

**TSG-RAN Meeting #15
Cheju, Korea, 5 - 8 March 2002**

TSGRP#15(02) 0260

Title: Age-of-Location and Any-Time-Interrogation Solution

Source: Siemens AG, Vodafone Ltd

Agenda item:

RP_Num	Tdoc_Num	Specification	CR_Num	Revision	3G_Release	CR_Subject	CR_Category	Cur_Ver_Num	Workitem
RP-020260		25.413	434		3R99	Inclusion of "Age of Location IE into LOCATION REPORT"	C	3.8.0	TEI
RP-020260		25.413	435		3Rel-4	Inclusion of "Age of Location IE into LOCATION REPORT"	C	4.3.0	TEI
RP-020260		25.305	82		1R99	Correction to CELL ID positioning when UE is not reachable.	F	3.7.0	TEI
RP-020260		25.305	83		1Rel-4	Correction to CELL ID positioning when UE is not reachable.	A	4.2.0	TEI
RP-020260		25.305	81		1Rel-5	Correction to CELL ID positioning when UE is not reachable.	A	5.3.0	TEI

CHANGE REQUEST

⌘ **25.305 CR 082** ⌘ ev **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

Title:	⌘ Correction to CELL ID positioning when UE is not reachable.
Source:	⌘ Nokia
Work item code:	⌘ <input type="text"/>
Date:	⌘ 21/02/02
Category:	⌘ F
	Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900 .
Release:	⌘ 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)

Reason for change: ⌘ RAN3 discovered that there is a contradiction between TS 25.305 and TS 23.271(TS 23.171 for R99): TS 25.305 requires the RNC to deliver in the outlined scenario (see S2's LS) the last known location and the age of that location information, whereas TS 23.271 specifies the RNC to report a failure:

Extract from TS 25.305 V3.7.0/V4.2.0
8.1.1 UE Cell ID is not known
For UE for which the cell ID is not known at the time the UE Positioning request is received at the SRNC, the UE may be paged to locate its current cell ID. If the UE is in an idle mode and there is a need for it to be paged, then the paging shall be initiated by the CN. If the UE is in URA_PCH state the paging may be initiated by the SRNC in UTRAN. For example, the UE can be forced to perform a transition to a Cell_FACH state to define the cell ID of its current cell. If the UE is in an idle mode, or in a RRC connected state when there is a need to page for the UE to obtain the cell ID, the CN may initiate paging, authentication and ciphering, as specified in [13]. Alternatively, the cell ID may be determined as the one that was used during the last active connection to the UE. This determination should be accompanied by the time-of-day of the last connection in the cell.

Extract from TS 23.171 v3.6.0
8.7.1.3 Location Calculation and Release Procedure
(10) When a location estimate best satisfying the requested QoS has been obtained, the SRNC returns it to the 3G-MSC in a Location Report message. If a location estimate could not be obtained, the SRNC returns a Location Report message containing a failure cause and no location estimate.

Extract from TS 23.271 v4.4.0
9.1.6.3 Location Calculation and Release Procedure
9) When location information best satisfying the requested location type and QoS has been obtained, the RAN returns it to the SGSN in a Location Report message. If a location estimate could not be obtained, the RAN returns a Location Report message containing a failure cause and no location estimate.

	<p>TS 25.413 and TS 23.060 follow the procedural description of TS 23.171/TS 23.271.</p> <p>Isolated Impact: It should be recognised that, for R'99 based on TS 23.171/23.271, the Any Time Interrogation service will work (although not optimally) and that the proposed changes may only harm implementation that follows the sole understanding described in TS 25.305.</p> <p>Furthermore for implementations affected by this correction, namely those based only on TS 25.305 and not on TS 23.171/23.271, the RNC only seems to need to be upgraded if:</p> <p>1) the operator is using a Gs interface between the MSC and SGSN to which the SRNC is connected,</p> <p>AND</p> <p>2) the manufacturer/operator is using 'long lived' lu interface connections for mobiles that are in the URA-PCH state.</p>												
Summary of change:	☞ Alignment of 25.305 according to 23.171/23.271.												
Consequences if not approved:	☞ There will still be a misalignment between two different stage 2 specifications that will lead to different implementations and interpretability issues.												
Clauses affected:	☞ 7.3.1, 8.1.1												
Other specs affected:	<table border="0"> <tr> <td>☞ <input type="checkbox"/></td> <td>Other core specifications</td> <td>☞</td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td>Test specifications</td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td>O&M Specifications</td> <td></td> <td></td> </tr> </table>	☞ <input type="checkbox"/>	Other core specifications	☞		<input type="checkbox"/>	Test specifications			<input type="checkbox"/>	O&M Specifications		
☞ <input type="checkbox"/>	Other core specifications	☞											
<input type="checkbox"/>	Test specifications												
<input type="checkbox"/>	O&M Specifications												
Other comments:	☞												

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.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. ☞

7.3.1 Procedures in the SRNC

When a positioning attempt fails due to failure of a position method itself (e.g. due to inaccurate or insufficient position measurements and related data) and the SRNC is unable to instigate another positioning attempt (e.g. due to a requirement on response time), the SRNC may ~~return a Location response over the Iu interface containing a less accurate position estimate. If a less accurate estimate is not available or will not meet the accuracy requirement, the SRNC may~~ instead return a Location response message containing no position estimate and indicating the cause of failure.

