

**Source:** TSG CN WG4  
**Title:** CRs on Rel-4 & earlier Location Service Enhancement  
**Agenda item:** 7.4  
**Document for:** APPROVAL

**Introduction:**

This document contains 19 CRs on Rel-4 & earlier Work Item "LCS" & "LCS1" , that have been agreed by TSG CN WG4, and are forwarded to TSG CN Plenary meeting #16 for approval.

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
29.010	050	1	N4-020503	R99	LCS: clarification of mapping for Location Acquisition	F	3.7.0
29.010	051	1	N4-020504	Rel-4	LCS: clarification of mapping for Location Acquisition	F	4.2.0
29.002	426	1	N4-020505	R99	LCS : on error handling if shape not supported by GMLC	F	3.12.0
24.080	021		N4-020633	R99	LCS: error handling if shape not supported by MS	F	3.6.0
24.080	022		N4-020634	Rel-4	LCS: error handling if shape not supported by MS	F	4.2.0
24.080	023		N4-020635	Rel-5	LCS: error handling if shape not supported by MS	A	5.0.0
23.016	024		N4-020375	Rel-4	Clarification of introducing Session related and unrelated class	F	4.1.0
23.016	025		N4-020376	Rel-5	Clarification of introducing Session related and unrelated class	A	5.0.0
29.002	424		N4-020409	Rel-4	Clarify conditions to trigger restart of MTLR-Deferred procedure	F	4.7.0
29.002	425		N4-020410	Rel-5	Clarify conditions to trigger restart of MTLR-Deferred procedure	A	5.1.0
29.002	419	1	N4-020498	Rel-4	Clarification of introducing Session related and unrelated class	F	4.7.0
29.002	420	1	N4-020499	Rel-5	Clarification of introducing Session related and unrelated class	A	5.1.0
29.010	048	1	N4-020502	Rel-4	LCS: Mapping BSSMAP-RANAP for request of assistance data on E interface	F	4.2.0
24.080	017	1	N4-020508	Rel-4	LCS: Error handling if wrong method requested in LCS-MOLR	F	4.2.0
24.080	018	1	N4-020509	Rel-5	LCS: Error handling if wrong method requested in LCS-MOLR	A	5.0.0
29.002	429	1	N4-020510	Rel-4	Corrections on the introduction of LCS for PS domain	F	4.7.0
29.002	430	1	N4-020511	Rel-5	Corrections on the introduction of LCS for PS domain	A	5.1.0
29.002	427	2	N4-020529	Rel-4	LCS: error handling if shape not supported by GMLC	F	4.7.0
29.002	428	2	N4-020530	Rel-5	LCS: error handling if shape not supported by GMLC	A	5.1.0

## CHANGE REQUEST

⌘ **23.016 CR 024** ⌘ rev **-** ⌘ Current version: **4.1.0** ⌘

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

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Clarfication of introducing Session related and unrelated class		
<b>Source:</b>	⌘ CN4		
<b>Work item code:</b>	⌘ LCS1-PS	<b>Date:</b>	⌘ 29.03.2002
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ REL-4
	<i>Use one of the following categories:</i> <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	<i>Use one of the following releases:</i> <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>REL-4</b> (Release 4) <b>REL-5</b> (Release 5)	

<b>Reason for change:</b>	⌘ When PS LCS was introduced in stage2, "Call related" and "Call unrelated" privacy classes are expanded to "Call/session related" and "Call/session unrelated" classes respectively. It is clearly described in 23.271. However the current text in 29.002 does not reflect it in clear.
<b>Summary of change:</b>	⌘ Rename "call related class" as "call/session related class". Rename both "call unrelated class" and "non-call related class" as "call/session unrelated class".
<b>Consequences if not approved:</b>	⌘ Inconsistency between stage2 and stage3 may remain.

<b>Clauses affected:</b>	⌘ 4.5.4		
<b>Other specs affected:</b>	⌘ <input checked="" type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘ 29.002 CR419	
<b>Other comments:</b>	⌘		

### 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:

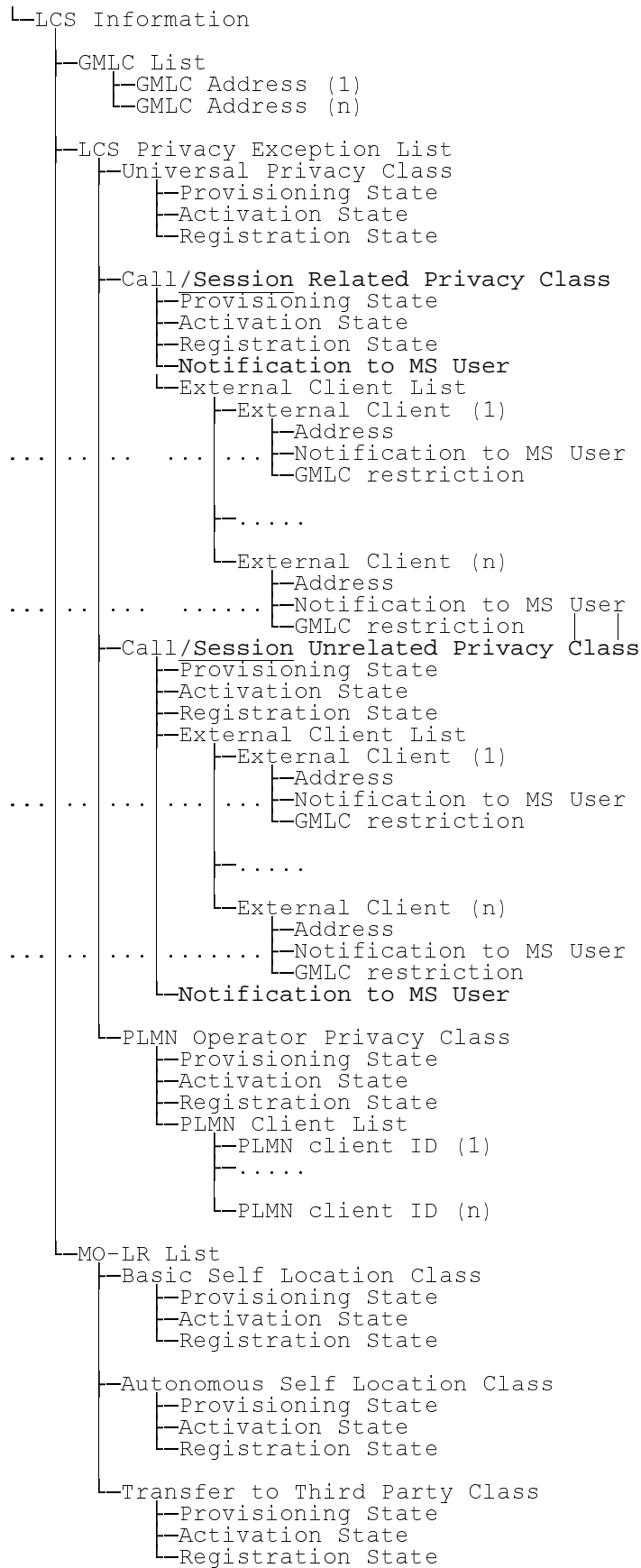
- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") 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.

**\*\*\* START OF MODIFICATION\*\*\***

**Next Change**

#### 4.5.4 Consistency of Supplementary Service data

\*\*\* SKIPPED \*\*\*



NOTE: For detailed information see 3GPP TS 23.271 and 3GPP TS 29.002.

**Figure 16: LCS Information**

\*\*\* SKIPPED \*\*\*

## CHANGE REQUEST

⌘ **23.016 CR 025** ⌘ rev **-** ⌘ Current version: **5.0.0** ⌘

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

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Clarfication of introducing Session related and unrelated class		
<b>Source:</b>	⌘ CN4		
<b>Work item code:</b>	⌘ LCS1-PS	<b>Date:</b>	⌘ 29.03.2002
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ REL-5
	<i>Use one of the following categories:</i> <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	<i>Use one of the following releases:</i> <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>REL-4</b> (Release 4) <b>REL-5</b> (Release 5)	

<b>Reason for change:</b>	⌘ When PS LCS was introduced in stage2, "Call related" and "Call unrelated" privacy classes are expanded to "Call/session related" and "Call/session unrelated" classes respectively. It is clearly described in 23.271. However the current text in 29.002 does not reflect it in clear.
<b>Summary of change:</b>	⌘ Rename "call related class" as "call/session related class". Rename both "call unrelated class" and "non-call related class" as "call/session unrelated class".
<b>Consequences if not approved:</b>	⌘ Inconsistency between stage2 and stage3 may remain.

<b>Clauses affected:</b>	⌘ 4.5.4		
<b>Other specs affected:</b>	⌘ <input checked="" type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘ 29.002 CR420	
<b>Other comments:</b>	⌘		

### 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:

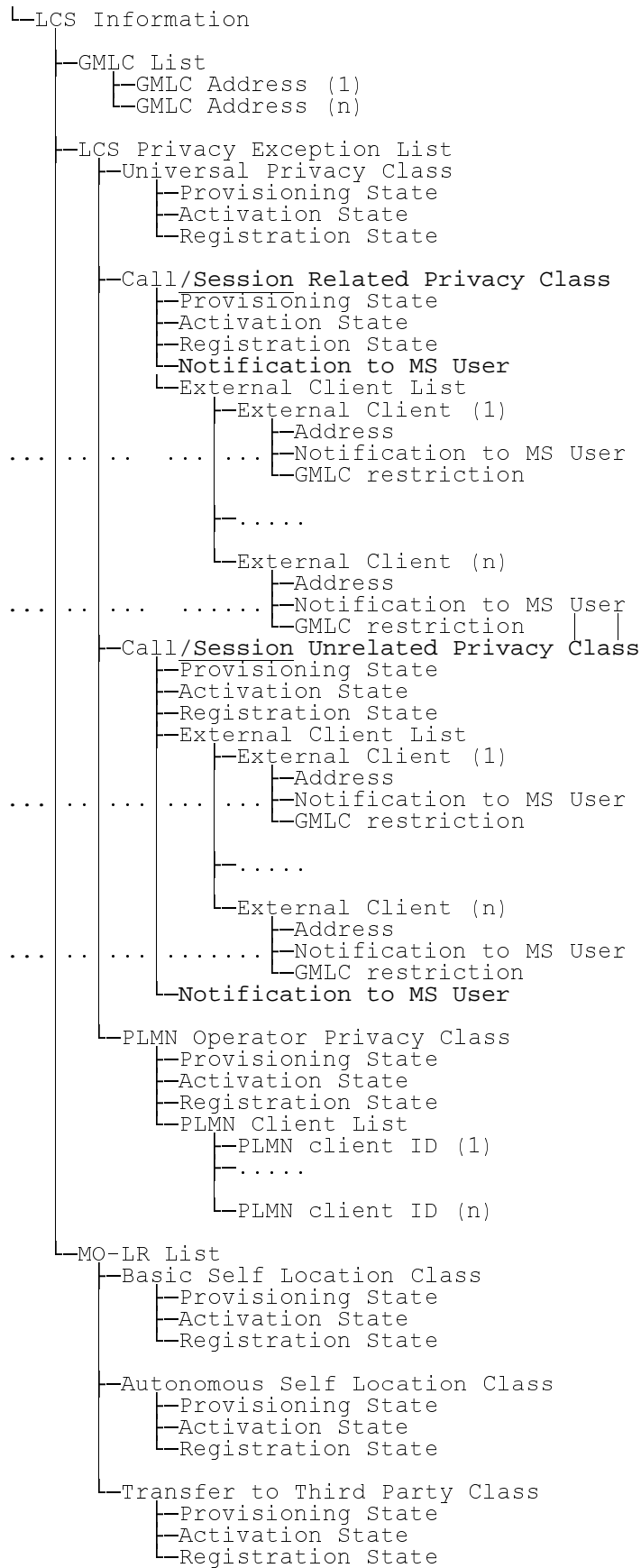
- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") 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.

\*\*\* START OF MODIFICATION\*\*\*

**Next Change**

#### 4.5.4 Consistency of Supplementary Service data

\*\*\* SKIPPED \*\*\*



NOTE: For detailed information see 3GPP TS 23.271 and 3GPP TS 29.002.

Figure 16: LCS Information

\*\*\* SKIPPED \*\*\*

## CHANGE REQUEST

⌘ **24.080 CR 017** ⌘ rev **1** ⌘ Current version: **4.2.0** ⌘

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

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ LCS: Error handling if wrong method requested in LCS-MOLR		
<b>Source:</b>	⌘ CN4		
<b>Work item code:</b>	⌘ LCS1	<b>Date:</b>	⌘ 25/03/2002
<b>Category:</b>	⌘ <b>F</b> (Agreed by consensus) Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	<b>Release:</b>	⌘ REL-4 Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

<b>Reason for change:</b>	⌘ When sending LCS-MOLR to request assistance data, the MS must provide the location method for which it requests the assistance data. Some of the methods are UMTS only, others are GSM only. Currently there's no description of the error handling when rthe MSC receives a Location Method inconsistent with the type of radio access.
<b>Summary of change:</b>	⌘ Specify the error handling when Location Method and type of radio access are incompatible
<b>Consequences if not approved:</b>	⌘ It would not be clear how to handle this error case leading to possibly different implementations

<b>Clauses affected:</b>	⌘ 4.4.2		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	
<b>Other comments:</b>	⌘		

### 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 ****
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## 4.4.2 ASN.1 data types

This subclause provides an ASN.1 module defining the abstract data types in operations and errors specification. Only data types which are specific for this specification are defined. All other data types are imported from MAP together with the import of operations and errors.

```
SS-DataTypes {
  ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Access (2) modules (3)
  ss-DataTypes (2) version7 (7)}
```

DEFINITIONS

### Unchanged text removed for clarity

-- an unrecognized value shall be treated the same as value 0 (permissionDenied)

```
LCS-MOLRArg ::= SEQUENCE {
  molr-Type [0] MOLR-Type,
  locationMethod [1] LocationMethod OPTIONAL,
  lcs-QoS [2] LCS-QoS OPTIONAL,
  lcsClientExternalID [3] LCSClientExternalID OPTIONAL,
  mlc-Number [4] ISDN-AddressString OPTIONAL,
  gpsAssistanceData [5] GPSAssistanceData OPTIONAL,
  ...,
  supportedGADShapes [6] SupportedGADShapes OPTIONAL}
```

-- The parameter locationMethod shall be included if and only if the molr-Type is set to value deCipherringKeys or assistanceData.

-- The parameter gpsAssistanceData shall be included if and only if the molr-Type is set to value assistanceData and LocationMethod is set to value assistedGPS.

```
MOLR-Type ::= ENUMERATED {
  locationEstimate (0),
  assistanceData (1),
  deCipherringKeys (2),
  ... }
```

-- exception handling:

-- an unrecognized value shall be rejected by the receiver with a return error cause of unexpected data value.

```
LocationMethod ::= ENUMERATED {
  msBasedEOTD (0),
  msAssistedEOTD (1),
  assistedGPS (2),
  ...,
  msBasedOTDOA (3),
  msAssistedOTDOA (4)
}
```

-- exception handling:

-- When this parameter is received with value msBasedEOTD or msAssistedEOTD and the MS is camping incamped on an UMTS Service Area then the receiver shall reject it with a return error cause of unexpected data value.

-- When this parameter is received with value msBasedOTDOA or msAssistedOTDOA and the MS is camping incamped on a GSM Cell then the receiver shall reject it with a return error cause of unexpected data value.

-- an unrecognized value shall be rejected by the receiver with a return error cause of unexpected data value.

```
GPSAssistanceData ::= OCTET STRING (SIZE (1..38))
```

-- Octets 1 to 38 are coded in the same way as the octets 3 to 7+2n of Requested GPS Data IE in GSM 09.31.

```
LCS-MOLRRes ::= SEQUENCE {
  locationEstimate [0] Ext-GeographicalInformation OPTIONAL,
  decipherringKeys [1] DecipherringKeys OPTIONAL,
  ...,
  add-LocationEstimate [2] Add-GeographicalInformation OPTIONAL}
```

-- Parameters locationEstimate or add-LocationEstimate (one but not both)

```
-- shall be included if and only if the
-- molr-Type in LocationRequestArg was set to value locationEstimate.
-- Parameter add-LocationEstimate shall not be included if the supportedGADShapes
-- parameter was not received in the LCS-MOLRArg.
-- Parameter decipheringKeys shall be included if and only if the molr-Type
-- in LocationRequestArg was set to value deCipherringKeys.
--
```

```
DecipheringKeys ::= OCTET STRING (SIZE (15))
-- Octets in DecipheringKeys are coded in the same way as the octets 3 to 17 of Deciphering Key IE
-- in GSM 09.31. I.e. these octets contain Current Deciphering Key, Next Deciphering Key and
-- Cipherring Key Flag.
```

END

<b>*** END OF MODIFICATIONS ***</b>
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## CHANGE REQUEST

⌘ **24.080 CR 018** ⌘ rev **1** ⌘ Current version: **5.0.0** ⌘

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

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ LCS: Error handling if wrong method requested in LCS-MOLR		
<b>Source:</b>	⌘ CN4		
<b>Work item code:</b>	⌘ LCS1	<b>Date:</b>	⌘ 25/03/2002
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ REL-5
	<i>Use one of the following categories:</i> <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		<i>Use one of the following releases:</i> <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>REL-4</b> (Release 4) <b>REL-5</b> (Release 5)

<b>Reason for change:</b>	⌘ When sending LCS-MOLR to request assistance data, the MS must provide the location method for which it requests the assistance data. Some of the methods are UMTS only, others are GSM only. Currently there's no description of the error handling when rthe MSC receives a Location Method inconsistent with the type of radio access.
<b>Summary of change:</b>	⌘ Specify the error handling when Location Method and type of radio access are incompatible
<b>Consequences if not approved:</b>	⌘ It would not be clear how to handle this error case leading to possibly different implementations

<b>Clauses affected:</b>	⌘ 4.4.2	
<b>Other specs affected:</b>	<input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘
<b>Other comments:</b>	⌘	

### 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.

**** <b>FIRST MODIFIED SECTION</b> ****
---

## 4.4.2 ASN.1 data types

This subclause provides an ASN.1 module defining the abstract data types in operations and errors specification. Only data types which are specific for this specification are defined. All other data types are imported from MAP together with the import of operations and errors.

```
SS-DataTypes {
  ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Access (2) modules (3)
  ss-DataTypes (2) version7 (7)}
```

DEFINITIONS

### Unchanged text removed for clarity

-- an unrecognized value shall be treated the same as value 0 (permissionDenied)

```
LCS-MOLRArg ::= SEQUENCE {
  molr-Type [0] MOLR-Type,
  locationMethod [1] LocationMethod OPTIONAL,
  lcs-QoS [2] LCS-QoS OPTIONAL,
  lcsClientExternalID [3] LCSClientExternalID OPTIONAL,
  mlc-Number [4] ISDN-AddressString OPTIONAL,
  gpsAssistanceData [5] GPSAssistanceData OPTIONAL,
  ...,
  supportedGADShapes [6] SupportedGADShapes OPTIONAL}
```

-- The parameter locationMethod shall be included if and only if the molr-Type is set to value deCipherringKeys or assistanceData.

-- The parameter gpsAssistanceData shall be included if and only if the molr-Type is set to value assistanceData and LocationMethod is set to value assistedGPS.

```
MOLR-Type ::= ENUMERATED {
  locationEstimate (0),
  assistanceData (1),
  deCipherringKeys (2),
  ... }
```

-- exception handling:

-- an unrecognized value shall be rejected by the receiver with a return error cause of unexpected data value.

```
LocationMethod ::= ENUMERATED {
  msBasedEOTD (0),
  msAssistedEOTD (1),
  assistedGPS (2),
  ...,
  msBasedOTDOA (3),
  msAssistedOTDOA (4)
}
```

-- exception handling:

-- When this parameter is received with value msBasedEOTD or msAssistedEOTD and the MS is camping incamped on an UMTS Service Area then the receiver shall reject it with a return error cause of unexpected data value.

-- When this parameter is received with value msBasedOTDOA or msAssistedOTDOA and the MS is camping incamped on a GSM Cell then the receiver shall reject it with a return error cause of unexpected data value.

-- an unrecognized value shall be rejected by the receiver with a return error cause of unexpected data value.

```
GPSAssistanceData ::= OCTET STRING (SIZE (1..38))
```

-- Octets 1 to 38 are coded in the same way as the octets 3 to 7+2n of Requested GPS Data IE in GSM 09.31.

```
LCS-MOLRRes ::= SEQUENCE {
  locationEstimate [0] Ext-GeographicalInformation OPTIONAL,
  decipherringKeys [1] DecipherringKeys OPTIONAL,
  ...,
  add-LocationEstimate [2] Add-GeographicalInformation OPTIONAL}
```

-- Parameters locationEstimate or add-LocationEstimate (one but not both)

```
-- shall be included if and only if the
-- molr-Type in LocationRequestArg was set to value locationEstimate.
-- Parameter add-LocationEstimate shall not be included if the supportedGADShapes
-- parameter was not received in the LCS-MOLRArg.
-- Parameter decipheringKeys shall be included if and only if the molr-Type
-- in LocationRequestArg was set to value deCipherringKeys.
--
```

```
DecipheringKeys ::= OCTET STRING (SIZE (15))
-- Octets in DecipheringKeys are coded in the same way as the octets 3 to 17 of Deciphering Key IE
-- in GSM 09.31. I.e. these octets contain Current Deciphering Key, Next Deciphering Key and
-- Cipherring Key Flag.
```

END

<b>*** END OF MODIFICATIONS ***</b>
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## CHANGE REQUEST

⌘ **24.080 CR 021** ⌘ rev **-** ⌘ Current version: **3.6.0** ⌘

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

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ LCS: error handling if shape not supported by MS		
<b>Source:</b>	⌘ CN4		
<b>Work item code:</b>	⌘ LCS	<b>Date:</b>	⌘ 29/04/2002
<b>Category:</b>	⌘ <b>F</b> (Agreed by consensus) Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	<b>Release:</b>	⌘ R99 Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

<b>Reason for change:</b>	⌘ The MS can indicate in the supported GAD Shape parameter in LCS-MOLR which of the shapes defined in 23.032 it supports. If the location estimate available to the MSC/SGSN after the positioning request has been completed is coded in a shape not supported by the MS, then the MSC/SGSN cannot send it to the MS. The error handling in such a case is not specified
<b>Summary of change:</b>	⌘ Specify what is the error handling if the shape to be sent as location estimate to the MS is not supported by MS itself
<b>Consequences if not approved:</b>	⌘ The same traffic case could be implemented in different ways by different vendors leading to interoperability problems

<b>Clauses affected:</b>	⌘ 4.4.2		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	
<b>Other comments:</b>	⌘		

### 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.

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

## 4.4.2 ASN.1 data types

This subclause provides an ASN.1 module defining the abstract data types in operations and errors specification. Only data types which are specific for this specification are defined. All other data types are imported from MAP together with the import of operations and errors.

```
SS-DataTypes {
  ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Access (2) modules (3)
  ss-DataTypes (2) version6 (6)}
```

Unchanged text removed for clarity

```
LCS-MOLRRes ::= SEQUENCE {
  locationEstimate      [0] Ext-GeographicalInformation  OPTIONAL,
  decipheringKeys       [1] DecipheringKeys              OPTIONAL,
  ...,
  add-LocationEstimate  [2] Add-GeographicalInformation  OPTIONAL}
-- Parameters locationEstimate or add-LocationEstimate (one but not both)
-- shall be included if and only if the
-- molr-Type in LocationRequestArg was set to value locationEstimate.
-- Parameter add-LocationEstimate shall not be included if the supportedGADShapes
-- parameter was not received in the LCS-MOLRArg.
-- The locationEstimate and the add-locationEstimate parameters shall not be sent if
-- the supportedGADShapes parameter has been received in LCS-MOLRArg
-- and the shape encoded in locationEstimate or add-LocationEstimate is not marked
-- as supported in supportedGADShapes. In such a case LCS-MOLRArg
-- shall be rejected with error FacilityNotSupported.
-- Parameter decipheringKeys shall be included if and only if the molr-Type
-- in LocationRequestArg was set to value deCIPHERINGKEYS.
--

DecipheringKeys ::= OCTET STRING (SIZE (15))
-- Octets in DecipheringKeys are coded in the same way as the octets 3 to 17 of Deciphering Key IE
-- in GSM 09.31. I.e. these octets contain Current Deciphering Key, Next Deciphering Key and
-- CIPHERINGKEYFLAG.
```

END



## CHANGE REQUEST

⌘ **24.080 CR 022** ⌘ rev **-** ⌘ Current version: **4.2.0** ⌘

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

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ LCS: error handling if shape not supported by MS		
<b>Source:</b>	⌘ CN4		
<b>Work item code:</b>	⌘ LCS1	<b>Date:</b>	⌘ 29/04/2002
<b>Category:</b>	⌘ <b>F</b> (Agreed by consensus) Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	<b>Release:</b>	⌘ <b>R4</b> Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

<b>Reason for change:</b>	⌘ The MS can indicate in the supported GAD Shape parameter in LCS-MOLR which of the shapes defined in 23.032 it supports. If the location estimate available to the MSC/SGSN after the positioning request has been completed is coded in a shape not supported by the MS, then the MSC/SGSN cannot send it to the MS. The error handling in such a case is not specified
<b>Summary of change:</b>	⌘ Specify what is the error handling if the shape to be sent as location estimate to the MS is not supported by MS itself
<b>Consequences if not approved:</b>	⌘ The same traffic case could be implemented in different ways by different vendors leading to interoperability problems

<b>Clauses affected:</b>	⌘ 4.4.2		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications	⌘ <input type="checkbox"/>	<input type="checkbox"/> Test specifications
	<input type="checkbox"/> O&M Specifications		
<b>Other comments:</b>	⌘		

