3GPP TSG CN Plenary Meeting #18 **NP-020577**
4th – 6th December 2002 New Orleans, USA.

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	Addtion of reference number to deferred location request procedure	F	4.9.0
29.002	511	1	N4-021563	Rel-5	Addtion of reference number to deferred location request procedure	A	5.1.0

3GPP TSG CN WG4 Meeting #17 ***N4-021562***
Bangkok, THAILAND, 11th – 15th November 2002 **(Revision of N4-021381)**

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 **X**

Title:	⌘	Addtion of reference number to deferred location request procedure
Source:	⌘	CN4
Work item code:	⌘	LCS1
Date:	⌘	11/11/2002
Category:	⌘	**F**
Release:	⌘	Rel-4

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change:	⌘	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

		Y	N			
Other specs affected:	⌘	X		Other core specifications	⌘	23.271-CR132
			X	Test specifications		
			X	O&M Specifications		

Other comments: ⌘

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

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

<<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
		LCS-Reference Number	7.6.11.x
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
Basic Service Group	7.6.4.40
Bearer service	7.6.4.38
BSSMAP Service Handover	7.6.6.5
Call Barring Data	7.6.3.83
Call barring feature	7.6.4.19
Call barring information	7.6.4.18
Call Direction	7.6.5.8
Call Forwarding Data	7.6.3.84
Call Info	7.6.9.9
Call reference	7.6.5.1
Call Termination Indicator	7.6.3.67
Called number	7.6.2.24
Calling number	7.6.2.25
CAMEL Subscription Info	7.6.3.78
CAMEL Subscription Info Withdraw	7.6.3.38
Cancellation Type	7.6.3.52
Category	7.6.3.1
CCBS Feature	7.6.5.8
CCBS Request State	7.6.4.49
Channel Type	7.6.5.9
Chosen Channel	7.6.5.10
Chosen Radio Resource Information	7.6.6.10B
Ciphering mode	7.6.7.7
Cksn	7.6.7.5
CLI Restriction	7.6.4.5
CM service type	7.6.9.2
Complete Data List Included	7.6.3.54
CS Allocation Retention priority	7.6.3.87
CUG feature	7.6.3.26
CUG index	7.6.3.25
CUG info	7.6.3.22
CUG interlock	7.6.3.24
CUG Outgoing Access indicator	7.6.3.8
CUG subscription	7.6.3.23
CUG Subscription Flag	7.6.3.37
Current location area Id	7.6.2.6
Current password	7.6.4.21
Deferred MT-LR Data	7.6.11.3
Deferred MT-LR Response Indicator	7.6.11.2
eMLPP Information	7.6.4.41
Encryption Information	7.6.6.9
Equipment status	7.6.3.2
Extensible Basic Service Group	7.6.3.5
Extensible Bearer service	7.6.3.3
Extensible Call barring feature	7.6.3.21
Extensible Call barring information	7.6.3.20
Extensible Call barring information for CSE	7.6.3.79
Extensible Forwarding feature	7.6.3.16
Extensible Forwarding info	7.6.3.15
Extensible Forwarding information for CSE	7.6.3.80
Extensible Forwarding Options	7.6.3.18
Extensible No reply condition timer	7.6.3.19
Extensible QoS-Subscribed	7.6.3.74
Extensible SS-Data	7.6.3.29
Extensible SS-Info	7.6.3.14
Extensible SS-Status	7.6.3.17
Extensible Teleservice	7.6.3.4
External Signal Information	7.6.9.4
Failure Cause	7.6.7.9
Multiple Bearer Requested	7.6.2.53
Multiple Bearer Not Supported	7.6.2.54
MWD status	7.6.8.3
NbrUser	7.6.4.45
Network Access Mode	7.6.3.50
Network node number	7.6.2.43
Network resources	7.6.10.1
Network signal information	7.6.9.8
New password	7.6.4.20
No reply condition timer	7.6.4.7
North American Equal Access preferred Carrier Id	7.6.2.34
Number Portability Status	7.6.5.14
ODB Data	7.6.3.85
ODB General Data	7.6.3.9
ODB HPLMN Specific Data	7.6.3.10
OMC Id	7.6.2.18
Originally dialled number	7.6.2.26
Originating entity number	7.6.2.10
Override Category	7.6.4.4
P-TMSI	7.6.2.47
PDP-Address	7.6.2.45
PDP-Context identifier	7.6.3.55
PDP-Type	7.6.2.44
Pre-paging supported	7.6.5.15
Previous location area Id	7.6.2.4
Protocol Id	7.6.9.7
Provider error	7.6.1.3
QoS-Subscribed	7.6.3.47
Radio Resource Information	7.6.6.10
Radio Resource List	7.6.6.10A
RANAP Service Handover	7.6.6.6
Rand	7.6.7.2
Regional Subscription Data	7.6.3.11
Regional Subscription Response	7.6.3.12
Relocation Number List	7.6.2.19A
Requested Info	7.6.3.31
Requested Subscription Info	7.6.3.86
Roaming number	7.6.2.19
Roaming Restricted In SGSN Due To Unsupported Feature	7.6.3.49
Roaming Restriction Due To Unsupported Feature	7.6.3.13
Current Security Context	7.6.7.8
Selected RAB ID	7.6.2.56
Service centre address	7.6.2.27
Serving Cell Id	7.6.2.37
SGSN address	7.6.2.39
SGSN CAMEL Subscription Info	7.6.3.75
SGSN number	7.6.2.38
SIWF Number	7.6.2.35
SoLSA Support Indicator	7.6.3.57
SM Delivery Outcome	7.6.8.6
SM-RP-DA	7.6.8.1
SM-RP-MTI	7.6.8.16
SM-RP-OA	7.6.8.2
SM-RP-PRI	7.6.8.5
SM-RP-SMEA	7.6.8.17
SM-RP-UI	7.6.8.4
Sres	7.6.7.3
SS-Code	7.6.4.1
SS-Data	7.6.4.3
SS-Event	7.6.4.42
SS-Event-Data	7.6.4.43
SS-Info	7.6.4.24

Forwarded-to number	7.6.2.22
Forwarded-to subaddress	7.6.2.23
Forwarding feature	7.6.4.16
Forwarding information	7.6.4.15
Forwarding Options	7.6.4.6
GGSN address	7.6.2.40
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
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
SS-Status	7.6.4.2
Stored location area Id	7.6.2.5
Subscriber State	7.6.3.30
Subscriber Status	7.6.3.7
Super-Charger Supported in HLR	7.6.3.70
Super-Charger Supported in Serving Network Entity	7.6.3.71
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 T-CSI	7.6.3.33
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

<< 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 responce of a deferred mt-lr procedure as deccribed 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(=)		
LCS-Reference Number	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.

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(=)		
LCS-Reference Number	C	C(=)		
User error			C	C(=)
Provider error				O

13A.3.3 Parameter Definition and Use

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

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 reponse ~~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

```
MAP-LCS-DataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-LCS-DataTypes (25) version7 (7)}

DEFINITIONS
IMPLICIT TAGS
::=
BEGIN

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

IMPORTS
   AddressString,
   ISDN-AddressString,
   IMEI,
   IMSI,
   LMSI,
   SubscriberIdentity,
   AgeOfLocationInformation,
   LCSClientExternalID,
      LCSClientInternalID
FROM MAP-CommonDataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-CommonDataTypes (18) version7 (7)}

   ExtensionContainer
FROM MAP-ExtensionDataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version7 (7)}

   USSD-DataCodingScheme,
   USSD-String
FROM MAP-SS-DataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
   map-SS-DataTypes (14) version7 (7)}

   APN
FROM MAP-MS-DataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-MS-DataTypes (11) version7 (7)}

   Additional-Number
FROM MAP-SM-DataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-SM-DataTypes (16) version7 (7)}
;


```

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

RoutingInfoForLCS-Res ::= SEQUENCE {
     targetMS                           [0] SubscriberIdentity,
     lcsLocationInfo                    [1] LCSLocationInfo,
     extensionContainer                 [2] ExtensionContainer          OPTIONAL,
     ...}

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

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

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


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

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

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

LCS-ClientID ::= SEQUENCE {
     lcsClientType                      [0] LCSClientType,
     lcsClientExternalID                [1] LCSClientExternalID         OPTIONAL,
     lcsClientDialedByMS                [2] AddressString               OPTIONAL,
     lcsClientInternalID                [3] LCSClientInternalID         OPTIONAL,
     lcsClientName                      [4] LCSClientName               OPTIONAL,
     ...,
     lcsAPN                             [5] APN                         OPTIONAL }
```

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

LCSClientName ::= SEQUENCE {
     dataCodingScheme                   [0] USSD-DataCodingScheme,
     nameString                         [2] NameString,
     ...}

-- The USSD-DataCodingScheme shall indicate use of the default alphabet through the
-- following encoding
--   bit  7 6 5 4 3 2 1 0
--        0 0 0 0 1 1 1 1

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

maxNameStringLength  INTEGER ::= 63

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

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

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

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

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

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

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


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

```
ProvideSubscriberLocation-Res ::= SEQUENCE {
     locationEstimate                    Ext-GeographicalInformation,
     ageOfLocationEstimate               [0] AgeOfLocationInformation      OPTIONAL,
     extensionContainer                  [1] ExtensionContainer            OPTIONAL,
     ... ,
     add-LocationEstimate                [2] Add-GeographicalInformation   OPTIONAL,
     deferredmt-lrResponseIndicator      [3] NULL                          OPTIONAL }

--   if deferredmt-lrResponseIndicator is set, locationEstimate is ignored.

