONAL,
    h-gmlc-Address                         [4] GSN-Address                OPTIONAL,
    ppr-Address                            [5] GSN-Address                OPTIONAL }

```

```

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,
    lcs-ReferenceNumber                    [10] LCS-ReferenceNumber         OPTIONAL,
    lcsServiceTypeID                       [11] LCSServiceTypeID           OPTIONAL,
    lcsCodeword                            [12] LCSCodeword                OPTIONAL,
    lcs-PrivacyCheck                       [xx] LCS-PrivacyCheck           OPTIONAL }

-- one of imsi or msisdn is mandatory
-- If a location estimate type indicates activate deferred location or cancel deferred
-- location, a lcs-Reference number shall be included.

```

```

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 }

```

```

LCSClientType ::= 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

```

```

LCSClientName ::= SEQUENCE {
    dataCodingScheme           [0] USSD-DataCodingScheme,
    nameString                 [2] NameString,
    ...,
    lcs-FormatIndicator       [3] LCS-FormatIndicator           OPTIONAL }
-- 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,
    ...,
    lcs-FormatIndicator       [2] LCS-FormatIndicator           OPTIONAL }

```

```

RequestorIDString ::= USSD-String (SIZE (1..maxRequestorIDStringLength))

```

```

maxRequestorIDStringLength INTEGER ::= 127

```

```

LCS-FormatIndicator ::= ENUMERATED {
    logicalName               (0),
    e-mailAddress             (1),
    msisdn                    (2),
    url                       (3),
    sipUrl                    (4),
    ... }

```

```

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),
    ellipsoidPointWithAltitudeAndUncertaintyElipsoid (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.

```

```

LCS-ReferenceNumber ::= OCTET STRING (SIZE(1))

```

```

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

```

```

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

```

```

maxLCSCodewordStringLength INTEGER ::= 127

```

```

LCS-PrivacyCheck ::= SEQUENCE {
    callSessionUnrelated [0] PrivacyCheckRelatedAction,
    callSessionRelated [1] PrivacyCheckRelatedAction OPTIONAL,
    ...}

```

```

PrivacyCheckRelatedAction ::= ENUMERATED {
    allowedWithoutNotification (0),
    allowedWithNotification (1),
    allowedIfNoResponse (2),
    restrictedIfNoResponse (3),
    notAllowed (4),
    ...}
-- exception handling:
-- a ProvideSubscriberLocation-Arg containing an unrecognized PrivacyCheckRelatedAction
-- shall be rejected by the receiver with a return error cause of unexpected data value

```

```

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 }
-- 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

```

```

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,
    lcs-ReferenceNumber      [10] LCS-ReferenceNumber         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.
-- If a lcs event indicates deferred mt-lr response, the lcs-Reference number shall be
-- included.

```

```

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