### 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.

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

## 4.4.2 ASN.1 data types

This subclause provides an ASN.1 module defining the abstract data types in operations and errors specification. Only data types which are specific for this specification are defined. All other data types are imported from MAP together with the import of operations and errors.

```
SS-DataTypes {
  ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Access (2) modules (3)
  ss-DataTypes (2) version7 (7)}
```

Unchanged text removed for clarity

```
LCS-MOLRRes ::= SEQUENCE {
  locationEstimate      [0] Ext-GeographicalInformation      OPTIONAL,
  decipheringKeys       [1] DecipheringKeys                  OPTIONAL,
  ...,
  add-LocationEstimate [2] Add-GeographicalInformation        OPTIONAL}
-- Parameters locationEstimate or add-LocationEstimate (one but not both)
-- shall be included if and only if the
-- molr-Type in LocationRequestArg was set to value locationEstimate.
-- Parameter add-LocationEstimate shall not be included if the supportedGADShapes
-- parameter was not received in the LCS-MOLRArg.
-- The locationEstimate and the add-locationEstimate parameters shall not be sent if
-- the supportedGADShapes parameter has been received in LCS-MOLRArg
-- and the shape encoded in locationEstimate or add-LocationEstimate is not marked
-- as supported in supportedGADShapes. In such a case LCS-MOLRArg
-- shall be rejected with error FacilityNotSupported with additional indication
-- shapeOfLocationEstimateNotSupported.
-- Parameter decipheringKeys shall be included if and only if the molr-Type
-- in LocationRequestArg was set to value deCipherringKeys.
--
```

```
DecipheringKeys ::= OCTET STRING (SIZE (15))
-- Octets in DecipheringKeys are coded in the same way as the octets 3 to 17 of Deciphering Key IE
-- in GSM 09.31. I.e. these octets contain Current Deciphering Key, Next Deciphering Key and
-- Cipherring Key Flag.
```

END

## CHANGE REQUEST

⌘ **24.080 CR 023** ⌘ rev **-** ⌘ Current version: **5.0.0** ⌘

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

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ LCS: error handling if shape not supported by MS		
<b>Source:</b>	⌘ CN4		
<b>Work item code:</b>	⌘ LCS	<b>Date:</b>	⌘ 29/04/2002
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ REL-5
	<i>Use one of the following categories:</i> <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		<i>Use one of the following releases:</i> <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>REL-4</b> (Release 4) <b>REL-5</b> (Release 5)

<b>Reason for change:</b>	⌘ The MS can indicate in the supported GAD Shape parameter in LCS-MOLR which of the shapes defined in 23.032 it supports. If the location estimate available to the MSC/SGSN after the positioning request has been completed is coded in a shape not supported by the MS, then the MSC/SGSN cannot send it to the MS. The error handling in such a case is not specified
<b>Summary of change:</b>	⌘ Specify what is the error handling if the shape to be sent as location estimate to the MS is not supported by MS itself
<b>Consequences if not approved:</b>	⌘ The same traffic case could be implemented in different ways by different vendors leading to interoperability problems

<b>Clauses affected:</b>	⌘ 4.4.2		
<b>Other specs affected:</b>	<input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	
<b>Other comments:</b>	⌘		

### 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.

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

## 4.4.2 ASN.1 data types

This subclause provides an ASN.1 module defining the abstract data types in operations and errors specification. Only data types which are specific for this specification are defined. All other data types are imported from MAP together with the import of operations and errors.

```
SS-DataTypes {
  ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Access (2) modules (3)
  ss-DataTypes (2) version7 (7)}
```

Unchanged text removed for clarity

```
LCS-MOLRRes ::= SEQUENCE {
  locationEstimate      [0] Ext-GeographicalInformation      OPTIONAL,
  decipheringKeys       [1] DecipheringKeys                  OPTIONAL,
  ...,
  add-LocationEstimate  [2] Add-GeographicalInformation      OPTIONAL}
-- Parameters locationEstimate or add-LocationEstimate (one but not both)
-- shall be included if and only if the
-- molr-Type in LocationRequestArg was set to value locationEstimate.
-- Parameter add-LocationEstimate shall not be included if the supportedGADShapes
-- parameter was not received in the LCS-MOLRArg.
-- The locationEstimate and the add-locationEstimate parameters shall not be sent if
-- the supportedGADShapes parameter has been received in LCS-MOLRArg
-- and the shape encoded in locationEstimate or add-LocationEstimate is not marked
-- as supported in supportedGADShapes. In such a case LCS-MOLRArg
-- shall be rejected with error FacilityNotSupported with additional indication
-- shapeOfLocationEstimateNotSupported.
-- Parameter decipheringKeys shall be included if and only if the molr-Type
-- in LocationRequestArg was set to value deCipherringKeys.
--
```

```
DecipheringKeys ::= OCTET STRING (SIZE (15))
-- Octets in DecipheringKeys are coded in the same way as the octets 3 to 17 of Deciphering Key IE
-- in GSM 09.31. I.e. these octets contain Current Deciphering Key, Next Deciphering Key and
-- Cipherring Key Flag.
```

END

## CHANGE REQUEST

⌘ **29.002 CR 419** ⌘ rev **1** ⌘ Current version: **4.7.0** ⌘

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

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Clarfication of introducing Session related and unrelated class		
<b>Source:</b>	⌘ CN4		
<b>Work item code:</b>	⌘ LCS1-PS	<b>Date:</b>	⌘ 11.04.2002
<b>Category:</b>	⌘ <b>F</b> (Agreed by consensus) Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <u>TR 21.900</u> .	<b>Release:</b>	⌘ <b>REL-4</b> Use <u>one</u> of the following releases: <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>REL-4</b> (Release 4) <b>REL-5</b> (Release 5)

<b>Reason for change:</b>	⌘ When PS LCS was introduced in stage2, "Call related" and "Call unrelated" privacy classes are expanded to "Call/session related" and "Call/session unrelated" classes respectively. It is clearly described in 23.271. However the current text in 29.002 does not reflect it in clear.
<b>Summary of change:</b>	⌘ Rename "call related class" as "call/session related class". Rename both "call unrelated class" and "non-call related class" as "call/session unrelated class".
<b>Consequences if not approved:</b>	⌘ Inconsistency between stage2 and stage3 may remain.

<b>Clauses affected:</b>	⌘ 7.6.1.4(i), 7.6.3.61, 7.6.3.64, 7.6.3.65B, 7.6.4.44, 17.7.1, 17.7.5		
<b>Other specs affected:</b>	⌘ <input checked="" type="checkbox"/> Other core specifications	⌘ 23.016 CR024	
	<input type="checkbox"/> Test specifications		
	<input type="checkbox"/> O&M Specifications		
<b>Other comments:</b>	⌘		

### 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.

<b>*** START OF MODIFICATION***</b>
-------------------------------------

#### 7.6.1.4 User error

**\*\*\* SKIPPED \*\*\***

i) Location services problem:

- Unauthorised Requesting Network
- Unauthorised LCS Client with detailed reasons as follows:
  - Unauthorised Privacy Class
  - Unauthorised Call/Session Unrelated External Client
  - Unauthorised Call/Session Related External Client
- Privacy override not applicable
- Position method failure with detailed reasons as follows:
  - Congestion
  - Insufficient resources
  - Insufficient Measurement Data
  - Inconsistent Measurement Data
  - Location procedure not completed
  - QoS not attainable
  - Position Method Not Available in Network
  - Position Method Not Available in Location Area
- Unknown or unreachable LCS Client.

j) Problem detected by an application using secure transport:

- Secure transport error. This error indicates that the application using secure transport returned an error. The parameter of the error indicates:
  - The protected payload, which carries the result of applying the protection function specified in 3G TS 33.200 to the encoding of the parameter of the original error.

<b>Next Change</b>
--------------------

#### 7.6.3.61 GMLC List

This parameter contains the addresses of all GMLCs that are permitted to issue a ~~non-call/session~~ call/session unrelated or call/session related MT-LR location request for this MS. Usage of this parameter is defined in 3G TS 23.271.

<b>Next Change</b>
--------------------

#### 7.6.3.64 External Client List

This parameter is only applicable to the ~~non-call/session~~ call/session unrelated privacy class and call/session related privacy class, and gives the identities of the external clients that are allowed to locate a target MS for a MT-LR. Each identity is an international (e.g.E.164) address. For each identified external client, GMLC restrictions may be defined. It may also be indicated if the MS shall be notified of a non-restricted MT-LR from each identified LCS client and, if so, whether



notification only or notification with privacy verification shall apply. Usage of this parameter is defined in 3G TS 23.271.

### Next Change

#### 7.6.3.65B Privacy Notification to MS User

This parameter is applicable to the ~~non-call/session~~ unrelated privacy class and call/session related privacy class. For ~~non-call/call-related~~ each privacy class it indicates whether the MS user shall be notified for a ~~non-call/call-related~~ that class MT-LR from any value added LCS client when the MT-LR is restricted and be enabled to accept or override the restriction. Usage of this parameter is defined in 3G TS 23.271.

### Next Change

#### 7.6.4.44 LCS Privacy Exceptions

Distinct SS codes are assigned to the following classes of LCS client in a target MS subscriber's privacy exception list.

- Universal Class;
- Call/session related value added class;
- ~~Non-Call/session~~ unrelated value added class;
- PLMN operator class.

### Next Change

#### 17.7.1 Mobile Service data types

\*\*\* SKIPPED \*\*\*

```

LCS-PrivacyClass ::= SEQUENCE {
    ss-Code                SS-Code,
    ss-Status              Ext-SS-Status,
    notificationToMSUser  [0] NotificationToMSUser           OPTIONAL,
    -- notificationToMSUser may be sent only for SS-codes callsSession#Related
    -- and callsSession#Unrelated. If not received for SS-codes callsSession#Related
    -- and callsSession#Unrelated,
    -- the default values according to 3G TS 23.271 shall be assumed.
    externalClientList    [1] ExternalClientList             OPTIONAL,
    -- externalClientList may be sent only for SS-code callsSession#Unrelated to a
    -- visited node that does not support LCS Release 4 or later versions.
    -- externalClientList may be sent only for SS-codes callsSession#Unrelated and
    -- callsSession#Related to a visited node that supports LCS Release 4 or later versions.
    plmnClientList        [2] PLMNClientList                 OPTIONAL,
    -- plmnClientList may be sent only for SS-code plmnoperator.
    extensionContainer    [3] ExtensionContainer             OPTIONAL,
    ...,
    ext-externalClientList [4] Ext-ExternalClientList        OPTIONAL
    -- Ext-externalClientList may be sent only if the visited node supports LCS Release 4 or
    -- later versions, the user did specify more than 5 clients, and White Book SCCP is used.
    -- if segmentation is used, the complete LCS-PrivacyClass shall be sent in one segment
}

```

\*\*\* SKIPPED \*\*\*

### Next Change

## 17.7.5 Supplementary service codes

\*\*\* SKIPPED \*\*\*

<b>allLCSPrivacyException</b>	SS-Code ::= '10110000'B
-- all LCS Privacy Exception Classes	
<b>universal</b>	SS-Code ::= '10110001'B
-- allow location by any LCS client	
<b>callsSessionRelated</b>	SS-Code ::= '10110010'B
-- allow location by any value added LCS client to which a <u>call/session</u>	
-- is established from the target MS	
<b>callsSessionUnrelated</b>	SS-Code ::= '10110011'B
-- allow location by designated external value added LCS clients	
<b>plmnoperator</b>	SS-Code ::= '10110100'B
-- allow location by designated PLMN operator LCS clients	

<b>allMOLR-SS</b>	SS-Code ::= '11000000'B
-- all Mobile Originating Location Request Classes	
<b>basicSelfLocation</b>	SS-Code ::= '11000001'B
-- allow an MS to request its own location	
<b>autonomousSelfLocation</b>	SS-Code ::= '11000010'B
-- allow an MS to perform self location without interaction	
-- with the PLMN for a predetermined period of time	
<b>transferToThirdParty</b>	SS-Code ::= '11000011'B
-- allow an MS to request transfer of its location to another LCS client	

\*\*\* SKIPPED \*\*\*

## CHANGE REQUEST

⌘ **29.002 CR 420** ⌘ rev **1-** ⌘ 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:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Clarfication of introducing Session related and unrelated class		
<b>Source:</b>	⌘ NTT DoCoMo, NTT Comware		
<b>Work item code:</b>	⌘ LCS1-PS	<b>Date:</b>	⌘ 11.04.29.03.2002
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ REL-5
	<i>Use one of the following categories:</i> <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	<i>Use one of the following releases:</i> <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>REL-4</b> (Release 4) <b>REL-5</b> (Release 5)	

<b>Reason for change:</b>	⌘ When PS LCS was introduced in stage2, "Call related" and "Call unrelated" privacy classes are expanded to "Call/session related" and "Call/session unrelated" classes respectively. It is clearly described in 23.271. However the current text in 29.002 does not reflect it in clear.
<b>Summary of change:</b>	⌘ Rename "call related class" as "call/session related class". Rename both "call unrelated class" and "non-call related class" as "call/session unrelated class".
<b>Consequences if not approved:</b>	⌘ Inconsistency between stage2 and stage3 may remain.

<b>Clauses affected:</b>	⌘ 7.6.1.4(i), 7.6.3.61, 7.6.3.64, 7.6.3.65B, 7.6.4.44, 17.7.1, 17.7.5		
<b>Other specs affected:</b>	⌘ <input checked="" type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘ 23.016 CR025	
<b>Other comments:</b>	⌘		

### 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.

*** START OF MODIFICATION***
------------------------------

#### 7.6.1.4 User error

\*\*\* SKIPPED \*\*\*

i) Location services problem:

- Unauthorised Requesting Network
- Unauthorised LCS Client with detailed reasons as follows:
  - Unauthorised Privacy Class
  - Unauthorised Call/Session Unrelated External Client
  - Unauthorised Call/Session Related External Client
- Privacy override not applicable
- Position method failure with detailed reasons as follows:
  - Congestion
  - Insufficient resources
  - Insufficient Measurement Data
  - Inconsistent Measurement Data
  - Location procedure not completed
  - QoS not attainable
  - Position Method Not Available in Network
  - Position Method Not Available in Location Area
- Unknown or unreachable LCS Client.

j) Problem detected by an application using secure transport:

- Secure transport error. This error indicates that the application using secure transport returned an error. The parameter of the error indicates:
  - The protected payload, which carries the result of applying the protection function specified in 3G TS 33.200 to the encoding of the parameter of the original error.

<b>Next Change</b>
--------------------

#### 7.6.3.61 GMLC List

This parameter contains the addresses of all GMLCs that are permitted to issue a ~~non-call/session~~ call/session unrelated or call/session related MT-LR location request for this MS. Usage of this parameter is defined in 3G TS 23.271.

<b>Next Change</b>
--------------------

#### 7.6.3.64 External Client List

This parameter is only applicable to the ~~non-call/session~~ call/session unrelated privacy class and call/session related privacy class, and gives the identities of the external clients that are allowed to locate a target MS for a MT-LR. Each identity is an international (e.g.E.164) address. For each identified external client, GMLC restrictions may be defined. It may also be indicated if the MS shall be notified of a non-restricted MT-LR from each identified LCS client and, if so, whether

notification only or notification with privacy verification shall apply. Usage of this parameter is defined in 3G TS 23.271.

### Next Change

#### 7.6.3.65B Privacy Notification to MS User

This parameter is applicable to the ~~non-call/session~~ unrelated privacy class and call/session related privacy class. For ~~non-call/call-related~~ each privacy class it indicates whether the MS user shall be notified for a ~~non-call/call-related~~ that class MT-LR from any value added LCS client when the MT-LR is restricted and be enabled to accept or override the restriction. Usage of this parameter is defined in 3G TS 23.271.

### Next Change

#### 7.6.4.44 LCS Privacy Exceptions

Distinct SS codes are assigned to the following classes of LCS client in a target MS subscriber's privacy exception list.

- Universal Class;
- Call/session related value added class;
- ~~Non-Call/session~~ unrelated value added class;
- PLMN operator class.

### Next Change

#### 17.7.1 Mobile Service data types

\*\*\* SKIPPED \*\*\*

```

LCS-PrivacyClass ::= SEQUENCE {
    ss-Code                SS-Code,
    ss-Status              Ext-SS-Status,
    notificationToMSUser  [0] NotificationToMSUser           OPTIONAL,
    -- notificationToMSUser may be sent only for SS-codes callsSession#Related
    -- and callsSession#Unrelated. If not received for SS-codes callsSession#Related
    -- and callsSession#Unrelated,
    -- the default values according to 3G TS 23.271 shall be assumed.
    externalClientList    [1] ExternalClientList             OPTIONAL,
    -- externalClientList may be sent only for SS-code callsSession#Unrelated to a
    -- visited node that does not support LCS Release 4 or later versions.
    -- externalClientList may be sent only for SS-codes callsSession#Unrelated and
    -- callsSession#Related to a visited node that supports LCS Release 4 or later versions.
    plmnClientList        [2] PLMNClientList                 OPTIONAL,
    -- plmnClientList may be sent only for SS-code plmnoperator.
    extensionContainer    [3] ExtensionContainer             OPTIONAL,
    ...,
    ext-externalClientList [4] Ext-ExternalClientList        OPTIONAL
    -- Ext-externalClientList may be sent only if the visited node supports LCS Release 4 or
    -- later versions, the user did specify more than 5 clients, and White Book SCCP is used.
    -- if segmentation is used, the complete LCS-PrivacyClass shall be sent in one segment
}

```

\*\*\* SKIPPED \*\*\*

### Next Change

## 17.7.5 Supplementary service codes

\*\*\* SKIPPED \*\*\*

<b>allLCSPrivacyException</b>	SS-Code ::= '10110000'B
-- all LCS Privacy Exception Classes	
<b>universal</b>	SS-Code ::= '10110001'B
-- allow location by any LCS client	
<b>callsSessionRelated</b>	SS-Code ::= '10110010'B
-- allow location by any value added LCS client to which a <u>call/session</u>	
-- is established from the target MS	
<b>callsSessionUnrelated</b>	SS-Code ::= '10110011'B
-- allow location by designated external value added LCS clients	
<b>plmnoperator</b>	SS-Code ::= '10110100'B
-- allow location by designated PLMN operator LCS clients	

<b>allMOLR-SS</b>	SS-Code ::= '11000000'B
-- all Mobile Originating Location Request Classes	
<b>basicSelfLocation</b>	SS-Code ::= '11000001'B
-- allow an MS to request its own location	
<b>autonomousSelfLocation</b>	SS-Code ::= '11000010'B
-- allow an MS to perform self location without interaction	
-- with the PLMN for a predetermined period of time	
<b>transferToThirdParty</b>	SS-Code ::= '11000011'B
-- allow an MS to request transfer of its location to another LCS client	

\*\*\* SKIPPED \*\*\*

## CHANGE REQUEST

⌘ **29.002 CR 424** ⌘ rev **-** ⌘ Current version: **4.7.0** ⌘

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

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Clarify conditions to trigger restart of MTLR-Deferred procedure		
<b>Source:</b>	⌘ CN4		
<b>Work item code:</b>	⌘ LCS1	<b>Date:</b>	⌘ 27/03/2002
<b>Category:</b>	⌘ <b>F</b> (Agreed by consensus) Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	<b>Release:</b>	⌘ REL-4 Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

<b>Reason for change:</b>	⌘ The current text describing the cases where the restart of MTLR-Deferred location procedure is triggered by the visited MSC/SGSN can lead to some confusion. Indeed now it's mentioned that an Implicit Detach can lead to a restart of the procedure but this is incorrect since, when the MSC/SGSN performs an implicit detach it does not remove the subscriber record. Restarting the procedure in this case shall only waste signalling and processing power in GMLC, MSC/SGSN and HLR since the HLR would give to the GMLC the same MSC/SGSN address, and the MSC/SGSN would only queue again the deferred location request. MSC/SGSN should trigger again a restart of the procedure only if the VLR/SGSN has received Cancel Location from HLR, or for example Send Identification from a new VLR. Only in this cases restarting the procedure might lead to success.
<b>Summary of change:</b>	⌘ Clarify the conditions to trigger a restart of the MTLR-Deferred location
<b>Consequences if not approved:</b>	⌘ Waste of signalling and processing power in GMLC, HLR and MSC/SGSN due to useless triggering of a new MTLR-Deferred procedure

<b>Clauses affected:</b>	⌘ 7.6.11.3, 17.7.13		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	
<b>Other comments:</b>	⌘ <b>Warning:</b> The base document for this CR is the draft version of 29.002 v4.7.0		

**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 \*\*\*\***

### 7.6.11.3 Deferred MT-LR Data

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

**\*\*\*\* 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

*Unchanged text removed for clarity*

```
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 }

-- 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.
```

```
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),
  ... }
-- 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 autonomously deregistered due to a Cancel Location received from HLR by the serving
node (e.g. implicit detach).
--
-- exception handling
-- an unrecognized value shall be treated the same as value 1 (errorundefined)
```

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

END

**\*\*\* END OF MODIFICATIONS \*\*\***

## CHANGE REQUEST

⌘ **29.002 CR 425** ⌘ 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:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Clarify conditions to trigger restart of MTLR-Deferred procedure		
<b>Source:</b>	⌘ CN4		
<b>Work item code:</b>	⌘ LCS1	<b>Date:</b>	⌘ 27/03/2002
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ REL-5
	<i>Use one of the following categories:</i> <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	<i>Use one of the following releases:</i> <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>REL-4</b> (Release 4) <b>REL-5</b> (Release 5)	

<b>Reason for change:</b>	⌘ The current text describing the cases where the restart of MTLR-Deferred location procedure is triggered by the visited MSC/SGSN can lead to some confusion. Indeed now it's mentioned that an Implicit Detach can lead to a restart of the procedure but this is incorrect since, when the MSC/SGSN performs an implicit detach it does not remove the subscriber record. Restarting the procedure in this case shall only waste signalling and processing power in GMLC, MSC/SGSN and HLR since the HLR would give to the GMLC the same MSC/SGSN address, and the MSC/SGSN would only queue again the deferred location request. MSC/SGSN should trigger again a restart of the procedure only if the VLR/SGSN has received Cancel Location from HLR, or for example Send Identification from a new VLR. Only in this cases restarting the procedure might lead to success.
<b>Summary of change:</b>	⌘ Clarify the conditions to trigger a restart of the MTLR-Deferred location
<b>Consequences if not approved:</b>	⌘ Waste of signalling and processing power in GMLC, HLR and MSC/SGSN due to useless triggering of a new MTLR-Deferred procedure

<b>Clauses affected:</b>	⌘ 7.6.11.3, 17.7.13		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	
<b>Other comments:</b>	⌘ <b>Warning:</b> The base document for this CR is the draft version of 29.002 v5.1.0		

**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 \*\*\*\***

### 7.6.11.3 Deferred MT-LR Data

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

**\*\*\*\* 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)}
```

*Unchanged text removed for clarity*

```
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 }

-- 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.
```

```
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),
  ... }
-- 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 autonomously deregistered due to a Cancel Location received from HLR.by the
servicing node (e.g implicit detach).
--
-- exception handling
-- an unrecognized value shall be treated the same as value 1 (errorundefined)
```

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

END

**\*\*\* END OF MODIFICATIONS \*\*\***

## CHANGE REQUEST

⌘ **29.002 CR 426** ⌘ rev **1** ⌘ Current version: **3.12.0** ⌘

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

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ LCS : on error handling if shape not supported by GMLC		
<b>Source:</b>	⌘ Ericsson		
<b>Work item code:</b>	⌘ LCS	<b>Date:</b>	⌘ 29/03/2002
<b>Category:</b>	⌘ <b>F</b> (Agreed by consensus) Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	<b>Release:</b>	⌘ REL-99 Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

<b>Reason for change:</b>	⌘ The GMLC can indicate in the supported GAD Shape parameter in Provide Subscriber Location which of the shapes defined in 23.032 it supports. If the location estimate available to the MSC/SGSN after the positioning request has been completed is coded in a shape not supported by the GMLC, then the MSC/SGSN cannot send it to the GMCL. The error handling in such a case is not specified
<b>Summary of change:</b>	⌘ Specify what is the error handling if the shape to be sent as location estimate to the GMLC is not supported by GMLC itself
<b>Consequences if not approved:</b>	⌘ The same traffic case could be implemented in different ways by different vendors leading to interoperability problems

<b>Clauses affected:</b>	⌘ 17.7.13		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	
<b>Other comments:</b>	⌘ <b>Warning:</b> The base document for this CR is the draft version of 29.002 v3.12.0		

### 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 \*\*\*\***

### 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) version6 (6)}

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) version6 (6)}

  ExtensionContainer
FROM MAP-ExtensionDataTypes {
  ccitt identified-organization (4) etsi (0) mobileDomain (0)
  gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version6 (6)}

  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) version6 (6)}
;

```

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

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

<b>LCSLocationInfo</b> ::= SEQUENCE {			
msc-Number		ISDN-AddressString,	
lmsi		[0] LMSI	OPTIONAL,
extensionContainer		[1] ExtensionContainer	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 }

-- one of imsi or msisdn is mandatory

```

```

LocationType ::= SEQUENCE {
    locationEstimateType        [0] LocationEstimateType,
    ... }

```

```

LocationEstimateType ::= ENUMERATED {
    currentLocation             (0),
    currentOrLastKnownLocation (1),
    initialLocation             (2),
    ... }
-- exception handling:
-- a ProvideSubscriberLocation-Arg containing an unrecognized LocationEstimateType
-- 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,
    ... }

```

```

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),
    ellipsoidPointWithAltitudeAndUncertaintyEllipsoid (5),
    ellipsoidArc (6) } (SIZE (7..16))
-- A node shall mark in the BIT STRING all Shapes defined in 3GPP TS 23.032 it supports.
-- exception handling: bits 7 to 15 shall be ignored if received.

```

```

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

```

```

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 }

-- 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

```

```

LCS-Event ::= ENUMERATED {
  emergencyCallOrigination (0),
  emergencyCallRelease (1),
  mo-lr (2),
  ... }
-- 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

```

```

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

```

END

\*\*\* END OF MODIFICATIONS \*\*\*

3GPP TSG CN WG4 Meeting #13  
 Fort Lauderdale, US, 8<sup>th</sup> April – 12<sup>th</sup> April 2002

N4-020529

CR-Form-v5.1
<b>CHANGE REQUEST</b>
⌘ <b>29.002 CR 427</b> ⌘ rev <b>2</b> ⌘ Current version: <b>4.7.0</b> ⌘

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

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ LCS: error handling if shape not supported by GMLC		
<b>Source:</b>	⌘ CN4		
<b>Work item code:</b>	⌘ LCS1	<b>Date:</b>	⌘ 29/03/2002
<b>Category:</b>	⌘ <b>F</b> (Agreed by consensus) Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	<b>Release:</b>	⌘ REL-4 Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

<b>Reason for change:</b>	⌘ The GMLC can indicate in the supported GAD Shape parameter in Provide Subscriber Location which of the shapes defined in 23.032 it supports. If the location estimate available to the MSC/SGSN after the positioning request has been completed is coded in a shape not supported by the GMLC, then the MSC/SGSN cannot send it to the GMLC. The error handling in such a case is not specified
<b>Summary of change:</b>	⌘ Specify what is the error handling if the shape to be sent as location estimate to the GMLC is not supported by GMLC itself
<b>Consequences if not approved:</b>	⌘ The same traffic case could be implemented in different ways by different vendors leading to interoperability problems

<b>Clauses affected:</b>	⌘ 7.6.1.4, 17.7.7, 17.7.13		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	
<b>Other comments:</b>	⌘ <b>Warning:</b> The base document for this CR is the draft version of 29.002 v3.C.0		

**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** \*\*\*\*

#### 7.6.1.4 User error

This parameter can take values as follows:

NOTE: The values are grouped in order to improve readability; the grouping has no other significance.

#### Unchanged text removed for clarity

a) Generic error:

- system failure, i.e. a task cannot be performed because of a problem in another entity. The type of entity or network resource may be indicated by use of the network resource parameter;
- data missing, i.e. an optional parameter required by the context is missing;
- unexpected data value, i.e. the data type is formally correct but its value or presence is unexpected in the current context;
- resource limitation;
- initiating release, i.e. the receiving entity has started the release procedure;
- facility not supported, i.e. the requested facility is not supported by the PLMN with detailed reasons as follows:
  - Shape of location estimate not supported by GMLC;
- incompatible terminal, i.e. the requested facility is not supported by the terminal.

#### Unchanged text removed for clarity

\*\*\*\* **FIRST MODIFIED SECTION** \*\*\*\*

### 17.7.7 Error data types

```
MAP-ER-DataTypes {
  ccitt identified-organization (4) etsi (0) mobileDomain (0)
  gsm-Network (1) modules (3) map-ER-DataTypes (17) version7 (7)}
```

DEFINITIONS

#### Unchanged text removed for clarity

<pre> FacilityNotSupParam ::= SEQUENCE {     extensionContainer          ExtensionContainer          OPTIONAL,     ...     shapeOfLocationEstimateNotSupportedByCMLC [0] NULL    OPTIONAL} </pre>
---

Unchanged text removed for clarity

\*\*\*\* 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}
-- one of imsi or msisdn is mandatory

```

```

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

```

```

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

```

```

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

```

```

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

```

```

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 3G 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 3G 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 3G TS 23.032 it supports.
-- exception handling: bits 7 to 15 shall be ignored if received.