-- the add-LocationEstimate parameter shall not be sent to a node that did not indicate the
-- geographic shapes supported in the ProvideSubscriberLocation-Arg
-- The locationEstimate and the add-locationEstimate parameters shall not be sent if
-- the supportedGADShapes parameter has been received in ProvideSubscriberLocation-Arg
-- and the shape encoded in locationEstimate or add-LocationEstimate is not marked
-- as supported in supportedGADShapes. In such a case ProvideSubscriberLocation
-- shall be rejected with error FacilityNotSupported with additional indication
-- shapeOfLocationEstimateNotSupported
```

```
Ext-GeographicalInformation ::= OCTET STRING (SIZE (1..maxExt-GeographicalInformation))
     -- Refers to geographical Information defined in 3GPP TS 23.032.
     -- This is composed of 1 or more octets with an internal structure according to
     -- 3GPP TS 23.032
     -- Octet 1: Type of shape, only the following shapes in 3GPP TS 23.032 are allowed:
     --       (a) Ellipsoid point with uncertainty circle
     --       (b) Ellipsoid point with uncertainty ellipse
     --       (c) Ellipsoid point with altitude and uncertainty ellipsoid
     --       (d) Ellipsoid Arc
     --       (e) Ellipsoid Point
     -- Any other value in octet 1 shall be treated as invalid
     -- Octets 2 to 8 for case (a) – Ellipsoid point with uncertainty circle
     --       Degrees of Latitude                                        3 octets
     --       Degrees of Longitude                                       3 octets
     --       Uncertainty code                                           1 octet
     -- Octets 2 to 11 for case (b) – Ellipsoid point with uncertainty ellipse:
     --       Degrees of Latitude                                        3 octets
     --       Degrees of Longitude                                       3 octets
     --       Uncertainty semi-major axis                                1 octet
     --       Uncertainty semi-minor axis                                1 octet
     --       Angle of major axis                                        1 octet
     --       Confidence                                                 1 octet
     -- Octets 2 to 14 for case (c) – Ellipsoid point with altitude and uncertainty ellipsoid
     --       Degrees of Latitude                                        3 octets
     --       Degrees of Longitude                                       3 octets
     --       Altitude                                                   2 octets
     --       Uncertainty semi-major axis                                1 octet
     --       Uncertainty semi-minor axis                                1 octet
     --       Angle of major axis                                        1 octet
     --       Uncertainty altitude                                       1 octet
     --       Confidence                                                 1 octet
     -- Octets 2 to 13 for case (d) – Ellipsoid Arc
     --       Degrees of Latitude                                        3 octets
     --       Degrees of Longitude                                       3 octets
     --       Inner radius                                               2 octets
     --       Uncertainty radius                                         1 octet
     --       Offset angle                                               1 octet
     --       Included angle                                             1 octet
     --       Confidence                                                 1 octet
     -- Octets 2 to 7 for case (e) – Ellipsoid Point
     --       Degrees of Latitude                                        3 octets
     --       Degrees of Longitude                                       3 octets

     --
     -- An Ext-GeographicalInformation parameter comprising more than one octet and
     -- containing any other shape or an incorrect number of octets or coding according
     -- to 3GPP TS 23.032 shall be treated as invalid data by a receiver.
     --
     -- An Ext-GeographicalInformation parameter comprising one octet shall be discarded
     -- by the receiver if an Add-GeographicalInformation parameter is received
     -- in the same message.
     --
     -- An Ext-GeographicalInformation parameter comprising one octet shall be treated as
     -- invalid data by the receiver if an Add-GeographicalInformation parameter is not
     -- received in the same message.
```

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

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

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

```
SubscriberLocationReport-Arg ::= SEQUENCE {
     lcs-Event                      LCS-Event,
     lcs-ClientID                   LCS-ClientID,
     lcsLocationInfo                LCSLocationInfo,
     msisdn                         [0] ISDN-AddressString          OPTIONAL,
     imsi                           [1] IMSI                        OPTIONAL,
     imei                           [2] IMEI                        OPTIONAL,
     na-ESRD                        [3] ISDN-AddressString          OPTIONAL,
     na-ESRK                        [4] ISDN-AddressString          OPTIONAL,
     locationEstimate               [5] Ext-GeographicalInformation OPTIONAL,
     ageOfLocationEstimate          [6] AgeOfLocationInformation    OPTIONAL,
     extensionContainer             [7] ExtensionContainer          OPTIONAL,
     ... ,
     add-LocationEstimate           [8] Add-GeographicalInformation OPTIONAL,
     deferredmt-lrData              [9] Deferredmt-lrData           OPTIONAL,
     lcs-ReferenceNumber            [10] LCS-ReferenceNumber        OPTIONAL }

     -- one of msisdn or imsi is mandatory
     -- a location estimate that is valid for the locationEstimate parameter should
     -- be transferred in this parameter in preference to the add-LocationEstimate.
     -- the deferredmt-lrData parameter shall be included if and only if the lcs-Event
     -- indicates a deferredmt-lrResponse.
     -- if the lcs-Event indicates a deferredmt-lrResponse then the locationEstimate
     -- and the add-locationEstimate parameters shall not be sent if the
     -- supportedGADShapes parameter had been received in ProvideSubscriberLocation-Arg
     -- and the shape encoded in locationEstimate or add-LocationEstimate was not marked
     -- as supported in supportedGADShapes. In such a case terminationCause
     -- in deferredmt-lrData shall be present with value
     -- shapeOfLocationEstimateNotSupported.
     -- If a lcs event indicates deferred mt-lr response, the lcs-Reference number shall be
     -- included.
```

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

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

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

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

