

3GPP TSG CN Plenary Meeting #18
4th – 6th December 2002 New Orleans, USA.

NP-020577

Source: TSG CN WG4
Title: Corrections on Location Service Enhancement for Release 4
Agenda item: 7.4
Document for: APPROVAL

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
29.010	076		N4-021197	Rel-4	Correction on the use of "User Failure" error for LCS-MOLR operation	F	4.4.0
29.010	077		N4-021198	Rel-5	Correction on the use of "User Failure" error for LCS-MOLR operation	A	5.1.0
29.010	072	1	N4-021235	Rel-4	Adding missing parameter mapping to assistance data request procedure after inter-MSC SRNS Relocation	F	4.4.0
29.010	073	1	N4-021236	Rel-5	Adding missing parameter mapping to assistance data request procedure after inter-MSC SRNS Relocation	A	5.1.0
29.002	510	1	N4-021562	Rel-4	Addition of reference number to deferred location request procedure	F	4.9.0
29.002	511	1	N4-021563	Rel-5	Addition of reference number to deferred location request procedure	A	5.1.0

CR-Form-v7

CHANGE REQUEST

⌘ **29.002 CR 510** ⌘ rev **1** ⌘ Current version: **4.9.0** ⌘

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 reference number to deferred location request procedure		
Source:	⌘ CN4		
Work item code:	⌘ LCS1	Date:	⌘ 11/11/2002
Category:	⌘ F	Release:	⌘ Rel-4
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)		2 (GSM Phase 2)
	A (corresponds to a correction in an earlier release)		R96 (Release 1996)
	B (addition of feature),		R97 (Release 1997)
	C (functional modification of feature)		R98 (Release 1998)
	D (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900.		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

Reason for change:	⌘ Since a deferred location request procedure is composed of two completely separated MAP dialogues, e.g. MAP_PROVIDE_SUBSCRIBER_LOCATION and MAP_SUBSCRIBER_LOCATION_REPORT, it is not possible to identify the correspondence between the MAP_PROVIDE_SUBSCRIBER_LOCATION message to the MAP_SUBSCRIBER_LOCATION_REPORT message when multiple deferred location requests for the same target UE from the same LCS Client via the same GMLC are performed. Therefore, addition of reference number is needed so that the network node can identify the correspondence between the two MAP messages. This is an essential correction.
Summary of change:	⌘ The LCS reference number is added to MAP_PROVIDE_SUBSCRIBER_LOCATION and MAP_SUBSCRIBER_LOCATION_REPORT
Consequences if not approved:	⌘ The specification cannot guarantee the GMLC to send the corresponding response to the LCS Client to the request from the LCS client when the GMLC receives two or more deferred location requests for the same UE from the same LCS client.

Clauses affected:	⌘ 7.6, 7.6.11, 13.A.2, 13.A.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;">X</td> <td style="text-align: center;"> </td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> </table>	Y	N	X			X		X	Other core specifications	⌘ 23.271-CR132
Y	N										
X											
	X										
	X										
		Test specifications									
		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.

<<First modified section>>

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
Access signalling information	7.6.9.5	Kc	7.6.7.4
		<u>LCS-Reference Number</u>	<u>7.6.11.x</u>
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
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		
Call Barring Data	7.6.3.83	NbrUser	7.6.4.45
Call barring feature	7.6.4.19	Network Access Mode	7.6.3.50
Call barring information	7.6.4.18	Network node number	7.6.2.43
Call Direction	7.6.5.8	Network resources	7.6.10.1
Call Forwarding Data	7.6.3.84	Network signal information	7.6.9.8
Call Info	7.6.9.9	New password	7.6.4.20
Call reference	7.6.5.1	No reply condition timer	7.6.4.7
Call Termination Indicator	7.6.3.67		
Called number	7.6.2.24	North American Equal Access	7.6.2.34
		preferred Carrier Id	
Calling number	7.6.2.25	Number Portability Status	7.6.5.14
CAMEL Subscription Info	7.6.3.78	ODB Data	7.6.3.85
CAMEL Subscription Info Withdraw	7.6.3.38	ODB General Data	7.6.3.9
Cancellation Type	7.6.3.52	ODB HPLMN Specific Data	7.6.3.10
Category	7.6.3.1	OMC Id	7.6.2.18
CCBS Feature	7.6.5.8	Originally dialled number	7.6.2.26
CCBS Request State	7.6.4.49	Originating entity number	7.6.2.10
Channel Type	7.6.5.9	Override Category	7.6.4.4
Chosen Channel	7.6.5.10	P-TMSI	7.6.2.47
Chosen Radio Resource Information	7.6.6.10B	PDP-Address	7.6.2.45
Ciphering mode	7.6.7.7	PDP-Context identifier	7.6.3.55
Cksn	7.6.7.5	PDP-Type	7.6.2.44
CLI Restriction	7.6.4.5	Pre-paging supported	7.6.5.15
CM service type	7.6.9.2	Previous location area Id	7.6.2.4
Complete Data List Included	7.6.3.54	Protocol Id	7.6.9.7
CS Allocation Retention priority	7.6.3.87	Provider error	7.6.1.3
CUG feature	7.6.3.26	QoS-Subscribed	7.6.3.47
CUG index	7.6.3.25	Radio Resource Information	7.6.6.10
CUG info	7.6.3.22	Radio Resource List	7.6.6.10A
		RANAP Service Handover	7.6.6.6
CUG interlock	7.6.3.24	Rand	7.6.7.2
CUG Outgoing Access indicator	7.6.3.8	Regional Subscription Data	7.6.3.11
CUG subscription	7.6.3.23	Regional Subscription Response	7.6.3.12
CUG Subscription Flag	7.6.3.37	Relocation Number List	7.6.2.19A
Current location area Id	7.6.2.6	Requested Info	7.6.3.31
		Requested Subscription Info	7.6.3.86
Current password	7.6.4.21	Roaming number	7.6.2.19
		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
Failure Cause	7.6.7.9	SS-Event-Data	7.6.4.43
		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
GGSN address	7.6.2.40	Super-Charger Supported in Serving Network Entity	7.6.3.71
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
GPRS Subscription Data	7.6.3.46	Suppress T-CSI	7.6.3.33
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
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

<< Next Modified Section >>

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

7.6.11.x 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].

<<Next modified 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(=)		
<u>LCS-Reference Number</u>	<u>C</u>	<u>C(=)</u>		
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.

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.

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(=)		
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(=)		
<u>LCS-Reference Number</u>	<u>C</u>	<u>C(=)</u>		
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

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.

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.

LCS-Reference Number

This parameter shall be included if the Subscriber Location Report is the response of to a deferred MT location request ~~mt-lr~~.

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.

<<Next modified section>>

17.7.13 Location service data types

```
1  MAP-LCS-DataTypes {
2    ccitt identified-organization (4) etsi (0) mobileDomain (0)
3    gsm-Network (1) modules (3) map-LCS-DataTypes (25) version7 (7)}
4
5  DEFINITIONS
6  IMPLICIT TAGS
7  ::=
8  BEGIN
9
10 EXPORTS
11   RoutingInfoForLCS-Arg,
12   RoutingInfoForLCS-Res,
13   ProvideSubscriberLocation-Arg,
14   ProvideSubscriberLocation-Res,
15   SubscriberLocationReport-Arg,
16   SubscriberLocationReport-Res,
17   LocationType,
18   LCSClientName,
19   LCS-QoS,
20   Horizontal-Accuracy,
21   ResponseTime,
22   Ext-GeographicalInformation,
23   SupportedGADShapes,
24   Add-GeographicalInformation
25 ;
26
27 IMPORTS
28   AddressString,
29   ISDN-AddressString,
30   IMEI,
31   IMSI,
32   LMSI,
33   SubscriberIdentity,
34   AgeOfLocationInformation,
35   LCSClientExternalID,
36   LCSClientInternalID
37 FROM MAP-CommonDataTypes {
38   ccitt identified-organization (4) etsi (0) mobileDomain (0)
39   gsm-Network (1) modules (3) map-CommonDataTypes (18) version7 (7)}
40
41   ExtensionContainer
42 FROM MAP-ExtensionDataTypes {
43   ccitt identified-organization (4) etsi (0) mobileDomain (0)
44   gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version7 (7)}
45
46   USSD-DataCodingScheme,
47   USSD-String
48 FROM MAP-SS-DataTypes {
49   ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
50   map-SS-DataTypes (14) version7 (7)}
51
52   APN
53 FROM MAP-MS-DataTypes {
54   ccitt identified-organization (4) etsi (0) mobileDomain (0)
55   gsm-Network (1) modules (3) map-MS-DataTypes (11) version7 (7)}
56
57   Additional-Number
58 FROM MAP-SM-DataTypes {
59   ccitt identified-organization (4) etsi (0) mobileDomain (0)
60   gsm-Network (1) modules (3) map-SM-DataTypes (16) version7 (7)}
61 ;
62
63
```

```

64 RoutingInfoForLCS-Arg ::= SEQUENCE {
65     mlcNumber                [0] ISDN-AddressString,
66     targetMS                 [1] SubscriberIdentity,
67     extensionContainer       [2] ExtensionContainer          OPTIONAL,
68     ... }
69
70 RoutingInfoForLCS-Res ::= SEQUENCE {
71     targetMS                 [0] SubscriberIdentity,
72     lcsLocationInfo         [1] LCSLocationInfo,
73     extensionContainer       [2] ExtensionContainer          OPTIONAL,
74     ... }
75
76 LCSLocationInfo ::= SEQUENCE {
77     networkNode-Number      ISDN-AddressString,
78     -- NetworkNode-number can be either msc-number or sgsn-number
79     lmsi                    [0] LMSI                        OPTIONAL,
80     extensionContainer       [1] ExtensionContainer          OPTIONAL,
81     ... ,
82     gprsNodeIndicator       [2] NULL                        OPTIONAL,
83     -- gprsNodeIndicator is set only if the SGSN number is sent as the Network Node Number
84     additional-Number       [3] Additional-Number           OPTIONAL
85     }
86
87 ProvideSubscriberLocation-Arg ::= SEQUENCE {
88     locationType             LocationType,
89     mlc-Number               ISDN-AddressString,
90     lcs-ClientID             [0] LCS-ClientID                OPTIONAL,
91     privacyOverride          [1] NULL                        OPTIONAL,
92     imsi                    [2] IMSI                        OPTIONAL,
93     msisdn                   [3] ISDN-AddressString          OPTIONAL,
94     lmsi                    [4] LMSI                        OPTIONAL,
95     imei                    [5] IMEI                        OPTIONAL,
96     lcs-Priority             [6] LCS-Priority                OPTIONAL,
97     lcs-QoS                  [7] LCS-QoS                    OPTIONAL,
98     extensionContainer       [8] ExtensionContainer          OPTIONAL,
99     ... ,
100    supportedGADShapes        [9] SupportedGADShapes          OPTIONAL,
101    lcs-RreferenceNumber       [10] LCS-ReferenceNumber        OPTIONAL }
102
103    -- one of imsi or msisdn is mandatory
104    -- If a location estimate type indicates activate deferred location or cancel deferred
105    -- location, a lcs-Rreference number shall be included.
106
107
108
109 LocationType ::= SEQUENCE {
110     locationEstimateType     [0] LocationEstimateType,
111     ... ,
112     deferredLocationEventType [1] DeferredLocationEventType OPTIONAL }
113
114 LocationEstimateType ::= ENUMERATED {
115     currentLocation          (0),
116     currentOrLastKnownLocation (1),
117     initialLocation          (2),
118     ... ,
119     activateDeferredLocation (3),
120     cancelDeferredLocation   (4) }
121 -- exception handling:
122 -- a ProvideSubscriberLocation-Arg containing an unrecognized LocationEstimateType
123 -- shall be rejected by the receiver with a return error cause of unexpected data value
124
125 DeferredLocationEventType ::= BIT STRING {
126     msAvailable              (0) } (SIZE (1..16))
127 -- exception handling
128 -- a ProvideSubscriberLocation-Arg containing other values than listed above in
129 -- DeferredLocationEventType shall be rejected by the receiver with a return error cause of
130 -- unexpected data value.
131
132 LCS-ClientID ::= SEQUENCE {
133     lcsClientType            [0] LCSClientType,
134     lcsClientExternalID      [1] LCSClientExternalID        OPTIONAL,
135     lcsClientDialedByMS      [2] AddressString              OPTIONAL,
136     lcsClientInternalID      [3] LCSClientInternalID        OPTIONAL,
137     lcsClientName            [4] LCSClientName               OPTIONAL,
138     ... ,
139     lcsAPN                   [5] APN                        OPTIONAL }
140

```

```

141 LCSCClientType ::= ENUMERATED {
142     emergencyServices           (0),
143     valueAddedServices         (1),
144     plmnOperatorServices       (2),
145     lawfulInterceptServices    (3),
146     ... }
147 -- exception handling:
148 -- unrecognized values may be ignored if the LCS client uses the privacy override
149 -- otherwise, an unrecognized value shall be treated as unexpected data by a receiver
150 -- a return error shall then be returned if received in a MAP invoke
151
152 LCSCClientName ::= SEQUENCE {
153     dataCodingScheme             [0] USSD-DataCodingScheme,
154     nameString                  [2] NameString,
155     ...}
156
157 -- The USSD-DataCodingScheme shall indicate use of the default alphabet through the
158 -- following encoding
159 -- bit 7 6 5 4 3 2 1 0
160 --      0 0 0 0 1 1 1 1
161
162 NameString ::= USSD-String (SIZE (1..maxNameStringLength))
163
164 maxNameStringLength INTEGER ::= 63
165
166 LCS-Priority ::= OCTET STRING (SIZE (1))
167 -- 0 = highest priority
168 -- 1 = normal priority
169 -- all other values treated as 1
170
171 LCS-Qos ::= SEQUENCE {
172     horizontal-accuracy         [0] Horizontal-Accuracy           OPTIONAL,
173     verticalCoordinateRequest   [1] NULL                        OPTIONAL,
174     vertical-accuracy           [2] Vertical-Accuracy           OPTIONAL,
175     responseTime                [3] ResponseTime                OPTIONAL,
176     extensionContainer          [4] ExtensionContainer          OPTIONAL,
177     ...}
178
179 Horizontal-Accuracy ::= OCTET STRING (SIZE (1))
180 -- bit 8 = 0
181 -- bits 7-1 = 7 bit Uncertainty Code defined in 3GPP TS 23.032. The horizontal location
182 -- error should be less than the error indicated by the uncertainty code with 67%
183 -- confidence.
184
185 Vertical-Accuracy ::= OCTET STRING (SIZE (1))
186 -- bit 8 = 0
187 -- bits 7-1 = 7 bit Vertical Uncertainty Code defined in 3GPP TS 23.032.
188 -- The vertical location error should be less than the error indicated
189 -- by the uncertainty code with 67% confidence.
190
191 ResponseTime ::= SEQUENCE {
192     responseTimeCategory        ResponseTimeCategory,
193     ...}
194 -- note: an expandable SEQUENCE simplifies later addition of a numeric response time.
195
196 ResponseTimeCategory ::= ENUMERATED {
197     lowdelay (0),
198     delaytolerant (1),
199     ... }
200 -- exception handling:
201 -- an unrecognized value shall be treated the same as value 1 (delaytolerant)
202
203 SupportedGADShapes ::= BIT STRING {
204     ellipsoidPoint (0),
205     ellipsoidPointWithUncertaintyCircle (1),
206     ellipsoidPointWithUncertaintyEllipse (2),
207     polygon (3),
208     ellipsoidPointWithAltitude (4),
209     ellipsoidPointWithAltitudeAndUncertaintyElipsoid (5),
210     ellipsoidArc (6) } (SIZE (7..16))
211 -- A node shall mark in the BIT STRING all Shapes defined in 3GPP TS 23.032 it supports.
212 -- exception handling: bits 7 to 15 shall be ignored if received.
213
214
215 LCS-ReferenceNumber ::= OCTET STRING (SIZE(1))
216