```

```

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 systemFailureFacilityNotSupported with additional indication
-- shapeOfLocationEstimateNotSupportedByGMLC.

```

```

Ext-GeographicalInformation ::= OCTET STRING (SIZE (1..maxExt-GeographicalInformation))
-- Refers to geographical Information defined in 3G TS 23.032.
-- This is composed of 1 or more octets with an internal structure according to
-- 3G TS 23.032
-- Octet 1: Type of shape, only the following shapes in 3G 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 3G 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 3G TS 23.032 to be included in later
-- versions of 3G TS 29.002

```

```

Add-GeographicalInformation ::= OCTET STRING (SIZE (1..maxAdd-GeographicalInformation))
-- Refers to geographical Information defined in 3G TS 23.032.
-- This is composed of 1 or more octets with an internal structure according to
-- 3G TS 23.032
-- Octet 1: Type of shape, all the shapes defined in 3G TS 23.032 are allowed:
-- Octets 2 to n (where n is the total number of octets necessary to encode the shape
-- according to 3G TS 23.032) are used to encode the shape itself in accordance with the
-- encoding defined in 3G 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
-- 3G TS 23.032 or an incorrect number of octets or coding according to
-- 3G 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 3G 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 }

-- 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
-- shapeOfLocationEstimateNotSupportedByGMLCerrorundefined.

```

```

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),
shapeOfLocationEstimateNotSupportedByGMLC (6),
    ...
    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 autonomously deregistered by the serving node (e.g implicit detach).
--
-- exception handling
-- an unrecognized value shall be treated the same as value 1 (errorundefined)
```

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

END

\*\*\* END OF MODIFICATIONS \*\*\*

3GPP TSG CN WG4 Meeting #13  
 Fort Lauderdale, US, 8<sup>th</sup> April – 12<sup>th</sup> April 2002

N4-020530

CR-Form-v5.1	<b>CHANGE REQUEST</b>
⌘ <b>29.002 CR 428</b> ⌘ rev <b>2</b> ⌘ Current version: <b>5.1.0</b> ⌘	

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

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ LCS: error handling if shape not supported by GMLC		
<b>Source:</b>	⌘ CN4		
<b>Work item code:</b>	⌘ LCS1	<b>Date:</b>	⌘ 29/03/2002
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ REL-5
	Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)	

<b>Reason for change:</b>	⌘ The GMLC can indicate in the supported GAD Shape parameter in Provide Subscriber Location which of the shapes defined in 23.032 it supports. If the location estimate available to the MSC/SGSN after the positioning request has been completed is coded in a shape not supported by the GMLC, then the MSC/SGSN cannot send it to the GMLC. The error handling in such a case is not specified
<b>Summary of change:</b>	⌘ Specify what is the error handling if the shape to be sent as location estimate to the GMLC is not supported by GMLC itself
<b>Consequences if not approved:</b>	⌘ The same traffic case could be implemented in different ways by different vendors leading to interoperability problems

<b>Clauses affected:</b>	⌘ 7.6.1.4, 17.7.7, 17.7.13		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	
<b>Other comments:</b>	⌘ <b>Warning:</b> The base document for this CR is the draft version of 29.002 v5.1.0		

**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 \*\*\*\***

#### 7.6.1.4 User error

This parameter can take values as follows:

NOTE: The values are grouped in order to improve readability; the grouping has no other significance.

#### Unchanged text removed for clarity

a) Generic error:

- system failure, i.e. a task cannot be performed because of a problem in another entity. The type of entity or network resource may be indicated by use of the network resource parameter;
- data missing, i.e. an optional parameter required by the context is missing;
- unexpected data value, i.e. the data type is formally correct but its value or presence is unexpected in the current context;
- resource limitation;
- initiating release, i.e. the receiving entity has started the release procedure;
- facility not supported, i.e. the requested facility is not supported by the PLMN with detailed reasons as follows:
  - Shape of location estimate not supported by GMLC;
- incompatible terminal, i.e. the requested facility is not supported by the terminal.

#### Unchanged text removed for clarity

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

### 17.7.7 Error data types

```
MAP-ER-DataTypes {  
  ccitt identified-organization (4) etsi (0) mobileDomain (0)  
  gsm-Network (1) modules (3) map-ER-DataTypes (17) version7 (7)}
```

DEFINITIONS

#### Unchanged text removed for clarity

<pre> <b>FacilityNotSupParam</b> ::= SEQUENCE {     extensionContainer          ExtensionContainer          OPTIONAL,     ...     shapeOfLocationEstimateNotSupportedByCMLC [0] NULL    OPTIONAL} </pre>
--

Unchanged text removed for clarity

\*\*\*\* 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,
    LCSRequestorID
;

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}

-- one of imsi or msisdn is mandatory
```

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

```
LocationEstimateType ::= ENUMERATED {
  currentLocation          (0),
  currentOrLastKnownLocation (1),
  initialLocation          (2),
  ... ,
  activateDeferredLocation (3),
  cancelDeferredLocation   (4) }

-- exception handling:
-- a ProvideSubscriberLocation-Arg containing an unrecognized LocationEstimateType
-- shall be rejected by the receiver with a return error cause of unexpected data value
```

```
DeferredLocationEventType ::= BIT STRING {
  msAvailable              (0) } (SIZE (1..16))

-- exception handling
-- a ProvideSubscriberLocation-Arg containing other values than listed above in
-- DeferredLocationEventType shall be rejected by the receiver with a return error cause of
-- unexpected data value.
```

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

lcsClientName	[4] LCSClientName	OPTIONAL,
...		
lcsAPN	[5] APN	OPTIONAL,
lcsRequestorID	[6] LCSRequestorID	OPTIONAL }

```

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 (0..maxRequestorIDStringLength))

```

```

maxRequestorIDStringLength INTEGER ::= 127

```

```

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

```

```

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

```

```

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

```

```

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

```

```

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

```

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

```
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
-- shapeOfLocationEstimateNotSupportedByGMLSystemFailure.
```

```

Ext-GeographicalInformation ::= OCTET STRING (SIZE (1..maxExt-GeographicalInformation))
-- Refers to geographical Information defined in 3G TS 23.032.
-- This is composed of 1 or more octets with an internal structure according to
-- 3G TS 23.032
-- Octet 1: Type of shape, only the following shapes in 3G 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 3G 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 3G TS 23.032 to be included in later
-- versions of 3G TS 29.002

```

```

Add-GeographicalInformation ::= OCTET STRING (SIZE (1..maxAdd-GeographicalInformation))
-- Refers to geographical Information defined in 3G TS 23.032.
-- This is composed of 1 or more octets with an internal structure according to
-- 3G TS 23.032
-- Octet 1: Type of shape, all the shapes defined in 3G TS 23.032 are allowed:
-- Octets 2 to n (where n is the total number of octets necessary to encode the shape
-- according to 3G TS 23.032) are used to encode the shape itself in accordance with the
-- encoding defined in 3G 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
-- 3G TS 23.032 or an incorrect number of octets or coding according to
-- 3G 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 3G 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 }

  -- 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
  -- shapeOfLocationEstimateNotSupportedByGMLCerrorundefined.

```

```

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),
  shapeOfLocationEstimateNotSupportedByGMLC (6),
  ... ,
  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 autonomously deregistered by the serving node (e.g implicit detach).
  --
  -- exception handling
  -- an unrecognized value shall be treated the same as value 1 (errorundefined)

```

```

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

```

END

**\*\*\* END OF MODIFICATIONS \*\*\***

## CHANGE REQUEST

⌘ **29.002 CR 429** ⌘ rev **1** ⌘ Current version: **4.7.0** ⌘

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

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Corrections on the introduction of LCS for PS domain		
<b>Source:</b>	⌘ Siemens		
<b>Work item code:</b>	⌘ LCS1	<b>Date:</b>	⌘ 11.04.02
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ Rel-4
	<i>Use one of the following categories:</i> <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		<i>Use one of the following releases:</i> <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>REL-4</b> (Release 4) <b>REL-5</b> (Release 5)

<b>Reason for change:</b>	⌘ To clarify that the LCS procedures between MSC and GMLC are also applicable between SGSN and GMLC
<b>Summary of change:</b>	⌘ Add the locationSvcEnquiryContext to the priority table of ACs in the SGSN; Add the SGSN-GMLC interface to table 6.1/1 and to the ASN.1 section.
<b>Consequences if not approved:</b>	⌘ Incomplete LCS description.

<b>Clauses affected:</b>	⌘ Table 5.1/3, 6.1.3.10B, 6.1.3.11, 17.2.2.45, 17.2.2.45A, 17.3.2.40		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications	⌘ <input type="checkbox"/>	
	<input type="checkbox"/> Test specifications	<input type="checkbox"/>	
	<input type="checkbox"/> O&M Specifications	<input type="checkbox"/>	
<b>Other comments:</b>	⌘		

### 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.

**Table 5.1/3: Priorities of Application Contexts for SGSN as Responder**

<b>Responder = SGSN</b>	<b>Initiating Entity</b>
<b>Priority high</b>	
<u>Mobility and Location Register Management</u>	
locationCancel (cancelLocation v3)	HLR
reset (reset)	HLR
subscriberDataMngt (insertSubscriberData v3), (deleteSubscriberData v3)	HLR
tracing (activateTraceMode), (deactivateTraceMode)	HLR
<u>Short Message Service</u>	
shortMsgMT-Relay (MT-ForwardSM v3) (forwardSM v1/v2)	MSC
<u>Location Services</u>	
<u>locationSvcEnquiry</u> (provideSubscriberLocation v3)	<u>GMLC</u>
<u>Network-Requested PDP context activation</u>	
gprsNotify HLR (noteMsPresentForGprs v3),	
<b>Priority low</b>	

NOTE: The application context name is the last component but one of the object identifier. Operation names are given in brackets for information with "/vn" appended to vn.

\*\*\*\*\*Next Modification\*\*\*\*\*

### 6.1.3.10B The Gateway Mobile Location Centre (GMLC)

The GMLC initiates location requests on behalf of external clients. The E.164 address of the GMLC is provided to an HLR when the GMLC requests a serving MSC address [or SGSN address](#) from the HLR for a target MS. The E.164 address of the GMLC is also provided to a serving MSC [or SGSN](#) when the GMLC requests the location of a target MS served by this MSC [or SGSN](#).

### 6.1.3.11 Summary table

The following tables summarise the SCCP address used for invoke operations. As a principle, within a PLMN either an SPC or a GT may be used (network operation option), whereas when addressing an entity outside the PLMN the GT must be used. The address type mentioned in the table (e.g. MSISDN) is used as GT or to derive the SPC.



For a response, the originating address passed in the invoke is used as SCCP Called Party Address. For extra-PLMN addressing the own E.164 entity address is used as SCCP Calling Party Address; for intra-PLMN addressing an SPC derived from the entity number may be used instead. When using an SPC, the SPC may be taken directly from MTP.

Table 6.1/1

to from	fixed net work	HLR	VLR	MSC	EIR	gsmSCF	SIWF	SGSN	GGSN
fixed network	---	E:GT T:MSISDN	---	---	---	---	---	---	---
Home Location Register	---	---	I:SPC/GT E:GT T:VLR NUMBER	---	---	I:SPC/GT E:GT T:gsmSCF NUMBER	---	I:SPC/GT E:GT T:SGSN NUMBER	I:SPC/GT E:GT T:GGSN NUMBER
Visitor Location Register	---	I:SPC/GT E:GT T:MGT (outside World Zone 1)/MSISDN (World Zone 1)/HLR NUMBER (note)	I:SPC/GT E:GT T:VLR NUMBER	---	---	I:SPC/GT E:GT T:gsmSCF NUMBER	---	---	---
mobile-services switching centre	---	I:SPC/GT E:GT T:MSISDN	I:SPC/GT E:GT T:VLR NUMBER	I:SPC/GT E:GT T:MSC NUMBER	I:SPC/GT E:GT T:EIR NUMBER	I:SPC/GT E:GT T:gsmSCF NUMBER	I:SPC/GT E:GT T:SIWF NUMBER	I:SPC/GT E:GT T:SGSN NUMBER	---
gsm Service Control Function	---	I:SPC/GT E:GT T:MSISDN	---	---	---	---	---	---	---
Shared Inter Working Function	---	---	---	I:SPC/GT E:GT T:MSC NUMBER	---	---	---	---	---
Serving GPRS Support Node	---	I:SPC/GT E:GT T:MGT/ MSISDN/ HLR NUMBER	---	I:SPC/GT E:GT T:MSC NUMBER	I:SPC/GT E:GT T:EIR NUMBER	---	---	---	---
Gateway GPRS Support Node	---	I:SPC/GT E:GT T:MGT	---	---	---	---	---	---	---
Gateway Mobile Location Centre	---	I:SPC/GT E:GT T:MSISDN, MGT (outside World Zone 1) or IMSI (World Zone 1) (note)	---	I:SPC/GT E:GT T:MSC NUMBER	---	---	---	<a href="#">I:SPC/GT E:GT T:SGSN NUMBER</a> ---	---

I: Intra-PLMN.  
E: Extra (Inter)-PLMN.  
T: Address Type.  
GT: Global Title.  
MGT: E.214 Mobile Global Title.  
SPC: Signalling Point Code.  
NOTE: For initiating the location updating procedure and an authentication information retrieval from the HLR preceding it, the VLR has to derive the HLR address from the IMSI of the MS. The result can be an SPC or an E.214 Mobile Global Title if CCITT or ITU-T SCCP is used, or IMSI itself if ANSI SCCP is used (ANSI SCCP is used in World Zone 1). When continuing the established update location dialogue (as with any other dialogue) the VLR must derive the routing information towards the HLR from the Calling Party Address received with the first responding CONTINUE message until the dialogue terminating message is received.  
For transactions invoked by the VLR after update location completion, the VLR may derive the information for addressing the HLR from addresses received in the course of the update location procedure (MSISDN or HLR number) or from the IMSI.  
When invoking the Restore Data procedure and an authentication information retrieval from the HLR preceding it, the VLR must derive the information for addressing the HLR from the address information received in association with the roaming number request. This may be either the IMSI received as a parameter of the MAP message requesting the Roaming Number or the Calling Party Address associated with the MAP message requesting the Roaming Number.  
The gsmSCF shall be addressed using more than one Global Title number. The first Global Title number is used to address a gsmSCF for MAP. The second Global Title number is used to address a gsmSCF for CAP.  
For querying the HLR to obtain the VMSC address to support location services, the GMLC has to derive the HLR address from either the MSISDN or IMSI of the target MS. When using the IMSI, the result can be an SPC or an E.214 Mobile Global Title if CCITT or ITU-T SCCP is used, or IMSI itself if ANSI SCCP is used (ANSI SCCP is used in World Zone 1).

**Table 6.1/2**

to from		GMLC
<b>fixed network</b>		---
<b>Home Location Register</b>		---
<b>Visitor Location Register</b>		---
<b>Mobile-services Switching Centre</b>		<a href="#">I:SPC/GT</a> <a href="#">E:GT</a> <a href="#">T:MLC Number</a> - -
<b>gsm Service Control Function</b>		I:SPC/GT E:GT T:MSISDN
<b>Shared Inter Working Function</b>		---
<b>Serving GPRS Support Node</b>		<a href="#">I:SPC/GT</a> <a href="#">E:GT</a> <a href="#">T:MLC Number</a> - -
<b>Gateway GPRS Support Node</b>		---
<b>Gateway Mobile Location Centre</b>		
I:	Intra-PLMN.	
E:	Extra (Inter)-PLMN.	
T:	Address Type.	
GT:	Global Title.	
MGT:	E.214 Mobile Global Title.	
SPC:	Signalling Point Code.	

\*\*\*\*\*Next Modification\*\*\*\*\*

### 17.2.2.45 Location service enquiry

This operation package includes the operations required for the location service enquiry procedures between GMLC and MSC [and between GMLC and SGSN](#).

```
LocationSvcEnquiryPackage-v3 ::= OPERATION-PACKAGE
-- Supplier is MSC or SGSN if Consumer is GMLC
CONSUMER INVOKES {
    provideSubscriberLocation}
```

This package is v3 only.

### 17.2.2.45A Location service reporting

This operation package includes the operations required for the location service enquiry procedures between MSC and GMLC [and between SGSN and GMLC](#).

```
LocationSvcReportingPackage-v3 ::= OPERATION-PACKAGE
-- Supplier is GMLC if Consumer is MSC
-- Supplier is GMLC if Consumer is SGSN
CONSUMER INVOKES {
    subscriberLocationReport}
```

\*\*\*\*\*Next Modification\*\*\*\*\*

### 17.3.2.40 Location Service Enquiry

This application context is used for location service enquiry procedures.

```
locationSvcEnquiryContext-v3 APPLICATION-CONTEXT
-- Responder is MSC or SGSN if Initiator is GMLC
-- Responder is GMLC if Initiator is MSC
-- Responder is GMLC if Initiator is SGSN
INITIATOR CONSUMER OF {
    locationSvcEnquiryPackage-v3,
    locationSvcReportingPackage-v3}
::= {map-ac locationSvcEnquiry(38) version3 (3)}
```

## CHANGE REQUEST

⌘ **29.002 CR 430** ⌘ rev **1** ⌘ 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:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Corrections on the introduction of LCS for PS domain		
<b>Source:</b>	⌘ CN4		
<b>Work item code:</b>	⌘ LCS1	<b>Date:</b>	⌘ 11.04.02
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)		<b>2</b> (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)		<b>R96</b> (Release 1996)
	<b>B</b> (addition of feature),		<b>R97</b> (Release 1997)
	<b>C</b> (functional modification of feature)		<b>R98</b> (Release 1998)
	<b>D</b> (editorial modification)		<b>R99</b> (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP <a href="http://www.3gpp.org/ftp/Specs/3GPP/21.900">TR 21.900</a> .		<b>REL-4</b> (Release 4)
			<b>REL-5</b> (Release 5)

<b>Reason for change:</b>	⌘ To clarify that the LCS procedures between MSC and GMLC are also applicable between SGSN and GMLC
<b>Summary of change:</b>	⌘ Add the locationSvcEnquiryContext to the priority table of ACs in the SGSN; Add the SGSN-GMLC interface to table 6.1/1 and to the ASN.1 section.
<b>Consequences if not approved:</b>	⌘ Incomplete LCS description.

<b>Clauses affected:</b>	⌘ Table 5.1/3, 6.1.3.10B, 6.1.3.11, 17.2.2.45, 17.2.2.45A, 17.3.2.40	
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications	⌘
	<input type="checkbox"/> Test specifications	
	<input type="checkbox"/> O&M Specifications	
<b>Other comments:</b>	⌘	

### 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.

**Table 5.1/3: Priorities of Application Contexts for SGSN as Responder**

<b>Responder = SGSN</b>	<b>Initiating Entity</b>
<i>Priority high</i>	
<u>Mobility and Location Register Management</u>	
locationCancel (cancelLocation v3)	HLR
reset (reset)	HLR
subscriberDataMngt (insertSubscriberData v3), (deleteSubscriberData v3)	HLR
tracing (activateTraceMode), (deactivateTraceMode)	HLR
<u>Short Message Service</u>	
shortMsgMT-Relay (MT-ForwardSM v3) (forwardSM v1/v2)	MSC
<u>Location Services</u>	
<u>locationSvcEnquiry</u> (provideSubscriberLocation v3)	<u>GMLC</u>
<u>Network-Requested PDP context activation</u>	
gprsNotify HLR (noteMsPresentForGprs v3),	
<i>Priority low</i>	

NOTE: The application context name is the last component but one of the object identifier. Operation names are given in brackets for information with "/vn" appended to vn.

\*\*\*\*\*Next Modification\*\*\*\*\*

### 6.1.3.10B The Gateway Mobile Location Centre (GMLC)

The GMLC initiates location requests on behalf of external clients. The E.164 address of the GMLC is provided to an HLR when the GMLC requests a serving MSC address [or SGSN address](#) from the HLR for a target MS. The E.164 address of the GMLC is also provided to a serving MSC [or SGSN](#) when the GMLC requests the location of a target MS served by this MSC [or SGSN](#).

### 6.1.3.11 Summary table

The following tables summarise the SCCP address used for invoke operations. As a principle, within a PLMN either an SPC or a GT may be used (network operation option), whereas when addressing an entity outside the PLMN the GT must be used. The address type mentioned in the table (e.g. MSISDN) is used as GT or to derive the SPC.

For a response, the originating address passed in the invoke is used as SCCP Called Party Address. For extra-PLMN addressing the own E.164 entity address is used as SCCP Calling Party Address; for intra-PLMN addressing an SPC derived from the entity number may be used instead. When using an SPC, the SPC may be taken directly from MTP.

Table 6.1/1

to from	fixed net work	HLR	VLR	MSC	EIR	gsmSCF	SIWF	SGSN	GGSN
fixed network	---	E:GT T:MSISDN	---	---	---	---	---	---	---
Home Location Register	---	---	I:SPC/GT E:GT T:VLR NUMBER	---	---	I:SPC/GT E:GT T:gsmSCF NUMBER	---	I:SPC/GT E:GT T:SGSN NUMBER	I:SPC/GT E:GT T:GGSN NUMBER
Visitor Location Register	---	I:SPC/GT E:GT T:MGT (outside World Zone 1)/MSISDN (World Zone 1)/HLR NUMBER (note)	I:SPC/GT E:GT T:VLR NUMBER	---	---	I:SPC/GT E:GT T:gsmSCF NUMBER	---	---	---
mobile-services switching centre	---	I:SPC/GT E:GT T:MSISDN	I:SPC/GT E:GT T:VLR NUMBER	I:SPC/GT E:GT T:MSC NUMBER	I:SPC/GT E:GT T:EIR NUMBER	I:SPC/GT E:GT T:gsmSCF NUMBER	I:SPC/GT E:GT T:SIWF NUMBER	I:SPC/GT E:GT T:SGSN NUMBER	---
gsm Service Control Function	---	I:SPC/GT E:GT T:MSISDN	---	---	---	---	---	---	---
Shared Inter Working Function	---	---	---	I:SPC/GT E:GT T:MSC NUMBER	---	---	---	---	---
Serving GPRS Support Node	---	I:SPC/GT E:GT T:MGT/ MSISDN/HL R NUMBER	---	I:SPC/GT E:GT T:MSC NUMBER	I:SPC/GT E:GT T:EIR NUMBER	---	---	---	---
Gateway GPRS Support Node	---	I:SPC/GT E:GT T:MGT	---	---	---	---	---	---	---
Gateway Mobile Location Centre	---	I:SPC/GT E:GT T:MSISDN, MGT (outside World Zone 1) or IMSI (World Zone 1) (note)	---	I:SPC/GT E:GT T:MSC NUMBER	---	---	---	<a href="#">I:SPC/GT E:GT T:SGSN NUMBER</a> ---	---



I: Intra-PLMN.  
E: Extra (Inter)-PLMN.  
T: Address Type.  
GT: Global Title.  
MGT: E.214 Mobile Global Title.  
SPC: Signalling Point Code.  
NOTE: For initiating the location updating procedure and an authentication information retrieval from the HLR preceding it, the VLR has to derive the HLR address from the IMSI of the MS. The result can be an SPC or an E.214 Mobile Global Title if CCITT or ITU-T SCCP is used, or IMSI itself if ANSI SCCP is used (ANSI SCCP is used in World Zone 1). When continuing the established update location dialogue (as with any other dialogue) the VLR must derive the routing information towards the HLR from the Calling Party Address received with the first responding CONTINUE message until the dialogue terminating message is received.  
For transactions invoked by the VLR after update location completion, the VLR may derive the information for addressing the HLR from addresses received in the course of the update location procedure (MSISDN or HLR number) or from the IMSI.  
When invoking the Restore Data procedure and an authentication information retrieval from the HLR preceding it, the VLR must derive the information for addressing the HLR from the address information received in association with the roaming number request. This may be either the IMSI received as a parameter of the MAP message requesting the Roaming Number or the Calling Party Address associated with the MAP message requesting the Roaming Number.  
The gsmSCF shall be addressed using more than one Global Title number. The first Global Title number is used to address a gsmSCF for MAP. The second Global Title number is used to address a gsmSCF for CAP.  
For querying the HLR to obtain the VMSC address to support location services, the GMLC has to derive the HLR address from either the MSISDN or IMSI of the target MS. When using the IMSI, the result can be an SPC or an E.214 Mobile Global Title if CCITT or ITU-T SCCP is used, or IMSI itself if ANSI SCCP is used (ANSI SCCP is used in World Zone 1).

**Table 6.1/2**

to from		GMLC
<b>fixed network</b>		---
<b>Home Location Register</b>		---
<b>Visitor Location Register</b>		---
<b>Mobile-services Switching Centre</b>		<a href="#">I:SPC/GT</a> <a href="#">E:GT</a> <a href="#">T:MLC Number</a> - -
<b>gsm Service Control Function</b>		I:SPC/GT E:GT T:MSISDN
<b>Shared Inter Working Function</b>		---
<b>Serving GPRS Support Node</b>		<a href="#">I:SPC/GT</a> <a href="#">E:GT</a> <a href="#">T:MLC Number</a> - -
<b>Gateway GPRS Support Node</b>		---
<b>Gateway Mobile Location Centre</b>		
I:	Intra-PLMN.	
E:	Extra (Inter)-PLMN.	
T:	Address Type.	
GT:	Global Title.	
MGT:	E.214 Mobile Global Title.	
SPC:	Signalling Point Code.	

\*\*\*\*\*Next Modification\*\*\*\*\*

### 17.2.2.45 Location service enquiry

This operation package includes the operations required for the location service enquiry procedures between GMLC and MSC [and between GMLC and SGSN](#).