```
END
```

3GPP TSG CN WG4 Meeting #17 ***N4-021563***
Bangkok, THAILAND, 11th – 15th November 2002 **(Revision of N4-021382)**

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:	⌘	Addtion of reference number to deferred location request procedure
Source:	⌘	CN4
Work item code:	⌘	LCS1
Date:	⌘	11/11/2002
Category:	⌘	**A**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	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:	⌘	**Y** / **N**	Other core specifications	⌘	CR 23.271-133
		X /	Test specifications		
		/ **X**	O&M Specifications		
Other comments:	⌘				

How to create CRs using this form:

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

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

<<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
		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
B subscriber subaddress	7.6.2.49
Basic Service Group	7.6.4.40
Bearer service	7.6.4.38
BSSMAP Service Handover	7.6.6.5
Call Barring Data	7.6.3.83
Call barring feature	7.6.4.19
Call barring information	7.6.4.18
Call Direction	7.6.5.8
Call Forwarding Data	7.6.3.84
Call Info	7.6.9.9
Call reference	7.6.5.1
Call Termination Indicator	7.6.3.67
Called number	7.6.2.24
Calling number	7.6.2.25
CAMEL Subscription Info	7.6.3.78
CAMEL Subscription Info Withdraw	7.6.3.38
Cancellation Type	7.6.3.52
Category	7.6.3.1
CCBS Feature	7.6.5.8
CCBS Request State	7.6.4.49
Channel Type	7.6.5.9
Chosen Channel	7.6.5.10
Chosen Radio Resource Information	7.6.6.10B
Ciphering mode	7.6.7.7
Cksn	7.6.7.5
CLI Restriction	7.6.4.5
CM service type	7.6.9.2
Complete Data List Included	7.6.3.54
CS Allocation Retention priority	7.6.3.87
CS LCS Not Supported by UE	7.6.11.9
CUG feature	7.6.3.26
CUG index	7.6.3.25
CUG info	7.6.3.22
CUG interlock	7.6.3.24
CUG Outgoing Access indicator	7.6.3.8
CUG subscription	7.6.3.23
CUG Subscription Flag	7.6.3.37
Current location area Id	7.6.2.6
Current password	7.6.4.21
Deferred MT-LR Data	7.6.11.3
Deferred MT-LR Response Indicator	7.6.11.2
eMLPP Information	7.6.4.41
Encryption Information	7.6.6.9
Equipment status	7.6.3.2
Extensible Basic Service Group	7.6.3.5
Extensible Bearer service	7.6.3.3
Extensible Call barring feature	7.6.3.21
Extensible Call barring information	7.6.3.20
Extensible Call barring information for CSE	7.6.3.79
Extensible Forwarding feature	7.6.3.16
Extensible Forwarding info	7.6.3.15
Extensible Forwarding information for CSE	7.6.3.80
Extensible Forwarding Options	7.6.3.18
Extensible No reply condition timer	7.6.3.19
Extensible QoS-Subscribed	7.6.3.74
Extensible SS-Data	7.6.3.29
Extensible SS-Info	7.6.3.14
Extensible SS-Status	7.6.3.17
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Multiple Bearer Not Supported	7.6.2.54
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Network signal information	7.6.9.8
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No reply condition timer	7.6.4.7
North American Equal Access preferred Carrier Id	7.6.2.34
Number Portability Status	7.6.5.14
ODB Data	7.6.3.85
ODB General Data	7.6.3.9
ODB HPLMN Specific Data	7.6.3.10
OMC Id	7.6.2.18
Originally dialled number	7.6.2.26
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Override Category	7.6.4.4
P-TMSI	7.6.2.47
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PDP-Context identifier	7.6.3.55
PDP-Type	7.6.2.44
Pre-paging supported	7.6.5.15
Previous location area Id	7.6.2.4
Protocol Id	7.6.9.7
Provider error	7.6.1.3
PS LCS Not Supported by UE	7.6.11.10
QoS-Subscribed	7.6.3.47
Radio Resource Information	7.6.6.10
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Rand	7.6.7.2
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Relocation Number List	7.6.2.19A
Requested Info	7.6.3.31
Requested Subscription Info	7.6.3.86
Roaming number	7.6.2.19
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Current Security Context	7.6.7.8
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SGSN address	7.6.2.39
SGSN CAMEL Subscription Info	7.6.3.75
SGSN number	7.6.2.38
SIWF Number	7.6.2.35
SoLSA Support Indicator	7.6.3.57
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SS-Code	7.6.4.1
SS-Data	7.6.4.3

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Forwarding information	7.6.4.15
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GGSN address	7.6.2.40
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GMSC CAMEL Subscription Info	7.6.3.34
GPRS enhancements support indicator	7.6.3.73
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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
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HLR number	7.6.2.13
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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

<<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 responce of a deferred mt-lr procedure as deccribed 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(=)		
LCS-Referecne Number	C	C(=)		
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(=)		
LCS-Reference Number	C	C(=)		
User error			C	C(=)
Provider error				O

13A.3.3 Parameter Definition and Use

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

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 reponse to~~of~~ 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

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

DEFINITIONS
IMPLICIT TAGS
::=
BEGIN

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

```

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

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

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

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

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


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

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

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

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

```
ProvideSubscriberLocation-Arg ::= SEQUENCE {
     locationType                        LocationType,
     mlc-Number                          ISDN-AddressString,
     lcs-ClientID                        [0] LCS-ClientID                    OPTIONAL,
     privacyOverride                     [1] NULL                            OPTIONAL,
     imsi                                [2] IMSI                            OPTIONAL,
     msisdn                              [3] ISDN-AddressString              OPTIONAL,
     lmsi                                [4] LMSI                            OPTIONAL,
     imei                                [5] IMEI                            OPTIONAL,
     lcs-Priority                        [6] LCS-Priority                    OPTIONAL,
     lcs-QoS                             [7] LCS-QoS                         OPTIONAL,
     extensionContainer                  [8] ExtensionContainer              OPTIONAL,
     ... ,
     supportedGADShapes                  [9]  SupportedGADShapes             OPTIONAL,
     lcs-RreferenceNumber                [10] LCS-ReferenceNumber            OPTIONAL,
     lcsServiceTypeID                    [110]    LCSServiceTypeID           OPTIONAL,
     lcsCodeword                         [121]    LCSCodeword                OPTIONAL }

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

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

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

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

```
LCS-ClientID ::= SEQUENCE {
     lcsClientType                       [0] LCSClientType,
     lcsClientExternalID                 [1] LCSClientExternalID           OPTIONAL,
     lcsClientDialedByMS                 [2] AddressString                 OPTIONAL,
     lcsClientInternalID                 [3] LCSClientInternalID           OPTIONAL,
     lcsClientName                       [4] LCSClientName                 OPTIONAL,
     ...,
     lcsAPN                              [5] APN                           OPTIONAL,
     lcsRequestorID                      [6] LCSRequestorID                OPTIONAL }
```

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

```
LCSClientName ::= SEQUENCE {
     dataCodingScheme                    [0] USSD-DataCodingScheme,
     nameString                          [2] NameString,
     ...}

-- The USSD-DataCodingScheme shall indicate use of the default alphabet through the
-- following encoding
--   bit  7 6 5 4 3 2 1 0
--        0 0 0 0 1 1 1 1
```

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

```
maxNameStringLength  INTEGER ::= 63

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

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

maxRequestorIDStringLength  INTEGER ::= 127

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

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

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

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

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

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

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

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

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

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

maxLCSCodewordStringLength  INTEGER ::= 127
```

```
ProvideSubscriberLocation-Res ::= SEQUENCE {
     locationEstimate                    Ext-GeographicalInformation,
     ageOfLocationEstimate               [0] AgeOfLocationInformation      OPTIONAL,
     extensionContainer                  [1] ExtensionContainer            OPTIONAL,
     ... ,
     add-LocationEstimate                [2] Add-GeographicalInformation   OPTIONAL,
     deferredmt-lrResponseIndicator      [3] NULL                          OPTIONAL }

--   if deferredmt-lrResponseIndicator is set, locationEstimate is ignored.

-- the add-LocationEstimate parameter shall not be sent to a node that did not indicate the
-- geographic shapes supported in the ProvideSubscriberLocation-Arg
-- The locationEstimate and the add-locationEstimate parameters shall not be sent if
-- the supportedGADShapes parameter has been received in ProvideSubscriberLocation-Arg
-- and the shape encoded in locationEstimate or add-LocationEstimate is not marked
-- as supported in supportedGADShapes. In such a case ProvideSubscriberLocation
-- shall be rejected with error FacilityNotSupported with additional indication
-- shapeOfLocationEstimateNotSupported
```

```
Ext-GeographicalInformation ::= OCTET STRING (SIZE (1..maxExt-GeographicalInformation))
     -- Refers to geographical Information defined in 3GPP TS 23.032.
     -- This is composed of 1 or more octets with an internal structure according to
     -- 3GPP TS 23.032
     -- Octet 1: Type of shape, only the following shapes in 3GPP TS 23.032 are allowed:
     --       (a) Ellipsoid point with uncertainty circle
     --       (b) Ellipsoid point with uncertainty ellipse
     --       (c) Ellipsoid point with altitude and uncertainty ellipsoid
     --       (d) Ellipsoid Arc
     --       (e) Ellipsoid Point
     -- Any other value in octet 1 shall be treated as invalid
     -- Octets 2 to 8 for case (a) – Ellipsoid point with uncertainty circle
     --       Degrees of Latitude                                        3 octets
     --       Degrees of Longitude                                       3 octets
     --       Uncertainty code                                           1 octet
     -- Octets 2 to 11 for case (b) – Ellipsoid point with uncertainty ellipse:
     --       Degrees of Latitude                                        3 octets
     --       Degrees of Longitude                                       3 octets
     --       Uncertainty semi-major axis                                1 octet
     --       Uncertainty semi-minor axis                                1 octet
     --       Angle of major axis                                        1 octet
     --       Confidence                                                 1 octet
     -- Octets 2 to 14 for case (c) – Ellipsoid point with altitude and uncertainty ellipsoid
     --       Degrees of Latitude                                        3 octets
     --       Degrees of Longitude                                       3 octets
     --       Altitude                                                   2 octets
     --       Uncertainty semi-major axis                                1 octet
     --       Uncertainty semi-minor axis                                1 octet
     --       Angle of major axis                                        1 octet
     --       Uncertainty altitude                                       1 octet
     --       Confidence                                                 1 octet
     -- Octets 2 to 13 for case (d) – Ellipsoid Arc
     --       Degrees of Latitude                                        3 octets
     --       Degrees of Longitude                                       3 octets
     --       Inner radius                                               2 octets
     --       Uncertainty radius                                         1 octet
     --       Offset angle                                               1 octet
     --       Included angle                                             1 octet
     --       Confidence                                                 1 octet
     -- Octets 2 to 7 for case (e) – Ellipsoid Point
     --       Degrees of Latitude                                        3 octets
     --       Degrees of Longitude                                       3 octets

     --
     -- An Ext-GeographicalInformation parameter comprising more than one octet and
     -- containing any other shape or an incorrect number of octets or coding according
     -- to 3GPP TS 23.032 shall be treated as invalid data by a receiver.
     --
     -- An Ext-GeographicalInformation parameter comprising one octet shall be discarded
     -- by the receiver if an Add-GeographicalInformation parameter is received
     -- in the same message.
     --
     -- An Ext-GeographicalInformation parameter comprising one octet shall be treated as
     -- invalid data by the receiver if an Add-GeographicalInformation parameter is not
     -- received in the same message.
```

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

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

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