```

```

217 ProvideSubscriberLocation-Res ::= SEQUENCE {
218     locationEstimate             Ext-GeographicalInformation,
219     ageOfLocationEstimate       [0] AgeOfLocationInformation    OPTIONAL,
220     extensionContainer          [1] ExtensionContainer        OPTIONAL,
221     ... ,
222     add-LocationEstimate        [2] Add-GeographicalInformation  OPTIONAL,
223     deferredmt-lrResponseIndicator [3] NULL                OPTIONAL }
224
225 -- if deferredmt-lrResponseIndicator is set, locationEstimate is ignored.
226
227 -- the add-LocationEstimate parameter shall not be sent to a node that did not indicate the
228 -- geographic shapes supported in the ProvideSubscriberLocation-Arg
229 -- The locationEstimate and the add-locationEstimate parameters shall not be sent if
230 -- the supportedGADShapes parameter has been received in ProvideSubscriberLocation-Arg
231 -- and the shape encoded in locationEstimate or add-LocationEstimate is not marked
232 -- as supported in supportedGADShapes. In such a case ProvideSubscriberLocation
233 -- shall be rejected with error FacilityNotSupported with additional indication
234 -- shapeOfLocationEstimateNotSupported
235
236 Ext-GeographicalInformation ::= OCTET STRING (SIZE (1..maxExt-GeographicalInformation))
237 -- Refers to geographical Information defined in 3GPP TS 23.032.
238 -- This is composed of 1 or more octets with an internal structure according to
239 -- 3GPP TS 23.032
240 -- Octet 1: Type of shape, only the following shapes in 3GPP TS 23.032 are allowed:
241 --     (a) Ellipsoid point with uncertainty circle
242 --     (b) Ellipsoid point with uncertainty ellipse
243 --     (c) Ellipsoid point with altitude and uncertainty ellipsoid
244 --     (d) Ellipsoid Arc
245 --     (e) Ellipsoid Point
246 -- Any other value in octet 1 shall be treated as invalid
247 -- Octets 2 to 8 for case (a) - Ellipsoid point with uncertainty circle
248 --     Degrees of Latitude             3 octets
249 --     Degrees of Longitude           3 octets
250 --     Uncertainty code                1 octet
251 -- Octets 2 to 11 for case (b) - Ellipsoid point with uncertainty ellipse:
252 --     Degrees of Latitude             3 octets
253 --     Degrees of Longitude           3 octets
254 --     Uncertainty semi-major axis    1 octet
255 --     Uncertainty semi-minor axis    1 octet
256 --     Angle of major axis            1 octet
257 --     Confidence                      1 octet
258 -- Octets 2 to 14 for case (c) - Ellipsoid point with altitude and uncertainty ellipsoid
259 --     Degrees of Latitude             3 octets
260 --     Degrees of Longitude           3 octets
261 --     Altitude                       2 octets
262 --     Uncertainty semi-major axis    1 octet
263 --     Uncertainty semi-minor axis    1 octet
264 --     Angle of major axis            1 octet
265 --     Uncertainty altitude           1 octet
266 --     Confidence                      1 octet
267 -- Octets 2 to 13 for case (d) - Ellipsoid Arc
268 --     Degrees of Latitude             3 octets
269 --     Degrees of Longitude           3 octets
270 --     Inner radius                   2 octets
271 --     Uncertainty radius             1 octet
272 --     Offset angle                   1 octet
273 --     Included angle                 1 octet
274 --     Confidence                      1 octet
275 -- Octets 2 to 7 for case (e) - Ellipsoid Point
276 --     Degrees of Latitude             3 octets
277 --     Degrees of Longitude           3 octets
278
279 --
280 -- An Ext-GeographicalInformation parameter comprising more than one octet and
281 -- containing any other shape or an incorrect number of octets or coding according
282 -- to 3GPP TS 23.032 shall be treated as invalid data by a receiver.
283 --
284 -- An Ext-GeographicalInformation parameter comprising one octet shall be discarded
285 -- by the receiver if an Add-GeographicalInformation parameter is received
286 -- in the same message.
287 --
288 -- An Ext-GeographicalInformation parameter comprising one octet shall be treated as
289 -- invalid data by the receiver if an Add-GeographicalInformation parameter is not
290 -- received in the same message.
291

```

```
292 maxExt-GeographicalInformation INTEGER ::= 20
293 -- the maximum length allows for further shapes in 3GPP TS 23.032 to be included in later
294 -- versions of 3GPP TS 29.002
295
```

```
296 Add-GeographicalInformation ::= OCTET STRING (SIZE (1..maxAdd-GeographicalInformation))
297 -- Refers to geographical Information defined in 3GPP TS 23.032.
298 -- This is composed of 1 or more octets with an internal structure according to
299 -- 3GPP TS 23.032
300 -- Octet 1: Type of shape, all the shapes defined in 3GPP TS 23.032 are allowed:
301 -- Octets 2 to n (where n is the total number of octets necessary to encode the shape
302 -- according to 3GPP TS 23.032) are used to encode the shape itself in accordance with
303 the
304 -- encoding defined in 3GPP TS 23.032
305 --
306 -- An Add-GeographicalInformation parameter, whether valid or invalid, received
307 -- together with a valid Ext-GeographicalInformation parameter in the same message
308 -- shall be discarded.
309 --
310 -- An Add-GeographicalInformation parameter containing any shape not defined in
311 -- 3GPP TS 23.032 or an incorrect number of octets or coding according to
312 -- 3GPP TS 23.032 shall be treated as invalid data by a receiver if not received
313 -- together with a valid Ext-GeographicalInformation parameter in the same message.
314
```

```
315 maxAdd-GeographicalInformation INTEGER ::= 91
316 -- the maximum length allows support for all the shapes currently defined in 3GPP TS
317 23.032
318
```

```
319 SubscriberLocationReport-Arg ::= SEQUENCE {
320     lcs-Event                LCS-Event,
321     lcs-ClientID             LCS-ClientID,
322     lcsLocationInfo          LCSLocationInfo,
323     msisdn                   [0] ISDN-AddressString          OPTIONAL,
324     imsi                     [1] IMSI                        OPTIONAL,
325     imei                     [2] IMEI                       OPTIONAL,
326     na-ESRD                  [3] ISDN-AddressString          OPTIONAL,
327     na-ESRK                  [4] ISDN-AddressString          OPTIONAL,
328     locationEstimate         [5] Ext-GeographicalInformation OPTIONAL,
329     ageOfLocationEstimate    [6] AgeOfLocationInformation    OPTIONAL,
330     extensionContainer       [7] ExtensionContainer           OPTIONAL,
331     ... ,
332     add-LocationEstimate     [8] Add-GeographicalInformation OPTIONAL,
333     deferredmt-lrData        [9] Deferredmt-lrData           OPTIONAL,
334     lcs-RreferenceNumber     [10] LCS-ReferenceNumber         OPTIONAL }
335
336 -- one of msisdn or imsi is mandatory
337 -- a location estimate that is valid for the locationEstimate parameter should
338 -- be transferred in this parameter in preference to the add-LocationEstimate.
339 -- the deferredmt-lrData parameter shall be included if and only if the lcs-Event
340 -- indicates a deferredmt-lrResponse.
341 -- if the lcs-Event indicates a deferredmt-lrResponse then the locationEstimate
342 -- and the add-locationEstimate parameters shall not be sent if the
343 -- supportedGADShapes parameter had been received in ProvideSubscriberLocation-Arg
344 -- and the shape encoded in locationEstimate or add-LocationEstimate was not marked
345 -- as supported in supportedGADShapes. In such a case terminationCause
346 -- in deferredmt-lrData shall be present with value
347 -- shapeOfLocationEstimateNotSupported.
348 -- If a lcs event indicates deferred mt-lr response, the lcs-Rreference number shall be
349 -- included.
350
```

```
351
352 Deferredmt-lrData ::= SEQUENCE {
353     deferredLocationEventType DeferredLocationEventType,
354     terminationCause         [0] TerminationCause           OPTIONAL,
355     lcsLocationInfo          [1] LCSLocationInfo             OPTIONAL,
356     ... }
357 -- lcsLocationInfo may be included only if a terminationCause is present
358 -- indicating mt-lrRestart.
359
```

```
360 LCS-Event ::= ENUMERATED {
361     emergencyCallOrigination (0),
362     emergencyCallRelease (1),
363     mo-lr (2),
364     ... ,
365     deferredmt-lrResponse (3) }
366 -- exception handling:
367 -- a SubscriberLocationReport-Arg containing an unrecognized LCS-Event
368 -- shall be rejected by a receiver with a return error cause of unexpected data value
369
```

```
370 TerminationCause ::= ENUMERATED {
371     normal (0),
372     errorundefined (1),
373     internalTimeout (2),
374     congestion (3),
375     mt-lrRestart (4),
376     privacyViolation (5),
377     ...,
378     shapeOfLocationEstimateNotSupported (6) }
379 -- mt-lrRestart shall be used to trigger the GMLC to restart the location procedure,
380 -- either because the sending node knows that the terminal has moved under coverage
381 -- of another MSC or SGSN (e.g. Send Identification received), or because the subscriber
382 -- has been deregistered due to a Cancel Location received from HLR.
383 --
384 -- exception handling
385 -- an unrecognized value shall be treated the same as value 1 (errorundefined)
386
387 SubscriberLocationReport-Res ::= SEQUENCE {
388     extensionContainer          ExtensionContainer          OPTIONAL,
389     ...}
390
391
392
393 END
394
```


CR-Form-v7

CHANGE REQUEST

⌘ **29.002 CR 512** ⌘ rev **1** ⌘ Current version: **5.3.0** ⌘

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 reference number to deferred location request procedure		
Source:	⌘ CN4		
Work item code:	⌘ LCS1	Date:	⌘ 11/11/2002
Category:	⌘ A	Release:	⌘ Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)	2	(GSM Phase 2)
	A (corresponds to a correction in an earlier release)	R96	(Release 1996)
	B (addition of feature),	R97	(Release 1997)
	C (functional modification of feature)	R98	(Release 1998)
	D (editorial modification)	R99	(Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900.	Rel-4	(Release 4)
		Rel-5	(Release 5)
		Rel-6	(Release 6)

Reason for change:	⌘ Since a deferred location request procedure is composed of two completely separated MAP dialogues, e.g. MAP_PROVIDE_SUBSCRIBER_LOCATION and MAP_SUBSCRIBER_LOCATION_REPORT, it is not possible to identify the correspondence between the MAP_PROVIDE_SUBSCRIBER_LOCATION message to the MAP_SUBSCRIBER_LOCATION_REPORT message when multiple deferred location requests for the same target UE from the same LCS Client via the same GMLC are performed. Therefore, addition of reference number is needed so that the network node can identify the correspondence between the two MAP messages.
Summary of change:	⌘ The reference number is added to MAP_PROVIDE_SUBSCRIBER_LOCATION and MAP_SUBSCRIBER_LOCATION_REPORT
Consequences if not approved:	⌘ The specification cannot guarantee the GMLC to send the corresponding response to the LCS Client to the request from the LCS client when the GMLC receives two or more deferred location requests for the same UE from the same LCS client.

Clauses affected:	⌘ 7.6, 7.6.11, 13.A.2, 13.A.3, 17.7.13										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Y</td> <td style="padding: 2px;">N</td> </tr> <tr> <td style="padding: 2px;">X</td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;"></td> <td style="padding: 2px;">X</td> </tr> <tr> <td style="padding: 2px;"></td> <td style="padding: 2px;">X</td> </tr> </table>	Y	N	X			X		X	Other core specifications	⌘ CR 23.271-133
	Y	N									
	X										
	X										
	X										
	Test specifications										
	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.

<<First Modified Section>>

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 Codeword Applicability	7.6.11.19
		LCS Information	7.6.3.60
		LCS Service Type Id	7.6.11.15
		LCS Codeword Notification	7.6.11.22
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
		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		
Call Barring Data	7.6.3.83	NbrUser	7.6.4.45
Call barring feature	7.6.4.19	Network Access Mode	7.6.3.50
Call barring information	7.6.4.18	Network node number	7.6.2.43
Call Direction	7.6.5.8	Network resources	7.6.10.1
Call Forwarding Data	7.6.3.84	Network signal information	7.6.9.8
Call Info	7.6.9.9	New password	7.6.4.20
Call reference	7.6.5.1	No reply condition timer	7.6.4.7
Call Termination Indicator	7.6.3.67		
Called number	7.6.2.24	North American Equal Access	7.6.2.34
		preferred Carrier Id	
Calling number	7.6.2.25	Number Portability Status	7.6.5.14
CAMEL Subscription Info	7.6.3.78	ODB Data	7.6.3.85
CAMEL Subscription Info Withdraw	7.6.3.38	ODB General Data	7.6.3.9
Cancellation Type	7.6.3.52	ODB HPLMN Specific Data	7.6.3.10
Category	7.6.3.1	OMC Id	7.6.2.18
CCBS Feature	7.6.5.8	Originally dialled number	7.6.2.26
CCBS Request State	7.6.4.49	Originating entity number	7.6.2.10
Channel Type	7.6.5.9	Override Category	7.6.4.4
Chosen Channel	7.6.5.10	P-TMSI	7.6.2.47
Chosen Radio Resource Information	7.6.6.10B	PDP-Address	7.6.2.45
Ciphering mode	7.6.7.7	PDP-Context identifier	7.6.3.55
Cksn	7.6.7.5	PDP-Type	7.6.2.44
CLI Restriction	7.6.4.5	Pre-paging supported	7.6.5.15
CM service type	7.6.9.2	Previous location area Id	7.6.2.4
Complete Data List Included	7.6.3.54	Protocol Id	7.6.9.7
CS Allocation Retention priority	7.6.3.87	Provider error	7.6.1.3
CS LCS Not Supported by UE	7.6.11.9	PS LCS Not Supported by UE	7.6.11.10
CUG feature	7.6.3.26	QoS-Subscribed	7.6.3.47
CUG index	7.6.3.25	Radio Resource Information	7.6.6.10
CUG info	7.6.3.22	Radio Resource List	7.6.6.10A
		RANAP Service Handover	7.6.6.6
CUG interlock	7.6.3.24	Rand	7.6.7.2
		<u>LCS-Reference Number</u>	<u>7.6.11.x</u>
CUG Outgoing Access indicator	7.6.3.8	Regional Subscription Data	7.6.3.11
CUG subscription	7.6.3.23	Regional Subscription Response	7.6.3.12
CUG Subscription Flag	7.6.3.37	Relocation Number List	7.6.2.19A
Current location area Id	7.6.2.6	Requested Info	7.6.3.31
		Requested Subscription Info	7.6.3.86
Current password	7.6.4.21	Roaming number	7.6.2.19
		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
		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
GGSN address	7.6.2.40	Super-Charger Supported in Serving Network Entity	7.6.3.71
		Supported Camel4 Subsets	7.6.3.36D
		Supported Camel4 Subsets in GMSC	7.6.3.36E
		Supported Camel4 Subsets in VMSC	7.6.3.36F
		Supported Camel4 Subsets in VLR	7.6.3.36B
		Supported Camel4 Subsets in SGSN	7.6.3.36C
		Supported CAMEL Phases in VLR	7.6.3.36
		Supported CAMEL Phases in SGSN	7.6.3.36A
		Supported GAD Shapes	7.6.11.20
		Supported LCS Capability Sets	7.6.11.17
		Suppress Incoming Call Barring	7.6.3.b
		Suppress T-CSI	7.6.3.33
		Suppress VT-CSI	7.6.3.a
		Suppression of Announcement	7.6.3.32
		Target cell Id	7.6.2.8
		Target location area Id	7.6.2.7
		Target RNC Id	7.6.2.8A
		Target MSC number	7.6.2.12
		Teleservice	7.6.4.39
		TMSI	7.6.2.2
		Trace reference	7.6.10.2
		Trace type	7.6.10.3
		User error	7.6.1.4
		USSD Data Coding Scheme	7.6.4.36
		USSD String	7.6.4.37
		UU Data	7.6.5.12
		UUS CF Interaction	7.6.5.13
		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
GGSN number	7.6.2.41		
GMSC CAMEL Subscription Info	7.6.3.34		
GPRS enhancements support indicator	7.6.3.73		
GPRS Node Indicator	7.6.8.14		
GPRS Subscription Data	7.6.3.46		
GPRS Subscription Data Withdraw	7.6.3.45		
GPRS Support Indicator	7.6.8.15		
Group Id	7.6.2.33		
GSM bearer capability	7.6.3.6		
gsmSCF Address	7.6.2.58		
gsmSCF Initiated Call	7.6.3.c		
Guidance information	7.6.4.22		
Handover number	7.6.2.21		
High Layer Compatibility	7.6.3.43		
HLR Id	7.6.2.15		
HLR number	7.6.2.13		
HO-Number Not Required	7.6.6.7		
IMEI	7.6.2.3		
IMSI	7.6.2.1		
Integrity Protection Information	7.6.6.8		
Inter CUG options	7.6.3.27		
Intra CUG restrictions	7.6.3.28		

<<Next Modified Section>>

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 3G TS 23.032

7.6.11.22 LCS Codeword Notification

This parameter indicates if codeword shall be sent to the subscriber as described in 3G TS23.271 [26a]

7.6.11.x 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].