```
LocationSvcEnquiryPackage-v3 ::= OPERATION-PACKAGE
-- Supplier is MSC or SGSN if Consumer is GMLC
CONSUMER INVOKES {
    provideSubscriberLocation}
```

This package is v3 only.

### 17.2.2.45A Location service reporting

This operation package includes the operations required for the location service enquiry procedures between MSC and GMLC [and between SGSN and GMLC](#).

```
LocationSvcReportingPackage-v3 ::= OPERATION-PACKAGE
-- Supplier is GMLC if Consumer is MSC
-- Supplier is GMLC if Consumer is SGSN
CONSUMER INVOKES {
    subscriberLocationReport}
```

\*\*\*\*\*Next Modification\*\*\*\*\*

### 17.3.2.40 Location Service Enquiry

This application context is used for location service enquiry procedures.

```
locationSvcEnquiryContext-v3 APPLICATION-CONTEXT
-- Responder is MSC or SGSN if Initiator is GMLC
-- Responder is GMLC if Initiator is MSC
-- Responder is GMLC if Initiator is SGSN
INITIATOR CONSUMER OF {
    locationSvcEnquiryPackage-v3,
    locationSvcReportingPackage-v3}
::= {map-ac locationSvcEnquiry(38) version3 (3)}
```

## CHANGE REQUEST

⌘ **29.010 CR 048** ⌘ rev **1** ⌘ Current version: **4.2.0** ⌘

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

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ LCS: Mapping BSSMAP-RANAP for request of assistance data on E interface		
<b>Source:</b>	⌘ CN4		
<b>Work item code:</b>	⌘ LCS1	<b>Date:</b>	⌘ 21/03/2002
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ Rel-4
	<i>Use one of the following categories:</i> <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	<i>Use one of the following releases:</i> <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>REL-4</b> (Release 4) <b>REL-5</b> (Release 5)	

<b>Reason for change:</b>	⌘ In case of completed Inter MSC Handover, the UE might perform a MO-LocationRequest that requires the delivery of Assistance Data or Deciphering Keys. The request received via DTAP by the anchor-MSC needs to be relayed to the BSS/RNC. The Anchor MSC will forward this request by encapsulating the related BSSMAP/RANAP message on the E interface, while the non-anchor will have to send again the related BSSMAP/RANAP message to the BSS/RNC. If the Access Signalling protocol is different from the protocol encapsulated on the E-Interface then the non-anchor MSC has to map the one protocol into the other.  The mapping between RANAP and BSSMAP and vice versa is missing in the TS 29.010.
<b>Summary of change:</b>	⌘ Add mapping tables between RANAP and BSSMAP messages and corresponding parameters in case of request of Assistance Data and Deciphering Keys for MO-LR requests.
<b>Consequences if not approved:</b>	⌘ Mapping might be performed in different ways by different vendors, causing problems in case of BSS's/RNC's and MSC's not provided by the same vendor.

<b>Clauses affected:</b>	⌘ 4.9.4 (and subclauses), 4.9.5 (and subclauses), 4.9.6 (and subclauses)		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	
<b>Other comments:</b>	⌘		

**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.

<b>**** FIRST NEW ADDED SECTION ****</b>
--

## 4.9.4 Request of Assistance Data or De-ciphering Keys: Successful Case

### 4.9.4.1 Inter-MSC Handover (GSM to GSM)

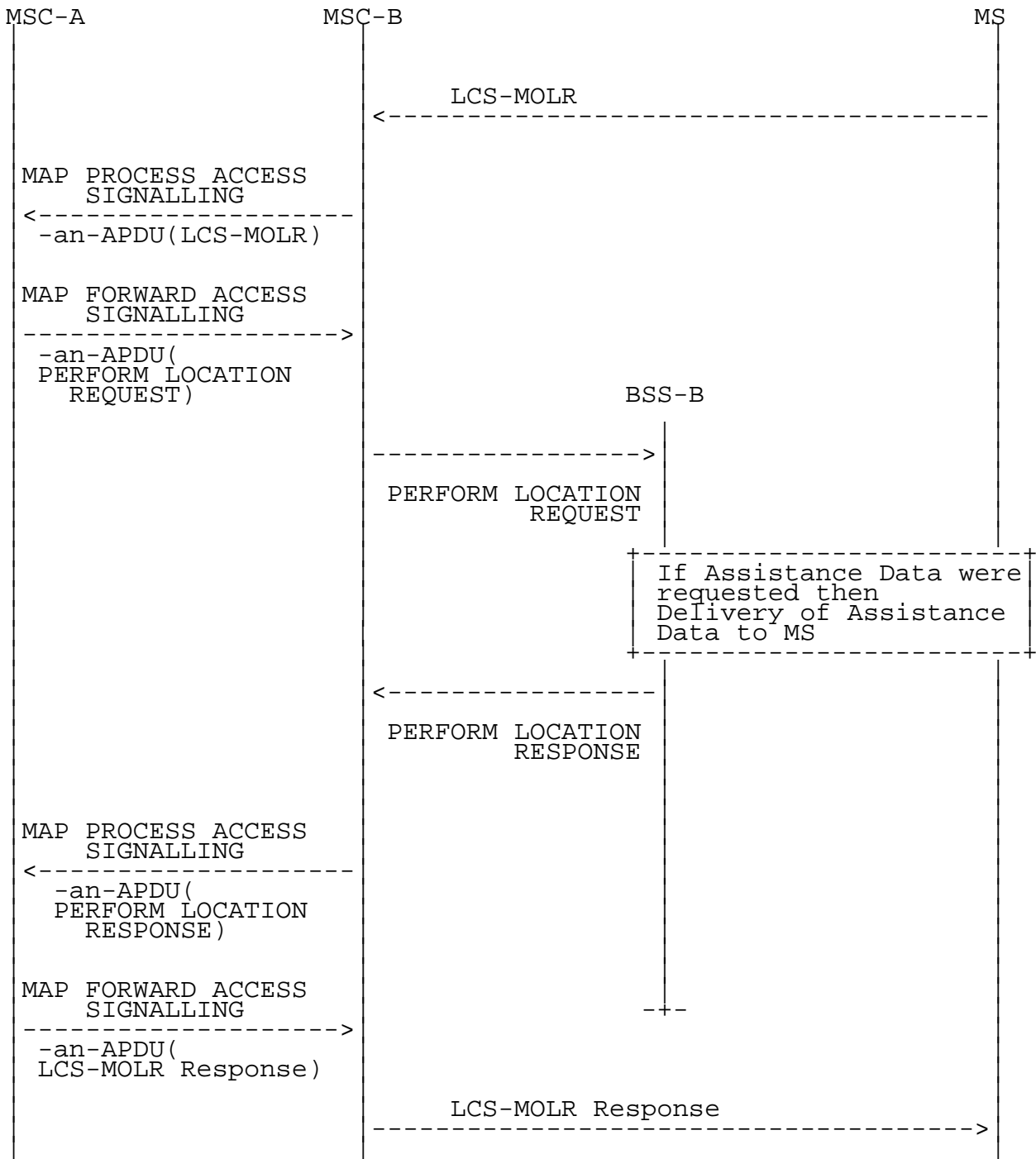
After a successful Inter-MSC handover, any request of Assistance Data or De-ciphering keys received by the non anchor MSC via the DTAP message LCS-MOLR is forwarded to the anchor MSC by encapsulating the DTAP message into the MAP messages Process Access Signalling. The anchor MSC triggers the BSSMAP 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 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 MSC the BSSMAP messages received from the anchor MSC are forwarded to the BSS, and the BSSMAP messages received from the BSS are 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 MSC, which relays it to the MS.

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



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

After the inter-MSC handover, the MSC-B can perform intra-MSC GSM to UMTS handover. Any request for Assistance Data or De-ciphering keys received after completion of the intra-MSC GSM to UMTS handover is handled as for Inter-MSC Handover GSM to UMTS (see section 4.9.4.2).

#### 4.9.4.2 Inter-MSC Handover (GSM to UMTS)

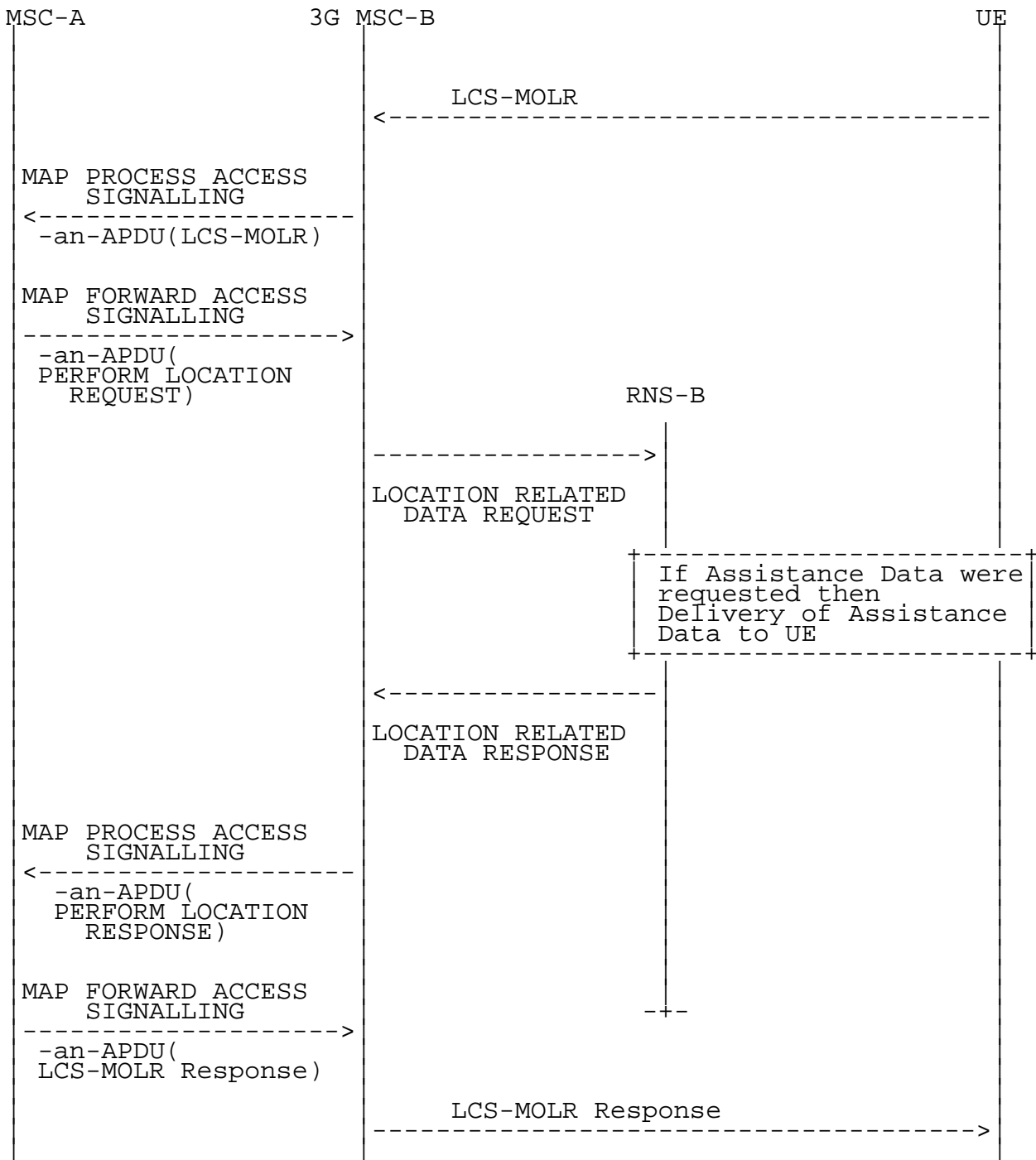
After a successful Inter-MSC GSM to UMTS inter system handover, any request of Assistance Data or De-ciphering keys received by the non-anchor 3G MSC via the DTAP message LCS-MOLR is forwarded to the anchor MSC by encapsulating the DTAP message into the MAP messages Process Access Signalling. The anchor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

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

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

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

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



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

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

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

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

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

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

#### 4.9.4.3 Inter-MSC Handover (UMTS to GSM)

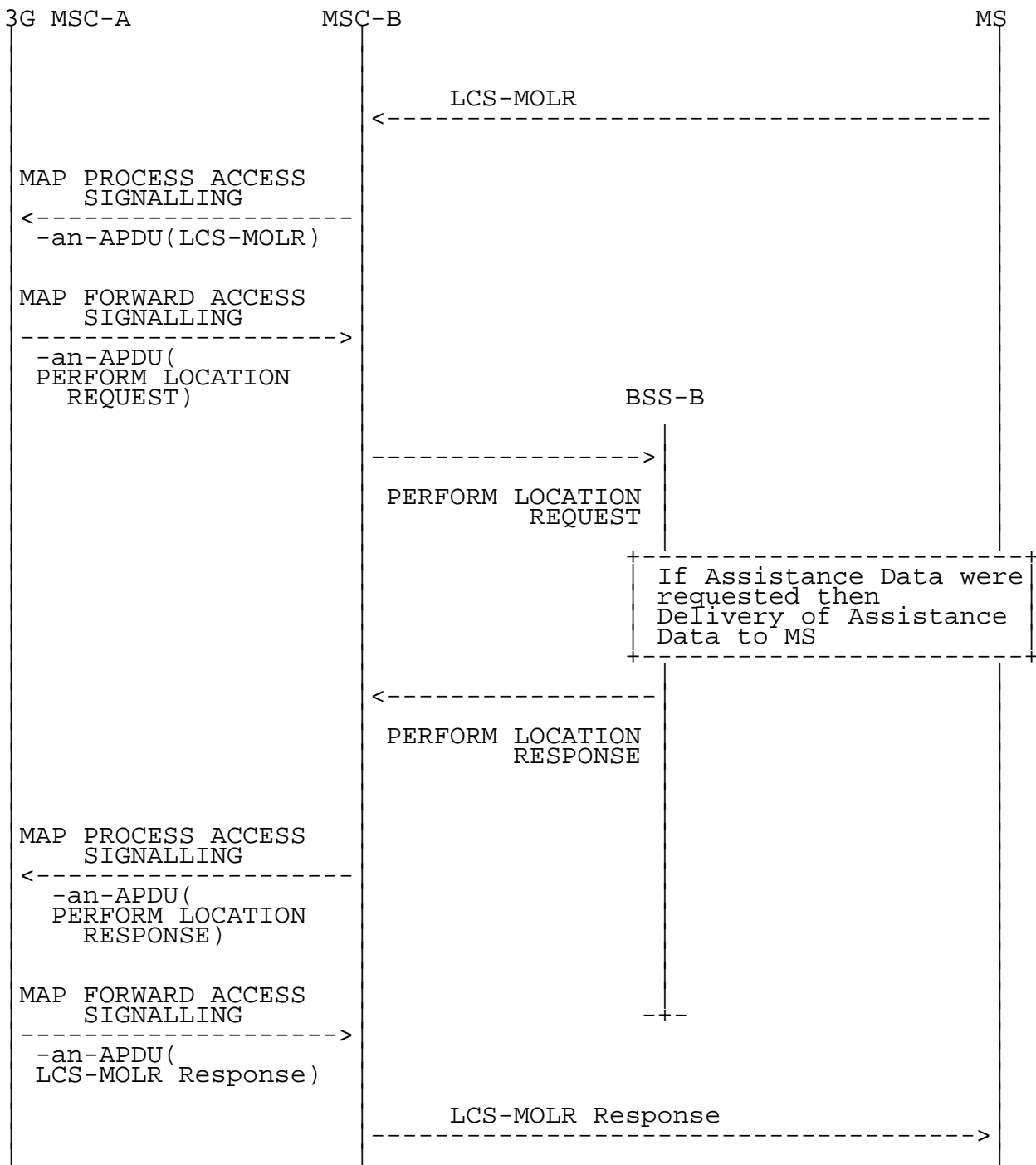
After a successful Inter-MSC UMTS to GSM inter system handover, any request of Assistance Data or De-ciphering keys received by the non-anchor MSC via the DTAP message LCS-MOLR is forwarded to the anchor 3G MSC by encapsulating the DTAP message into the MAP messages Process Access Signalling. The anchor 3G MSC triggers the 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 3G MSC playing the role of the MSC and the non-anchor 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 MSC the BSSMAP messages received from the anchor 3G MSC are forwarded to the BSS, and the BSSMAP messages received from the BSS are sent over the E-interface to the anchor 3G MSC.

Once the BSSMAP 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 MSC, which relays it to the UE.

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



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

After the inter-MSC UMTS to GSM handover, the 3G MSC-B can perform intra-MSC GSM to UMTS handover. Any request for Assistance Data or De-ciphering keys received after completion of the intra-MSC GSM to UMTS handover is handled as for Inter-MSC Handover GSM to UMTS (see section 4.9.4.2)..

#### 4.9.4.4 Inter-MSC SRNS Relocation

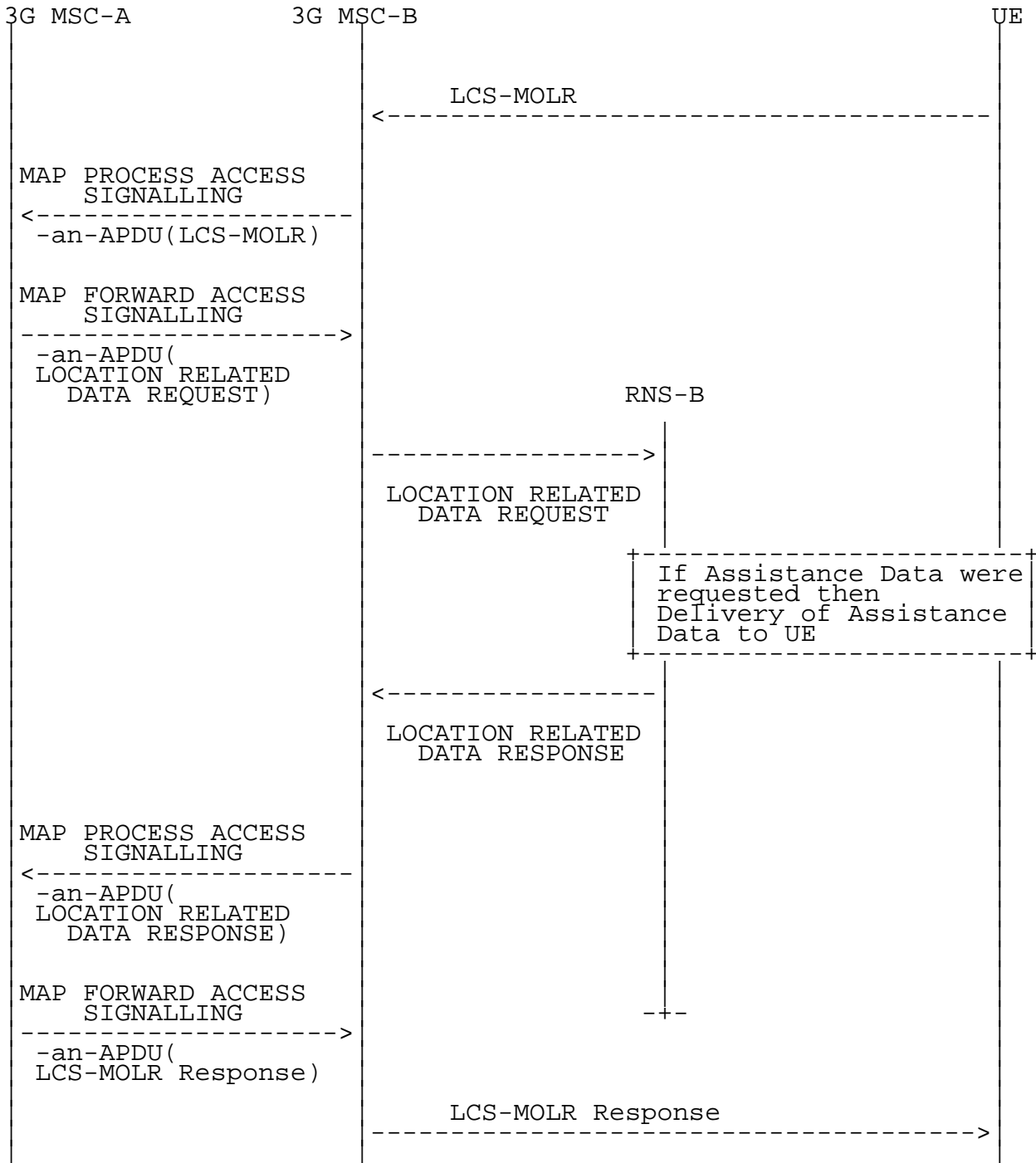
After a successful Inter-MSC SRNS Relocation , any request of Assistance Data or De-ciphering keys received by the non anchor 3G MSC via the DTAP message LCS-MOLR is forwarded to the anchor 3G MSC by encapsulating the DTAP message into the MAP messages Process Access Signalling. The anchor 3G MSC triggers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

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

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

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

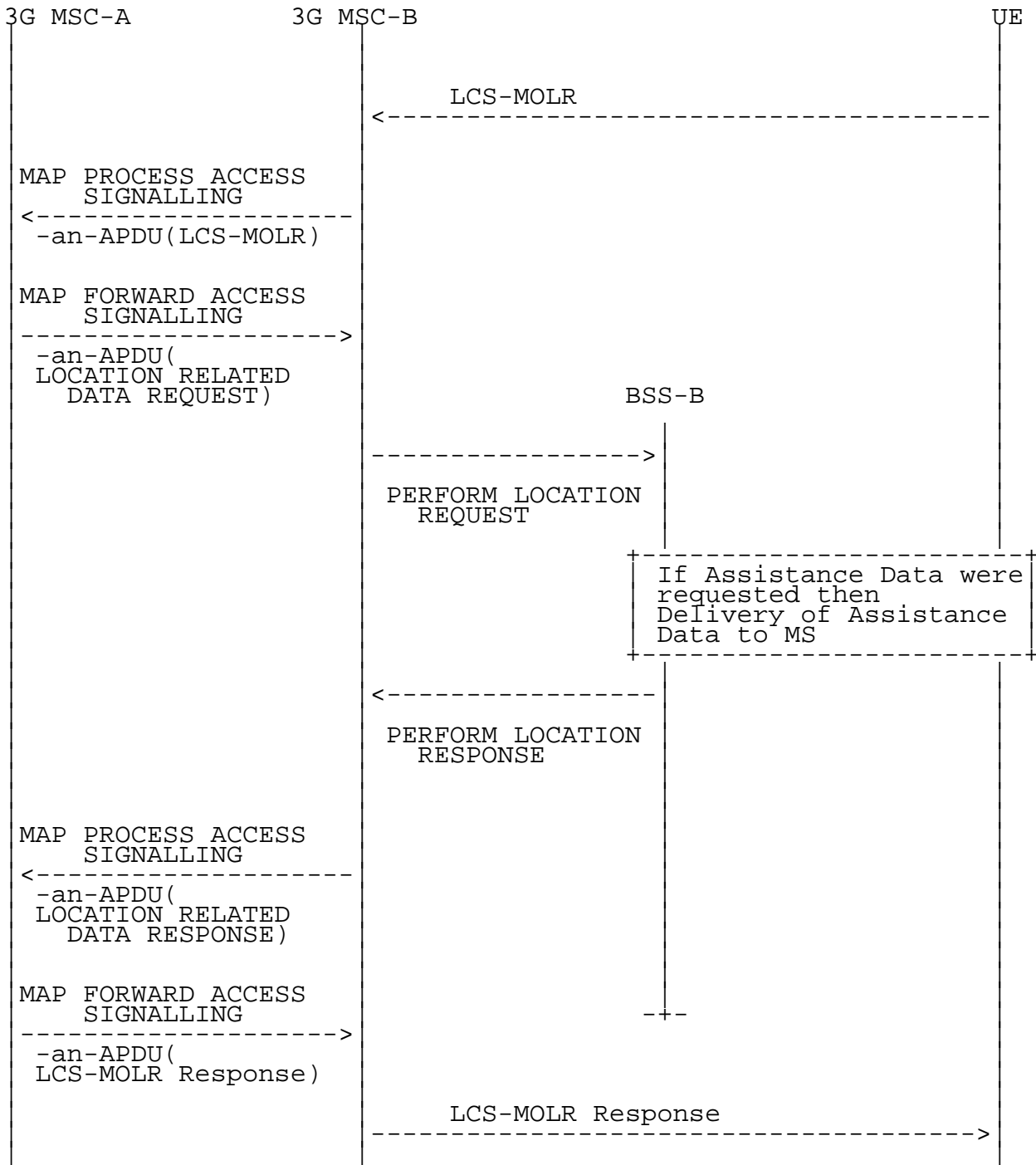
The signalling for a completed request of Assistance Data or De-ciphering Keys is shown in figures 67d.



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

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

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



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

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

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

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

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

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

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

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

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

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

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

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

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

## 4.9.5 Request of Assistance Data or De-ciphering Keys: Failure Case

### 4.9.5.1 Inter-MSC Handover (GSM to GSM)

After a successful Inter-MSC handover, any request of Assistance Data or De-ciphering keys received by the non anchor MSC via the DTAP message LCS-MOLR is handled as described in section 4.9.4.1.

If the request fails, either because the BSS-B cannot return the requested De-ciphering Keys to the anchor MSC or cannot deliver the required Assistance Data to the MS, the signalling is the same as for the successful case and is shown in figure 67a.

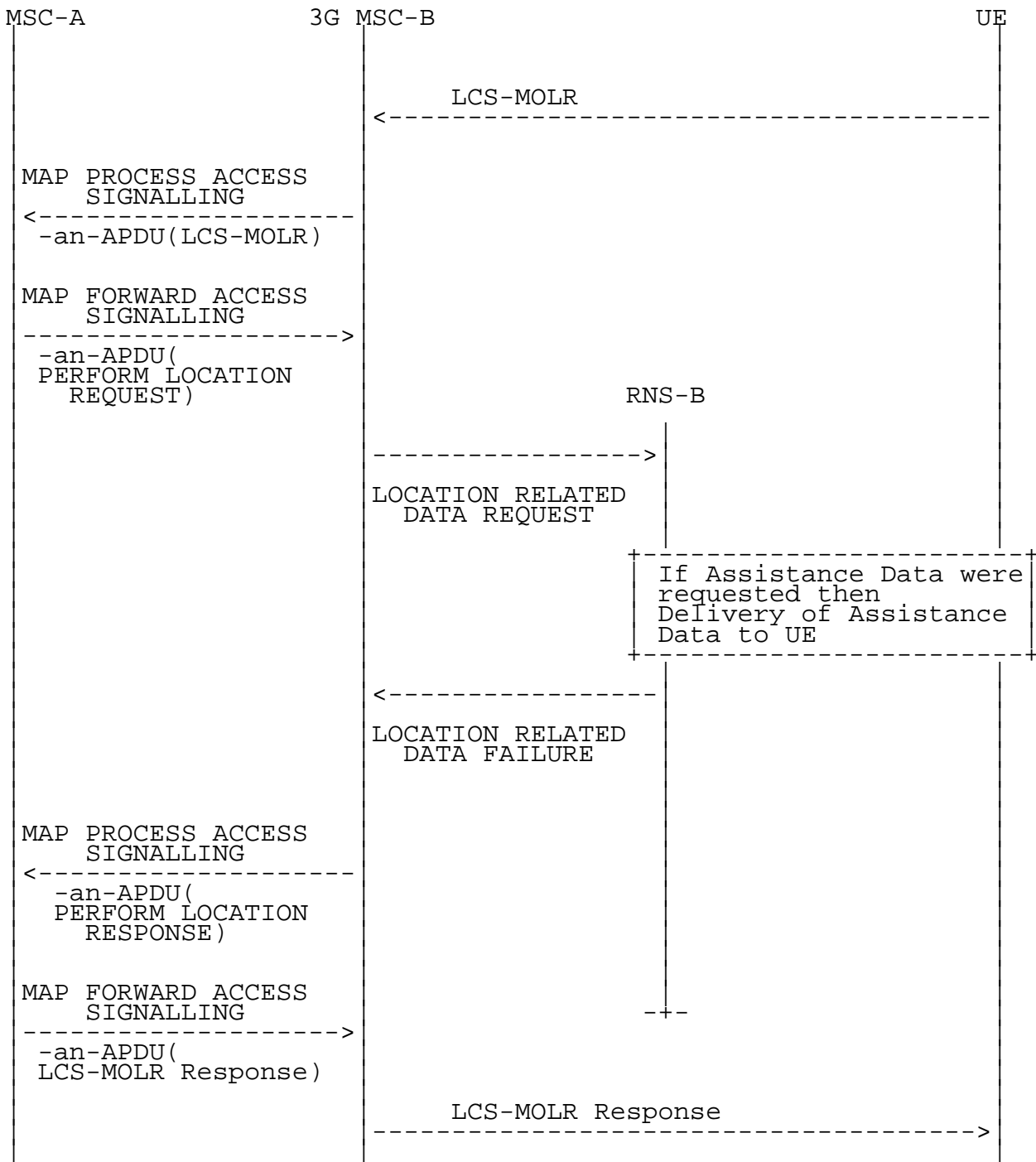
After the inter-MSC handover, the MSC-B can perform intra-MSC GSM to UMTS handover. Any request for Assistance Data or De-ciphering keys received after completion of the intra-MSC GSM to UMTS handover is handled as for Inter-MSC Handover GSM to UMTS (see section 4.9.4.2).

If the request fails the signalling is the same as for the failure case for Inter-MSC Handover GSM to UMTS (see section 4.9.5.2)

### 4.9.5.2 Inter-MSC Handover (GSM to UMTS)

After a successful Inter-MSC GSM to UMTS handover, any request of Assistance Data or De-ciphering keys received by the non anchor 3G MSC via the DTAP message LCS-MOLR is handled as described in section 4.9.4.2.