```
SubscriberLocationReport-Arg ::= SEQUENCE {
     lcs-Event                          LCS-Event,
     lcs-ClientID                       LCS-ClientID,
     lcsLocationInfo                    LCSLocationInfo,
     msisdn                             [0] ISDN-AddressString            OPTIONAL,
     imsi                               [1] IMSI                          OPTIONAL,
     imei                               [2] IMEI                          OPTIONAL,
     na-ESRD                            [3] ISDN-AddressString            OPTIONAL,
     na-ESRK                            [4] ISDN-AddressString            OPTIONAL,
     locationEstimate                   [5] Ext-GeographicalInformation   OPTIONAL,
     ageOfLocationEstimate              [6] AgeOfLocationInformation      OPTIONAL,
     extensionContainer                 [7] ExtensionContainer            OPTIONAL,
     ... ,
     add-LocationEstimate               [8] Add-GeographicalInformation   OPTIONAL,
     deferredmt-lrData                  [9] Deferredmt-lrData             OPTIONAL,
     lcs-RreferenceNumber               [10] LCS-ReferenceNumber          OPTIONAL }

     -- one of msisdn or imsi is mandatory
     -- a location estimate that is valid for the locationEstimate parameter should
     -- be transferred in this parameter in preference to the add-LocationEstimate.
     -- the deferredmt-lrData parameter shall be included if and only if the lcs-Event
     -- indicates a deferredmt-lrResponse.
     -- if the lcs-Event indicates a deferredmt-lrResponse then the locationEstimate
     -- and the add-locationEstimate parameters shall not be sent if the
     -- supportedGADShapes parameter had been received in ProvideSubscriberLocation-Arg
     -- and the shape encoded in locationEstimate or add-LocationEstimate was not marked
     -- as supported in supportedGADShapes. In such a case terminationCause
     -- in deferredmt-lrData shall be present with value
     -- shapeOfLocationEstimateNotSupported.
     -- If a lcs event indicates deferred mt-lr response, the lcs-rReference number shall be
     -- included.
```

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

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

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

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