~~NOTE: — Need to check that Iu has enough flexibility.~~

When a positioning attempt is interrupted by some other unrecoverable error event inside the SRNC, the SRNC shall immediately terminate the positioning attempt and return a Location Response message containing the reason for the positioning attempt cancellation. In that case, SRNC may also abort any dialogue previously opened with an LMU for the purpose of instigating position measurements for the UE being located.

8.1.1 UE Cell ID is not known

For UE for which the cell ID is not known at the time the UE Positioning request is received at the SRNC, the UE may be paged to locate its current cell ID. If the UE is in an idle mode and there is a need for it to be paged, then the paging shall be initiated by the CN. If the UE is in URA_PCH state the paging may be initiated by the SRNC in UTRAN. For example, the UE can be forced to perform a transition to a Cell_FACH state to define the cell ID of its current cell.

If the UE is in an idle mode, or in a RRC connected state when there is a need to page for the UE to obtain the cell ID, the CN may initiate paging, authentication and ciphering, as specified in [13].

~~Alternatively, the cell ID may be determined as the one that was used during the last active connection to the UE. This determination should be accompanied by the time-of-day of the last connection in the cell.~~

CHANGE REQUEST

⌘ **25.305 CR 083** ⌘ ev **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

Title:	⌘ Correction to CELL ID positioning when UE is not reachable.
Source:	⌘ Vodafone Ltd
Work item code:	⌘ <input type="text"/>
Date:	⌘ 21/02/02
Category:	⌘ A
	Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900 .
Release:	⌘ REL-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)

Reason for change: ⌘ RAN3 discovered that there is a contradiction between TS 25.305 and TS 23.271(TS 23.171 for R99): TS 25.305 requires the RNC to deliver in the outlined scenario (see S2's LS) the last known location and the age of that location information, whereas TS 23.271 specifies the RNC to report a failure:

Extract from TS 25.305 V3.7.0/V4.2.0
8.1.1 UE Cell ID is not known
For UE for which the cell ID is not known at the time the UE Positioning request is received at the SRNC, the UE may be paged to locate its current cell ID. If the UE is in an idle mode and there is a need for it to be paged, then the paging shall be initiated by the CN. If the UE is in URA_PCH state the paging may be initiated by the SRNC in UTRAN. For example, the UE can be forced to perform a transition to a Cell_FACH state to define the cell ID of its current cell. If the UE is in an idle mode, or in a RRC connected state when there is a need to page for the UE to obtain the cell ID, the CN may initiate paging, authentication and ciphering, as specified in [13]. Alternatively, the cell ID may be determined as the one that was used during the last active connection to the UE. This determination should be accompanied by the time-of-day of the last connection in the cell.

Extract from TS 23.171 v3.6.0
8.7.1.3 Location Calculation and Release Procedure
(10) When a location estimate best satisfying the requested QoS has been obtained, the SRNC returns it to the 3G-MSC in a Location Report message. If a location estimate could not be obtained, the SRNC returns a Location Report message containing a failure cause and no location estimate.

Extract from TS 23.271 v4.4.0
9.1.6.3 Location Calculation and Release Procedure
9) When location information best satisfying the requested location type and QoS has been obtained, the RAN returns it to the SGSN in a Location Report message. If a location estimate could not be obtained, the RAN returns a Location Report message containing a failure cause and no location estimate.

	<p>TS 25.413 and TS 23.060 follow the procedural description of TS 23.171/TS 23.271.</p> <p>Isolated Impact: It should be recognised that, for R'99 based on TS 23.171/23.271, the Any Time Interrogation service will work (although not optimally) and that the proposed changes may only harm implementation that follows the sole understanding described in TS 25.305.</p> <p>Furthermore for implementations affected by this correction, namely those based only on TS 25.305 and not on TS 23.171/23.271, the RNC only seems to need to be upgraded if:</p> <p>2) the operator is using a Gs interface between the MSC and SGSN to which the SRNC is connected,</p> <p>AND</p> <p>2) the manufacturer/operator is using 'long lived' lu interface connections for mobiles that are in the URA-PCH state.</p>												
Summary of change:	☞ Alignment of 25.305 according to 23.171/23.271.												
Consequences if not approved:	☞ There will still be a misalignment between two different stage 2 specifications that will lead to different implementations and interpretability issues.												
Clauses affected:	☞ 7.3.1, 8.1.1												
Other specs affected:	<table border="0"> <tr> <td>☞ <input type="checkbox"/></td> <td>Other core specifications</td> <td>☞</td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td>Test specifications</td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td>O&M Specifications</td> <td></td> <td></td> </tr> </table>	☞ <input type="checkbox"/>	Other core specifications	☞		<input type="checkbox"/>	Test specifications			<input type="checkbox"/>	O&M Specifications		
☞ <input type="checkbox"/>	Other core specifications	☞											
<input type="checkbox"/>	Test specifications												
<input type="checkbox"/>	O&M Specifications												
Other comments:	☞												