<<Next Modified 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(=)		
<u>LCS-Reference Number</u>	<u>C</u>	<u>C(=)</u>		
LCS Codeword	C	C(=)		
LCS Service Type Id	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.

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.

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(=)		
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(=)		
<u>LCS-Reference Number</u>	<u>C</u>	<u>C(=)</u>		
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

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.

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.

LCS-Reference Number

This parameter shall be included if the Subscriber Location Report is the response to a deferred MT location request.

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.

<<Next Modified Section>>

17.7.13 Location service data types

```
1 MAP-LCS-DataTypes {
2     itu-t identified-organization (4) etsi (0) mobileDomain (0)
3     gsm-Network (1) modules (3) map-LCS-DataTypes (25) version8 (8)}
4
5 DEFINITIONS
6 IMPLICIT TAGS
7 ::=
8 BEGIN
9
10 EXPORTS
11     RoutingInfoForLCS-Arg,
12     RoutingInfoForLCS-Res,
13     ProvideSubscriberLocation-Arg,
14     ProvideSubscriberLocation-Res,
15     SubscriberLocationReport-Arg,
16     SubscriberLocationReport-Res,
17     LocationType,
18     LCSClientName,
19     LCS-QoS,
20     Horizontal-Accuracy,
21     ResponseTime,
22     Ext-GeographicalInformation,
23     SupportedGADShapes,
24     Add-GeographicalInformation,
25     LCSRequestorID,
26     LCSCodeword
27 ;
28
```

```

29 IMPORTS
30   AddressString,
31   ISDN-AddressString,
32   IMEI,
33   IMSI,
34   LMSI,
35   SubscriberIdentity,
36   AgeOfLocationInformation,
37   LCSClientExternalID,
38   LCSClientInternalID,
39   LCSServiceTypeID
40 FROM MAP-CommonDataTypes {
41   itu-t identified-organization (4) etsi (0) mobileDomain (0)
42   gsm-Network (1) modules (3) map-CommonDataTypes (18) version8 (8)}
43
44   ExtensionContainer
45 FROM MAP-ExtensionDataTypes {
46   itu-t identified-organization (4) etsi (0) mobileDomain (0)
47   gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version8 (8)}
48
49   USSD-DataCodingScheme,
50   USSD-String
51 FROM MAP-SS-DataTypes {
52   itu-t identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
53   map-SS-DataTypes (14) version8 (8)}
54
55   APN
56 FROM MAP-MS-DataTypes {
57   itu-t identified-organization (4) etsi (0) mobileDomain (0)
58   gsm-Network (1) modules (3) map-MS-DataTypes (11) version8 (8)}
59
60   Additional-Number
61 FROM MAP-SM-DataTypes {
62   itu-t identified-organization (4) etsi (0) mobileDomain (0)
63   gsm-Network (1) modules (3) map-SM-DataTypes (16) version8 (8)}
64 ;

```

```

67 RoutingInfoForLCS-Arg ::= SEQUENCE {
68     mlcNumber                [0] ISDN-AddressString,
69     targetMS                 [1] SubscriberIdentity,
70     extensionContainer       [2] ExtensionContainer           OPTIONAL,
71     ...,
72     lcsCodewordApplicability [3] LCSCodewordApplicability   OPTIONAL }

```

```

74 LCSCodewordApplicability ::= ENUMERATED {
75     codewordCheckApplicable (0),
76     codewordCheckNotApplicable (1),
77     ...}
78 -- exception handling:
79 -- unrecognized values shall be ignored by the receiver.

```

```

81 RoutingInfoForLCS-Res ::= SEQUENCE {
82     targetMS                [0] SubscriberIdentity,
83     lcsLocationInfo         [1] LCSLocationInfo,
84     extensionContainer       [2] ExtensionContainer           OPTIONAL,
85     ...,
86     lcsCodewordNotification [3] NULL                        OPTIONAL
87     -- lcsCodewordNotification may be present only if
88     -- lcsCodewordApplicability was present in RoutingInfoForLCS-Arg.
89     -- If received when lcsCodewordApplicability was not present in
90     -- RoutingInfoForLCS-Arg then lcsCodewordNotification shall be ignored.
91 }

```

```

93 LCSLocationInfo ::= SEQUENCE {
94     networkNode-Number      ISDN-AddressString,
95     -- NetworkNode-number can be either msc-number or sgsn-number
96     lmsi                    [0] LMSI                        OPTIONAL,
97     extensionContainer       [1] ExtensionContainer           OPTIONAL,
98     ...,
99     gprsNodeIndicator        [2] NULL                        OPTIONAL,
100    -- gprsNodeIndicator is set only if the SGSN number is sent as the Network Node Number
101    additional-Number        [3] Additional-Number           OPTIONAL
102 }

```

103

```

104 ProvideSubscriberLocation-Arg ::= SEQUENCE {
105     locationType                LocationType,
106     mlc-Number                  ISDN-AddressString,
107     lcs-ClientID                [0] LCS-ClientID                OPTIONAL,
108     privacyOverride             [1] NULL                    OPTIONAL,
109     imsi                        [2] IMSI                    OPTIONAL,
110     msisdn                      [3] ISDN-AddressString        OPTIONAL,
111     lmsi                        [4] LMSI                    OPTIONAL,
112     imei                        [5] IMEI                    OPTIONAL,
113     lcs-Priority                [6] LCS-Priority            OPTIONAL,
114     lcs-QoS                     [7] LCS-QoS                OPTIONAL,
115     extensionContainer          [8] ExtensionContainer        OPTIONAL,
116     ... ,
117     supportedGADShapes          [9] SupportedGADShapes        OPTIONAL,
118     lcs-RreferenceNumber        [10] LCS-ReferenceNumber       OPTIONAL,
119     lcsServiceTypeID            [11] LCSServiceTypeID        OPTIONAL,
120     lcsCodeword                 [12] LCSCodeword            OPTIONAL }
121
122 -- one of imsi or msisdn is mandatory
123 -- If a location estimate type indicates activate deferred location or cancel deferred
124 -- location, a lcs-Rreference number shall be included.

```

```

127 LocationType ::= SEQUENCE {
128     locationEstimateType        [0] LocationEstimateType,
129     ... ,
130     deferredLocationEventType  [1] DeferredLocationEventType OPTIONAL }

```

```

132 LocationEstimateType ::= ENUMERATED {
133     currentLocation              (0),
134     currentOrLastKnownLocation  (1),
135     initialLocation              (2),
136     ... ,
137     activateDeferredLocation    (3),
138     cancelDeferredLocation      (4) }
139 -- exception handling:
140 -- a ProvideSubscriberLocation-Arg containing an unrecognized LocationEstimateType
141 -- shall be rejected by the receiver with a return error cause of unexpected data value

```

```

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

```

```

150 LCS-ClientID ::= SEQUENCE {
151     lcsClientType                [0] LCSClientType,
152     lcsClientExternalID          [1] LCSClientExternalID    OPTIONAL,
153     lcsClientDialedByMS         [2] AddressString          OPTIONAL,
154     lcsClientInternalID         [3] LCSClientInternalID      OPTIONAL,
155     lcsClientName               [4] LCSClientName            OPTIONAL,
156     ... ,
157     lcsAPN                      [5] APN                    OPTIONAL,
158     lcsRequestorID              [6] LCSRequestorID          OPTIONAL }

```

```

160 LCSClientType ::= ENUMERATED {
161     emergencyServices            (0),
162     valueAddedServices          (1),
163     plmnOperatorServices        (2),
164     lawfulInterceptServices     (3),
165     ... }
166 -- exception handling:
167 -- unrecognized values may be ignored if the LCS client uses the privacy override
168 -- otherwise, an unrecognized value shall be treated as unexpected data by a receiver
169 -- a return error shall then be returned if received in a MAP invoke

```

```

171 LCSClientName ::= SEQUENCE {
172     dataCodingScheme             [0] USSD-DataCodingScheme,
173     nameString                   [2] NameString,
174     ... }
175
176 -- The USSD-DataCodingScheme shall indicate use of the default alphabet through the
177 -- following encoding
178 -- bit 7 6 5 4 3 2 1 0
179 --      0 0 0 0 1 1 1 1

```

```

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

```

```

182
183 maxNameStringLength INTEGER ::= 63
184
185 LCSRequestorID ::= SEQUENCE {
186     dataCodingScheme           [0] USSD-DataCodingScheme,
187     requestorIDString         [1] RequestorIDString,
188     ...}
189
190 RequestorIDString ::= USSD-String (SIZE (1..maxRequestorIDStringLength))
191
192 maxRequestorIDStringLength INTEGER ::= 127
193
194 LCS-Priority ::= OCTET STRING (SIZE (1))
195     -- 0 = highest priority
196     -- 1 = normal priority
197     -- all other values treated as 1
198
199 LCS-QoS ::= SEQUENCE {
200     horizontal-accuracy        [0] Horizontal-Accuracy           OPTIONAL,
201     verticalCoordinateRequest  [1] NULL                      OPTIONAL,
202     vertical-accuracy          [2] Vertical-Accuracy           OPTIONAL,
203     responseTime               [3] ResponseTime                OPTIONAL,
204     extensionContainer         [4] ExtensionContainer           OPTIONAL,
205     ...}
206
207 Horizontal-Accuracy ::= OCTET STRING (SIZE (1))
208     -- bit 8 = 0
209     -- bits 7-1 = 7 bit Uncertainty Code defined in 3GPP TS 23.032. The horizontal location
210     -- error should be less than the error indicated by the uncertainty code with 67%
211     -- confidence.
212
213 Vertical-Accuracy ::= OCTET STRING (SIZE (1))
214     -- bit 8 = 0
215     -- bits 7-1 = 7 bit Vertical Uncertainty Code defined in 3GPP TS 23.032.
216     -- The vertical location error should be less than the error indicated
217     -- by the uncertainty code with 67% confidence.
218
219 ResponseTime ::= SEQUENCE {
220     responseTimeCategory      ResponseTimeCategory,
221     ...}
222 -- note: an expandable SEQUENCE simplifies later addition of a numeric response time.
223
224 ResponseTimeCategory ::= ENUMERATED {
225     lowdelay (0),
226     delaytolerant (1),
227     ... }
228 -- exception handling:
229 -- an unrecognized value shall be treated the same as value 1 (delaytolerant)
230
231 SupportedGADShapes ::= BIT STRING {
232     ellipsoidPoint (0),
233     ellipsoidPointWithUncertaintyCircle (1),
234     ellipsoidPointWithUncertaintyEllipse (2),
235     polygon (3),
236     ellipsoidPointWithAltitude (4),
237     ellipsoidPointWithAltitudeAndUncertaintyEllipsoid (5),
238     ellipsoidArc (6) } (SIZE (7..16))
239 -- A node shall mark in the BIT STRING all Shapes defined in 3GPP TS 23.032 it supports.
240 -- exception handling: bits 7 to 15 shall be ignored if received.
241
242 LCS-ReferenceNumber ::= OCTET STRING (SIZE(1))
243
244 LCSCodeword ::= SEQUENCE {
245     dataCodingScheme           [0] USSD-DataCodingScheme,
246     lcsCodewordString         [1] LCSCodewordString,
247     ...}
248
249 LCSCodewordString ::= USSD-String (SIZE (1..maxLCSCodewordStringLength))
250
251 maxLCSCodewordStringLength INTEGER ::= 127
252

```

```

253 ProvideSubscriberLocation-Res ::= SEQUENCE {
254     locationEstimate                Ext-GeographicalInformation,
255     ageOfLocationEstimate           [0] AgeOfLocationInformation    OPTIONAL,
256     extensionContainer              [1] ExtensionContainer        OPTIONAL,
257     ... ,
258     add-LocationEstimate            [2] Add-GeographicalInformation  OPTIONAL,
259     deferredmt-lrResponseIndicator  [3] NULL                          OPTIONAL }
260
261 -- if deferredmt-lrResponseIndicator is set, locationEstimate is ignored.
262
263 -- the add-LocationEstimate parameter shall not be sent to a node that did not indicate the
264 -- geographic shapes supported in the ProvideSubscriberLocation-Arg
265 -- The locationEstimate and the add-locationEstimate parameters shall not be sent if
266 -- the supportedGADShapes parameter has been received in ProvideSubscriberLocation-Arg
267 -- and the shape encoded in locationEstimate or add-LocationEstimate is not marked
268 -- as supported in supportedGADShapes. In such a case ProvideSubscriberLocation
269 -- shall be rejected with error FacilityNotSupported with additional indication
270 -- shapeOfLocationEstimateNotSupported
271
272 Ext-GeographicalInformation ::= OCTET STRING (SIZE (1..maxExt-GeographicalInformation))
273 -- Refers to geographical Information defined in 3GPP TS 23.032.
274 -- This is composed of 1 or more octets with an internal structure according to
275 -- 3GPP TS 23.032
276 -- Octet 1: Type of shape, only the following shapes in 3GPP TS 23.032 are allowed:
277 --     (a) Ellipsoid point with uncertainty circle
278 --     (b) Ellipsoid point with uncertainty ellipse
279 --     (c) Ellipsoid point with altitude and uncertainty ellipsoid
280 --     (d) Ellipsoid Arc
281 --     (e) Ellipsoid Point
282 -- Any other value in octet 1 shall be treated as invalid
283 -- Octets 2 to 8 for case (a) - Ellipsoid point with uncertainty circle
284 --     Degrees of Latitude                3 octets
285 --     Degrees of Longitude              3 octets
286 --     Uncertainty code                  1 octet
287 -- Octets 2 to 11 for case (b) - Ellipsoid point with uncertainty ellipse:
288 --     Degrees of Latitude                3 octets
289 --     Degrees of Longitude              3 octets
290 --     Uncertainty semi-major axis       1 octet
291 --     Uncertainty semi-minor axis       1 octet
292 --     Angle of major axis               1 octet
293 --     Confidence                        1 octet
294 -- Octets 2 to 14 for case (c) - Ellipsoid point with altitude and uncertainty ellipsoid
295 --     Degrees of Latitude                3 octets
296 --     Degrees of Longitude              3 octets
297 --     Altitude                          2 octets
298 --     Uncertainty semi-major axis       1 octet
299 --     Uncertainty semi-minor axis       1 octet
300 --     Angle of major axis               1 octet
301 --     Uncertainty altitude              1 octet
302 --     Confidence                        1 octet
303 -- Octets 2 to 13 for case (d) - Ellipsoid Arc
304 --     Degrees of Latitude                3 octets
305 --     Degrees of Longitude              3 octets
306 --     Inner radius                      2 octets
307 --     Uncertainty radius                1 octet
308 --     Offset angle                     1 octet
309 --     Included angle                   1 octet
310 --     Confidence                        1 octet
311 -- Octets 2 to 7 for case (e) - Ellipsoid Point
312 --     Degrees of Latitude                3 octets
313 --     Degrees of Longitude              3 octets
314
315 --
316 -- An Ext-GeographicalInformation parameter comprising more than one octet and
317 -- containing any other shape or an incorrect number of octets or coding according
318 -- to 3GPP TS 23.032 shall be treated as invalid data by a receiver.
319 --
320 -- An Ext-GeographicalInformation parameter comprising one octet shall be discarded
321 -- by the receiver if an Add-GeographicalInformation parameter is received
322 -- in the same message.
323 --
324 -- An Ext-GeographicalInformation parameter comprising one octet shall be treated as
325 -- invalid data by the receiver if an Add-GeographicalInformation parameter is not
326 -- received in the same message.
327