If the request fails, either because BSS-B cannot return the requested De-ciphering Keys to the anchor MSC or because BSS-B cannot deliver the required Assistance Data to the MS, the signalling is as shown in figure 68a.



**Figure 68a: Signalling for a failed request of Assistance Data or De-ciphering Keys**

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

	29.002	25.413	Notes
Forward message	"For the forward messages please refer to the corresponding table in section 4.9.4.2"		
Result	MAP PROCESS ACCESS SIG. request -an-APDU( PERFORM LOCATION RESPONSE)  BSSMAP information elements:  LCS Cause > System Failure	LOCATION RELATED DATA FAILURE  RANAP information elements:  Cause > Dedicated Assistance Data Not Available	

When the RNS-B cannot satisfy the request for De-ciphering Keys, the interworking between the BSSMAP messages encapsulated in MAP and the RANAP messages is as follows:

	29.002	25.413	Notes
Forward message	"For the forward messages please refer to the corresponding table in section 4.9.4.2"		
Result	MAP PROCESS ACCESS SIG. request -an-APDU( PERFORM LOCATION RESPONSE)  BSSMAP information elements:  LCS Cause > System Failure	LOCATION RELATED DATA FAILURE  RANAP information elements:  Cause > Deciphering Keys Not Available	

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).

If the request fails the signalling is the same as for the failure case for Inter-MSC Handover GSM to GSM (see section 4.9.5.1)

#### 4.9.5.3 Inter-MSC Handover (UMTS to GSM)

After a successful Inter-MSC UMTS to GSM handover, any request of Assistance Data or De-ciphering keys received by the non anchor MSC via the DTAP message LCS-MOLR is handled as described in section 4.9.4.3.

If the request fails, either because the BSS-B cannot return the requested De-ciphering Keys to the anchor 3G MSC or BSS-B cannot deliver the required Assistance Data to the MS, the signalling is the same as for the successful case and is shown in figure 67c.

After the inter-MSC UMTS to GSM handover, the 3G MSC-B can perform intra-MSC GSM to UMTS handover. Any request for Assistance Data or De-ciphering keys received after completion of the intra-MSC GSM to UMTS handover is handled as for Inter-MSC Handover GSM to UMTS (see section 4.9.4.2)..

If the request fails the signalling is the same as for the failure case for Inter-MSC Handover GSM to UMTS (see section 4.9.5.2)



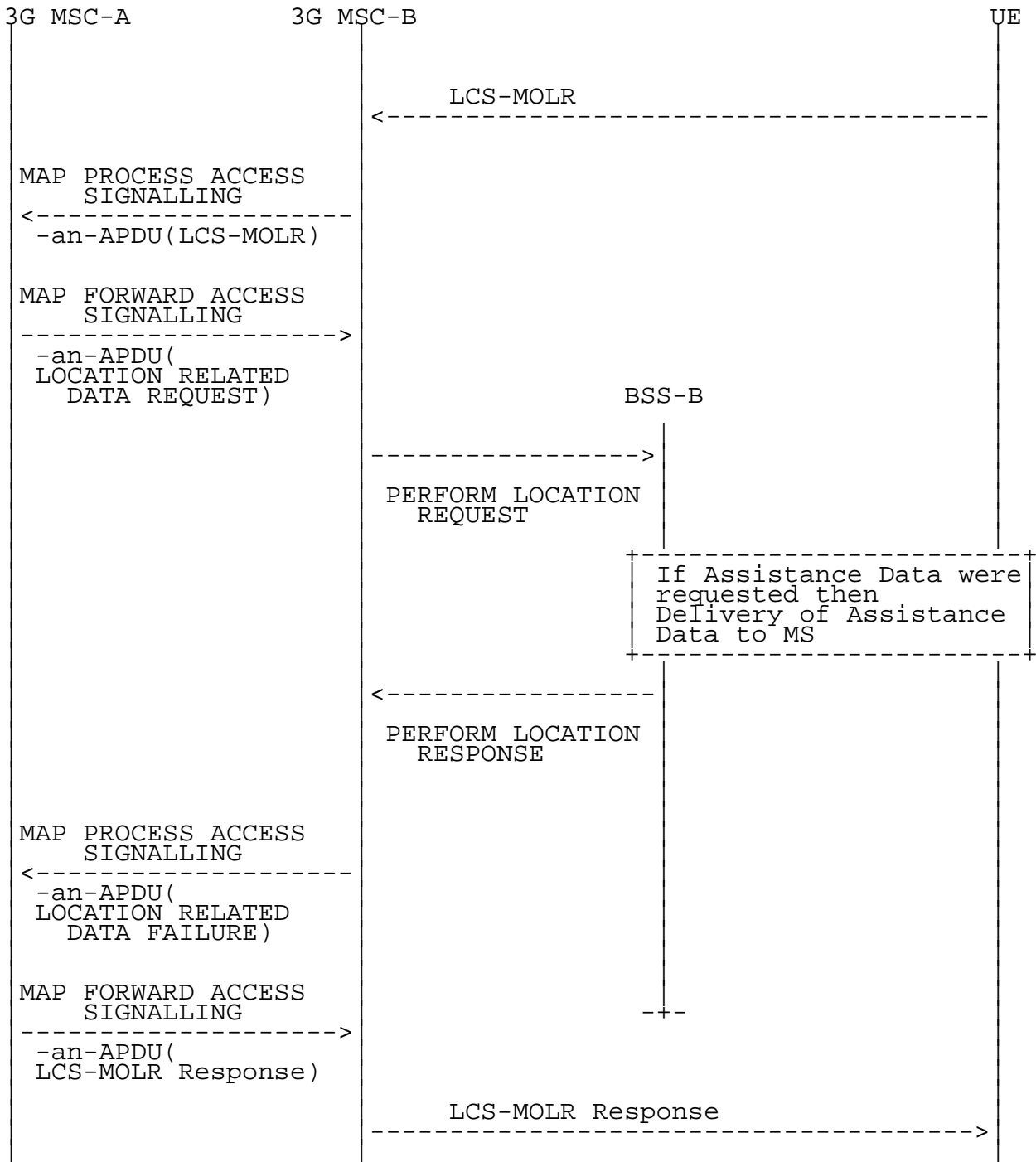
#### 4.9.5.4 Inter-MSC SRNS Relocation

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 handled as described in section 4.9.4.4.

If the request fails, either because the RNS-B cannot return the requested De-ciphering Keys to the anchor 3G MSC or RNS-B cannot deliver the required Assistance Data to the MS, the signalling is the same as for the successful case and is shown in figure 67d.

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.

If the request fails, either because the BSS-B cannot return the requested De-ciphering Keys to the anchor 3G MSC or BSS-B cannot deliver the required Assistance Data to the MS, the signalling is as shown in figure 68b.



**Figure 68b: 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.

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	"For the forward messages please refer to the corresponding table in section 4.9.4.4"		
Result	MAP PROCESS ACCESS SIG. request -an-APDU( LOCATION RELATED DATA FAILURE)  RANAP information elements:  Cause > Dedicated Assistance Data Not Available	PERFORM LOCATION RESPONSE  BSSMAP information elements:  LCS Cause > <any value>	

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	"For the forward messages please refer to the corresponding table in section 4.9.4.4"		
Result	MAP PROCESS ACCESS SIG. request -an-APDU( LOCATION RELATED DATA FAILURE)  RANAP information elements:  Cause > Deciphering Keys Not Available	PERFORM LOCATION RESPONSE  BSSMAP information elements:  LCS Cause > <any value>	

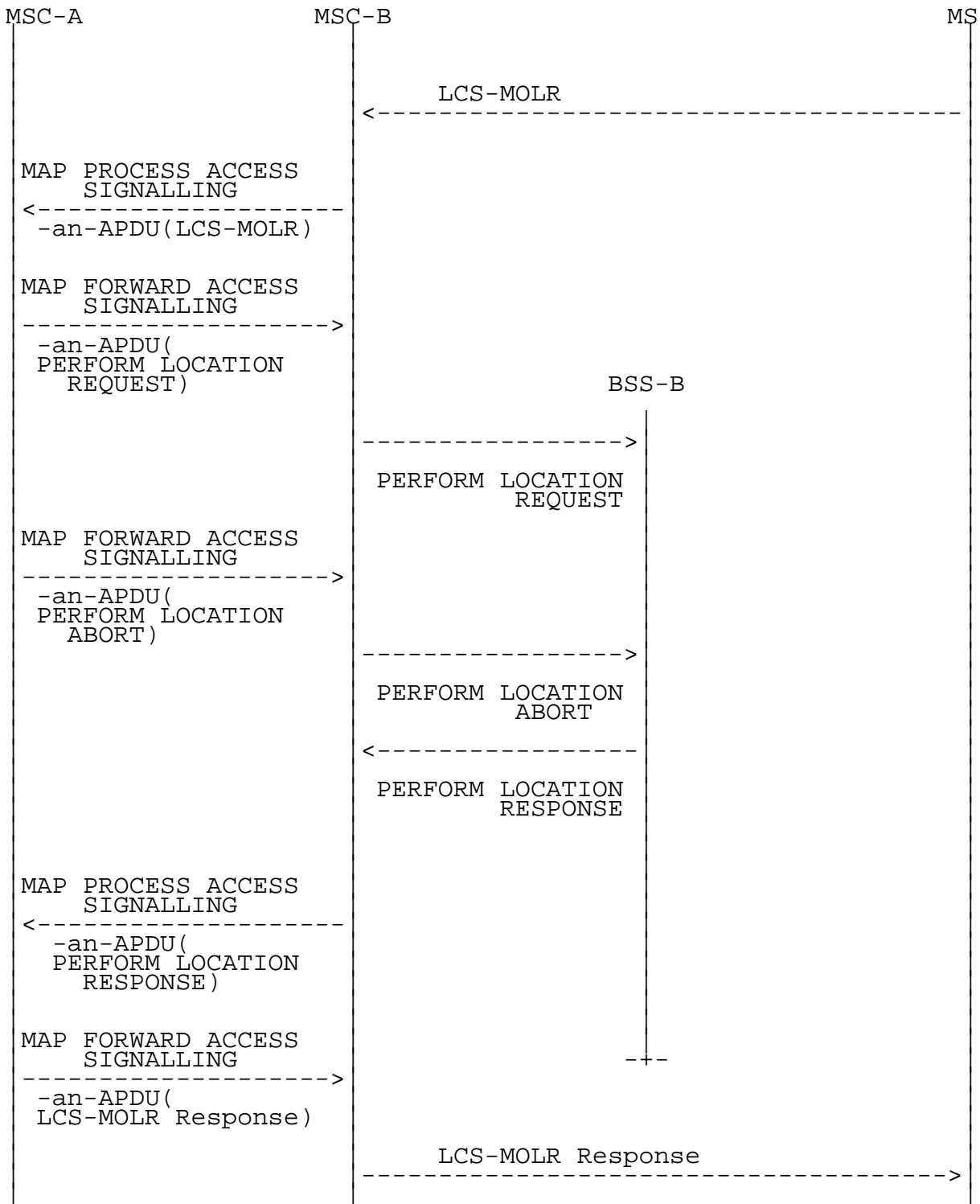
\*\*\*\* NEXT MODIFIED SECTION \*\*\*\*

## 4.9.6 Abort of Request of Assistance Data or De-ciphering Keys:

### 4.9.6.1 Inter-MSM Handover (GSM to GSM)

After a successful Inter-MSM handover, any request of Assistance Data or De-ciphering keys received by the non anchor MSM via the DTAP message LCS-MOLR is handled as described in section 4.9.4.1.

If the request is aborted by the anchor MSM the signalling is as shown in figure 69a.



**Figure 69a: Signalling for the abortion of a request for Assistance Data or De-ciphering Keys**

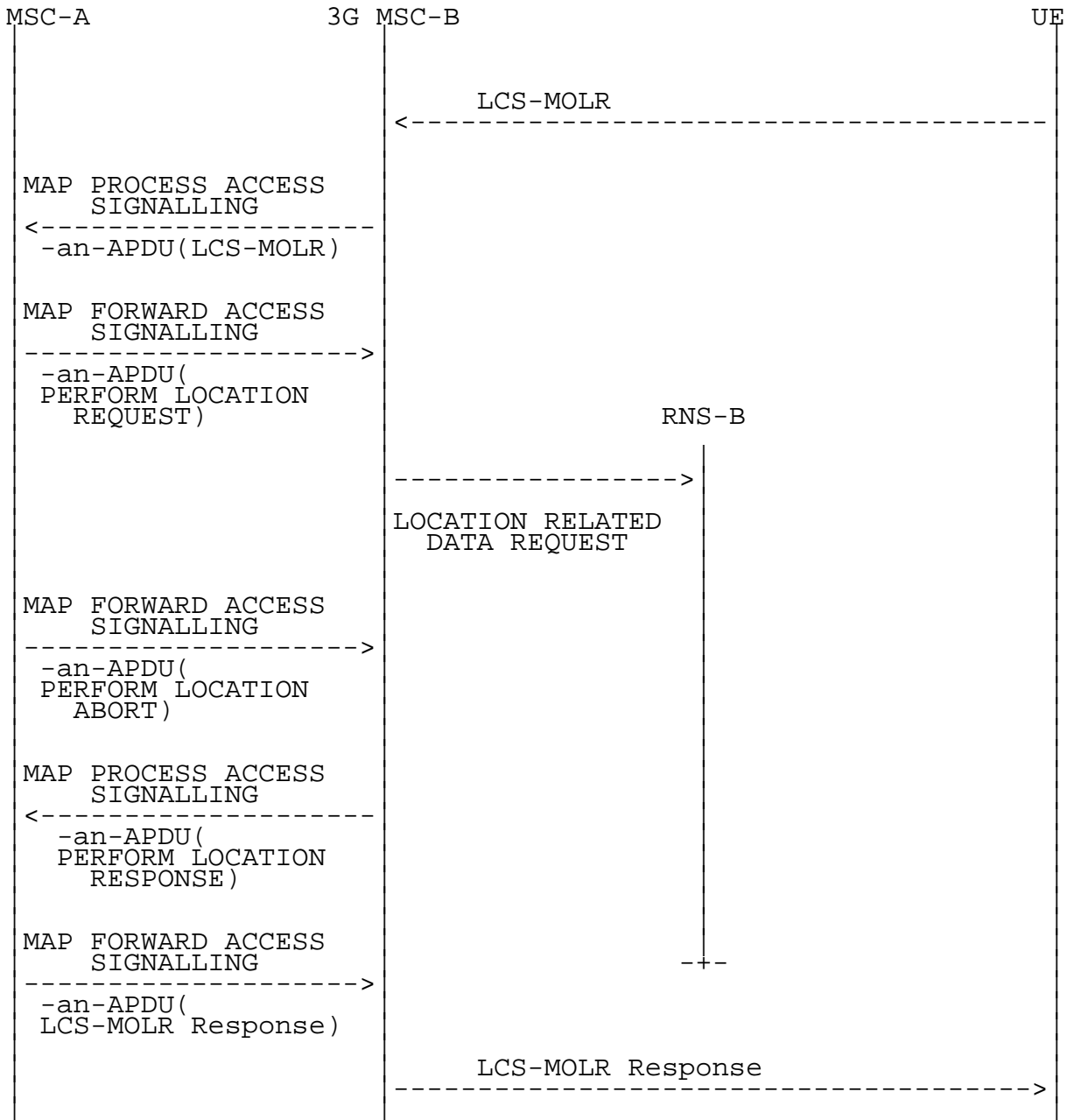
After the inter-MSC handover, the MSC-B can perform intra-MSC GSM to UMTS handover. Any request for Assistance Data or De-ciphering keys received after completion of the intra-MSC GSM to UMTS handover is handled as for Inter-MSC Handover GSM to UMTS (see section 4.9.4.2).

If the request is aborted the signalling is the same as for the abortion case for Inter-MSC Handover GSM to UMTS (see section 4.9.6.2)

### 4.9.6.2 Inter-MSC Handover (GSM to UMTS)

After a successful Inter-MSC GSM to UMTS handover, any request of Assistance Data or De-ciphering keys received by the non anchor MSC via the DTAP message LCS-MOLR is handled as described in section 4.9.4.1.

If the request is aborted by the anchor MSC the signalling is as shown in figure 69b.



**Figure 69b: Signalling for the abortion of the request for Assistance Data or De-ciphering Keys**

There's no interworking between the BSSMAP Perform Location Abort and any RANAP message since it is not possible to abort a request for Assistance Data or De-ciphering Keys with RANAP. The BSSMAP message Perform Location Response is generated by the non-anchor 3G MSC.

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).

If the request is aborted the signalling is the same as for the abortion case for Inter-MSC Handover GSM to GSM (see section 4.9.6.1)

#### 4.9.6.3 Inter-MSC Handover (UMTS to GSM)

After a successful Inter-MSC UMTS to GSM handover, any request of Assistance Data or De-ciphering keys received by the non anchor MSC via the DTAP message LCS-MOLR is handled as described in section 4.9.4.3.

If the request is aborted by the anchor 3G MSC the signalling is the same as for the abortion for Inter-MSC GSM to GSM handover and is shown in figure 69a.

After the inter-MSC UMTS to GSM handover, the 3G MSC-B can perform intra-MSC GSM to UMTS handover. Any request for Assistance Data or De-ciphering keys received after completion of the intra-MSC GSM to UMTS handover is handled as for Inter-MSC Handover GSM to UMTS (see section 4.9.4.2)..

If the request is aborted the signalling is the same as for the abortion case for Inter-MSC Handover GSM to UMTS (see section 4.9.6.2)

#### 4.9.6.4 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 handled as described in section 4.9.4.4.

The request cannot be aborted by the 3G anchor MSC since RANAP does not support abortion of a request for Assistance Data or De-Ciphering Keys.

<b>**** END OF MODIFICATIONS ****</b>
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## CHANGE REQUEST

⌘ **29.010 CR 050** ⌘ rev **1** ⌘ Current version: **3.7.0** ⌘

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

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ LCS: clarification of mapping for Location Acquisition		
<b>Source:</b>	⌘ CN4		
<b>Work item code:</b>	⌘ LCS	<b>Date:</b>	⌘ 25/03/2002
<b>Category:</b>	⌘ <b>F</b> (Agreed by consensus) Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	<b>Release:</b>	⌘ Rel-99 Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

<b>Reason for change:</b>	⌘ The sections 4.9.1.x, 4.9.2.x, 4.9.3.x describing the Location Acquisition procedures after the different Handover cases still contain a number of errors and they do not describe what happens after an intra-msc inter-system handover is performed in non anchor MSC
<b>Summary of change:</b>	⌘ Correct a number of inconsistencies in the mentioned sections and describe the handling after intra-MSC inter-system handover in non-anchor MSC
<b>Consequences if not approved:</b>	⌘ Different implementations could arise from unspecified behaviour leading to interoperability problems.

<b>Clauses affected:</b>	⌘ 4.9.1.x, 4.9.2.x, 4.9.3.x		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	
<b>Other comments:</b>	⌘		

### 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 \*\*\*

## 4.9 Location Services

The general principles of the location services procedures are given in Technical Specification 3GPP TS 23.071 and 3GPP TS 23.171.

3GPP TS 29.010 gives the necessary information for interworking between the 3GPP TS 25.413 RANAP protocol and the ~~3GPP TS 48.008~~ GSM 08.08 BSSMAP protocol. The interworking is necessary for positioning requests issued after a completed GSM to UMTS inter system handover. BSSMAP messages carried by MAP over the E-interface must be mapped by the non-anchor 3G-MSC into the corresponding RANAP messages to be sent over the Iu-interface and vice versa. ~~In case of~~ For Inter-MSC GSM to GSM Handover and Inter-MSC UMTS to UMTS SRNS Relocation no mapping between the 3GPP TS 25.413 RANAP protocol and the GSM 08.08 BSSMAP protocol is necessary, but only the interworking with the MAP protocol over the E-interface needs to be described.

### 4.9.1 Completed Location Acquisition

#### 4.9.1.1 Inter-MSC Handover (GSM to GSM)

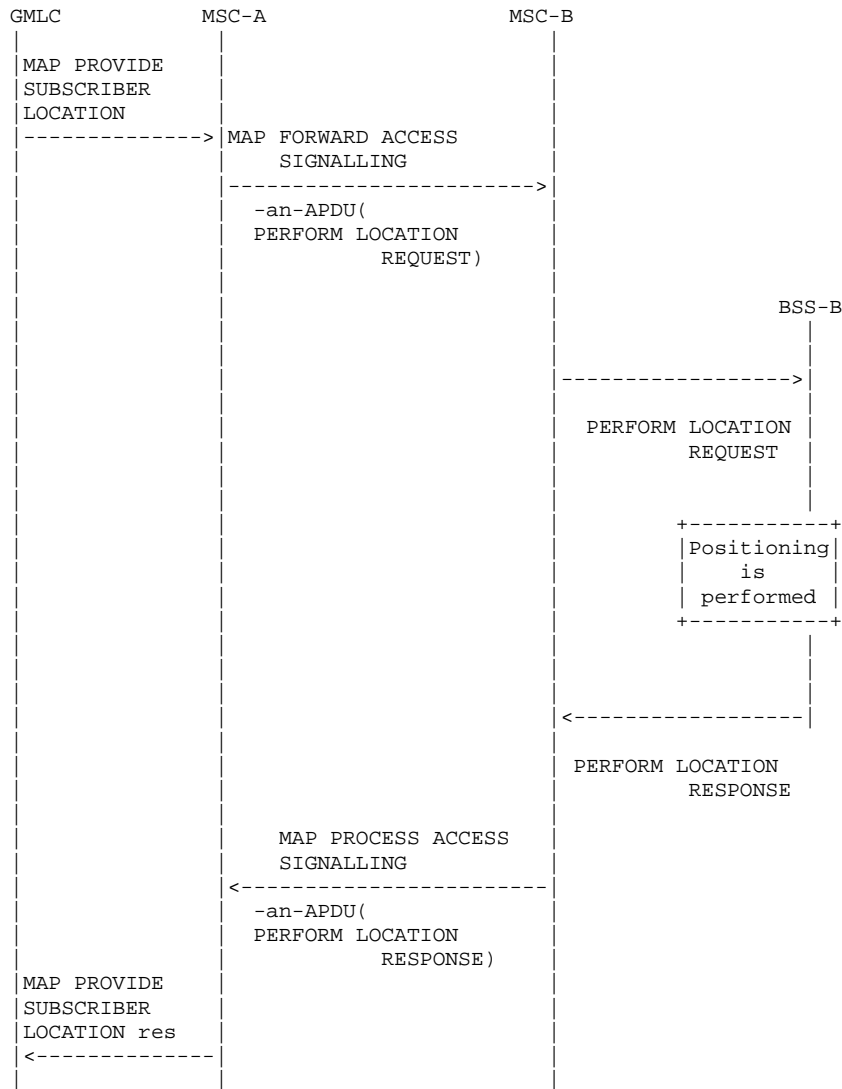