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.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.
- 4) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request. ☞

7.3.1 Procedures in the SRNC

When a positioning attempt fails due to failure of a position method itself (e.g. due to inaccurate or insufficient position measurements and related data) and the SRNC is unable to instigate another positioning attempt (e.g. due to a requirement on response time), the SRNC may return a Location response over the Iu interface containing a less accurate position estimate. If a less accurate estimate is not available or will not meet the accuracy requirement, the SRNC may instead return a Location response message containing no position estimate and indicating the cause of failure.

NOTE: — ~~Need to check that Iu has enough flexibility.~~

When a positioning attempt is interrupted by some other unrecoverable error event inside the SRNC, the SRNC shall immediately terminate the positioning attempt and return a Location Response message containing the reason for the positioning attempt cancellation. In that case, SRNC may also abort any dialogue previously opened with an LMU for the purpose of instigating position measurements for the UE being located.

8.1.1 UE Cell ID is not known

For UE for which the cell ID is not known at the time the UE Positioning request is received at the SRNC, the UE may be paged to locate its current cell ID. If the UE is in an idle mode and there is a need for it to be paged, then the paging shall be initiated by the CN. If the UE is in URA_PCH state the paging may be initiated by the SRNC in UTRAN. For example, the UE can be forced to perform a transition to a Cell_FACH state to define the cell ID of its current cell.

If the UE is in an idle mode, or in a RRC connected state when there is a need to page for the UE to obtain the cell ID, the CN may initiate paging, authentication and ciphering, as specified in [13].

Alternatively, the cell ID may be determined as the one that was used during the last active connection to the UE. [In the case the UE is not reachable, the last known position should include the age of location field.](#)

~~This determination should be accompanied by the time-of-day of the last connection in the cell.~~

Location

CR-Form-v4

CHANGE REQUEST

⌘ **25.305 CR 081** ⌘ ev **1** ⌘ Current version: **5.3.0** ⌘

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

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

Title:	⌘ Correction to CELL ID positioning when UE is not reachable.		
Source:	⌘ Vodafone Group		
Work item code:	⌘ LCS	Date:	⌘ 18/02/02
Category:	⌘ A	Release:	⌘ REL-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)		2 (GSM Phase 2)
	A (corresponds to a correction in an earlier release)		R96 (Release 1996)
	B (addition of feature),		R97 (Release 1997)
	C (functional modification of feature)		R98 (Release 1998)
	D (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		REL-4 (Release 4)
			REL-5 (Release 5)

Reason for change:	⌘ Since at least R'97, it has been possible to build services based on the last known "GSM cell ID" of the mobile. Unfortunately, R'99 seems to have damaged this functionality.
Summary of change:	⌘ Clarification for the provision of a last known location for a UE.
Consequences if not approved:	⌘ Location information will be out of line with earlier GSM release(s), will not work well.

Clauses affected:	⌘ 8.1.1		
Other specs affected:	⌘ <input type="checkbox"/> Other core specifications	⌘ 23.271, 25.413	
	<input type="checkbox"/> Test specifications		
	<input type="checkbox"/> O&M Specifications		
Other comments:	⌘		

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.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.

- 5) 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. ☒

8.1.1 UE Cell ID is not known

For UE for which the cell ID is not known at the time the UE Positioning request is received at the SRNC, the UE may be paged to locate its current cell ID. If the UE is in an idle mode and there is a need for it to be paged, then the paging shall be initiated by the CN. If the UE is in URA_PCH state the paging may be initiated by the SRNC in UTRAN. For example, the UE can be forced to perform a transition to a Cell_FACH state to define the cell ID of its current cell.

If the UE is in an idle mode, or in a RRC connected state when there is a need to page for the UE to obtain the cell ID, the CN may initiate paging, authentication and ciphering, as specified in [13].