```
END
```

3GPP TSG CN WG4 Meeting #16 ***N4-021197***
Miami, USA, 23rd – 27th September 2002

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 one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change:	⌘	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: ⌘	Y	N	
		X	Other core specifications
		X	Test specifications
		X	O&M Specifications

⌘

Other comments: ⌘

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

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

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.

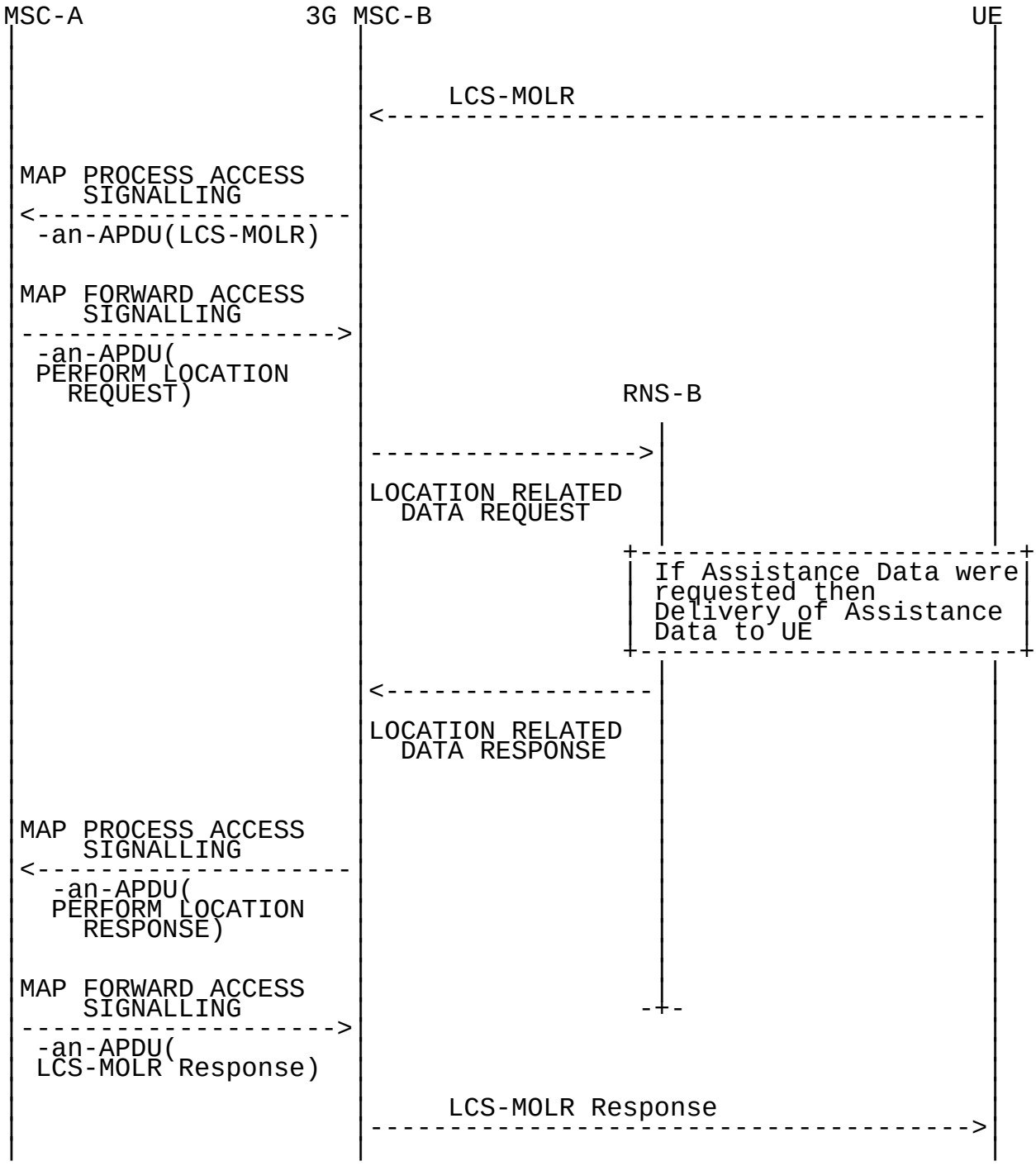

Figure 67b: Signalling for the request of Assistance Data or De-ciphering Keys

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

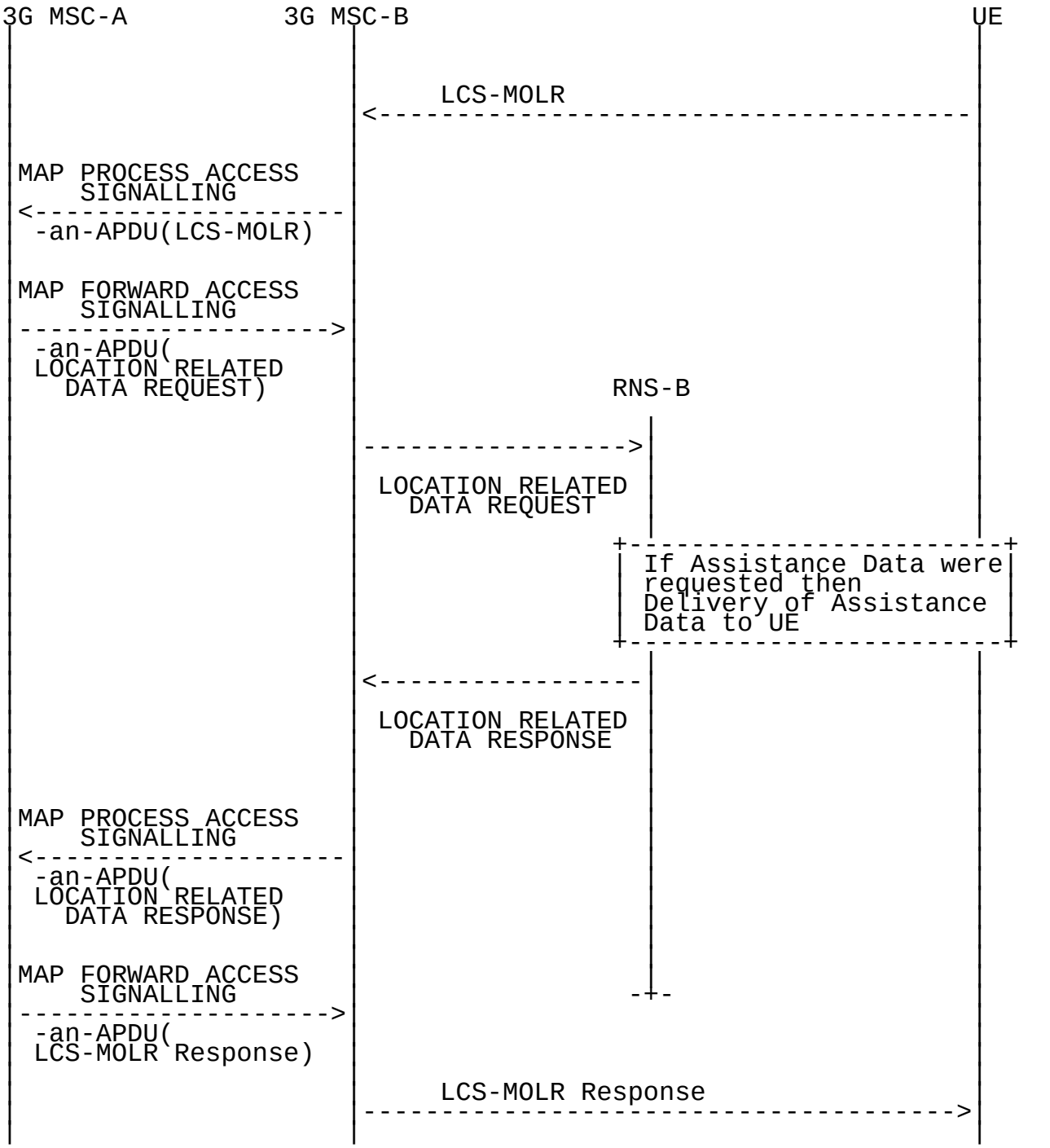

Figure 67d: Signalling for the request of Assistance Data or De-ciphering Keys

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.

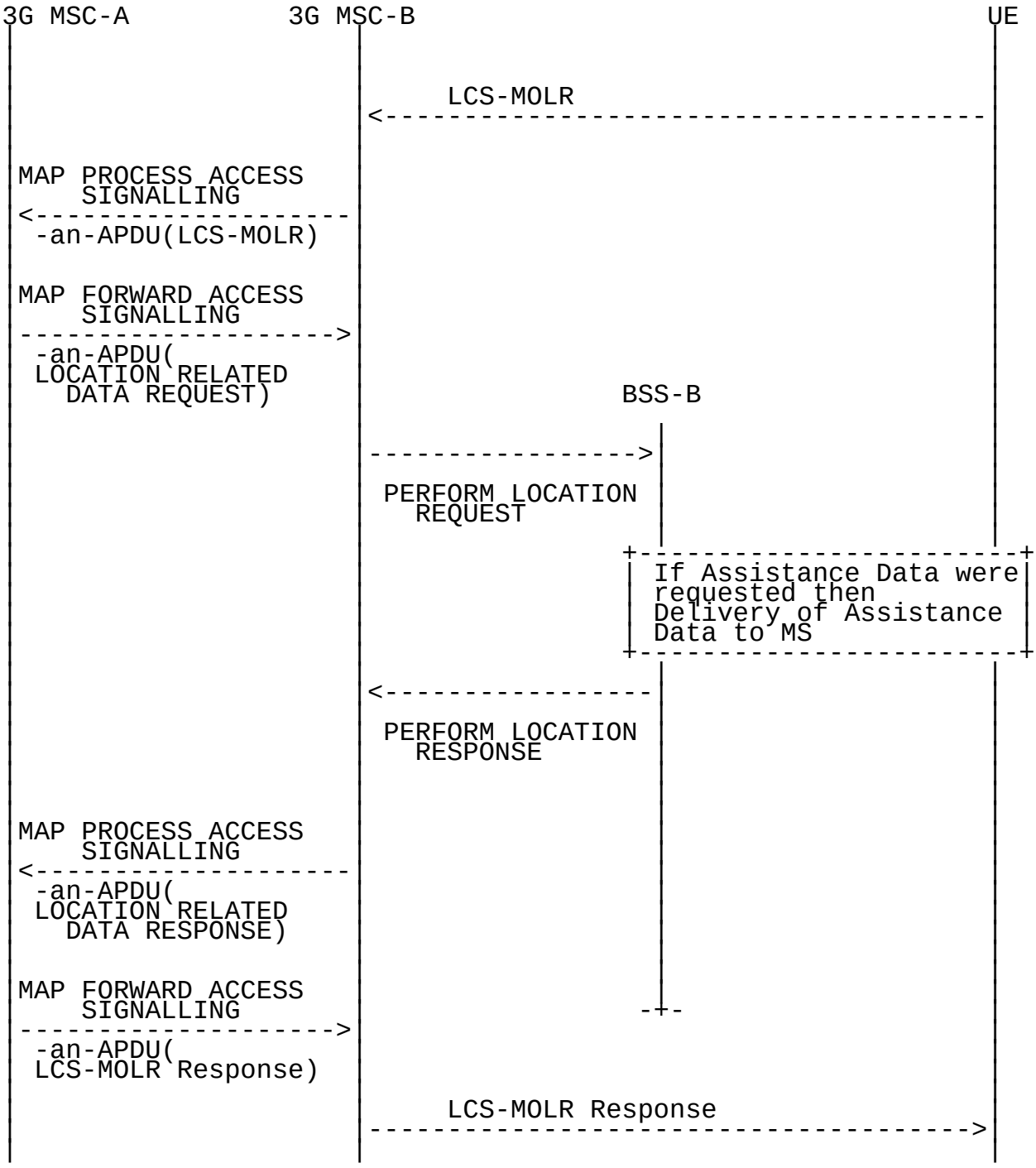

Figure 67e: Signalling for the request of Assistance Data or De-ciphering Keys

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 indicatioin 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 "~~User~~System 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.

3GPP TSG CN WG4 Meeting #16 **N4-021198**
Miami, USA, 23rd – 27th September 2002