```

```
328 maxExt-GeographicalInformation INTEGER ::= 20
329 -- the maximum length allows for further shapes in 3GPP TS 23.032 to be included in later
330 -- versions of 3GPP TS 29.002
331
```

```
332 Add-GeographicalInformation ::= OCTET STRING (SIZE (1..maxAdd-GeographicalInformation))
333 -- Refers to geographical Information defined in 3GPP TS 23.032.
334 -- This is composed of 1 or more octets with an internal structure according to
335 -- 3GPP TS 23.032
336 -- Octet 1: Type of shape, all the shapes defined in 3GPP TS 23.032 are allowed:
337 -- Octets 2 to n (where n is the total number of octets necessary to encode the shape
338 -- according to 3GPP TS 23.032) are used to encode the shape itself in accordance with
339 the
340 -- encoding defined in 3GPP TS 23.032
341 --
342 -- An Add-GeographicalInformation parameter, whether valid or invalid, received
343 -- together with a valid Ext-GeographicalInformation parameter in the same message
344 -- shall be discarded.
345 --
346 -- An Add-GeographicalInformation parameter containing any shape not defined in
347 -- 3GPP TS 23.032 or an incorrect number of octets or coding according to
348 -- 3GPP TS 23.032 shall be treated as invalid data by a receiver if not received
349 -- together with a valid Ext-GeographicalInformation parameter in the same message.
350
```

```
351 maxAdd-GeographicalInformation INTEGER ::= 91
352 -- the maximum length allows support for all the shapes currently defined in 3GPP TS
353 23.032
354
```

```
355 SubscriberLocationReport-Arg ::= SEQUENCE {
356     lcs-Event                LCS-Event,
357     lcs-ClientID             LCS-ClientID,
358     lcsLocationInfo          LCSLocationInfo,
359     msisdn                   [0] ISDN-AddressString      OPTIONAL,
360     imsi                     [1] IMSI                    OPTIONAL,
361     imei                     [2] IMEI                   OPTIONAL,
362     na-ESRD                  [3] ISDN-AddressString      OPTIONAL,
363     na-ESRK                  [4] ISDN-AddressString      OPTIONAL,
364     locationEstimate         [5] Ext-GeographicalInformation OPTIONAL,
365     ageOfLocationEstimate    [6] AgeOfLocationInformation OPTIONAL,
366     extensionContainer       [7] ExtensionContainer       OPTIONAL,
367     ... ,
368     add-LocationEstimate     [8] Add-GeographicalInformation OPTIONAL,
369     deferredmt-lrData        [9] Deferredmt-lrData        OPTIONAL,
370     lcs-R#referenceNumber     [10] LCS-ReferenceNumber     OPTIONAL }
371
372 -- one of msisdn or imsi is mandatory
373 -- a location estimate that is valid for the locationEstimate parameter should
374 -- be transferred in this parameter in preference to the add-LocationEstimate.
375 -- the deferredmt-lrData parameter shall be included if and only if the lcs-Event
376 -- indicates a deferredmt-lrResponse.
377 -- if the lcs-Event indicates a deferredmt-lrResponse then the locationEstimate
378 -- and the add-locationEstimate parameters shall not be sent if the
379 -- supportedGADShapes parameter had been received in ProvideSubscriberLocation-Arg
380 -- and the shape encoded in locationEstimate or add-LocationEstimate was not marked
381 -- as supported in supportedGADShapes. In such a case terminationCause
382 -- in deferredmt-lrData shall be present with value
383 -- shapeOfLocationEstimateNotSupported.
384 -- If a lcs event indicates deferred mt-lr response, the lcs-#Reference number shall be
385 -- included.
386
387
388
```

```
389 Deferredmt-lrData ::= SEQUENCE {
390     deferredLocationEventType DeferredLocationEventType,
391     terminationCause          [0] TerminationCause      OPTIONAL,
392     lcsLocationInfo           [1] LCSLocationInfo        OPTIONAL,
393     ... }
394 -- lcsLocationInfo may be included only if a terminationCause is present
395 -- indicating mt-lrRestart.
396
```

```

397 LCS-Event ::= ENUMERATED {
398     emergencyCallOrigination (0),
399     emergencyCallRelease (1),
400     mo-lr (2),
401     ...,
402     deferredmt-lrResponse (3) }
403 -- exception handling:
404 -- a SubscriberLocationReport-Arg containing an unrecognized LCS-Event
405 -- shall be rejected by a receiver with a return error cause of unexpected data value
406
407 TerminationCause ::= ENUMERATED {
408     normal (0),
409     errorundefined (1),
410     internalTimeout (2),
411     congestion (3),
412     mt-lrRestart (4),
413     privacyViolation (5),
414     ...,
415     shapeOfLocationEstimateNotSupported (6) }
416 -- mt-lrRestart shall be used to trigger the GMLC to restart the location procedure,
417 -- either because the sending node knows that the terminal has moved under coverage
418 -- of another MSC or SGSN (e.g. Send Identification received), or because the subscriber
419 -- has been deregistered due to a Cancel Location received from HLR.
420 --
421 -- exception handling
422 -- an unrecognized value shall be treated the same as value 1 (errorundefined)
423
424 SubscriberLocationReport-Res ::= SEQUENCE {
425     extensionContainer ExtensionContainer OPTIONAL,
426     ...}
427
428
429
430 END
431

```


CR-Form-v7

CHANGE REQUEST

⌘ **29.010 CR 076** ⌘ rev **-** ⌘ Current version: **4.4.0** ⌘

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:	⌘ Correction on the use of "User Failure" error for LCS-MOLR operation		
Source:	⌘ CN4		
Work item code:	⌘ LCS1	Date:	⌘ 16/09/2002
Category:	⌘ F	Release:	⌘ Rel-4
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)	2 (GSM Phase 2)	
	A (corresponds to a correction in an earlier release)	R96 (Release 1996)	
	B (addition of feature),	R97 (Release 1997)	
	C (functional modification of feature)	R98 (Release 1998)	
	D (editorial modification)	R99 (Release 1999)	
	Detailed explanations of the above categories can be found in 3GPP TR 21.900 .	Rel-4 (Release 4)	
		Rel-5 (Release 5)	
		Rel-6 (Release 6)	

Reason for change:	⌘ Currently there is number of instances where error "User Failure" is indicated to be used for LCS-MOLR operation. However such an error does not exist for the operation. This is an essential correction.
Summary of change:	⌘ All instances of "User Failure" are replaced by "System Failure".
Consequences if not approved:	⌘ Implementation according to the specification is not possible.

Clauses affected:	⌘ 4.9.4.2, 4.9.4.4										
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;">⌘</td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> </table>	Y	N	⌘	X	⌘	X	⌘	X	Other core specifications	⌘
Y	N										
⌘	X										
⌘	X										
⌘	X										
		Test specifications									
		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.

4.9.4.2 Inter-MSM Handover (GSM to UMTS)

After a successful Inter-MSM GSM to UMTS inter system handover, any request of Assistance Data or De-ciphering keys received by the non-anchor 3G MSM via the DTAP message LCS-MOLR is forwarded to the anchor MSM by encapsulating the DTAP message into the MAP messages Process Access Signalling. The anchor MSM triggers the BSSMAP procedure Location Acquisition described in 3G TS 48.008. For handover this procedure is executed according to 3G TS 49.008 with the anchor MSM playing the role of the MSM and the non anchor 3G MSM playing the role of the BSS.

The needed BSSMAP signalling is sent over the E-interface encapsulated in the MAP messages Process Access Signalling and Forward Access Signalling.

At the non-anchor 3G MSM the received BSSMAP messages are mapped into the corresponding RANAP messages to be sent to the RNS, and the received RANAP messages are mapped into the corresponding BSSMAP messages to be sent over the E-interface to the anchor MSM.

Once the BSSMAP procedure has been completed, the anchor MSM sends the DTAP message LCS-MOLR Response encapsulated in the MAP message Forward Access Signalling to the non anchor 3G MSM, which relays it to the UE.

The signalling for a completed request of Assistance Data or De-ciphering Keys is shown in figures 67b.

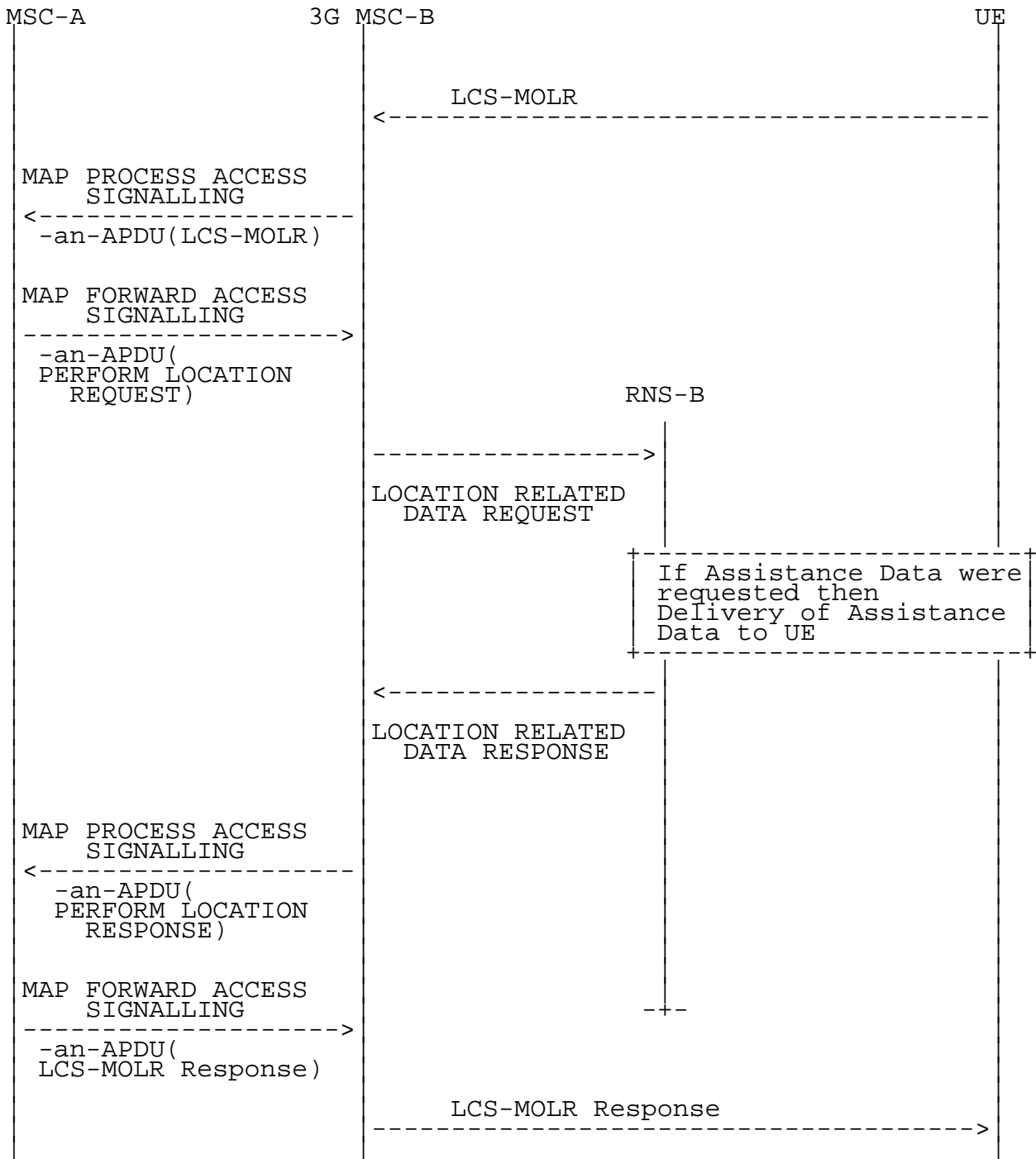


Figure 67b: Signalling for the request of Assistance Data or De-ciphering Keys

When the UE requires the delivery of Assistance Data for the GPS Assisted positioning method, the interworking between the BSSMAP messages encapsulated in MAP and the RANAP messages is as follows:

	29.002	25.413	Notes
Forward message	MAP FORWARD ACCESS SIG. request -an-APDU(PERFORM LOCATION REQUEST) BSSMAP information elements: Location Type. Location.Information > location assistance info for target MS Location Type. Positioning Method > Assisted GPS GPS Assistance Data	LOCATION RELATED DATA REQUEST RANAP information elements: Requested Location Related Data Type >Dedicated Assistance Data for Assisted GPS Requested GPS Assistance Data	1
Result	MAP PROCESS ACCESS SIG. request -an-APDU(PERFORM LOCATION RESPONSE) BSSMAP information elements:	LOCATION RELATED DATA RESPONSE RANAP information elements:	2

NOTE 1: All other Positioning Method possibilities are not supported by UMTS when Location Information is "location assistance information for the target MS".

NOTE 2: The absence of the Cause IE in the RANAP message Location Related Data Response is an indication that the requested assistance data has been successfully delivered to the UE..

If the UE requires the delivery of Assistance Data for an UMTS specific method, then the anchor MSC cannot forward the request to the non anchor 3G MSC, and replies with the error "UserSystem Failure" to the LCS-MOLR message.

If the anchor MSC sends a request for assistance data for a GSM specific method in BSSMAP Perform Location Request encapsulated in MAP Forward Access Signalling, then the non anchor 3G MSC replies immediately by generating and encapsulating BSSMAP Perform Location Response with Cause "System Failure" in MAP Process Access Signalling. This traffic case can happen if an LCS-MOLR had been received in the anchor MSC before the initiation of the handover procedure.

When the UE requires the delivery of De-ciphering Keys for the GPS Assisted positioning method, the interworking between the BSSMAP messages encapsulated in MAP and the RANAP messages is as follows:

	29.002	25.413	Notes
Forward message	MAP FORWARD ACCESS SIG. request -an-APDU(PERFORM LOCATION REQUEST) BSSMAP information elements: Location Type. Location Information > deciphering keys for broadcast assistance data for the target MS Location Type. Positioning Method > Assisted GPS	LOCATION RELATED DATA REQUEST RANAP information elements: Requested Location Related Data Type > Deciphering Keys for Assisted GPS	1
Result	MAP PROCESS ACCESS SIG. request -an-APDU(PERFORM LOCATION RESPONSE) BSSMAP information elements: Deciphering Keys	LOCATION RELATED DATA RESPONSE RANAP information elements: Broadcast Assistance Data Deciphering Keys	

NOTE 1: All other Positioning Method possibilities are not supported by UMTS when Location Information is “deciphering keys for broadcast assistance data for the target MS”.