Alternatively, the cell ID may be determined as the one that was used during the last active connection to the UE. In the case the UE is not reachable, the last known position should include the age of location field. ~~This determination should be accompanied by the time-of-day of the last connection in the cell.~~

revision of R3-020731 and Tdoc R3-020695

CR-Form-v5

CHANGE REQUEST

⌘ **25.413 CR 434** ⌘ rev **3** ⌘ Current version: **3.8.0** ⌘

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

Title:	⌘ Inclusion of <i>Last Know Service Area</i> IE group into LOCATION REPORT		
Source:	⌘ Siemens AG, Vodafone Ltd		
Work item code:	⌘ TEI	Date:	⌘ March 2002
Category:	⌘ F	Release:	⌘ R99
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)		2 (GSM Phase 2)
	A (corresponds to a correction in an earlier release)		R96 (Release 1996)
	B (addition of feature),		R97 (Release 1997)
	C (functional modification of feature)		R98 (Release 1998)
	D (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		REL-4 (Release 4)
			REL-5 (Release 5)

Reason for change:	⌘ There is the concern that in Release 99 the RNC could deliver an expired Service Area IE. For this reason, it is made clear that no Service Area IE is delivered in case the RNC is not able to reach the mobile.
Summary of change:	⌘ Inclusion of the fact, that RNC shall indicate the UE location to be "Undetermined" in case the RNC is not able to reach the mobile. Impact Analysis: Impact assessment towards the previous version of the specification (same release): This CR has isolated impact with the previous version of the specification (same release) because the handling of the Service Area IE was ambiguous and now the clarification is done in such way that a problematic implementation is excluded. The CR has an impact under functional point of view. The impact can be considered isolated because the change affects only the Location reporting function.
Consequences if not approved:	⌘

Clauses affected:	⌘ 8.20.2
Other specs affected:	⌘ <input checked="" type="checkbox"/> Other core specifications ⌘ TS 25.305 R99, TS 23.271 Rel-4 and Rel-5, TS 23.060 Rel-4 and Rel-5, TS25.413 Rel-4 <input type="checkbox"/> Test specifications

O&M Specifications

Other comments: ☞

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.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.

8.20 Location Report

8.20.1 General

The purpose of the Location Report procedure is to provide the UE's location information to the CN. The procedure uses connection oriented signalling.

8.20.2 Successful Operation

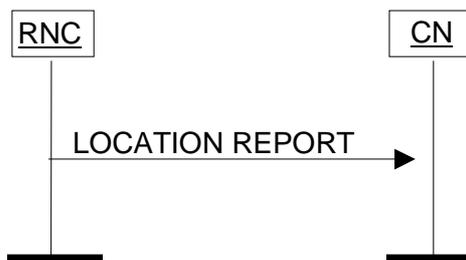


Figure 1: Location Report procedure. Successful operation.

The serving RNC shall initiate the procedure by generating a LOCATION REPORT message. The LOCATION REPORT message may be used as a response for the LOCATION REPORTING CONTROL message. Also, when a user enters or leaves a classified zone set by O&M, e.g. zone where a disaster occurred, a LOCATION REPORT message shall be sent to the CN including the Service Area of the UE in the *Area Identity* IE. The *Cause* IE shall indicate the appropriate cause value to CN, e.g. "User Restriction Start Indication" and "User Restriction End Indication". The CN shall react to the LOCATION REPORT message with CN vendor specific actions.

For this procedure, only Service Areas that are defined for the PS and CS domains shall be considered.

In case reporting at change of Service Area is requested by the CN, then the RNC shall issue a LOCATION REPORT message

- whenever the information given in the previous LOCATION REPORT message or INITIAL UE MESSAGE message is not anymore valid.
- upon receipt of the first LOCATION REPORTING CONTROL message following a Relocation Resource Allocation procedure, with *Request Type* IE set to "Change of Service Area", as soon as SAI becomes available in the new SRNC and the relocation procedure has been successfully completed.

In the case when Service Area is reported, the RNC shall include to the LOCATION REPORT message in the *Area Identity* IE the Service Area, which includes at least one of the cells from which the UE is consuming radio resources.

In the case when the LOCATION REPORT message is sent as an answer to a request for a direct report or at a change of Service Area, the *Request Type* IE from the LOCATION REPORTING CONTROL message shall be included.

If the RNC can not deliver the location information as requested by the CN, due to either the non-support of the requested event or the non-support of the request Report Area or if RNC is currently not able to reach the mobile, the RNC shall indicate the UE location to be "Undetermined" by omitting the *Area Identity* IE. A cause value shall instead be added to indicate the reason for the undetermined location, e.g. "Requested Request Type not supported".

If the Location Report procedure was triggered by a LOCATION REPORTING CONTROL message, which included a request to report a geographical area with a specific accuracy, the LOCATION REPORT message shall include the *Geographical Area* IE within the *Area Identity* IE containing either a point with indicated uncertainty or a polygon, which both shall fulfill the requested accuracy as accurately as possible. If, on the other hand, no specific accuracy level was requested in the LOCATION REPORTING CONTROL message, it is up to UTRAN to decide with which accuracy to report.