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 one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change:	⌘	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

	Y	N			
Other specs affected:	⌘		**N**	Other core specifications	⌘
			N	Test specifications	
			N	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-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.

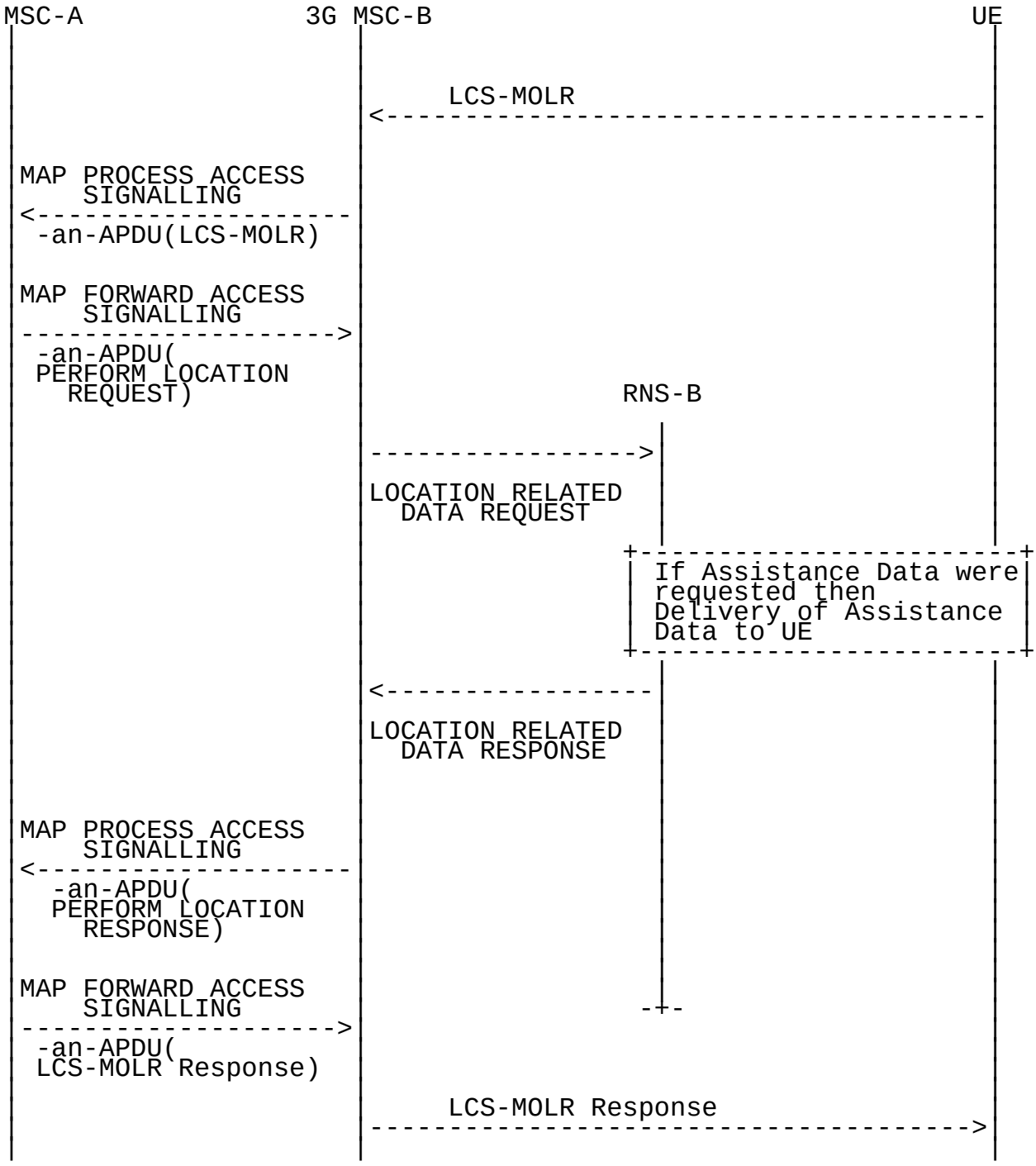

Figure 67b: Signalling for the request of Assistance Data or De-ciphering Keys

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

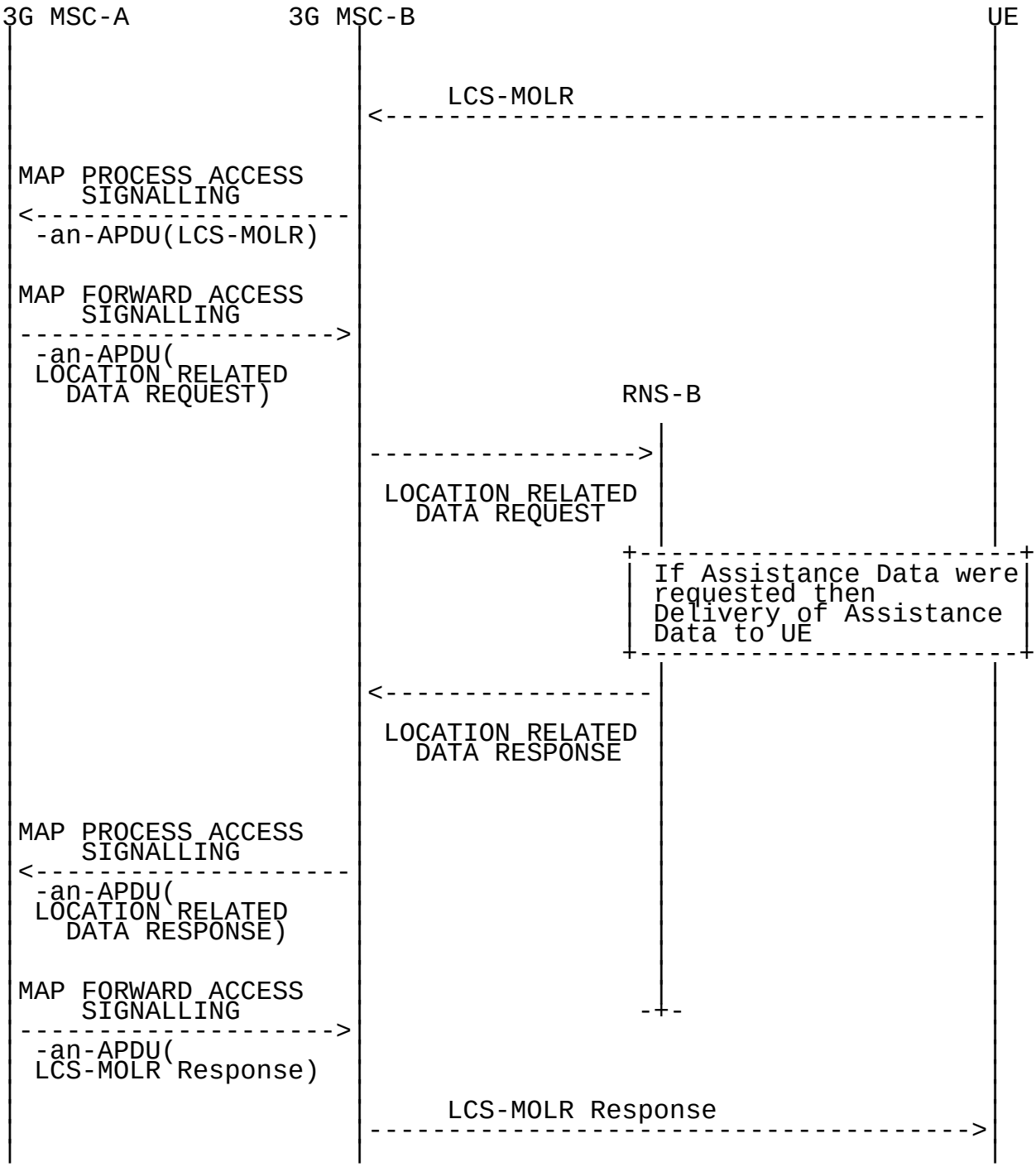

Figure 67d: Signalling for the request of Assistance Data or De-ciphering Keys

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.

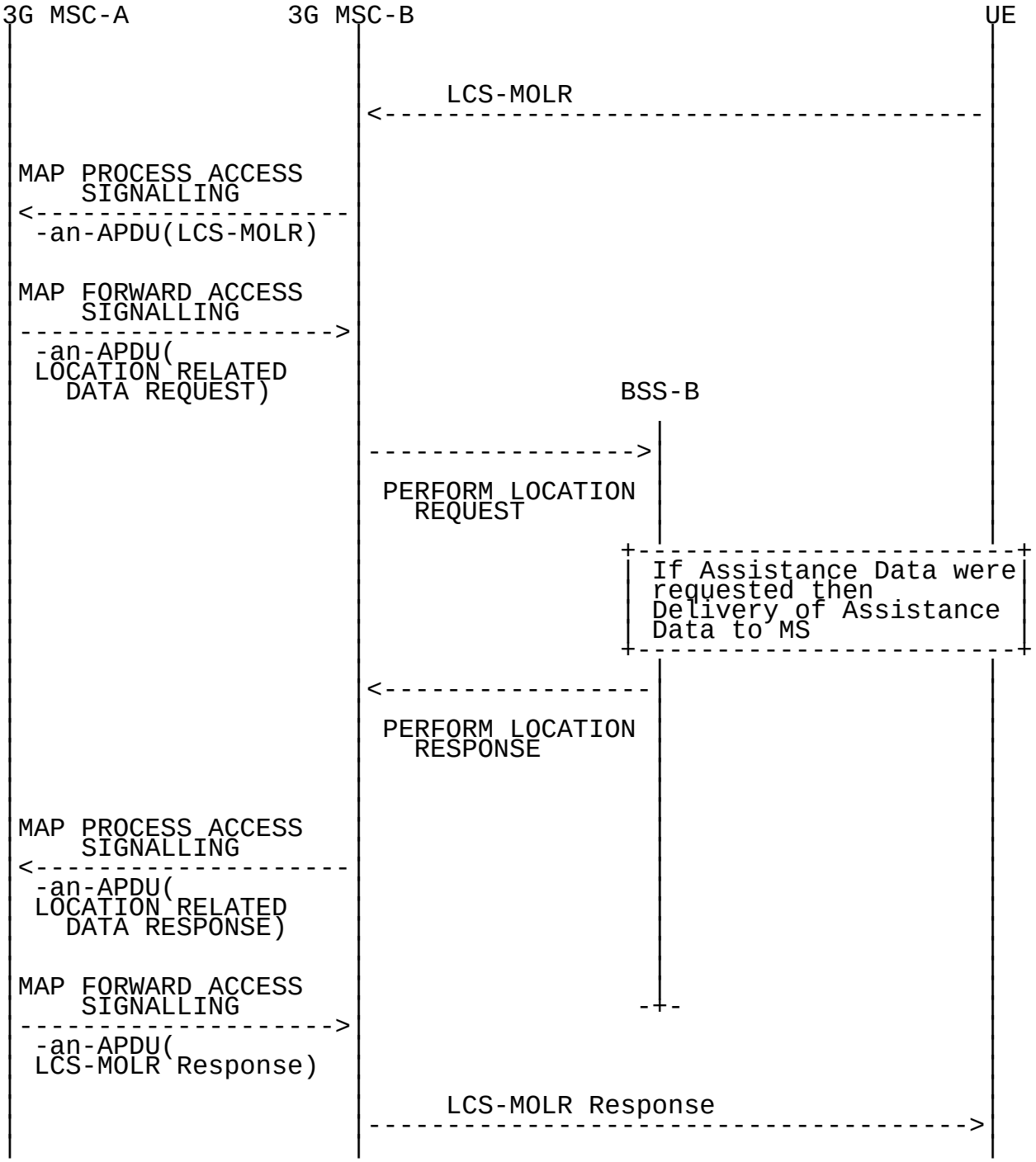

Figure 67e: Signalling for the request of Assistance Data or De-ciphering Keys

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 indicatioin 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 "~~User~~System 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.

****** 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.

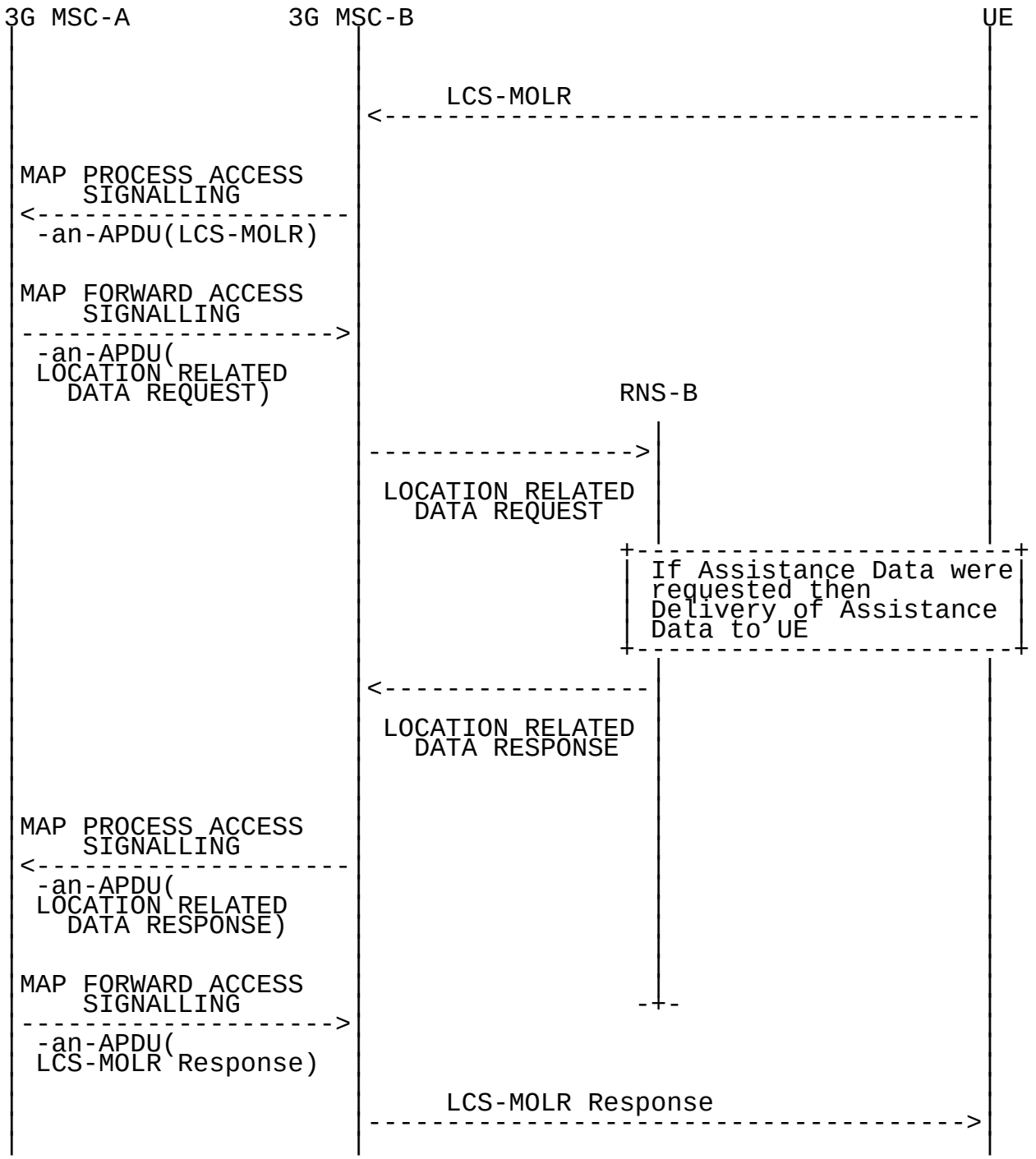

Figure 67d: Signalling for the request of Assistance Data or De-ciphering Keys

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.