If the UE requires the delivery of De-ciphering Keys for an UMTS specific method, then the anchor MSC cannot forward the request to the non anchor 3G MSC, and replies with the error “~~User~~System Failure” to the LCS-MOLR message.

If the anchor MSC sends a request for De-ciphering Keys for a GSM specific method in BSSMAP Perform Location Request encapsulated in MAP Forward Access Signalling, then the non anchor 3G MSC replies immediately by generating and encapsulating BSSMAP Perform Location Response with Cause “System Failure” in MAP Process Access Signalling. This traffic case can happen if an LCS-MOLR had been received in the anchor MSC before the initiation of the handover procedure.

After the inter-MSC GSM to UMTS handover, the 3G MSC-B can perform intra-MSC UMTS to GSM handover. Any request for Assistance Data or De-ciphering keys received after completion of the intra-MSC UMTS to GSM handover is handled as for Inter-MSC Handover GSM to GSM (see section 4.9.4.1).

**** NEXT MODIFIED SECTION ****

4.9.4.4 Inter-MSC SRNS Relocation

After a successful Inter-MSC SRNS Relocation , any request of Assistance Data or De-ciphering keys received by the non anchor 3G MSC via the DTAP message LCS-MOLR is forwarded to the anchor 3G MSC by encapsulating the DTAP message into the MAP messages Process Access Signalling. The anchor 3G MSC triggers the RANAP procedure Location Related Data described in TS 25.413. For handover this procedure is executed according to 23.009 with the anchor 3G-MSC playing the role of the 3G-MSC and the non anchor 3G-MSC playing the role of the RNS.

The needed RANAP signalling is sent over the E-interface encapsulated in the MAP messages Process Access Signalling and Forward Access Signalling.

At the non anchor 3G MSC the RANAP messages received from the anchor 3G MSC are forwarded to the RNS, and the RANAP messages received from the RNS are sent over the E-interface to the anchor 3G MSC.

Once the RANAP procedure has been completed, the anchor 3G MSC sends the DTAP message LCS-MOLR Response encapsulated in the MAP message Forward Access Signalling to the non anchor 3G MSC, which relays it to the UE.

The signalling for a completed request of Assistance Data or De-ciphering Keys is shown in figures 67d.

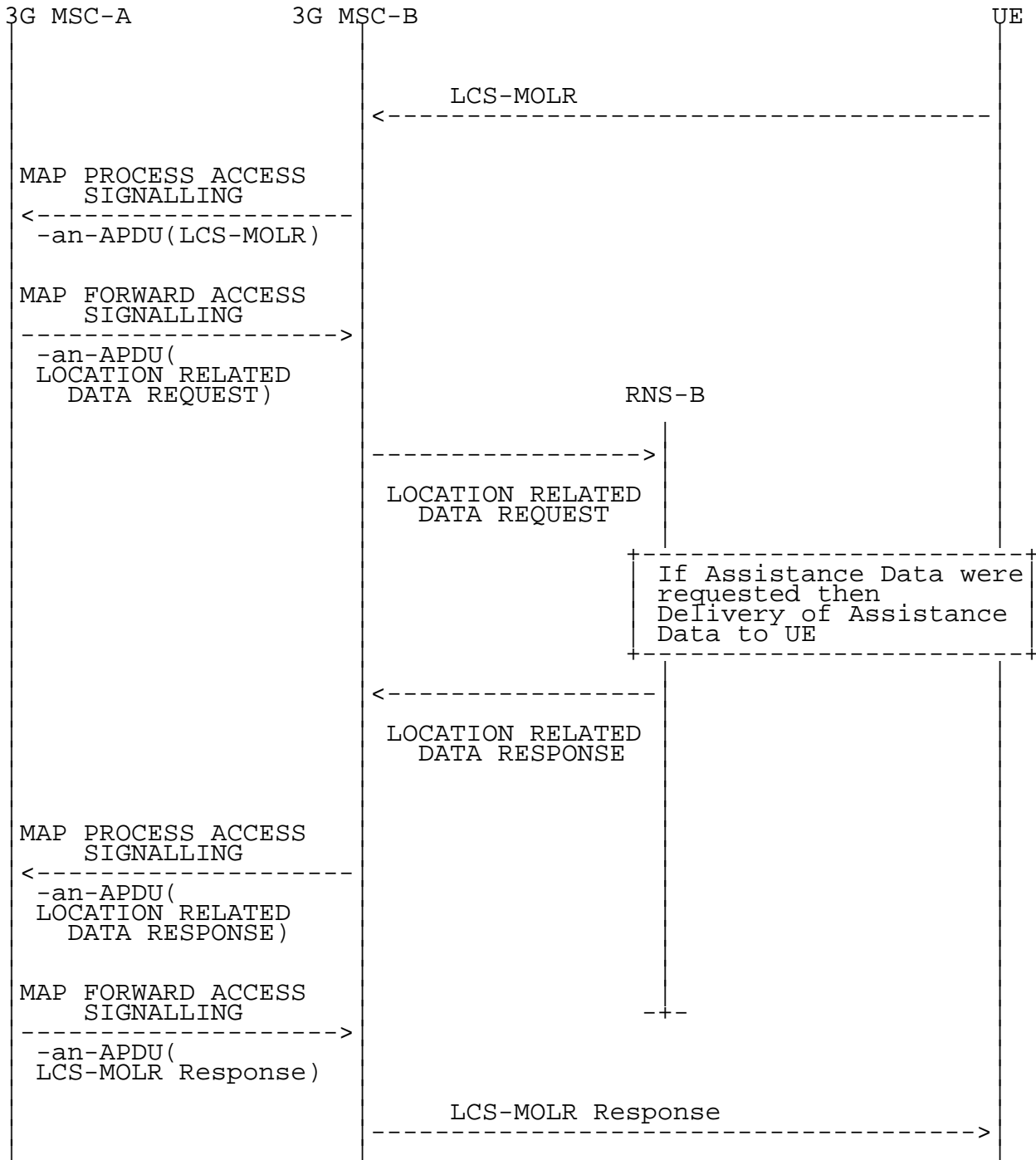


Figure 67d: Signalling for the request of Assistance Data or De-ciphering Keys

After the inter-MSC SRNS Relocation, the 3G MSC-B can perform intra-MSC UMTS to GSM handover. Any request for Assistance Data or De-ciphering keys received after completion of the intra-MSC UMTS to GSM requires that at the non anchor 3G MSC the received RANAP messages are mapped into the corresponding BSSMAP messages to be sent to the BSS, and the received BSSMAP messages are mapped into the corresponding RANAP messages to be sent over the E-interface to the anchor 3G-MSC. The signalling for a completed request of Assistance Data or De-ciphering Keys in this traffic case is shown in figures 67e.

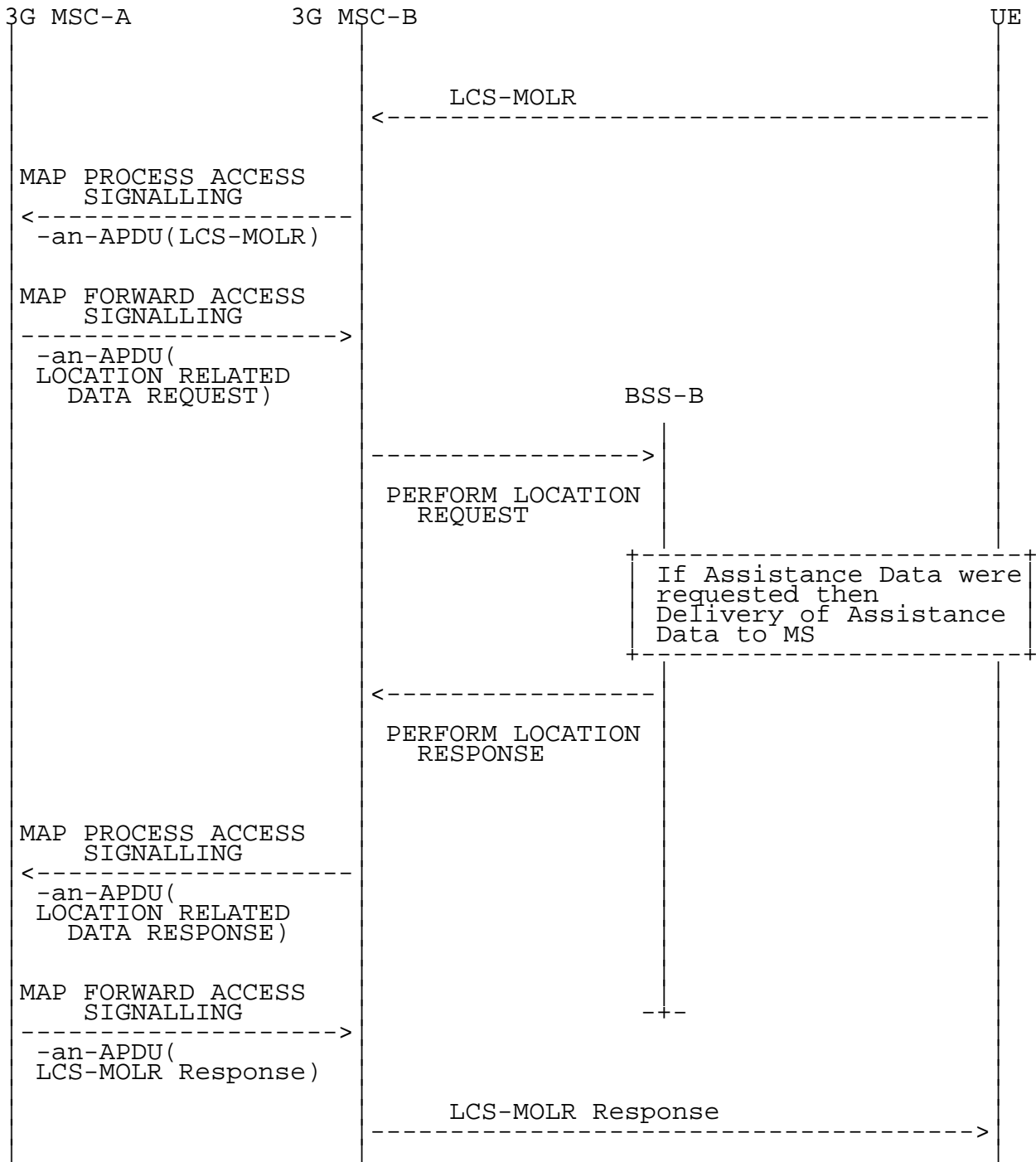


Figure 67e: Signalling for the request of Assistance Data or De-ciphering Keys

When the UE requires the delivery of Assistance Data for the GPS Assisted positioning method, the interworking between the RANAP messages encapsulated in MAP and the BSSMAP messages is as follows:

	29.002	48.008	Notes
Forward message	MAP FORWARD ACCESS SIG. request -an-APDU(LOCATION RELATED DATA REQUEST) RANAP information elements: Requested Location Related Data Type > Dedicated Assistance Data for Assisted GPS	PERFORM LOCATION REQUEST BSSMAP information elements: Location Type. Location Information > location assistance info for target MS Location Type. Positioning Method > Assisted GPS	1
Result	MAP PROCESS ACCESS SIG. request -an-APDU(LOCATION RELATED DATA RESPONSE) RANAP information elements:	PERFORM LOCATION RESPONSE BSSMAP information elements:	2

NOTE 1: All other Positioning Method possibilities are not supported by GSM when Location Information is “deciphering keys for broadcast assistance data for the target MS”.

NOTE 2: The absence of the Cause IE in the BSSMAP message Perform Location Response is an indication that the requested assistance data has been successfully delivered to the UE..

If the UE requires the delivery of Assistance Data for a GSM specific method, then the anchor 3G-MSC cannot forward the request to the non anchor 3G MSC, and replies with the error “~~User~~System Failure” to the LCS-MOLR message.

If the anchor 3G MSC sends a request for Assistance Data for an UMTS specific method in RANAP Location Related Data Request encapsulated in MAP Forward Access Signalling, then the non anchor 3G MSC replies immediately by generating and encapsulating RANAP Location Related Data Failure with Cause “Unspecified Failure” in MAP Process Access Signalling. This traffic case can happen if an LCS-MOLR had been received in the anchor MSC before the initiation of the intra-MSC handover procedure.

When the UE requires the delivery of De-ciphering Keys for the GPS Assisted positioning method, the interworking between the RANAP messages encapsulated in MAP and the BSSMAP messages is as follows:

	29.002	48.008	Notes
Forward message	MAP FORWARD ACCESS SIG. request -an-APDU(LOCATION RELATED DATA REQUEST) RANAP information elements: Requested Location Related Data Type > Deciphering Keys for Assisted GPS	PERFORM LOCATION REQUEST BSSMAP information elements: Location Type. Location Information > deciphering keys for broadcast assistance data for the target MS Location Type. Positioning Method > Assisted GPS	1
Result	MAP PROCESS ACCESS SIG. request -an-APDU(LOCATION RELATED DATA RESPONSE) RANAP information elements: Broadcast Assistance Data Deciphering Keys	PERFORM LOCATION RESPONSE BSSMAP information elements: Deciphering Keys	

NOTE 1: All other Positioning Method possibilities are not supported by GSM when Location Information is “deciphering keys for broadcast assistance data for the target MS”.

If the UE requires the delivery of De-ciphering Keys for a GSM specific method, then the anchor 3G-MSC cannot forward the request to the non anchor 3G MSC, and replies with the error “UserSystem Failure” to the LCS-MOLR message.

If the anchor 3G MSC sends a request for De-ciphering Keys for an UMTS specific method in RANAP Location Related Data Request encapsulated in MAP Forward Access Signalling, then the non anchor 3G MSC replies immediately by generating and encapsulating RANAP Location Related Data Failure with Cause “Unspecified Failure” in MAP Process Access Signalling. This traffic case can happen if an LCS-MOLR had been received in the anchor MSC before the initiation of the intra-MSC handover procedure.

CR-Form-v7

CHANGE REQUEST

⌘ **29.010 CR 077** ⌘ rev **-** ⌘ Current version: **5.1.0** ⌘

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:	⌘ Correction on the use of "User Failure" error for LCS-MOLR operation		
Source:	⌘ CN4		
Work item code:	⌘ LCS1	Date:	⌘ 16/09/2002
Category:	⌘ A	Release:	⌘ Rel-4
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)	2	(GSM Phase 2)
	A (corresponds to a correction in an earlier release)	R96	(Release 1996)
	B (addition of feature),	R97	(Release 1997)
	C (functional modification of feature)	R98	(Release 1998)
	D (editorial modification)	R99	(Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900.	Rel-4	(Release 4)
		Rel-5	(Release 5)
		Rel-6	(Release 6)

Reason for change:	⌘ Currently there is number of instances where error "User Failure" is indicated to be used for LCS-MOLR operation. However such an error does not exist for the operation.
Summary of change:	⌘ All instances of "User Failure" are replaced by "System Failure".
Consequences if not approved:	⌘ The requirement to use a non-existing error causes confusion for the implementors and may also cause interoperability problems

Clauses affected:	⌘ 4.9.4.2, 4.9.4.4										
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;">⌘</td> <td style="text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">N</td> </tr> </table>	Y	N	⌘	N	⌘	N	⌘	N	Other core specifications	⌘
Y	N										
⌘	N										
⌘	N										
⌘	N										
		Test specifications									
		O&M Specifications									
Other comments:	⌘										

How to create CRs using this form:

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- 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.