8.20.3 Abnormal Conditions

Not applicable.

revision of R3-020732 and Tdoc R3-020696

CR-Form-v5

CHANGE REQUEST

⌘ **25.413 CR 435** ⌘ rev **3** ⌘ Current version: **4.3.0** ⌘

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

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

Title:	⌘ Inclusion of <i>Last Know Service Area</i> IE group into LOCATION REPORT		
Source:	⌘ Siemens AG, Vodafone Ltd		
Work item code:	⌘ TEI	Date:	⌘ March 2002
Category:	⌘ C	Release:	⌘ REL-4
	<p>Use <u>one</u> of the following categories:</p> <p>F (correction)</p> <p>A (corresponds to a correction in an earlier release)</p> <p>B (addition of feature),</p> <p>C (functional modification of feature)</p> <p>D (editorial modification)</p> <p>Detailed explanations of the above categories can be found in 3GPP TR 21.900.</p>		<p>Use <u>one</u> of the following releases:</p> <p>2 (GSM Phase 2)</p> <p>R96 (Release 1996)</p> <p>R97 (Release 1997)</p> <p>R98 (Release 1998)</p> <p>R99 (Release 1999)</p> <p>REL-4 (Release 4)</p> <p>REL-5 (Release 5)</p>

Reason for change:	⌘
Summary of change:	<p>⌘ Inclusion of Last Know Service Area IE group into LOCATION REPORT with suitable behaviour and cause value when the LOCATION REPORT message is sent as an answer to a request for a direct report of Service Area and the current Service Area can not be determined by the RNC.</p> <p>Procedure text, tabular format section and ASN.1 are therefore update accordingly.</p> <p>Impact Analysis: Impact assessment towards the previous version of the specification (same release):</p> <p>This CR has isolated impact with the previous version of the specification (same release) because the way of handling one particular case - when the LOCATION REPORT message is sent as an answer to a request for a direct report of Service Area and the current Service Area can not be determined by the RNC - has been changed. This would not affect implementations behaving like indicated in the CR, would affect implementations supporting the corrected functionality otherwise.</p> <p>The CR has an impact under protocol & functional point of view.</p> <p>The impact can be considered isolated because the change affects the Location reporting function and because the inclusion of the <i>Last Know Service Area IE</i> group into LOCATION REPORT is optional.</p>
Consequences if not approved:	⌘

Clauses affected:	⌘	8.20.2, 9.1.30, 9.2.3.xx, 9.3.3, 9.3.4 and 9.3.6	
Other specs affected:	⌘	<input checked="" type="checkbox"/>	Other core specifications
		<input type="checkbox"/>	Test specifications
		<input type="checkbox"/>	O&M Specifications
Other comments:	⌘		

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.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.

8.19 Location Reporting Control

8.19.1 General

The purpose of the Location Reporting Control procedure is to allow the CN to request information on the location of a given UE. The procedure uses connection oriented signalling.

8.19.2 Successful Operation



Figure 1: Location Reporting Control procedure. Successful operation.

The CN shall initiate the procedure by generating a LOCATION REPORTING CONTROL message.

The *Request Type* IE shall indicate to the serving RNC whether:

- to report directly;
- to stop a direct report;
- to report upon change of Service area, or
- to stop reporting at change of Service Area.

If reporting upon change of Service Area is requested, the Serving RNC shall report whenever the UE moves between Service Areas. For this procedure, only Service Areas that are defined for the PS and CS domains shall be considered.

The *Request Type* IE shall also indicate what type of location information the serving RNC shall report. The location information is either of the following types:

- Service Area Identifier, or
- Geographical area, including geographical coordinates with or without requested accuracy, response time, priority and the client type.

A request for a direct report can be done in parallel with having an active request to report upon change of Service Area for the same UE. The request to report upon change of Service Area shall not be affected by this.

Interaction with Relocation:

The order to perform location reporting at change of Service Area is lost in UTRAN at successful Relocation of SRNS. If the location reporting at change of Service Area shall continue also after the relocation has been performed, the Location Reporting Control procedure shall thus be re-initiated from the CN towards the future SRNC after the Relocation Resource Allocation procedure has been executed successfully.

8.19.3 Abnormal Conditions

Not applicable.

8.20 Location Report

8.20.1 General

The purpose of the Location Report procedure is to provide the UE's location information to the CN. The procedure uses connection oriented signalling.

8.20.2 Successful Operation

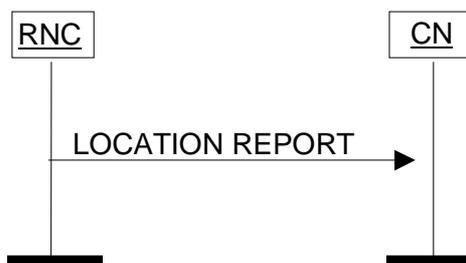


Figure 2: Location Report procedure. Successful operation.

The serving RNC shall initiate the procedure by generating a LOCATION REPORT message. The LOCATION REPORT message may be used as a response for the LOCATION REPORTING CONTROL message. Also, when a user enters or leaves a classified zone set by O&M, e.g. zone where a disaster occurred, a LOCATION REPORT message shall be sent to the CN including the Service Area of the UE in the *Area Identity* IE. The *Cause* IE shall indicate the appropriate cause value to CN, e.g. "User Restriction Start Indication" and "User Restriction End Indication". The CN shall react to the LOCATION REPORT message with CN vendor specific actions.