After a successful Inter-MSC handover, any positioning request received by the anchor MSC via the MAP message Provide Subscriber Location triggers the BSSMAP procedure Location Acquisition described in GSM 08.08. ~~In case of~~ For handover this procedure is executed according to GSM 09.08 with the anchor MSC playing the role of the MSC and the non anchor 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 MSC the ~~received~~ BSSMAP messages received from the anchor MSC are forwarded to the BSS, and the ~~received~~ BSSMAP messages received from the BSS are sent over the E-interface to the anchor MSC.

The signalling for a completed Location Acquisition procedure is shown in figures 65a.





**Figure 65a: Signalling for a completed Location Acquisition procedure**

After the inter-MSC handover, the MSC-B can perform intra-MSC GSM to UMTS handover. Any positioning request received by the anchor MSC after completion of the intra-MSC GSM to UMTS handover is handled as in case for Inter-MSC Handover GSM to UMTS (see section 4.9.1.2).

#### 4.9.1.2 Inter-MSC Handover (GSM to UMTS)

After a successful Inter-MSC GSM to UMTS inter system handover, any positioning request received by the anchor MSC via the MAP message Provide Subscriber Location triggers the BSSMAP procedure Location Acquisition described in ~~3GPP TS 48.008 GSM 08.08~~. ~~In case of~~ For handover this procedure is executed according to ~~3GPP TS 49.008 GSM 09.08~~ 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 received from the anchor MSC 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.

The signalling for a completed Location Acquisition procedure is shown in figures 65b.

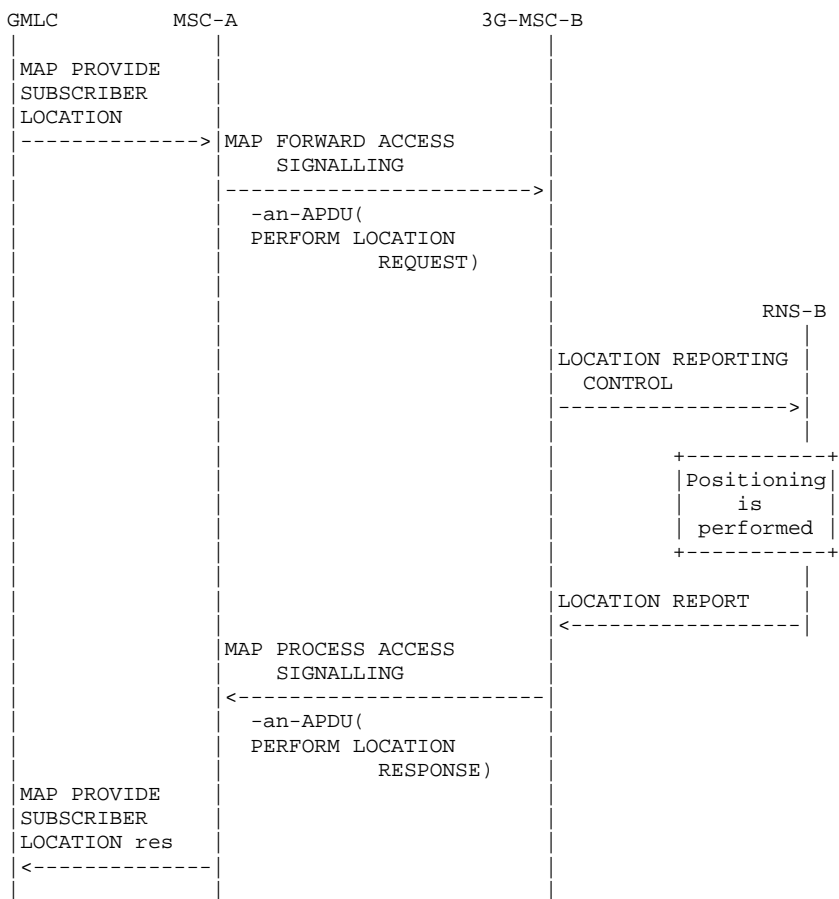


Figure 65b: Signalling for a completed Location Acquisition procedure

The interworking between the BSSMAP location acquisition messages in MAP and the RANAP location reporting 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 >Current Geographic Location Cell Identifier Classmark Inf. Type3 LCS Client Type Chosen Channel LCS Priority LCS QoS >Horizontal Accuracy GPS Assistance Data APDU	LOCATION REPORTING CONTROL RANAP information elements: Request Type >Event = Direct >Report Area = Geo. Coord. ---- ---- ---- ---- ---- Request Type >Accuracy Code ---- ----	1
Result	MAP PROCESS ACCESS SIG. request -an-APDU(PERFORM LOCATION RESPONSE) BSSMAP information elements: Location Estimate Positioning Data Deciphering Keys LCS Cause ----	LOCATION REPORT RANAP information elements: Area Identity >Geographical Area ---- ---- Cause Request Type	

NOTE 1: All other Location Type possibilities are not supported by UMTS positioning,

After the inter-MSC GSM to UMTS handover, the 3G MSC-B can perform intra-MSC UMTS to GSM handover. Any positioning request received by the anchor MSC after completion of the intra-MSC UMTS to GSM handover is handled as in case of for Inter-MSC Handover GSM to GSM (see section 4.9.1.1).

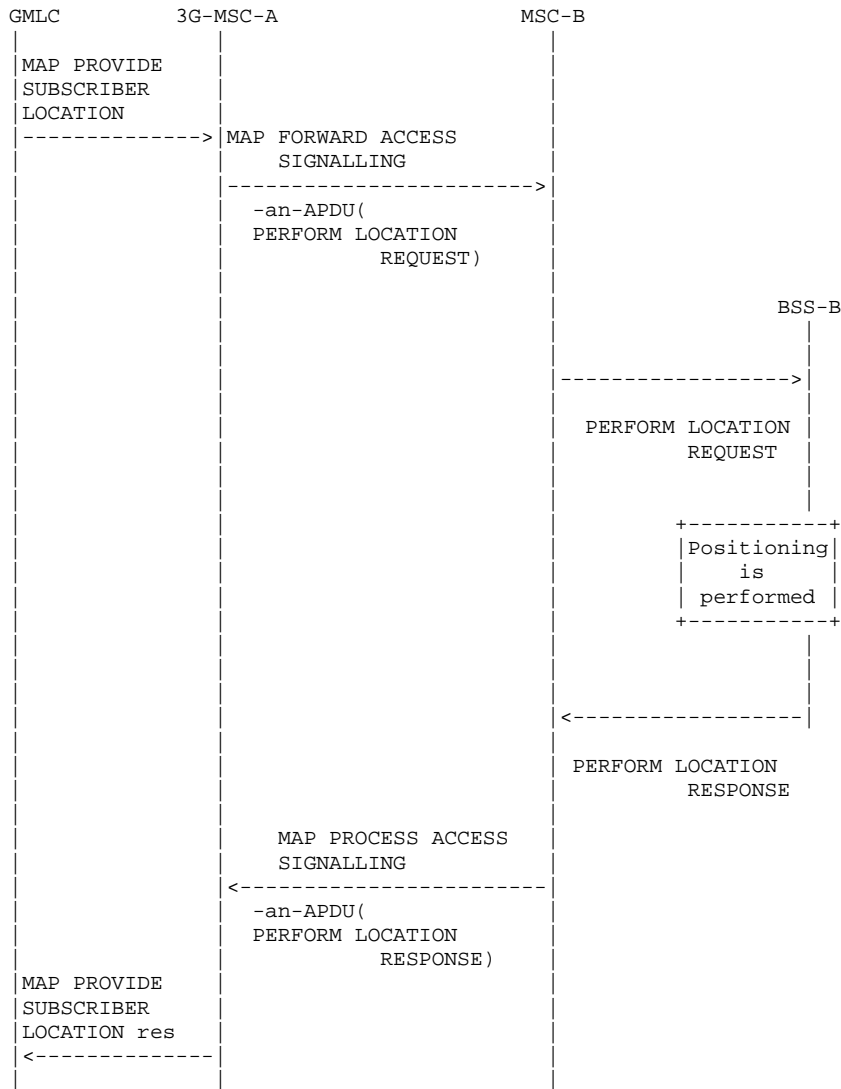
### 4.9.1.3 Inter-MSC Handover (UMTS to GSM)

After a successful Inter-MSC UMTS to GSM inter system handover, any positioning request received by the anchor 3G-MSC via the MAP message Provide Subscriber Location triggers the BSSMAP procedure Location Acquisition described in GSM 08.08. ~~In case of~~For handover this procedure is executed according to GSM 09.08 with the anchor 3G-MSC playing the role of the 3G-MSC and the non anchor 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 MSC the ~~received~~BSSMAP messages received from the anchor 3G-MSC are forwarded to the BSS, and the ~~received~~BSSMAP messages received from the BSS are sent over the E-interface to the anchor 3G-MSC.

The signalling for a completed Location Acquisition procedure is shown in figures 65~~b~~c.



**Figure 65bc:** Signalling for a completed Location Acquisition procedure

After the inter-MSC UMTS to GSM handover, the 3G MSC-B can perform intra-MSC GSM to UMTS handover. Any positioning request received by the anchor 3G MSC after completion of the intra-MSC GSM to UMTS handover is handled as in case of Inter-MSC Handover GSM to UMTS (see section 4.9.1.2).

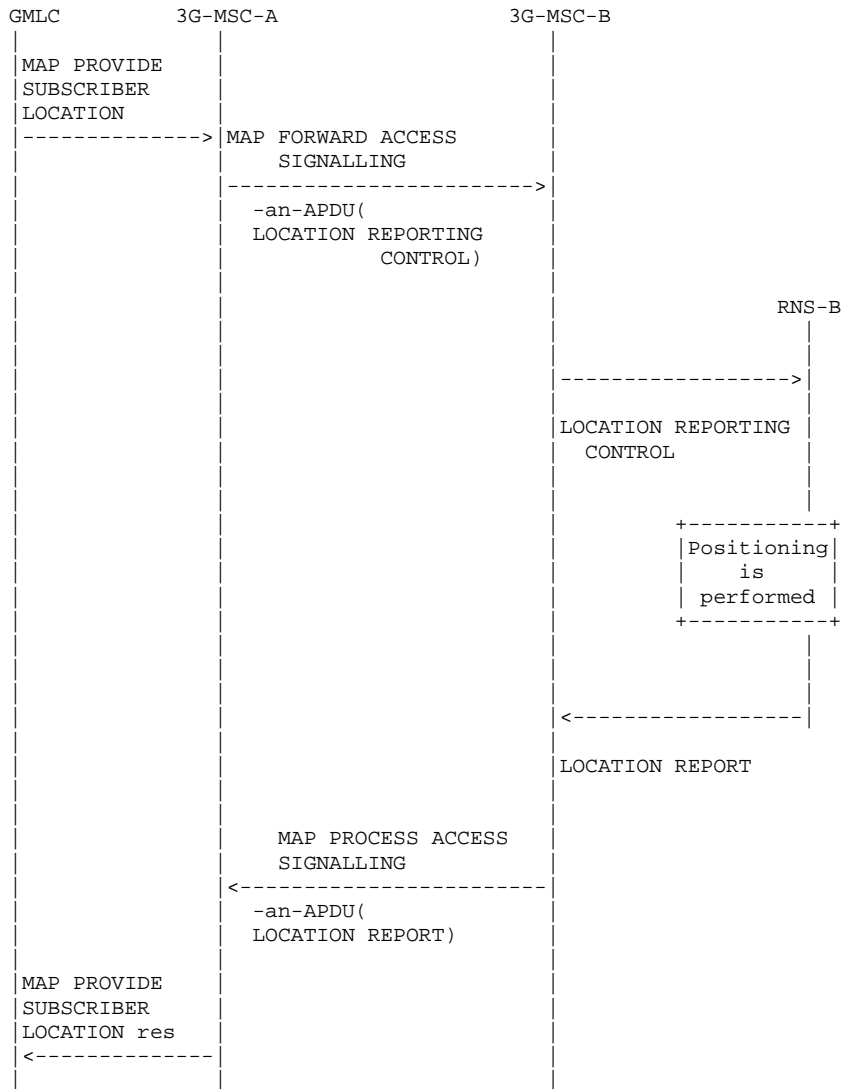
#### 4.9.1.4 Inter-MSC SRNS Relocation

After a successful Inter-MSC SRNS Relocation, any positioning request received by the anchor 3G-MSC via the MAP message Provide Subscriber Location triggers the RANAP procedure Location Reporting Control described in TS 25.413. ~~In case of~~ 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 ~~received~~ RANAP messages received from the anchor 3G-MSC are forwarded to the RNS, and the ~~received~~ RANAP messages received from the RNS are sent over the E-interface to the anchor 3G-MSC.

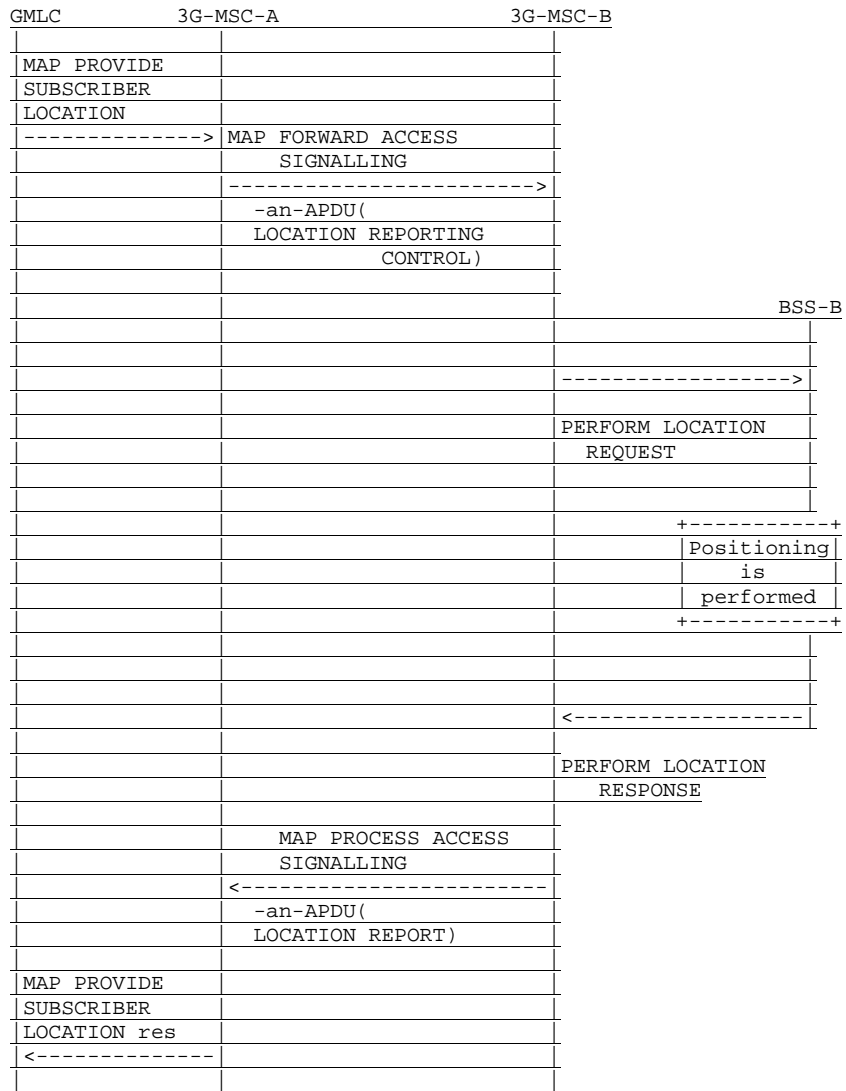
The signalling for a completed Location Acquisition procedure is shown in figures 65ed.



**Figure 65e:** Signalling for a completed Location Acquisition procedure

After the inter-MSC SRNS Relocation, the 3G MSC-B can perform intra-MSC UMTS to GSM handover. Any positioning request received by the anchor 3G MSC 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 Location Acquisition procedure is shown in figures 65e.



**Figure 65e: Signalling for a completed Location Acquisition procedure**

the interworking between the RANAP messages encapsulated in MAP and the BSSMAP messages is as follows:

	29.002	08.08	Notes
Forward message	MAP FORWARD ACCESS SIG. request	PERFORM LOCATION REQUEST	
	-an-APDU( LOCATION REPORTING CONTROL)		
	RANAP information elements:	BSSMAP information elements:	
	Request Type	Location Type	
	>Event = Direct	>Current Geographic	
	>Report Area = Geo. Coord.	Location	
	Request Type	LCS QoS	
	>Accuracy Code	>Horizontal Accuracy	
Result	MAP PROCESS ACCESS SIG. request	PERFORM LOCATION RESPONSE	
	-an-APDU( LOCATION REPORT)		
	RANAP information elements:	BSSMAP information elements:	
	Area Identity	Location Estimate	
	>Geographical Area		
	Cause	LCS Cause	
	Request Type	----	

## 4.9.2 Cause Code Mapping

### 4.9.2.1 Inter-MSC Handover(GSM to GSM)

When a mobile station is handed over from GSM to GSM, no mapping of cause codes is required. The MSC shall use the cause codes specified in GSM 08.08.

After the inter-MSC handover, the MSC-B can perform intra-MSC GSM to UMTS handover. A mapping of the cause codes used in the RANAP and the BSSMAP protocols is needed after completion of the intra-MSC GSM to UMTS handover and is the same as in case of Inter-MSC Handover GSM to UMTS (see section 4.9.2.2).

#### 4.9.2.2 Inter-MSC Handover (GSM to UMTS)

When a Mobile Station is handed over between GSM and UMTS, a mapping of the cause codes used in the RANAP and the BSSMAP protocols is needed. The mapping described here is applicable to the BSSMAP protocol even when used inside MAP in the E-interface.

The mapping between the cause codes received in RANAP Location Report and the LCS cause codes sent in BSSMAP Perform Location Response is as follows:

25.413	08.08	Notes
LOCATION REPORT	PERFORM LOCATION RESPONSE	
- Requested Report Type not Supported	- Position method failure	
- Requested Information not Available	- System Failure	
- all other cause codes	- System Failure	

After the inter-MSC GSM to UMTS handover, the 3G MSC-B can perform intra-MSC UMTS to GSM handover. No mapping of cause codes is required after completion of the intra-MSC UMTS to GSM handover as ~~in case of~~ for Inter-MSC Handover GSM to GSM (see section 4.9.2.1).

#### 4.9.2.3 Inter-MSC Handover (UMTS to GSM)

When a mobile station is handed over from UMTS to GSM, no mapping of cause codes is required. The 3G-MSC shall use the cause codes specified in GSM 08.08.

After the inter-MSC UMTS to GSM handover, the 3G MSC-B can perform intra-MSC GSM to UMTS handover. A mapping of the cause codes used in the RANAP and the BSSMAP protocols is needed after completion of the intra-MSC GSM to UMTS handover and is the same as ~~in case of~~ for Inter-MSC Handover GSM to UMTS (see section 4.9.2.2).

#### 4.9.2.4 Inter-MSC SRNS Relocation

When a mobile station is handed over from UMTS to UMTS, no mapping of cause codes is required. Both 3G-MSCs shall use the cause codes specified in TS 25.413.

After the inter-MSC SRNS Relocation, the 3G MSC-B can perform intra-MSC UMTS to GSM handover. A mapping of the cause codes used in the RANAP and the BSSMAP protocols is needed after completion of the intra-MSC UMTS to GSM handover.



The mapping between the cause codes received in BSSMAP Perform Location Response and the LCS cause codes sent in RANAP Location Report is as follows:

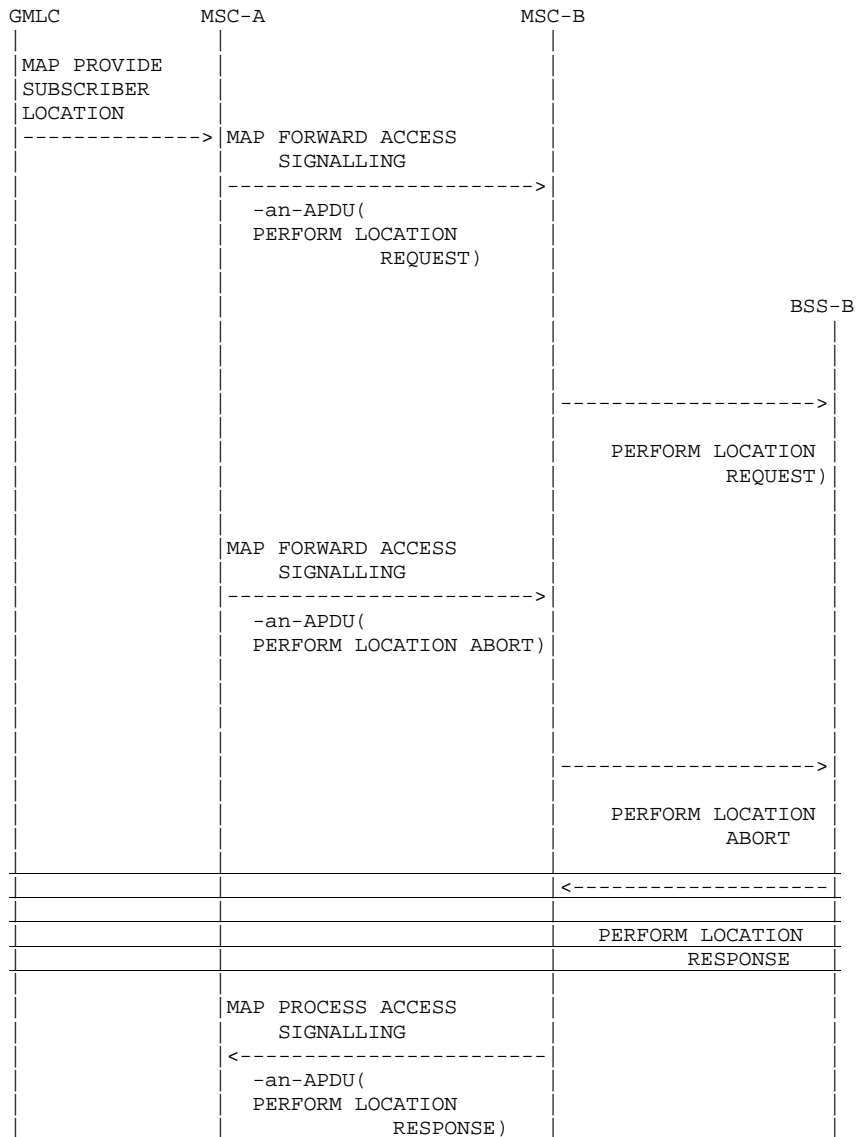
-----		Notes
08.08	25.413	
-----		-----
PERFORM LOCATION RESPONSE	LOCATION REPORT	
- Position method failure	- Requested Report Type not Supported	
- System Failure	- Unspecified Failure	
- Protocol Error	- Unspecified Failure	
- Data missing in position request	- Unspecified Failure	
- Unexpected data value in position request	- Unspecified Failure	
- Target MS Unreachable	- Unspecified Failure	
- Location request aborted	- Unspecified Failure	
- Facility not supported	- Requested Report Type not Supported	
- Inter-BSC Handover Ongoing	- Unspecified Failure	
- Intra-BSC Handover Complete	- Unspecified Failure	
- Congestion	- Unspecified Failure	
- Unspecified	- Unspecified Failure	

### 4.9.3 Aborted Location Acquisition

#### 4.9.3.1 Inter-MSC Handover (GSM to GSM)

When for any reason the on going location acquisition procedure needs to be aborted, the anchor MSC sends the BSSMAP message Perform Location Abort over the E-interface.