4.9.4.2 Inter-MSC Handover (GSM to UMTS)

After a successful Inter-MSC GSM to UMTS inter system handover, any request of Assistance Data or De-ciphering keys received by the non-anchor 3G MSC via the DTAP message LCS-MOLR is forwarded to the anchor MSC by encapsulating the DTAP message into the MAP messages Process Access Signalling. The anchor MSC triggers the BSSMAP procedure Location Acquisition described in 3G TS 48.008. For handover this procedure is executed according to 3G TS 49.008 with the anchor MSC playing the role of the MSC and the non anchor 3G MSC playing the role of the BSS.

The needed BSSMAP signalling is sent over the E-interface encapsulated in the MAP messages Process Access Signalling and Forward Access Signalling.

At the non-anchor 3G MSC the received BSSMAP messages are mapped into the corresponding RANAP messages to be sent to the RNS, and the received RANAP messages are mapped into the corresponding BSSMAP messages to be sent over the E-interface to the anchor MSC.

Once the BSSMAP procedure has been completed, the anchor MSC sends the DTAP message LCS-MOLR Response encapsulated in the MAP message Forward Access Signalling to the non anchor 3G MSC, which relays it to the UE.

The signalling for a completed request of Assistance Data or De-ciphering Keys is shown in figures 67b.

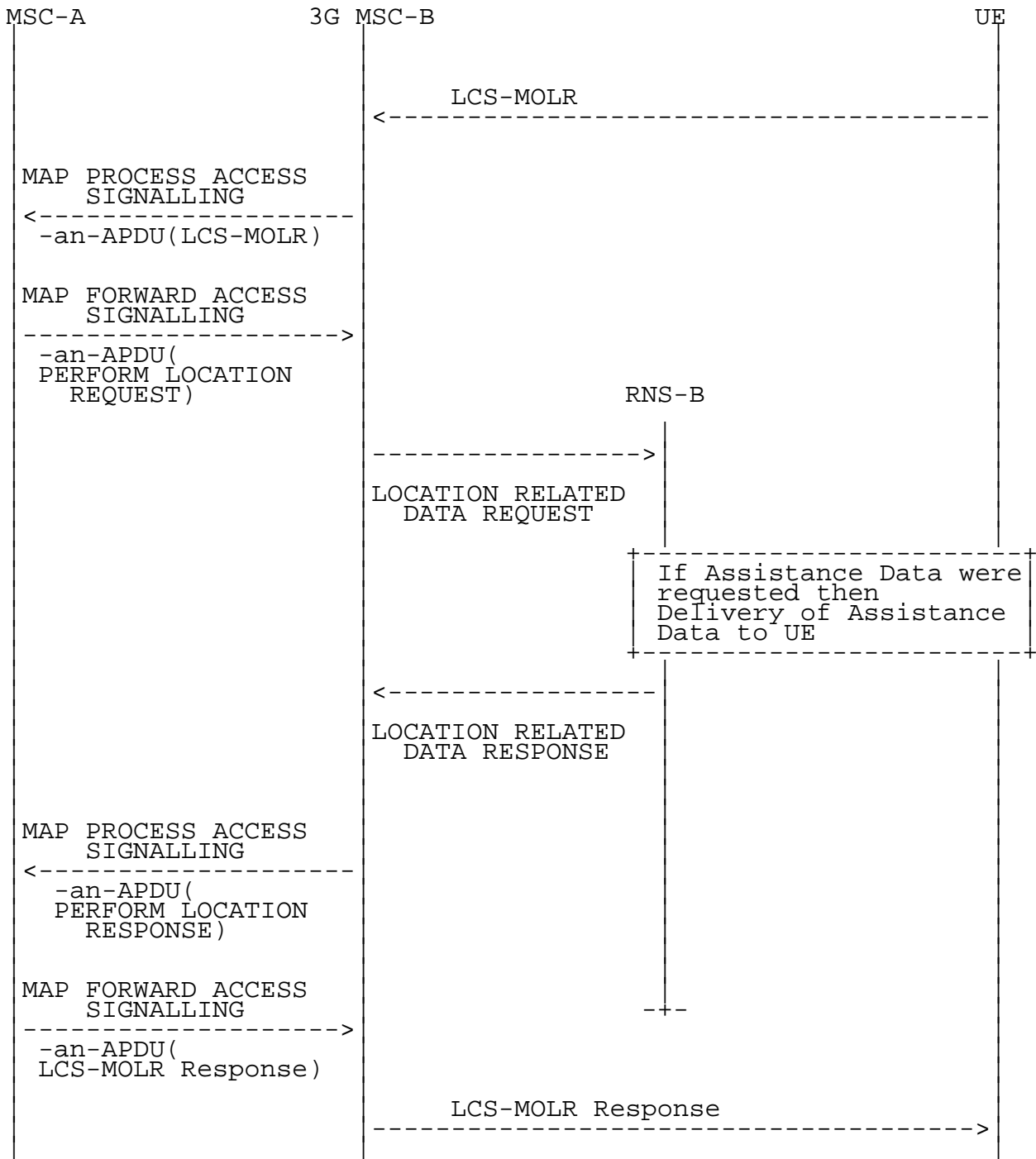


Figure 67b: Signalling for the request of Assistance Data or De-ciphering Keys

When the UE requires the delivery of Assistance Data for the GPS Assisted positioning method, the interworking between the BSSMAP messages encapsulated in MAP and the RANAP messages is as follows:

	29.002	25.413	Notes
Forward message	MAP FORWARD ACCESS SIG. request -an-APDU(PERFORM LOCATION REQUEST) BSSMAP information elements: Location Type. Location.Information > location assistance info for target MS Location Type. Positioning Method > Assisted GPS GPS Assistance Data	LOCATION RELATED DATA REQUEST RANAP information elements: Requested Location Related Data Type >Dedicated Assistance Data for Assisted GPS Requested GPS Assistance Data	1
Result	MAP PROCESS ACCESS SIG. request -an-APDU(PERFORM LOCATION RESPONSE) BSSMAP information elements:	LOCATION RELATED DATA RESPONSE RANAP information elements:	2

NOTE 1: All other Positioning Method possibilities are not supported by UMTS when Location Information is "location assistance information for the target MS".

NOTE 2: The absence of the Cause IE in the RANAP message Location Related Data Response is an indication that the requested assistance data has been successfully delivered to the UE..

If the UE requires the delivery of Assistance Data for an UMTS specific method, then the anchor MSC cannot forward the request to the non anchor 3G MSC, and replies with the error "User System Failure" to the LCS-MOLR message.

If the anchor MSC sends a request for assistance data for a GSM specific method in BSSMAP Perform Location Request encapsulated in MAP Forward Access Signalling, then the non anchor 3G MSC replies immediately by generating and encapsulating BSSMAP Perform Location Response with Cause "System Failure" in MAP Process Access Signalling. This traffic case can happen if an LCS-MOLR had been received in the anchor MSC before the initiation of the handover procedure.

When the UE requires the delivery of De-ciphering Keys for the GPS Assisted positioning method, the interworking between the BSSMAP messages encapsulated in MAP and the RANAP messages is as follows:

	29.002	25.413	Notes
Forward message	MAP FORWARD ACCESS SIG. request -an-APDU(PERFORM LOCATION REQUEST) BSSMAP information elements: Location Type. Location Information > deciphering keys for broadcast assistance data for the target MS Location Type. Positioning Method > Assisted GPS	LOCATION RELATED DATA REQUEST RANAP information elements: Requested Location Related Data Type > Deciphering Keys for Assisted GPS	1
Result	MAP PROCESS ACCESS SIG. request -an-APDU(PERFORM LOCATION RESPONSE) BSSMAP information elements: Deciphering Keys	LOCATION RELATED DATA RESPONSE RANAP information elements: Broadcast Assistance Data Deciphering Keys	

NOTE 1: All other Positioning Method possibilities are not supported by UMTS when Location Information is “deciphering keys for broadcast assistance data for the target MS”.

If the UE requires the delivery of De-ciphering Keys for an UMTS specific method, then the anchor MSC cannot forward the request to the non anchor 3G MSC, and replies with the error “~~User~~System Failure” to the LCS-MOLR message.

If the anchor MSC sends a request for De-ciphering Keys for a GSM specific method in BSSMAP Perform Location Request encapsulated in MAP Forward Access Signalling, then the non anchor 3G MSC replies immediately by generating and encapsulating BSSMAP Perform Location Response with Cause “System Failure” in MAP Process Access Signalling. This traffic case can happen if an LCS-MOLR had been received in the anchor MSC before the initiation of the handover procedure.

After the inter-MSC GSM to UMTS handover, the 3G MSC-B can perform intra-MSC UMTS to GSM handover. Any request for Assistance Data or De-ciphering keys received after completion of the intra-MSC UMTS to GSM handover is handled as for Inter-MSC Handover GSM to GSM (see section 4.9.4.1).

**** NEXT MODIFIED SECTION ****

4.9.4.4 Inter-MSC SRNS Relocation

After a successful Inter-MSC SRNS Relocation , any request of Assistance Data or De-ciphering keys received by the non anchor 3G MSC via the DTAP message LCS-MOLR is forwarded to the anchor 3G MSC by encapsulating the DTAP message into the MAP messages Process Access Signalling. The anchor 3G MSC triggers the RANAP procedure Location Related Data described in TS 25.413. For handover this procedure is executed according to 23.009 with the anchor 3G-MSC playing the role of the 3G-MSC and the non anchor 3G-MSC playing the role of the RNS.

The needed RANAP signalling is sent over the E-interface encapsulated in the MAP messages Process Access Signalling and Forward Access Signalling.

At the non anchor 3G MSC the RANAP messages received from the anchor 3G MSC are forwarded to the RNS, and the RANAP messages received from the RNS are sent over the E-interface to the anchor 3G MSC.

Once the RANAP procedure has been completed, the anchor 3G MSC sends the DTAP message LCS-MOLR Response encapsulated in the MAP message Forward Access Signalling to the non anchor 3G MSC, which relays it to the UE.

The signalling for a completed request of Assistance Data or De-ciphering Keys is shown in figures 67d.

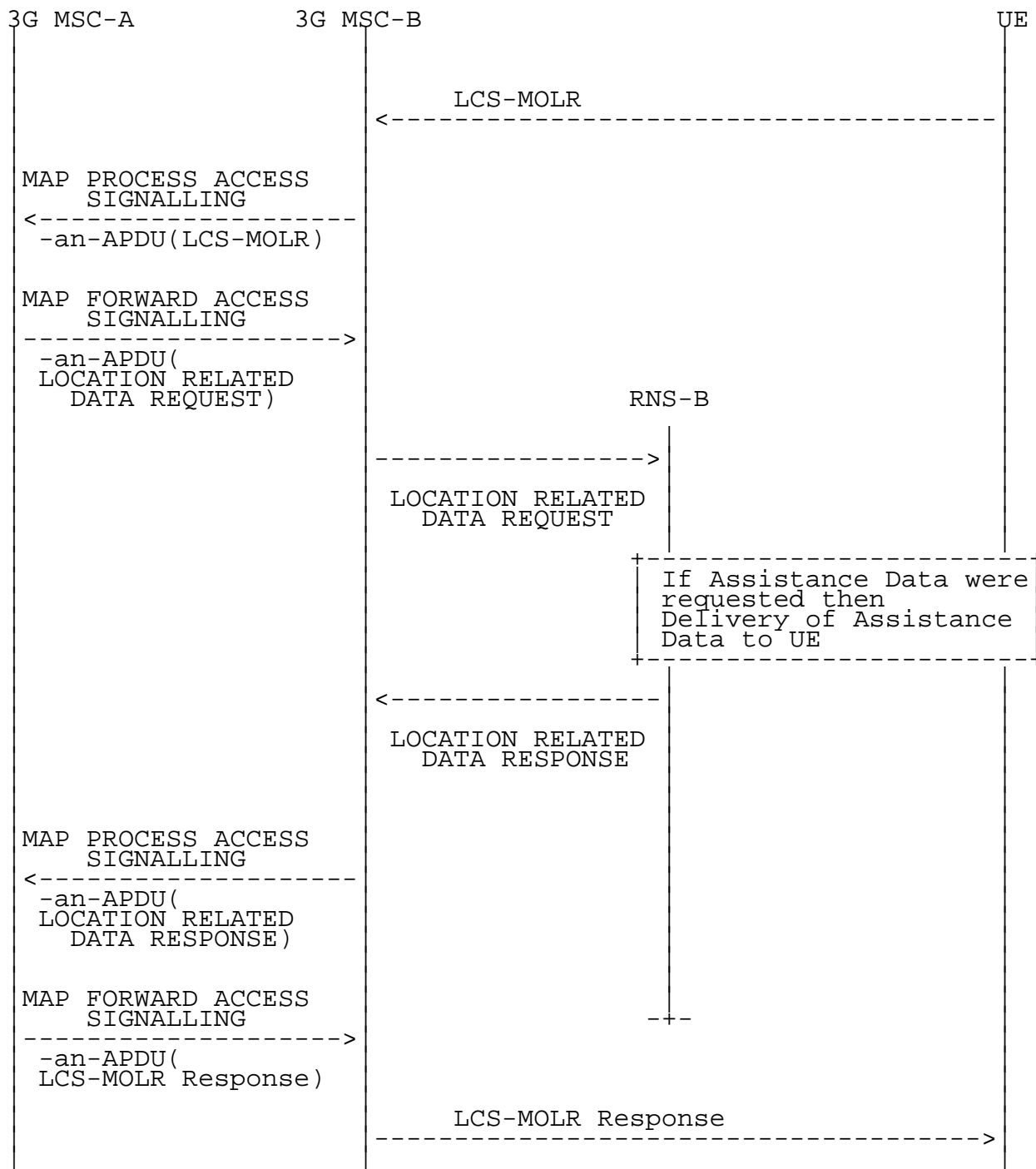


Figure 67d: Signalling for the request of Assistance Data or De-ciphering Keys

After the inter-MSC SRNS Relocation, the 3G MSC-B can perform intra-MSC UMTS to GSM handover. Any request for Assistance Data or De-ciphering keys received after completion of the intra-MSC UMTS to GSM requires that at the non anchor 3G MSC the received RANAP messages are mapped into the corresponding BSSMAP messages to be

sent to the BSS, and the received BSSMAP messages are mapped into the corresponding RANAP messages to be sent over the E-interface to the anchor 3G-MSC. The signalling for a completed request of Assistance Data or De-ciphering Keys in this traffic case is shown in figures 67e.