For this procedure, only Service Areas that are defined for the PS and CS domains shall be considered.

In case reporting at change of Service Area is requested by the CN, then the RNC shall issue a LOCATION REPORT message

- whenever the information given in the previous LOCATION REPORT message or INITIAL UE MESSAGE message is not anymore valid.
- upon receipt of the first LOCATION REPORTING CONTROL message following a Relocation Resource Allocation procedure, with *Request Type* IE set to "Change of Service Area", as soon as SAI becomes available in the new SRNC and the relocation procedure has been successfully completed.

In the case when Service Area is reported, the RNC shall include to the LOCATION REPORT message in the *Area Identity* IE the Service Area, which includes at least one of the cells from which the UE is consuming radio resources.

In the case when the LOCATION REPORT message is sent as an answer to a request for a direct report or at a change of Service Area, the *Request Type* IE from the LOCATION REPORTING CONTROL message shall be included.

If the LOCATION REPORT message is sent as an answer to a request for a direct report of Service Area and the current Service Area can not be determined by the RNC, then the *Area Identity* IE shall be omitted and a cause value shall be included to indicate that the request could not be fulfilled, e.g. "Requested Information Not Available". The RNC may also include the *Last Known Service Area* IE.

If the RNC can not deliver the location information as requested by the CN, due to either the non-support of the requested event or the non-suupport of the requested report area or if RNC is currently not able to reach the mobile, the RNC shall indicate the UE location to be "Undetermined" by omitting the *Area Identity* IE. A cause value shall instead be added to indicate the reason for the undetermined location, e.g. "Requested Request Type not supported".

If the Location Report procedure was triggered by a LOCATION REPORTING CONTROL message, which included a request to report a geographical area with a specific accuracy, the LOCATION REPORT message shall include the *Geographical Area* IE within the *Area Identity* IE containing either a point with indicated uncertainty or a polygon or an other type, which fulfils the requested accuracy as accurately as possible. If, on the other hand, no specific accuracy level was requested in the LOCATION REPORTING CONTROL message, it is up to UTRAN to decide with which accuracy to report.

8.20.3 Abnormal Conditions

Not applicable.

9.1.29 LOCATION REPORTING CONTROL

This message is sent by the CN to initiate, modify or stop location reporting from the RNC to the CN.

Direction: CN → RNC.

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.1.1		YES	ignore
Request Type	M		9.2.1.16		YES	ignore

9.1.30 LOCATION REPORT

This message is sent by the RNC to the CN with information about the UE location.

Direction: RNC → CN.

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.1.1		YES	ignore
Area Identity	O		9.2.3.10		YES	ignore
Cause	O		9.2.1.4		YES	ignore
Request Type	O		9.2.1.16		YES	ignore
Last Known Service Area	O		9.2.3.xx		YES	ignore

9.2.3.21 Requested GPS Assistance Data

This information element is used for indicating the requested GPS assistance data.

This IE is transparent to CN.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Requested GPS Assistance Data			OCTET STRING (SIZE(1..38))	For the corresponding Information Element Definition see "gpsAssistanceData" [22].

9.2.3.xx Last Known Service Area

This information element is used for indicating the last known Service Area and the elapsed time since the UE was known to be in this Service Area. The last known Service Area is reported when the current Service Area is unknown to the RNC.

<u>IE/Group Name</u>	<u>Presence</u>	<u>Range</u>	<u>IE type and reference</u>	<u>Semantics description</u>
<u>Last Known Service Area</u>				
<u>>SAI</u>	<u>M</u>		<u>9.2.3.9</u>	
<u>>Age of SAI</u>	<u>M</u>		<u>INTEGER (0..32767)</u>	<u>The value represents the elapsed time in minutes since the reported last known SAI was stored by the RNC. Value "0" shall not be used. Value "32767" indicates that the age of SAI is at least 32767 minutes old.</u>

9.3.3 PDU Definitions

```

-- *****
--
-- PDU definitions for RANAP.
--
-- *****

RANAP-PDU-Contents {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) ranap (0) version1 (1) ranap-PDU-Contents (1) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

-- *****
--
-- IE parameter types from other modules.
--
-- *****

IMPORTS
BroadcastAssistanceDataDecipheringKeys,
LocationRelatedDataRequestType,
DataVolumeReference,
AreaIdentity,
CN-DomainIndicator,
Cause,
CriticalityDiagnostics,
ChosenEncryptionAlgorithm,
ChosenIntegrityProtectionAlgorithm,
ClassmarkInformation2,
ClassmarkInformation3,
DL-GTP-PDU-SequenceNumber,
DL-N-PDU-SequenceNumber,
DataVolumeReportingIndication,
DRX-CycleLengthCoefficient,
EncryptionInformation,
GlobalCN-ID,
GlobalRNC-ID,
IntegrityProtectionInformation,
IuSignallingConnectionIdentifier,
IuTransportAssociation,
KeyStatus,
L3-Information,
LAI,
LastKnownServiceArea,
NAS-PDU,
NAS-SynchronisationIndicator,
NonSearchingIndication,
NumberOfSteps,
OMC-ID,
OldBSS-ToNewBSS-Information,
PagingAreaID,
PagingCause,
PDP-TypeInformation,
PermanentNAS-UE-ID,
RAB-ID,
RAB-Parameters,
RAC,
RelocationType,
RequestType,
Requested-RAB-Parameter-Values,
SAI,
SAPI,
Service-Handover,
SourceID,
SourceRNC-ToTargetRNC-TransparentContainer,
TargetID,
TargetRNC-ToSourceRNC-TransparentContainer,
TemporaryUE-ID,
TraceReference,
TraceType,
UnsuccessfullyTransmittedDataVolume,
TransportLayerAddress,
TriggerID,