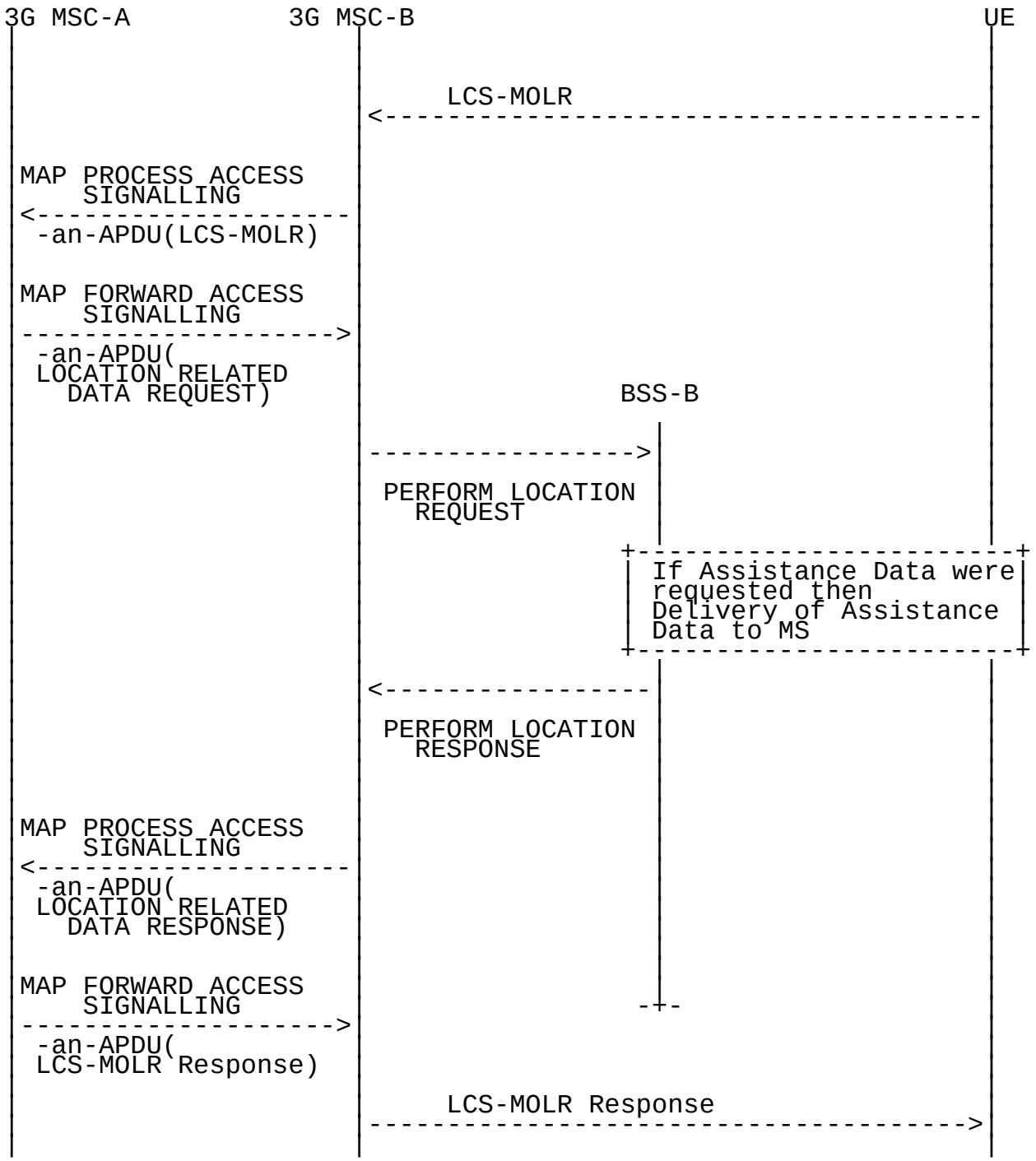

Figure 67e: Signalling for the request of Assistance Data or De-ciphering Keys

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)	PERFORM LOCATION REQUEST	
	RANAP information elements: Requested Location Related Data Type > Dedicated Assistance Data for Assisted GPS Requested GPS Assistance Data	BSSMAP information elements: Location Type, Location Information > location assistance info for target MS Location Type. Positioning Method > Assisted GPS GPS Assistance Data	1
Result	MAP PROCESS ACCESS SIG. request -an-APDU(LOCATION RELATED DATA RESPONSE)	PERFORM LOCATION RESPONSE	
	RANAP information elements:	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 indicatioin 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)	PERFORM LOCATION REQUEST	
	RANAP information elements:	BSSMAP information elements:	
	Requested Location Related Data Type > Deciphering Keys for Assisted GPS	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)	PERFORM LOCATION RESPONSE	
	RANAP information elements:	BSSMAP information elements:	
	Broadcast Assistance Data Deciphering Keys	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.

****** 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.

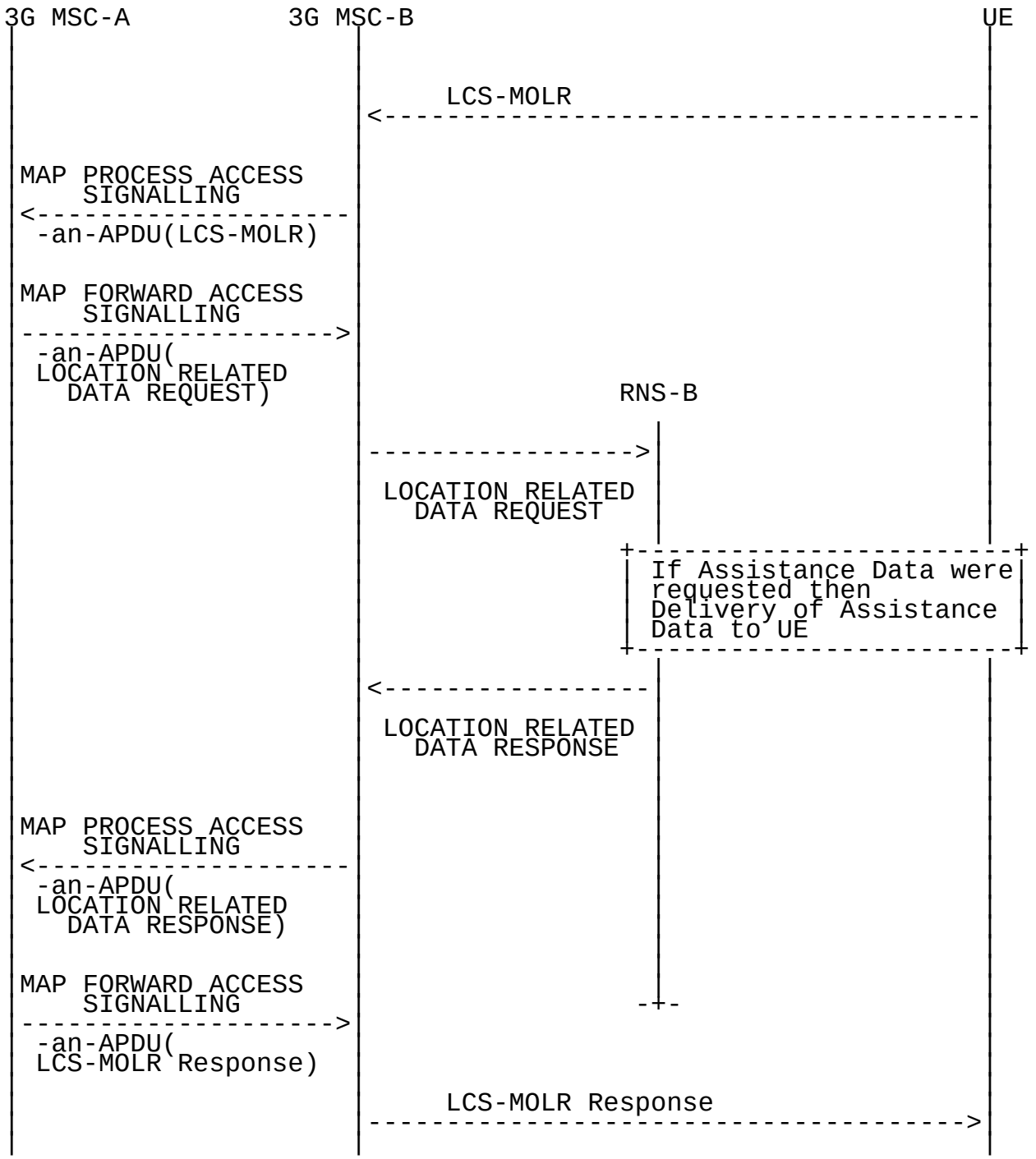