Figure 66a shows the signalling for an aborted Location Acquisition procedure.



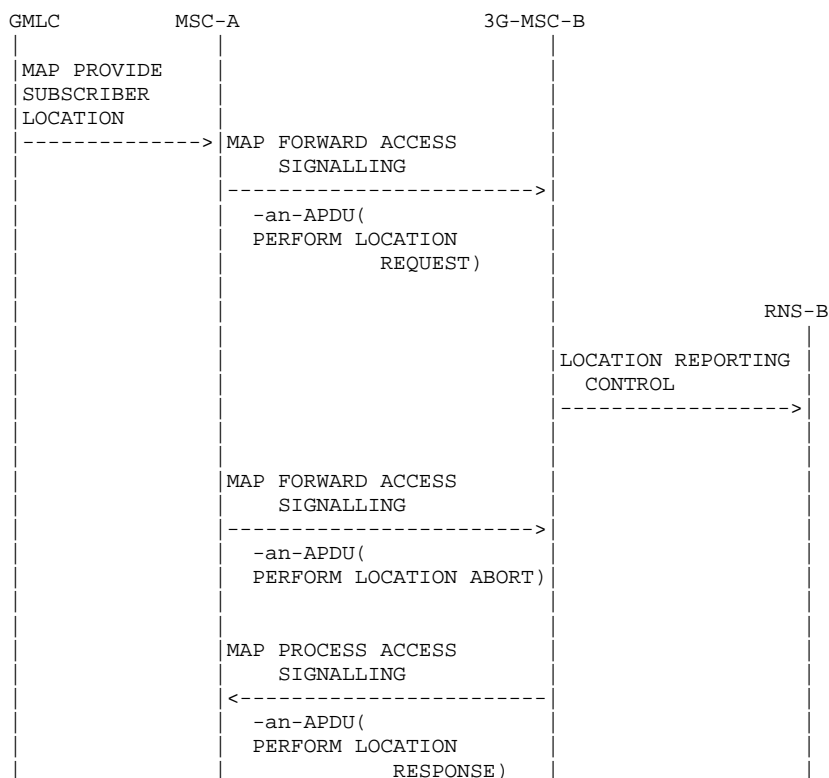
**Figure 66a: Signalling for an aborted Location Acquisition procedure**

After the inter-MSC handover, the MSC-B can perform intra-MSC GSM to UMTS handover. A positioning request that needs to be aborted by the anchor MSC after completion of the intra-MSC GSM to UMTS handover is handled as ~~an~~ ~~ease-off~~ for Inter-MSC Handover GSM to UMTS (see section 4.9.3.2).

### 4.9.3.2 Inter-MSC Handover (GSM to UMTS)

When for any reason the on going location acquisition procedure needs to be aborted, the anchor MSC sends the BSSMAP message Perform Location Abort over the E-interface.

Figure 66b shows the signalling for an aborted Location Acquisition procedure.



**Figure 66b: Signalling for an aborted Location Acquisition procedure**

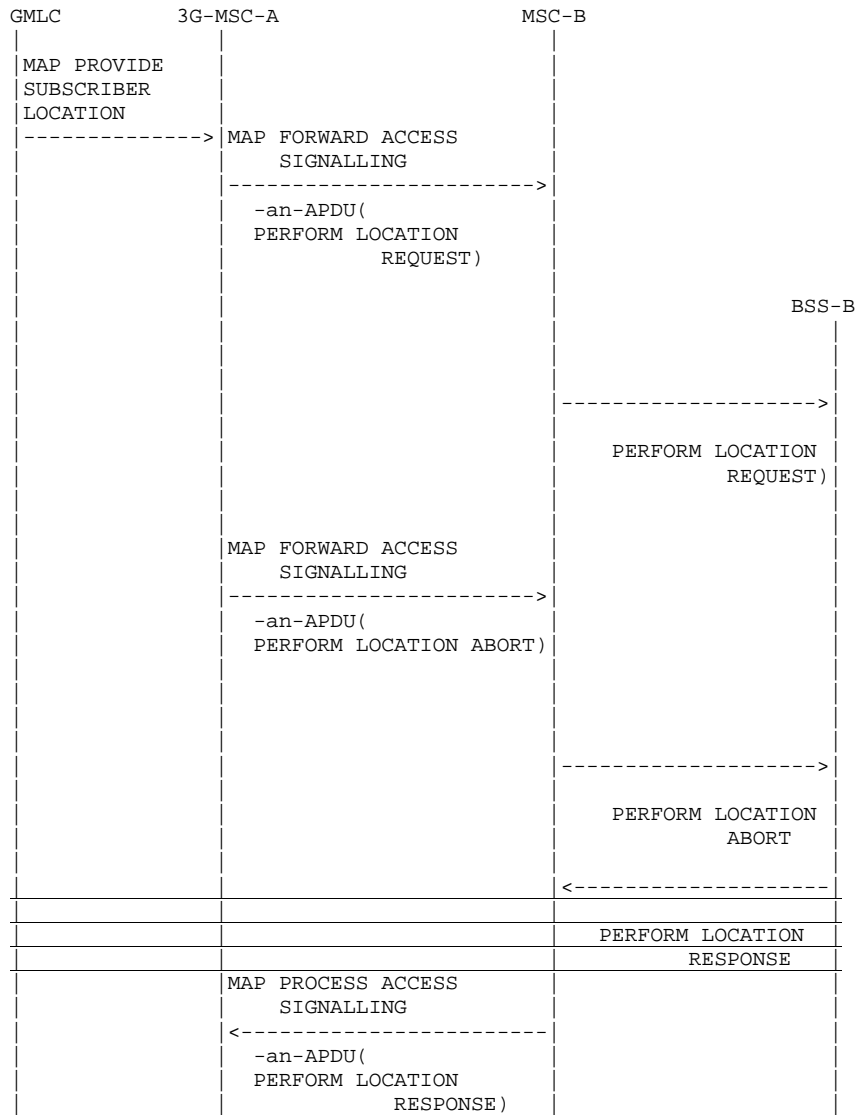
Since RANAP does not support abortion of a positioning request, non-anchor 3G-MSC shall generate a BSSMAP Perform Location Response with LCS Cause “Location request aborted” to be sent over the E-interface to the anchor MSC, and then shall discard any message from the RNS related to the aborted positioning request.

After the inter-MSC GSM to UMTS handover, the 3G MSC-B can perform intra-MSC UMTS to GSM handover. A positioning request that needs to be aborted by the anchor MSC after completion of the intra-MSC UMTS to GSM handover is handled as ~~in case of~~ Inter-MSC Handover GSM to GSM (see section 4.9.3.1).

### 4.9.3.3 Inter-MSC Handover (UMTS to GSM)

When for any reason the on going location acquisition procedure needs to be aborted, the anchor 3G-MSC sends the BSSMAP message Perform Location Abort over the E-interface.

Figure ~~66b~~ 66c shows the signalling for an aborted Location Acquisition procedure.



**Figure 66c: Signalling for an aborted Location Acquisition procedure**

After the inter-MSC UMTS to GSM handover, the 3G MSC-B can perform intra-MSC GSM to UMTS handover. A positioning request that needs to be aborted by the anchor 3G MSC after completion of the intra-MSC GSM to UMTS handover is handled as in case of Inter-MSC Handover GSM to UMTS (see section 4.9.3.2).

### 4.9.6.4 Inter-MSC SRNS Relocation

After a successful Inter-MSC SRNS Relocation a positioning request cannot be aborted by the 3G anchor MSC since RANAP does not support abortion of a positioning request.

\*\*\*\* END OF MODIFICATIONS \*\*\*\*



## CHANGE REQUEST

⌘ **29.010 CR 051** ⌘ rev **1** ⌘ Current version: **4.2.0** ⌘

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

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ LCS: clarification of mapping for Location Acquisition		
<b>Source:</b>	⌘ CN4		
<b>Work item code:</b>	⌘ LCS	<b>Date:</b>	⌘ 25/03/2002
<b>Category:</b>	⌘ <b>F</b> (Agreed by consensus) Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	<b>Release:</b>	⌘ Rel-4
		Use <u>one</u> of the following releases:	
		2 (GSM Phase 2)	
		R96 (Release 1996)	
		R97 (Release 1997)	
		R98 (Release 1998)	
		R99 (Release 1999)	
		REL-4 (Release 4)	
		REL-5 (Release 5)	

<b>Reason for change:</b>	⌘ The sections 4.9.1.x, 4.9.2.x, 4.9.3.x describing the Location Acquisition procedures after the different Handover cases still contain a number of errors and they do not describe what happens after an intra-msc inter-system handover is performed in non anchor MSC
<b>Summary of change:</b>	⌘ Correct a number of inconsistencies in the mentioned sections and describe the handling after intra-MSC inter-system handover in non-anchor MSC
<b>Consequences if not approved:</b>	⌘ Different implementations could arise from unspecified behaviour leading to interoperability problems.

<b>Clauses affected:</b>	⌘ 4.9.1.x, 4.9.2.x, 4.9.3.x		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	
<b>Other comments:</b>	⌘		

### 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** \*\*\*\*

## 4.9 Location Services

The general principles of the location services procedures are given in Technical Specification 3GPP TS 23.271.

3GPP TS 29.010 gives the necessary information for interworking between the 3GPP TS 25.413 RANAP protocol and the 3GPP TS 48.008 BSSMAP protocol. The interworking is necessary for positioning requests issued after a completed GSM to UMTS inter system handover. BSSMAP messages carried by MAP over the E-interface must be mapped by the non-anchor 3G-MSC into the corresponding RANAP messages to be sent over the Iu-interface and vice versa. ~~In case of~~ For Inter-MSC GSM to GSM Handover and Inter-MSC UMTS to UMTS SRNS Relocation no mapping between the 3GPP TS 25.413 RANAP protocol and the ~~3GPP TS 48.008 GSM 08.08~~ BSSMAP protocol is necessary, but only the interworking with the MAP protocol over the E-interface needs to be described.

### 4.9.1 Completed Location Acquisition

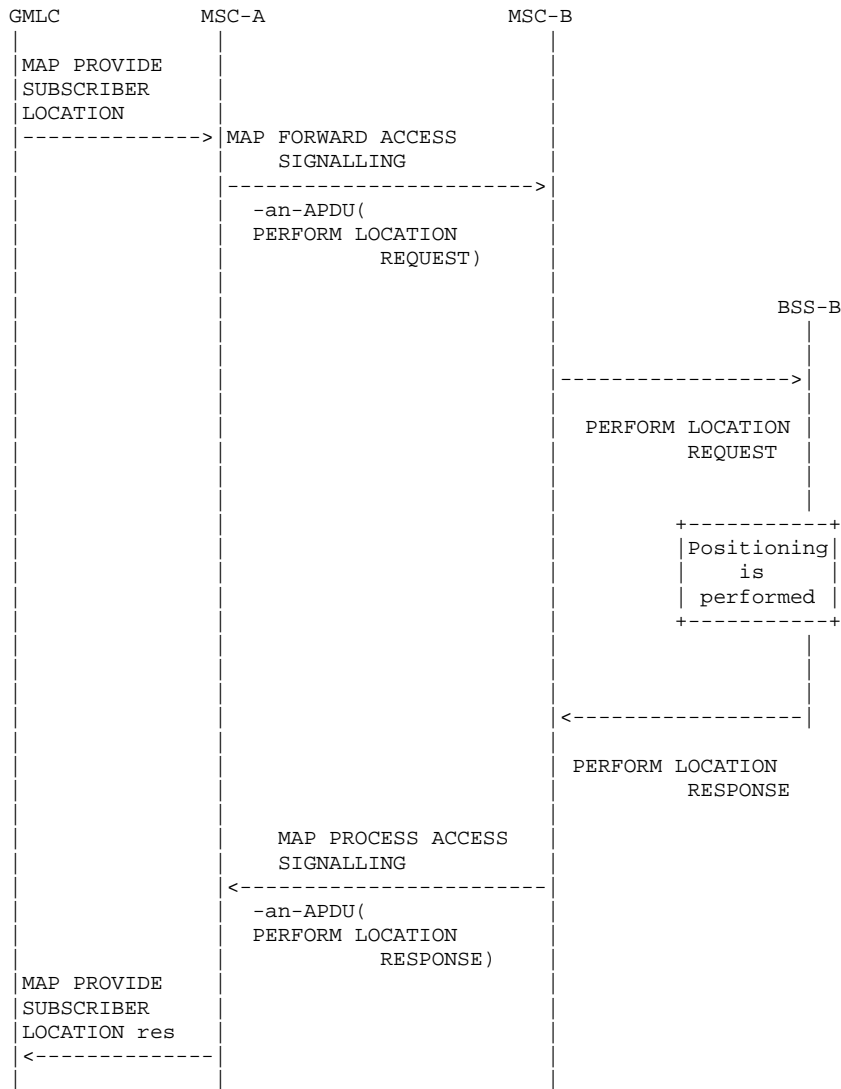
#### 4.9.1.1 Inter-MSC Handover (GSM to GSM)

After a successful Inter-MSC handover, any positioning request received by the anchor MSC via the MAP message Provide Subscriber Location triggers the BSSMAP procedure Location Acquisition described in ~~GSM 08.08~~ 3GPP TS 48.008. ~~In case of~~ For handover this procedure is executed according to ~~GSM 09.08~~ 3GPP TS 49.008 with the anchor MSC playing the role of the MSC and the non anchor 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 MSC the ~~received~~ BSSMAP messages received from the anchor MSC are forwarded to the BSS, and the ~~received~~ BSSMAP messages received from the BSS are sent over the E-interface to the anchor MSC.

The signalling for a completed Location Acquisition procedure is shown in figures 65a.



**Figure 65a: Signalling for a completed Location Acquisition procedure**

After the inter-MSC handover, the MSC-B can perform intra-MSC GSM to UMTS handover. Any positioning request received by the anchor MSC after completion of the intra-MSC GSM to UMTS handover is handled as ~~in case of~~ Inter-MSC Handover GSM to UMTS (see section 4.9.1.2).

#### 4.9.1.2 Inter-MSC Handover (GSM to UMTS)

After a successful Inter-MSC GSM to UMTS inter system handover, any positioning request received by the anchor MSC via the MAP message Provide Subscriber Location triggers the BSSMAP procedure Location Acquisition described in 3GPP TS 48.008. ~~In case of~~For handover this procedure is executed according to 3GPP 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 received from the anchor MSC 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.

The signalling for a completed Location Acquisition procedure is shown in figures 65b.



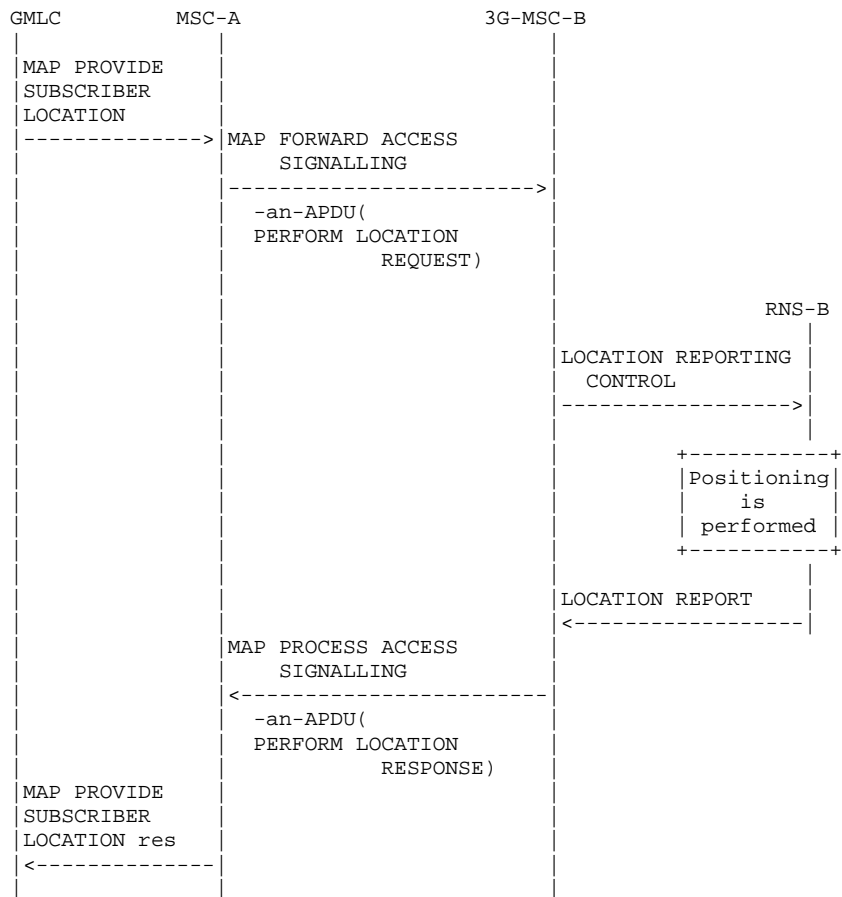


Figure 65b: Signalling for a completed Location Acquisition procedure

The interworking between the BSSMAP location acquisition messages in MAP and the RANAP location reporting 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 >Current Geographic Location Cell Identifier Classmark Inf. Type3 LCS Client Type Chosen Channel LCS Priority LCS QoS >Horizontal Accuracy GPS Assistance Data APDU	LOCATION REPORTING CONTROL RANAP information elements: Request Type >Event = Direct >Report Area = Geo. Coord. ---- ---- ---- ---- ---- Request Type >Accuracy Code ---- ----	1
Result	MAP PROCESS ACCESS SIG. request -an-APDU( PERFORM LOCATION RESPONSE) BSSMAP information elements: Location Estimate Positioning Data Deciphering Keys LCS Cause ----	LOCATION REPORT RANAP information elements: Area Identity >Geographical Area ---- ---- Cause Request Type	

NOTE 1: All other Location Type possibilities are not supported by UMTS positioning,

After the inter-MSC GSM to UMTS handover, the 3G MSC-B can perform intra-MSC UMTS to GSM handover. Any positioning request received by the anchor MSC after completion of the intra-MSC UMTS to GSM handover is handled as in case of for Inter-MSC Handover GSM to GSM (see section 4.9.1.1).

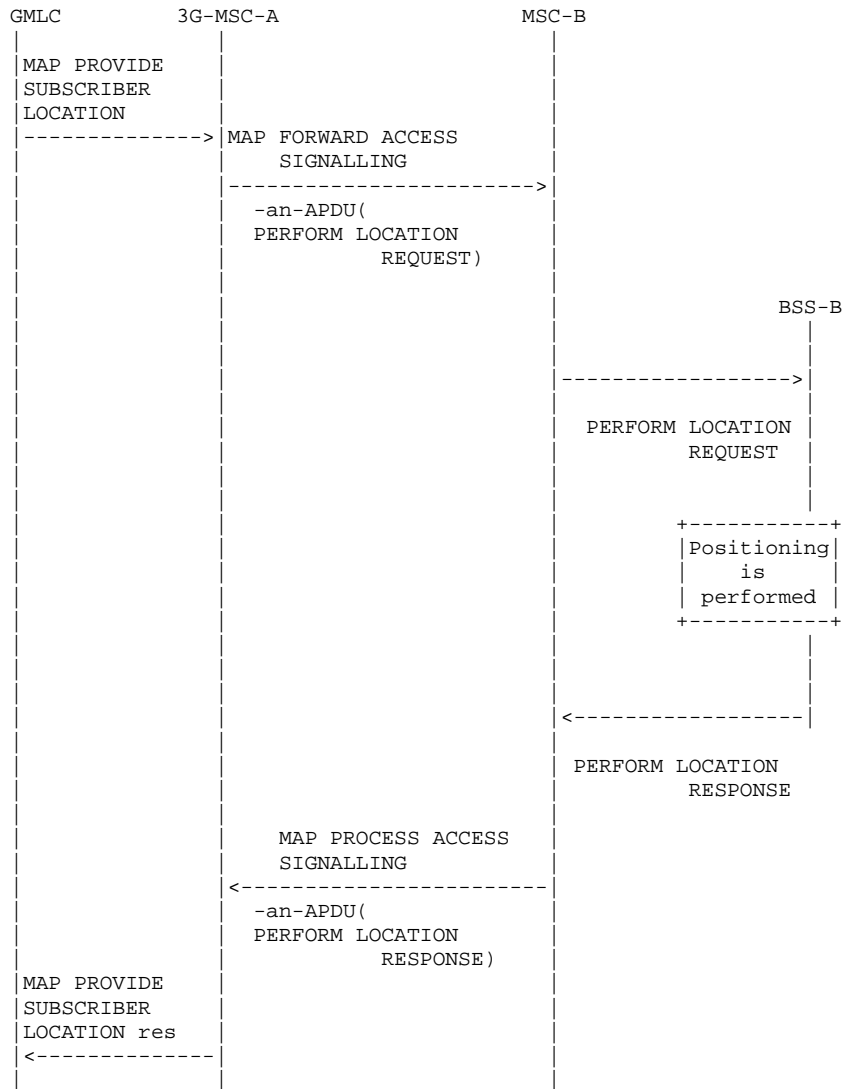
### 4.9.1.3 Inter-MSC Handover (UMTS to GSM)

After a successful Inter-MSC UMTS to GSM inter system handover, any positioning request received by the anchor 3G-MSC via the MAP message Provide Subscriber Location triggers the BSSMAP procedure Location Acquisition described in ~~GSM 08.08~~3GPP TS 48.008. ~~In case of~~For handover this procedure is executed according to ~~GSM 09.08~~3GPP TS 49.008 with the anchor 3G-MSC playing the role of the 3G-MSC and the non anchor 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 MSC the ~~received~~BSSMAP messages received from the anchor 3G-MSC are forwarded to the BSS, and the ~~received~~BSSMAP messages received from the BSS are sent over the E-interface to the anchor 3G-MSC.

The signalling for a completed Location Acquisition procedure is shown in figures 65~~b~~c.



**Figure 65bc:** Signalling for a completed Location Acquisition procedure

After the inter-MSC UMTS to GSM handover, the 3G MSC-B can perform intra-MSC GSM to UMTS handover. Any positioning request received by the anchor 3G MSC after completion of the intra-MSC GSM to UMTS handover is handled as in case of for Inter-MSC Handover GSM to UMTS (see section 4.9.1.2).

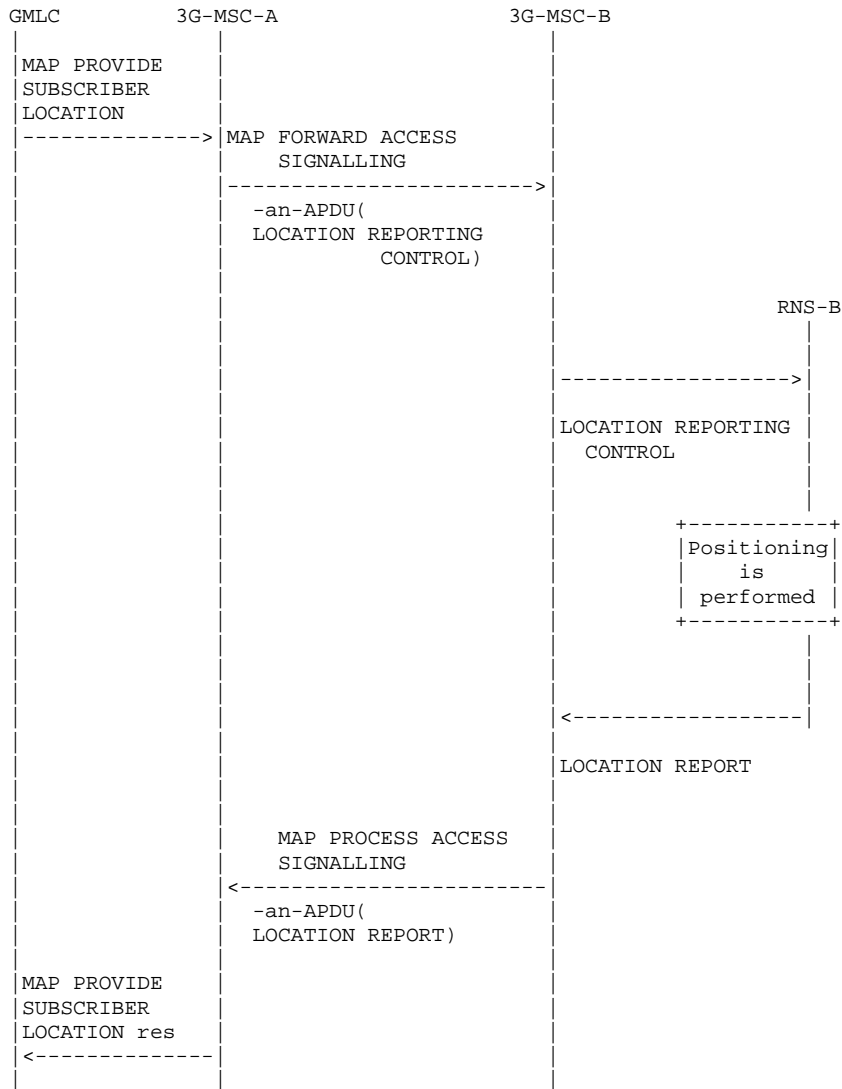
#### 4.9.1.4 Inter-MSC SRNS Relocation

After a successful Inter-MSC SRNS Relocation, any positioning request received by the anchor 3G-MSC via the MAP message Provide Subscriber Location triggers the RANAP procedure Location Reporting Control described in TS 25.413. ~~In case of~~ 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 ~~received~~ RANAP messages received from the anchor 3G-MSC are forwarded to the RNS, and the ~~received~~ RANAP messages received from the RNS are sent over the E-interface to the anchor 3G-MSC.