```

```

UE-ID,
UL-GTP-PDU-SequenceNumber,
UL-N-PDU-SequenceNumber,
UP-ModeVersions,
UserPlaneMode,
Alt-RAB-Parameters,
Ass-RAB-Parameters
FROM RANAP-IEs

```

```

PrivateIE-Container{},
ProtocolExtensionContainer{},
ProtocolIE-ContainerList{},
ProtocolIE-ContainerPair{},
ProtocolIE-ContainerPairList{},
ProtocolIE-Container{},
RANAP-PRIVATE-IES,
RANAP-PROTOCOL-EXTENSION,
RANAP-PROTOCOL-IES,
RANAP-PROTOCOL-IES-PAIR
FROM RANAP-Containers

```

```

maxNrOfDTs,
maxNrOfErrors,
maxNrOfIuSigConIds,
maxNrOfRABs,
maxNrOfVol,

```

```

id-AreaIdentity,
id-Alt-RAB-Parameters,
id-Ass-RAB-Parameters,
id-BroadcastAssistanceDataDecipheringKeys,
id-LocationRelatedDataRequestType,
id-CN-DomainIndicator,
id-Cause,
id-ChosenEncryptionAlgorithm,
id-ChosenIntegrityProtectionAlgorithm,
id-ClassmarkInformation2,
id-ClassmarkInformation3,
id-CriticalityDiagnostics,
id-DRX-CycleLengthCoefficient,
id-DirectTransferInformationItem-RANAP-RelocInf,
id-DirectTransferInformationList-RANAP-RelocInf,
id-DL-GTP-PDU-SequenceNumber,
id-EncryptionInformation,
id-GlobalCN-ID,
id-GlobalRNC-ID,
id-IntegrityProtectionInformation,
id-IuSigConId,
id-IuSigConIdItem,
id-IuSigConIdList,
id-IuTransportAssociation,
id-KeyStatus,
id-L3-Information,
id-LAI,
id-LastKnownServiceArea,
id-NAS-PDU,
id-NonSearchingIndication,
id-NumberOfSteps,
id-OMC-ID,
id-OldBSS-ToNewBSS-Information,
id-PagingAreaID,
id-PagingCause,
id-PermanentNAS-UE-ID,
id-RAB-ContextItem,
id-RAB-ContextList,
id-RAB-ContextFailedtoTransferItem,
id-RAB-ContextFailedtoTransferList,
id-RAB-ContextItem-RANAP-RelocInf,
id-RAB-ContextList-RANAP-RelocInf,
id-RAB-DataForwardingItem,
id-RAB-DataForwardingItem-SRNS-CtxReq,
id-RAB-DataForwardingList,
id-RAB-DataForwardingList-SRNS-CtxReq,
id-RAB-DataVolumeReportItem,
id-RAB-DataVolumeReportList,
id-RAB-DataVolumeReportRequestItem,
id-RAB-DataVolumeReportRequestList,

```

```

id-RAB-FailedItem,
id-RAB-FailedList,
id-RAB-FailedtoReportItem,
id-RAB-FailedtoReportList,
id-RAB-ID,
id-RAB-ModifyList,
id-RAB-ModifyItem,
id-RAB-QueuedItem,
id-RAB-QueuedList,
id-RAB-ReleaseFailedList,
id-RAB-ReleaseItem,
id-RAB-ReleasedItem-IuRelComp,
id-RAB-ReleaseList,
id-RAB-ReleasedItem,
id-RAB-ReleasedList,
id-RAB-ReleasedList-IuRelComp,
id-RAB-RelocationReleaseItem,
id-RAB-RelocationReleaseList,
id-RAB-SetupItem-RelocReq,
id-RAB-SetupItem-RelocReqAck,
id-RAB-SetupList-RelocReq,
id-RAB-SetupList-RelocReqAck,
id-RAB-SetupOrModifiedItem,
id-RAB-SetupOrModifiedList,
id-RAB-SetupOrModifyItem,
id-RAB-SetupOrModifyList,
id-RAC,
id-RelocationType,
id-RequestType,
id-SAI,
id-SAPI,
id-SourceID,
id-SourceRNC-ToTargetRNC-TransparentContainer,
id-TargetID,
id-TargetRNC-ToSourceRNC-TransparentContainer,
id-TemporaryUE-ID,
id-TraceReference,
id-TraceType,
id-TransportLayerAddress,
id-TriggerID,
id-UE-ID,
id-UL-GTP-PDU-SequenceNumber
FROM RANAP-Constants;