Figure 67d: Signalling for the request of Assistance Data or De-ciphering Keys

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.

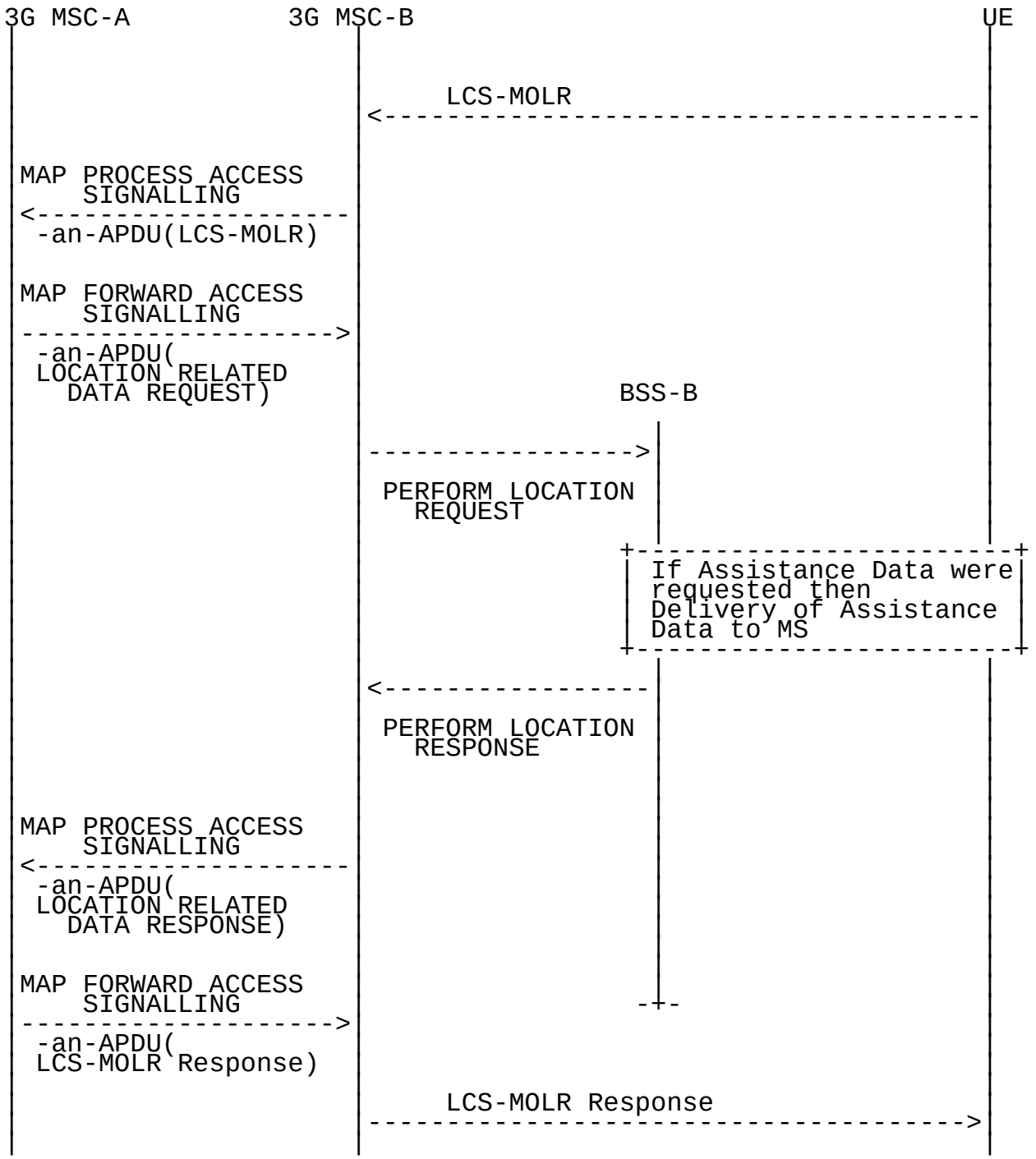

Figure 67e: Signalling for the request of Assistance Data or De-ciphering Keys

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)	PERFORM LOCATION REQUEST	
	RANAP information elements: Requested Location Related Data Type > Dedicated Assistance Data for Assisted GPS Requested GPS Assistance Data	BSSMAP information elements: Location Type, Location Information > location assistance info for target MS Location Type. Positioning Method > Assisted GPS GPS Assistance Data	1
Result	MAP PROCESS ACCESS SIG. request -an-APDU(LOCATION RELATED DATA RESPONSE)	PERFORM LOCATION RESPONSE	
	RANAP information elements:	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 indicatioin 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)	PERFORM LOCATION REQUEST	
	RANAP information elements:	BSSMAP information elements:	
	Requested Location Related Data Type > Deciphering Keys for Assisted GPS	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)	PERFORM LOCATION RESPONSE	
	RANAP information elements:	BSSMAP information elements:	
	Broadcast Assistance Data Deciphering Keys	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.