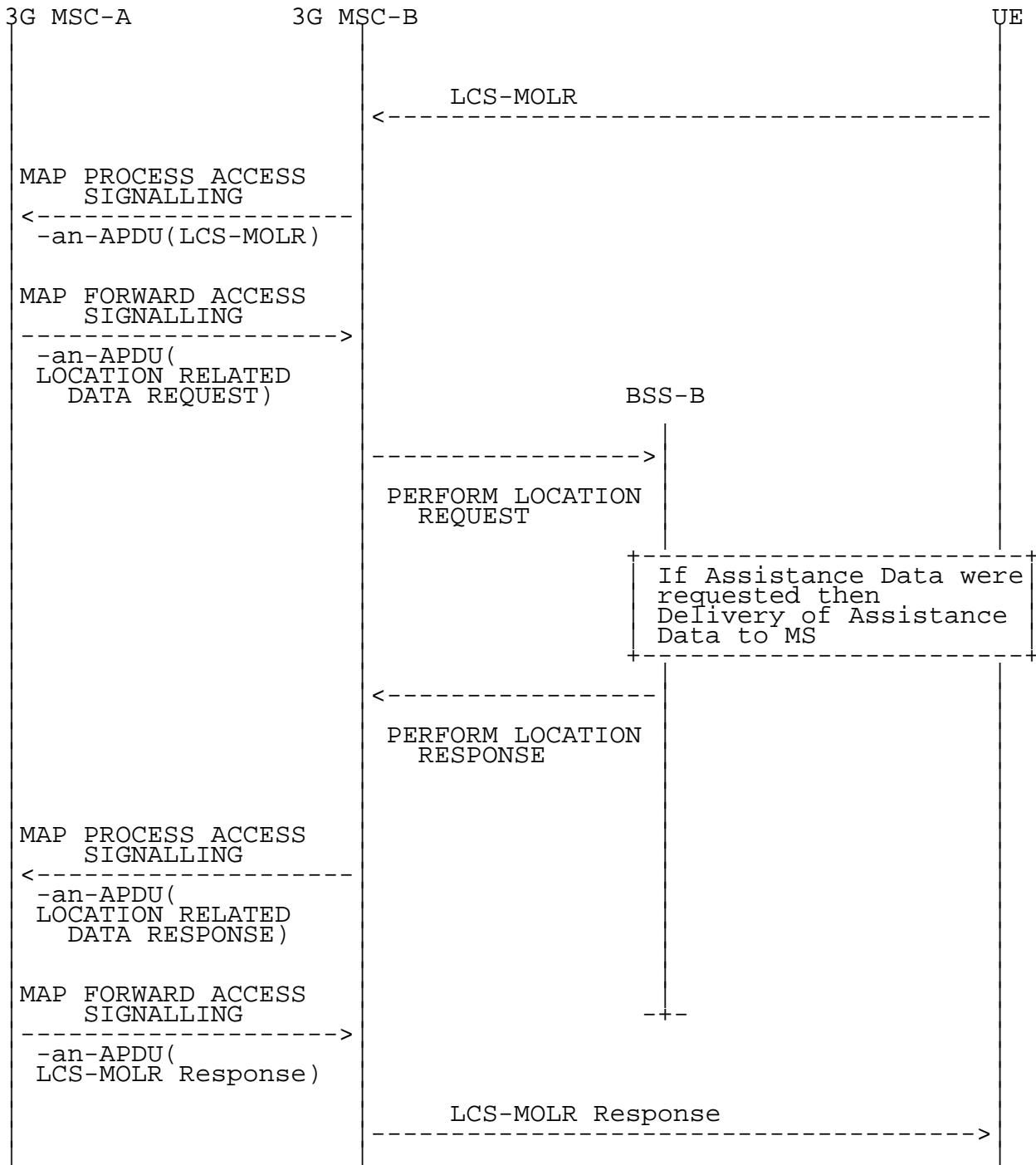


Figure 67e: Signalling for the request of Assistance Data or De-ciphering Keys

When the UE requires the delivery of Assistance Data for the GPS Assisted positioning method, the interworking between the RANAP messages encapsulated in MAP and the BSSMAP messages is as follows:

	29.002	48.008	Notes
Forward message	MAP FORWARD ACCESS SIG. request -an-APDU(LOCATION RELATED DATA REQUEST) RANAP information elements: Requested Location Related Data Type > Dedicated Assistance Data for Assisted GPS	PERFORM LOCATION REQUEST BSSMAP information elements: Location Type. Location Information > location assistance info for target MS Location Type. Positioning Method > Assisted GPS	1
Result	MAP PROCESS ACCESS SIG. request -an-APDU(LOCATION RELATED DATA RESPONSE) RANAP information elements:	PERFORM LOCATION RESPONSE BSSMAP information elements:	2

NOTE 1: All other Positioning Method possibilities are not supported by GSM when Location Information is “deciphering keys for broadcast assistance data for the target MS”.

NOTE 2: The absence of the Cause IE in the BSSMAP message Perform Location Response is an indication that the requested assistance data has been successfully delivered to the UE..

If the UE requires the delivery of Assistance Data for a GSM specific method, then the anchor 3G-MSC cannot forward the request to the non anchor 3G MSC, and replies with the error “~~User~~System Failure” to the LCS-MOLR message.

If the anchor 3G MSC sends a request for Assistance Data for an UMTS specific method in RANAP Location Related Data Request encapsulated in MAP Forward Access Signalling, then the non anchor 3G MSC replies immediately by generating and encapsulating RANAP Location Related Data Failure with Cause “Unspecified Failure” in MAP Process Access Signalling. This traffic case can happen if an LCS-MOLR had been received in the anchor MSC before the initiation of the intra-MSC handover procedure.

When the UE requires the delivery of De-ciphering Keys for the GPS Assisted positioning method, the interworking between the RANAP messages encapsulated in MAP and the BSSMAP messages is as follows:

	29.002	48.008	Notes
Forward message	MAP FORWARD ACCESS SIG. request -an-APDU(LOCATION RELATED DATA REQUEST) RANAP information elements: Requested Location Related Data Type > Deciphering Keys for Assisted GPS	PERFORM LOCATION REQUEST BSSMAP information elements: Location Type. Location Information > deciphering keys for broadcast assistance data for the target MS Location Type. Positioning Method > Assisted GPS	1
Result	MAP PROCESS ACCESS SIG. request -an-APDU(LOCATION RELATED DATA RESPONSE) RANAP information elements: Broadcast Assistance Data Deciphering Keys	PERFORM LOCATION RESPONSE BSSMAP information elements: Deciphering Keys	

NOTE 1: All other Positioning Method possibilities are not supported by GSM when Location Information is “deciphering keys for broadcast assistance data for the target MS”.

If the UE requires the delivery of De-ciphering Keys for a GSM specific method, then the anchor 3G-MSC cannot forward the request to the non anchor 3G MSC, and replies with the error “UserSystem Failure” to the LCS-MOLR message.

If the anchor 3G MSC sends a request for De-ciphering Keys for an UMTS specific method in RANAP Location Related Data Request encapsulated in MAP Forward Access Signalling, then the non anchor 3G MSC replies immediately by generating and encapsulating RANAP Location Related Data Failure with Cause “Unspecified Failure” in MAP Process Access Signalling. This traffic case can happen if an LCS-MOLR had been received in the anchor MSC before the initiation of the intra-MSC handover procedure.

4.9.4.4 Inter-MSC SRNS Relocation

After a successful Inter-MSC SRNS Relocation , any request of Assistance Data or De-ciphering keys received by the non anchor 3G MSC via the DTAP message LCS-MOLR is forwarded to the anchor 3G MSC by encapsulating the DTAP message into the MAP messages Process Access Signalling. The anchor 3G MSC triggers the RANAP procedure Location Related Data described in TS 25.413. For handover this procedure is executed according to 23.009 with the anchor 3G-MSC playing the role of the 3G-MSC and the non anchor 3G-MSC playing the role of the RNS.

The needed RANAP signalling is sent over the E-interface encapsulated in the MAP messages Process Access Signalling and Forward Access Signalling.

At the non anchor 3G MSC the RANAP messages received from the anchor 3G MSC are forwarded to the RNS, and the RANAP messages received from the RNS are sent over the E-interface to the anchor 3G MSC.

Once the RANAP procedure has been completed, the anchor 3G MSC sends the DTAP message LCS-MOLR Response encapsulated in the MAP message Forward Access Signalling to the non anchor 3G MSC, which relays it to the UE.

The signalling for a completed request of Assistance Data or De-ciphering Keys is shown in figures 67d.

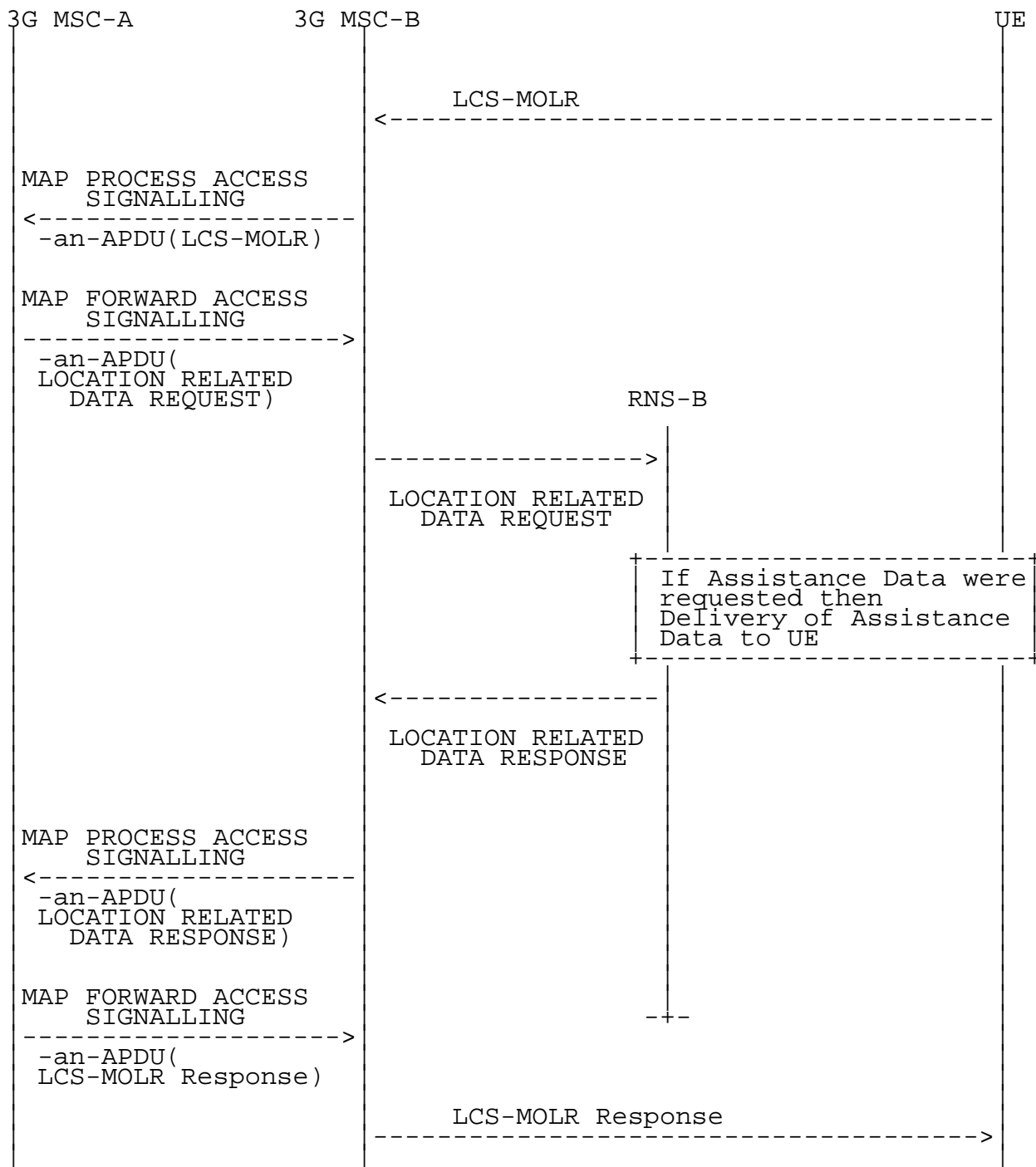


Figure 67d: Signalling for the request of Assistance Data or De-ciphering Keys

After the inter-MSC SRNS Relocation, the 3G MSC-B can perform intra-MSC UMTS to GSM handover. Any request for Assistance Data or De-ciphering keys received after completion of the intra-MSC UMTS to GSM requires that at the non anchor 3G MSC the received RANAP messages are mapped into the corresponding BSSMAP messages to be sent to the BSS, and the received BSSMAP messages are mapped into the corresponding RANAP messages to be sent over the E-interface to the anchor 3G-MSC. The signalling for a completed request of Assistance Data or De-ciphering Keys in this traffic case is shown in figures 67e.

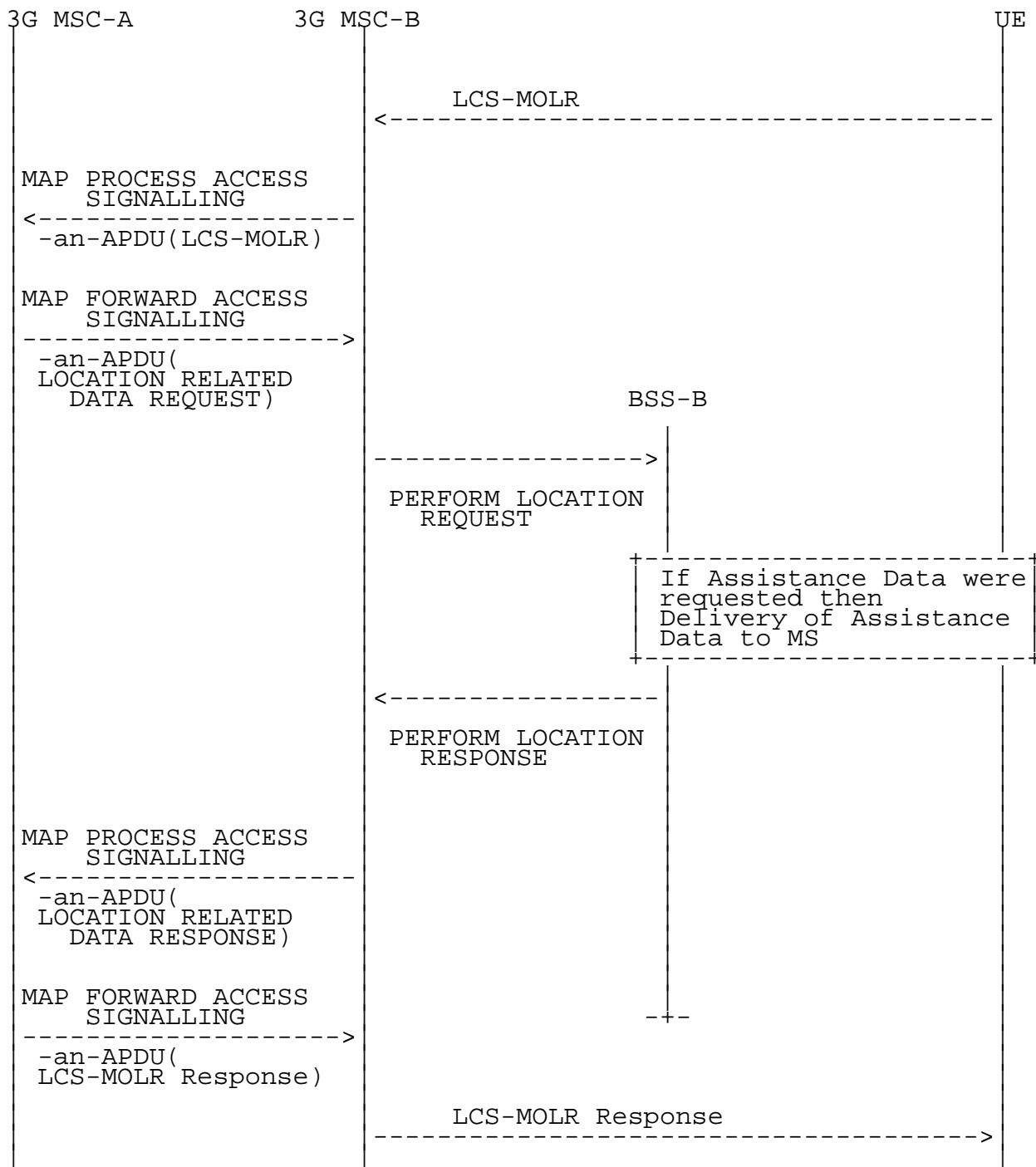


Figure 67e: Signalling for the request of Assistance Data or De-ciphering Keys

When the UE requires the delivery of Assistance Data for the GPS Assisted positioning method, the interworking between the RANAP messages encapsulated in MAP and the BSSMAP messages is as follows:

	29.002	48.008	Notes
Forward message	MAP FORWARD ACCESS SIG. request -an-APDU(LOCATION RELATED DATA REQUEST) RANAP information elements: Requested Location Related Data Type > Dedicated Assistance Data for Assisted GPS	PERFORM LOCATION REQUEST BSSMAP information elements: Location Type. Location Information > location assistance info for target MS Location Type. Positioning Method > Assisted GPS	1
	Requested GPS Assistance Data	GPS Assistance Data	
Result	MAP PROCESS ACCESS SIG. request -an-APDU(LOCATION RELATED DATA RESPONSE) RANAP information elements:	PERFORM LOCATION RESPONSE BSSMAP information elements:	2

NOTE 1: All other Positioning Method possibilities are not supported by GSM when Location Information is “deciphering keys for broadcast assistance data for the target MS”.