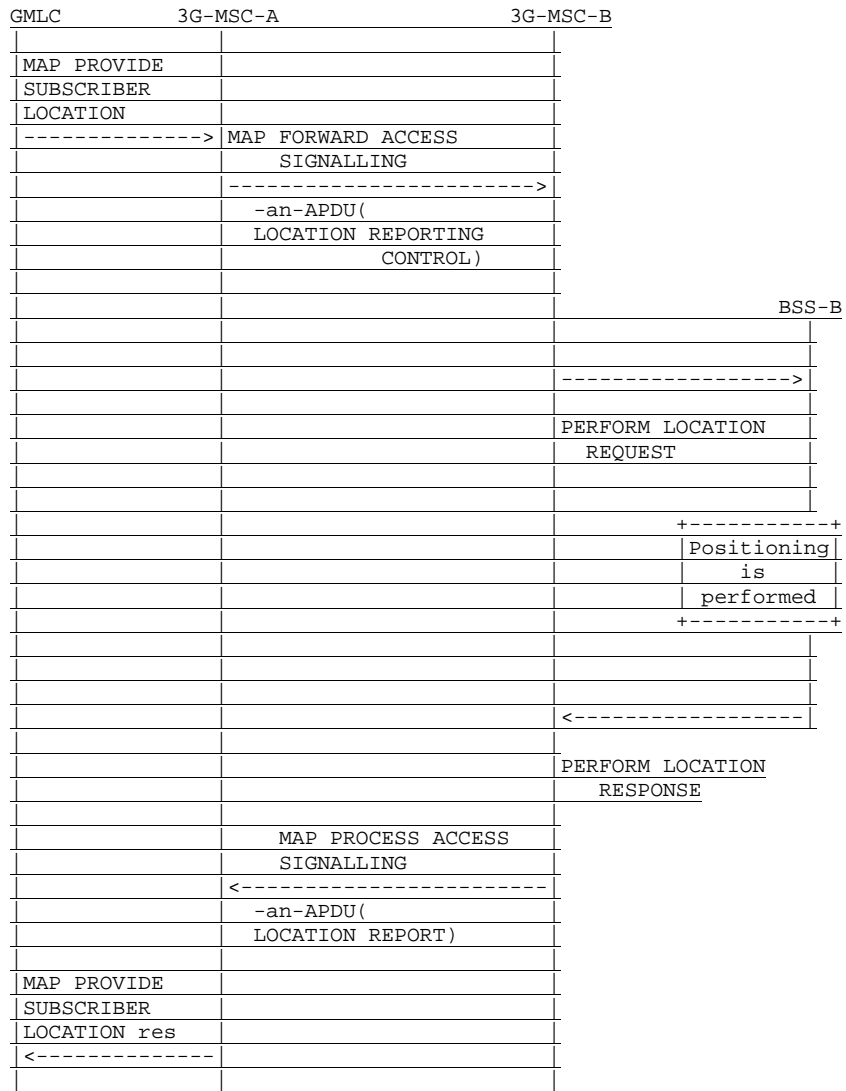
The signalling for a completed Location Acquisition procedure is shown in figures 65ed.



**Figure 65e:** Signalling for a completed Location Acquisition procedure

After the inter-MSC SRNS Relocation, the 3G MSC-B can perform intra-MSC UMTS to GSM handover. Any positioning request received by the anchor 3G MSC 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 Location Acquisition procedure is shown in figures 65e.



**Figure 65e: Signalling for a completed Location Acquisition procedure**

the interworking between the RANAP messages encapsulated in MAP and the BSSMAP messages is as follows:

	29.002	08.08	Notes
Forward message	MAP FORWARD ACCESS SIG. request	PERFORM LOCATION REQUEST	
	-an-APDU( LOCATION REPORTING CONTROL)		
	RANAP information elements:	BSSMAP information elements:	
	Request Type	Location Type	
	>Event = Direct	>Current Geographic	
	>Report Area = Geo. Coord.	Location	
	Request Type	LCS QoS	
	>Accuracy Code	>Horizontal Accuracy	
Result	MAP PROCESS ACCESS SIG. request	PERFORM LOCATION RESPONSE	
	-an-APDU( LOCATION REPORT)		
	RANAP information elements:	BSSMAP information elements:	
	Area Identity	Location Estimate	
	>Geographical Area		
	Cause	LCS Cause	
	Request Type	----	

## 4.9.2 Cause Code Mapping

### 4.9.2.1 Inter-MSC Handover(GSM to GSM)

When a mobile station is handed over from GSM to GSM, no mapping of cause codes is required. The MSC shall use the cause codes specified in ~~GSM 08.08~~ 3GPP TS 48.008.

After the inter-MSC handover, the MSC-B can perform intra-MSC GSM to UMTS handover. A mapping of the cause codes used in the RANAP and the BSSMAP protocols is needed after completion of the intra-MSC GSM to UMTS handover and is the same as in case of Inter-MSC Handover GSM to UMTS (see section 4.9.2.2).

### 4.9.2.2 Inter-MSC Handover (GSM to UMTS)

When a Mobile Station is handed over between GSM and UMTS, a mapping of the cause codes used in the RANAP and the BSSMAP protocols is needed. The mapping described here is applicable to the BSSMAP protocol even when used inside MAP in the E-interface.

The mapping between the cause codes received in RANAP Location Report and the LCS cause codes sent in BSSMAP Perform Location Response is as follows:

25.413	08.08	Notes
LOCATION REPORT	PERFORM LOCATION RESPONSE	
- Requested Report Type not Supported	- Position method failure	
- Requested Information not Available	- System Failure	
- all other cause codes	- System Failure	

After the inter-MSC GSM to UMTS handover, the 3G MSC-B can perform intra-MSC UMTS to GSM handover. No mapping of cause codes is required after completion of the intra-MSC UMTS to GSM handover as in case of for Inter-MSC Handover GSM to GSM (see section 4.9.2.1).

### 4.9.2.3 Inter-MSC Handover (UMTS to GSM)

When a mobile station is handed over from UMTS to GSM, no mapping of cause codes is required. The 3G-MSC shall use the cause codes specified in ~~GSM 08.08~~3GPP TS 48.008.

After the inter-MSC UMTS to GSM handover, the 3G MSC-B can perform intra-MSC GSM to UMTS handover. A mapping of the cause codes used in the RANAP and the BSSMAP protocols is needed after completion of the intra-MSC GSM to UMTS handover and is the same as in case of for Inter-MSC Handover GSM to UMTS (see section 4.9.2.2).

### 4.9.2.4 Inter-MSC SRNS Relocation

When a mobile station is handed over from UMTS to UMTS, no mapping of cause codes is required. Both 3G-MSCs shall use the cause codes specified in TS 25.413.

After the inter-MSC SRNS Relocation, the 3G MSC-B can perform intra-MSC UMTS to GSM handover. A mapping of the cause codes used in the RANAP and the BSSMAP protocols is needed after completion of the intra-MSC UMTS to GSM handover.

The mapping between the cause codes received in BSSMAP Perform Location Response and the LCS cause codes sent in RANAP Location Report is as follows:

08.08	25.413	Notes
PERFORM LOCATION RESPONSE	LOCATION REPORT	
- Position method failure	- Requested Report Type not Supported	
- System Failure	- Unspecified Failure	
- Protocol Error	- Unspecified Failure	
- Data missing in position request	- Unspecified Failure	
- Unexpected data value in position request	- Unspecified Failure	
- Target MS Unreachable	- Unspecified Failure	
- Location request aborted	- Unspecified Failure	
- Facility not supported	- Requested Report Type not Supported	
- Inter-BSC Handover Ongoing	- Unspecified Failure	
- Intra-BSC Handover Complete	- Unspecified Failure	
- Congestion	- Unspecified Failure	
- Unspecified	- Unspecified Failure	

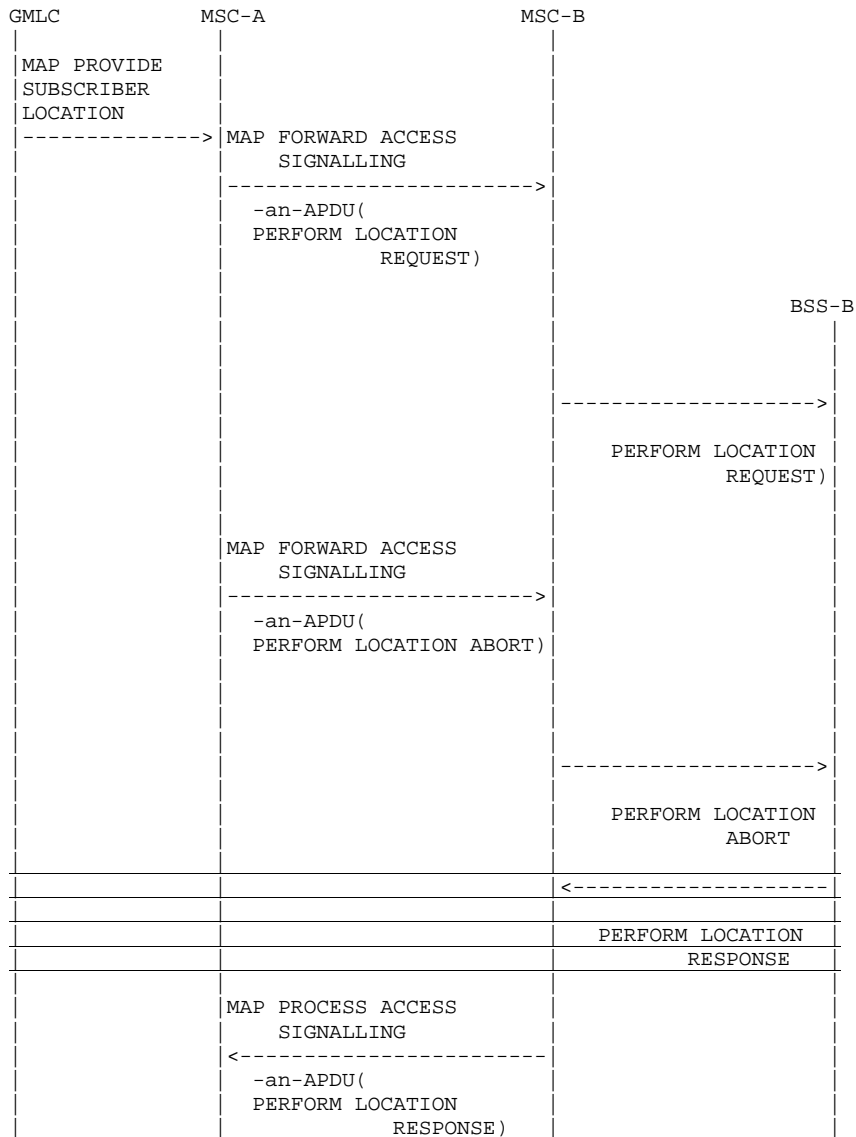


### 4.9.3 Aborted Location Acquisition

#### 4.9.3.1 Inter-MSC Handover (GSM to GSM)

When for any reason the on going location acquisition procedure needs to be aborted, the anchor MSC sends the BSSMAP message Perform Location Abort over the E-interface.

Figure 66a shows the signalling for an aborted Location Acquisition procedure.



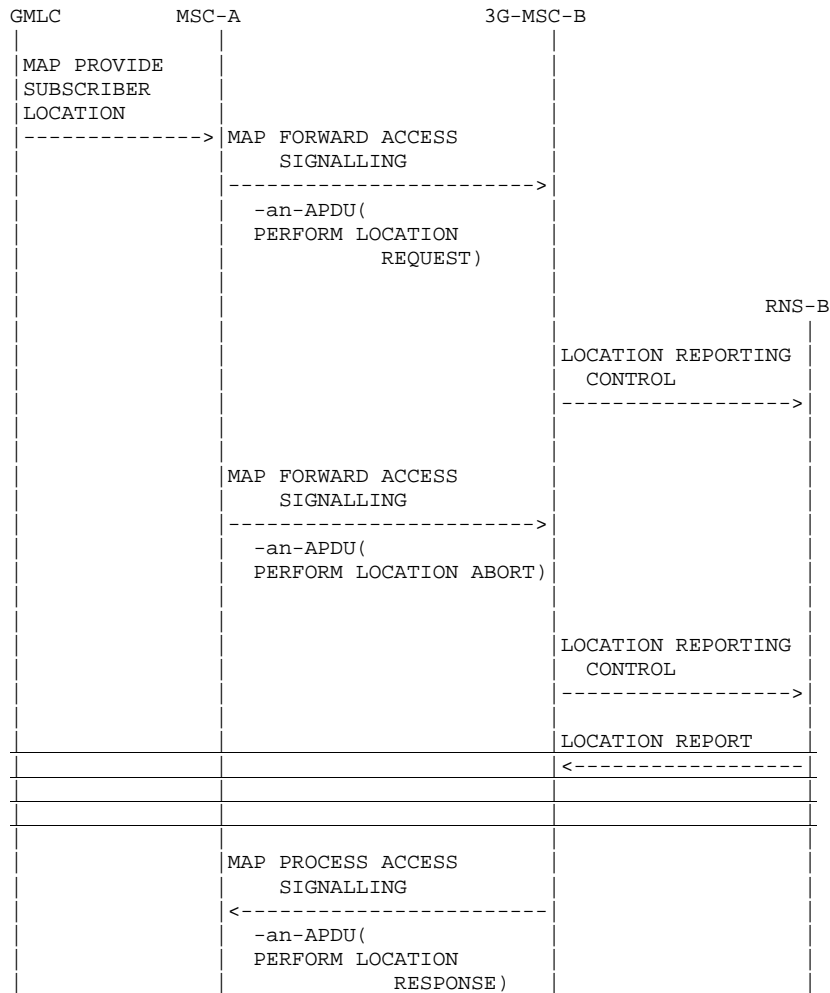
**Figure 66a: Signalling for an aborted Location Acquisition procedure**

After the inter-MSC handover, the MSC-B can perform intra-MSC GSM to UMTS handover. A positioning request that needs to be aborted by the anchor MSC after completion of the intra-MSC GSM to UMTS handover is handled as ~~an~~ ~~ease off~~ for Inter-MSC Handover GSM to UMTS (see section 4.9.3.2).

### 4.9.3.2 Inter-MSC Handover (GSM to UMTS)

When for any reason the on going location acquisition procedure needs to be aborted, the anchor MSC sends the BSSMAP message Perform Location Abort over the E-interface.

Figure 66b shows the signalling for an aborted Location Acquisition procedure.



**Figure 66b: Signalling for an aborted Location Acquisition procedure**

The interworking between the BSSMAP location acquisition messages in MAP and the RANAP location reporting messages is as follows:

	29.002	25.413	Notes
Forward message	MAP FORWARD ACCESS SIG. request  -an-APDU( PERFORM LOCATION ABORT)  BSSMAP information elements:  LCS Cause	LOCATION REPORTING CONTROL  RANAP information elements:  Request Type >Event = Stop <u>Direct</u> >Report Area = Geo. Coord.	
Result	MAP PROCESS ACCESS SIG. request -an-APDU( PERFORM LOCATION RESPONSE)  BSSMAP information elements:  LCS Cause  LCS Cause	<u>LOCATION REPORT</u>  RANAP information elements:  Cause	1

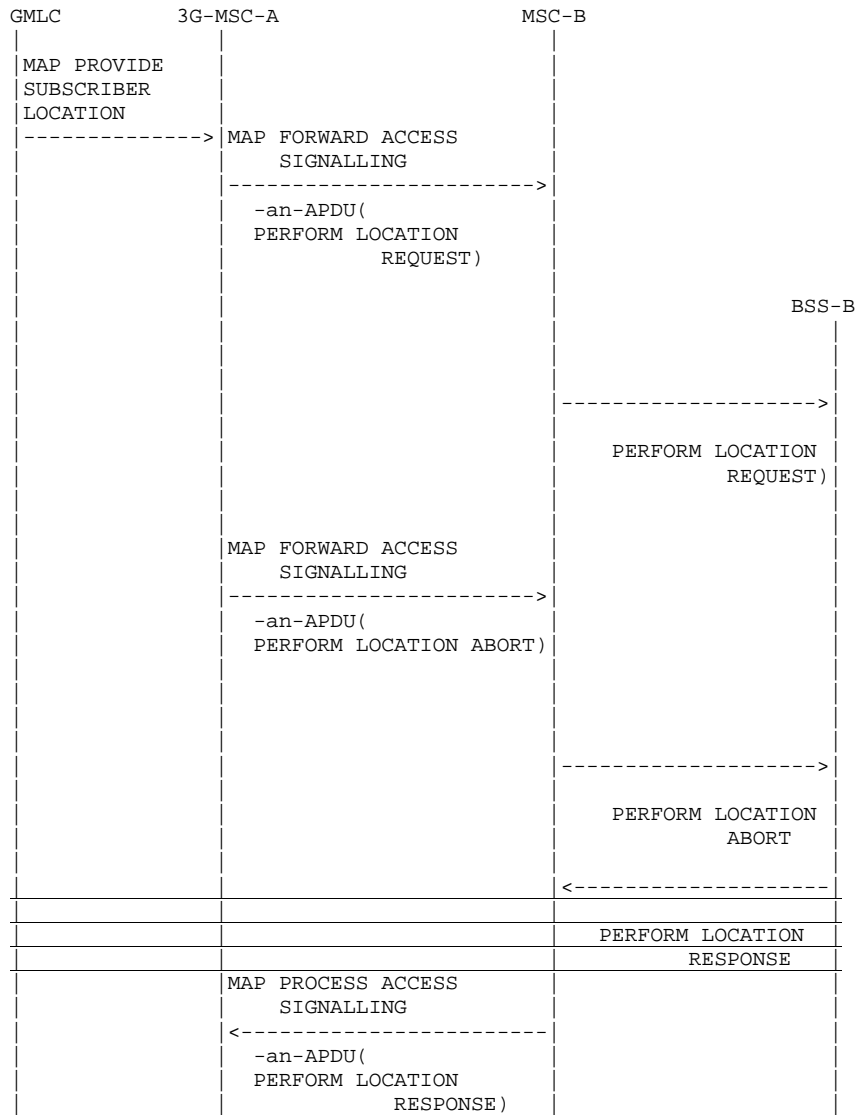
NOTE 1: PERFORM LOCATION RESPONSE with LCS cause shall be generated by 3G-MSC-B.

After the inter-MSC GSM to UMTS handover, the 3G MSC-B can perform intra-MSC UMTS to GSM handover. A positioning request that needs to be aborted by the anchor MSC after completion of the intra-MSC UMTS to GSM handover is handled as in case of Inter-MSC Handover GSM to GSM (see section 4.9.3.1).

### 4.9.3.3 Inter-MSC Handover (UMTS to GSM)

When for any reason the on going location acquisition procedure needs to be aborted, the anchor 3G-MSC sends the BSSMAP message Perform Location Abort over the E-interface.

Figure ~~66b-66c~~ shows the signalling for an aborted Location Acquisition procedure.



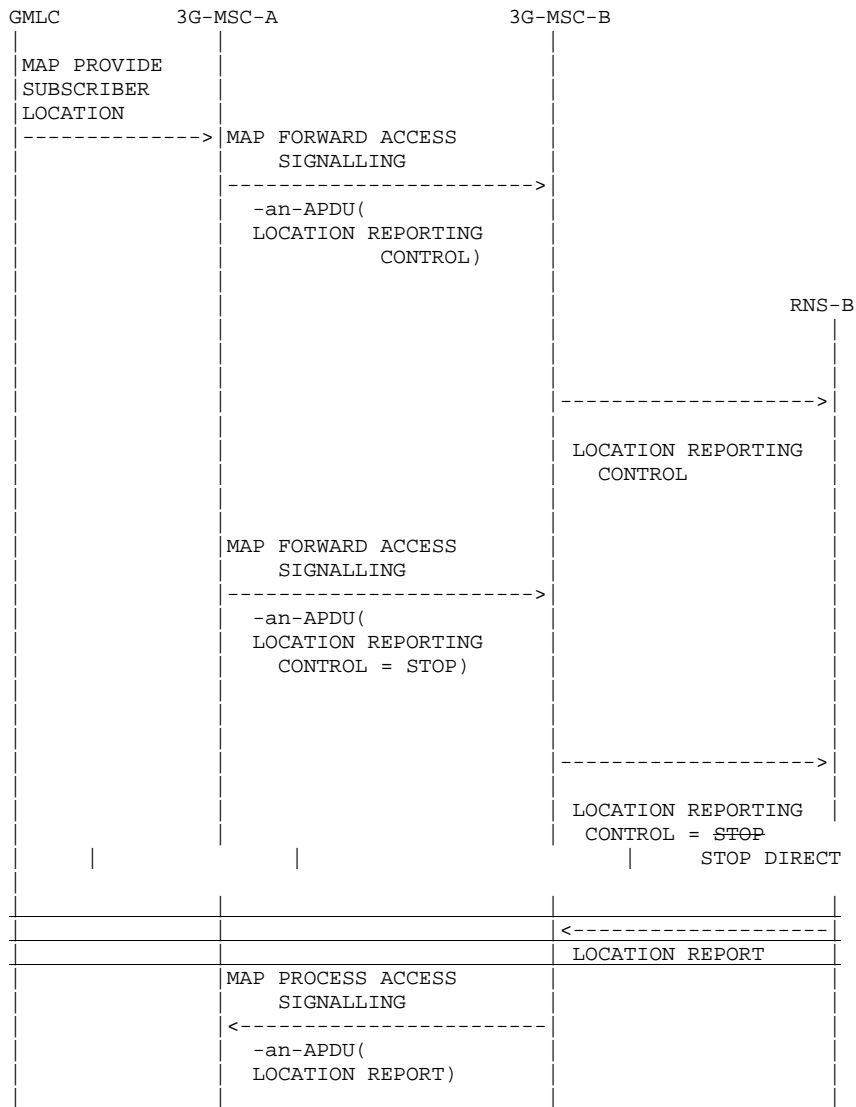
**Figure 66cb: Signalling for an aborted Location Acquisition procedure**

After the inter-MSC UMTS to GSM handover, the 3G MSC-B can perform intra-MSC GSM to UMTS handover. A positioning request that needs to be aborted by the anchor 3G MSC after completion of the intra-MSC GSM to UMTS handover is handled as in case of Inter-MSC Handover GSM to UMTS (see section 4.9.3.2)..

### 4.9.3.4 Inter-MSC SRNS Relocation

When for any reason the on going location acquisition procedure needs to be aborted, the anchor 3G-MSC sends the RANAP message Location Reporting Control over the E-interface.

Figure 66de shows the signalling for an aborted Location Acquisition procedure.



**Figure 66e:** Signalling for an aborted Location Acquisition procedure

After the inter-MSC SRNS Relocation, the 3G MSC-B can perform intra-MSC UMTS to GSM handover. A positioning request that needs to be aborted by the anchor 3G MSC 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 Location Acquisition procedure is shown in figures 65e.

GMLC	3G-MSC-A	3G-MSC-B
MAP PROVIDE		
SUBSCRIBER		
LOCATION		
----->	MAP FORWARD ACCESS	
	SIGNALLING	
	----->	
	-an-APDU(	
	LOCATION REPORTING	
	CONTROL)	
		BSS-B
		----->
		PERFORM LOCATION
		ABORT
		<-----
		PERFORM LOCATION
		RESPONSE
	MAP PROCESS ACCESS	
	SIGNALLING	
	<-----	
	-an-APDU(	
	LOCATION REPORT)	
MAP PROVIDE		
SUBSCRIBER		
LOCATION res		
<-----		

**Figure 65e: Signalling for an aborted Location Acquisition procedure**

the interworking between the RANAP messages encapsulated in MAP and the BSSMAP messages is as follows:

	29.002	08.08	Notes
Forward message	MAP FORWARD ACCESS SIG. request	PERFORM LOCATION ABORT	
	-an-APDU( LOCATION REPORTING CONTROL)		
	RANAP information elements:	BSSMAP information elements:	
	Request Type	LCS Cause	
	>Event = Stop Direct	> Location request	
	>Report Area = Geo. Coord.	aborted	
Result	MAP PROCESS ACCESS SIG. request	PERFORM LOCATION RESPONSE	
	-an-APDU( LOCATION REPORT)		
	RANAP information elements:	BSSMAP information elements:	
	Cause	LCS Cause	
	>Unspecified Failure	> Location request aborted	

**\*\*\*\* END OF MODIFICATIONS \*\*\*\***