NOTE 2: The absence of the Cause IE in the BSSMAP message Perform Location Response is an indication that the requested assistance data has been successfully delivered to the UE..

If the UE requires the delivery of Assistance Data for a GSM specific method, then the anchor 3G-MSC cannot forward the request to the non anchor 3G MSC, and replies with the error “User Failure”to the LCS-MOLR message.

If the anchor 3G MSC sends a request for Assistance Data for an UMTS specific method in RANAP Location Related Data Request encapsulated in MAP Forward Access Signalling, then the non anchor 3G MSC replies immediately by generating and encapsulating RANAP Location Related Data Failure with Cause “Unspecified Failure” in MAP Process Access Signalling. This traffic case can happen if an LCS-MOLR had been received in the anchor MSC before the initiation of the intra-MSC handover procedure.

When the UE requires the delivery of De-ciphering Keys for the GPS Assisted positioning method, the interworking between the RANAP messages encapsulated in MAP and the BSSMAP messages is as follows:

	29.002	48.008	Notes
Forward message	MAP FORWARD ACCESS SIG. request -an-APDU(LOCATION RELATED DATA REQUEST) RANAP information elements: Requested Location Related Data Type > Deciphering Keys for Assisted GPS	PERFORM LOCATION REQUEST BSSMAP information elements: Location Type. Location Information > deciphering keys for broadcast assistance data for the target MS Location Type. Positioning Method > Assisted GPS	1
Result	MAP PROCESS ACCESS SIG. request -an-APDU(LOCATION RELATED DATA RESPONSE) RANAP information elements: Broadcast Assistance Data Deciphering Keys	PERFORM LOCATION RESPONSE BSSMAP information elements: Deciphering Keys	

NOTE 1: All other Positioning Method possibilities are not supported by GSM when Location Information is "deciphering keys for broadcast assistance data for the target MS".

If the UE requires the delivery of De-ciphering Keys for a GSM specific method, then the anchor 3G-MSC cannot forward the request to the non anchor 3G MSC, and replies with the error "User Failure" to the LCS-MOLR message.

If the anchor 3G MSC sends a request for De-ciphering Keys for an UMTS specific method in RANAP Location Related Data Request encapsulated in MAP Forward Access Signalling, then the non anchor 3G MSC replies immediately by generating and encapsulating RANAP Location Related Data Failure with Cause "Unspecified Failure" in MAP Process Access Signalling. This traffic case can happen if an LCS-MOLR had been received in the anchor MSC before the initiation of the intra-MSC handover procedure.

4.9.4.4 Inter-MSC SRNS Relocation

After a successful Inter-MSC SRNS Relocation , any request of Assistance Data or De-ciphering keys received by the non anchor 3G MSC via the DTAP message LCS-MOLR is forwarded to the anchor 3G MSC by encapsulating the DTAP message into the MAP messages Process Access Signalling. The anchor 3G MSC triggers the RANAP procedure Location Related Data described in TS 25.413. For handover this procedure is executed according to 23.009 with the anchor 3G-MSC playing the role of the 3G-MSC and the non anchor 3G-MSC playing the role of the RNS.

The needed RANAP signalling is sent over the E-interface encapsulated in the MAP messages Process Access Signalling and Forward Access Signalling.

At the non anchor 3G MSC the RANAP messages received from the anchor 3G MSC are forwarded to the RNS, and the RANAP messages received from the RNS are sent over the E-interface to the anchor 3G MSC.

Once the RANAP procedure has been completed, the anchor 3G MSC sends the DTAP message LCS-MOLR Response encapsulated in the MAP message Forward Access Signalling to the non anchor 3G MSC, which relays it to the UE.

The signalling for a completed request of Assistance Data or De-ciphering Keys is shown in figures 67d.

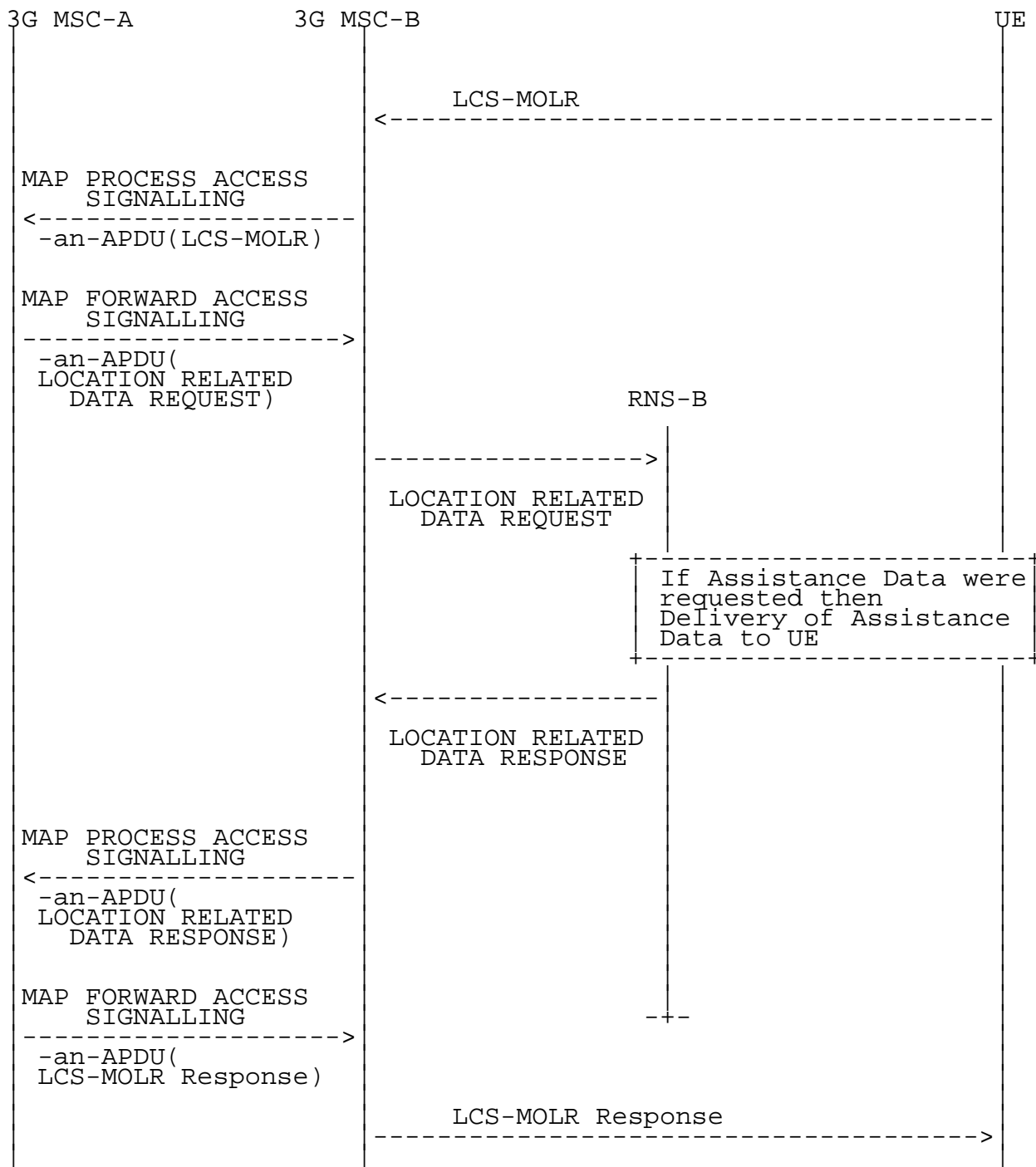


Figure 67d: Signalling for the request of Assistance Data or De-ciphering Keys

After the inter-MSC SRNS Relocation, the 3G MSC-B can perform intra-MSC UMTS to GSM handover. Any request for Assistance Data or De-ciphering keys received after completion of the intra-MSC UMTS to GSM requires that at the non anchor 3G MSC the received RANAP messages are mapped into the corresponding BSSMAP messages to be sent to the BSS, and the received BSSMAP messages are mapped into the corresponding RANAP messages to be sent over the E-interface to the anchor 3G-MSC. The signalling for a completed request of Assistance Data or De-ciphering Keys in this traffic case is shown in figures 67e.

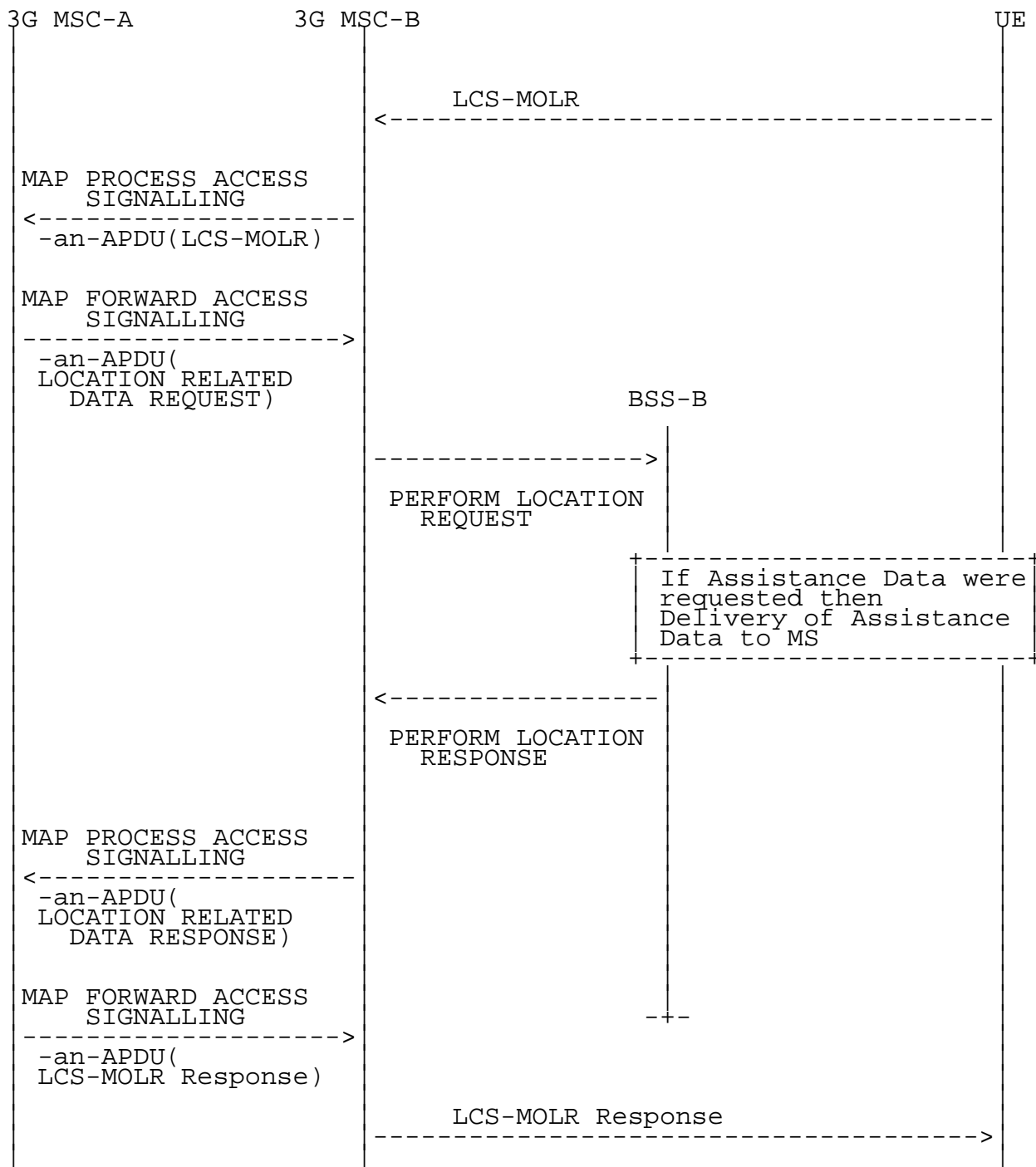


Figure 67e: Signalling for the request of Assistance Data or De-ciphering Keys

When the UE requires the delivery of Assistance Data for the GPS Assisted positioning method, the interworking between the RANAP messages encapsulated in MAP and the BSSMAP messages is as follows:

	29.002	48.008	Notes
Forward message	MAP FORWARD ACCESS SIG. request -an-APDU(LOCATION RELATED DATA REQUEST) RANAP information elements: Requested Location Related Data Type > Dedicated Assistance Data for Assisted GPS	PERFORM LOCATION REQUEST BSSMAP information elements: Location Type. Location Information > location assistance info for target MS Location Type. Positioning Method > Assisted GPS	1
	Requested GPS Assistance Data	GPS Assistance Data	
Result	MAP PROCESS ACCESS SIG. request -an-APDU(LOCATION RELATED DATA RESPONSE) RANAP information elements:	PERFORM LOCATION RESPONSE BSSMAP information elements:	2

NOTE 1: All other Positioning Method possibilities are not supported by GSM when Location Information is “deciphering keys for broadcast assistance data for the target MS”.

NOTE 2: The absence of the Cause IE in the BSSMAP message Perform Location Response is an indication that the requested assistance data has been successfully delivered to the UE..

If the UE requires the delivery of Assistance Data for a GSM specific method, then the anchor 3G-MSC cannot forward the request to the non anchor 3G MSC, and replies with the error “User Failure” to the LCS-MOLR message.

If the anchor 3G MSC sends a request for Assistance Data for an UMTS specific method in RANAP Location Related Data Request encapsulated in MAP Forward Access Signalling, then the non anchor 3G MSC replies immediately by generating and encapsulating RANAP Location Related Data Failure with Cause “Unspecified Failure” in MAP Process Access Signalling. This traffic case can happen if an LCS-MOLR had been received in the anchor MSC before the initiation of the intra-MSC handover procedure.

When the UE requires the delivery of De-ciphering Keys for the GPS Assisted positioning method, the interworking between the RANAP messages encapsulated in MAP and the BSSMAP messages is as follows:

	29.002	48.008	Notes
Forward message	MAP FORWARD ACCESS SIG. request -an-APDU(LOCATION RELATED DATA REQUEST) RANAP information elements: Requested Location Related Data Type > Deciphering Keys for Assisted GPS	PERFORM LOCATION REQUEST BSSMAP information elements: Location Type. Location Information > deciphering keys for broadcast assistance data for the target MS Location Type. Positioning Method > Assisted GPS	1
Result	MAP PROCESS ACCESS SIG. request -an-APDU(LOCATION RELATED DATA RESPONSE) RANAP information elements: Broadcast Assistance Data Deciphering Keys	PERFORM LOCATION RESPONSE BSSMAP information elements: Deciphering Keys	

NOTE 1: All other Positioning Method possibilities are not supported by GSM when Location Information is "deciphering keys for broadcast assistance data for the target MS".

If the UE requires the delivery of De-ciphering Keys for a GSM specific method, then the anchor 3G-MSC cannot forward the request to the non anchor 3G MSC, and replies with the error "User Failure" to the LCS-MOLR message.

If the anchor 3G MSC sends a request for De-ciphering Keys for an UMTS specific method in RANAP Location Related Data Request encapsulated in MAP Forward Access Signalling, then the non anchor 3G MSC replies immediately by generating and encapsulating RANAP Location Related Data Failure with Cause "Unspecified Failure" in MAP Process Access Signalling. This traffic case can happen if an LCS-MOLR had been received in the anchor MSC before the initiation of the intra-MSC handover procedure.