```

Lots of unaffected ASN1 in 9.3.3 not shown
--

```

-- *****
--
-- LOCATION REPORT ELEMENTARY PROCEDURE
--
-- *****
--
-- *****
--
-- Location Report
--
-- *****

LocationReport ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container          { {LocationReportIEs} },
    protocolExtensions   ProtocolExtensionContainer { {LocationReportExtensions} }
    OPTIONAL,
    ...
}

LocationReportIEs RANAP-PROTOCOL-IES ::= {
    { ID id-AreaIdentity          CRITICALITY ignore TYPE AreaIdentity          PRESENCE optional } |
    { ID id-Cause                 CRITICALITY ignore TYPE Cause                 PRESENCE optional } |
    { ID id-RequestType           CRITICALITY ignore TYPE RequestType           PRESENCE optional } ,
    ...
}

LocationReportExtensions RANAP-PROTOCOL-EXTENSION ::= {
{ ID id-LastKnownServiceArea   CRITICALITY ignore EXTENSION LastKnownServiceArea PRESENCE
optional},
    ...
}

```

Lots of unaffected ASN1 in 9.3.3 not shown

9.3.4 Information Element Definitions

```
-- *****
--
-- Information Element Definitions
--
-- *****
```

```
RANAP-IEs {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) ranap (0) version1 (1) ranap-IEs (2) }
```

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

Lots of unaffected ASN1 in 9.3.4 not shown

-- L

LAC ::= OCTET STRING (SIZE (2))

```
LAI ::= SEQUENCE {
  pLMNidentity          PLMNidentity,
  lAC                   LAC,
  iE-Extensions        ProtocolExtensionContainer { {LAI-ExtIEs} } OPTIONAL
}
```

```
LAI-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
  ...
}
```

```
LastKnownServiceArea ::= SEQUENCE {
  sAI          SAI,
  ageOfSAI    INTEGER (0..32767),
  ...
}
```

```
LocationRelatedDataRequestType ::= SEQUENCE {
  requestedLocationRelatedDataType      RequestedLocationRelatedDataType,
  requestedGPSAssistanceData            RequestedGPSAssistanceData OPTIONAL,
  -- This IE shall be present if the Requested Location Related Data Type IE is set to 'Dedicated
  Assistance Data for Assisted GPS' --
  ...
}
```

L3-Information ::= OCTET STRING

-- M

Lots of unaffected ASN1 in 9.3.4 not shown

9.3.6 Constant Definitions

```
-- *****
--
-- Constant definitions
--
-- *****

RANAP-Constants {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) ranap (0) version1 (1) ranap-Constants (4) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN
```

Lots of unaffected ASN1 in 9.3.6 not shown

```
-- *****
--
-- IEs
--
-- *****

id-AreaIdentity                INTEGER ::= 0
id-CN-DomainIndicator          INTEGER ::= 3
id-Cause                       INTEGER ::= 4
id-ChosenEncryptionAlgorithm   INTEGER ::= 5
id-ChosenIntegrityProtectionAlgorithm INTEGER ::= 6
id-ClassmarkInformation2       INTEGER ::= 7
id-ClassmarkInformation3       INTEGER ::= 8
id-CriticalityDiagnostics      INTEGER ::= 9
id-DL-GTP-PDU-SequenceNumber   INTEGER ::= 10
id-EncryptionInformation       INTEGER ::= 11
id-IntegrityProtectionInformation INTEGER ::= 12
id-IuTransportAssociation      INTEGER ::= 13
id-L3-Information              INTEGER ::= 14
id-LAI                         INTEGER ::= 15
id-NAS-PDU                    INTEGER ::= 16
id-NonSearchingIndication      INTEGER ::= 17
id-NumberOfSteps               INTEGER ::= 18
id-OMC-ID                     INTEGER ::= 19
id-OldBSS-ToNewBSS-Information INTEGER ::= 20
id-PagingAreaID               INTEGER ::= 21
id-PagingCause                 INTEGER ::= 22
id-PermanentNAS-UE-ID         INTEGER ::= 23
id-RAB-ContextItem            INTEGER ::= 24
id-RAB-ContextList            INTEGER ::= 25
id-RAB-DataForwardingItem      INTEGER ::= 26
id-RAB-DataForwardingItem-SRNS-CtxReq INTEGER ::= 27
id-RAB-DataForwardingList     INTEGER ::= 28
id-RAB-DataForwardingList-SRNS-CtxReq INTEGER ::= 29
id-RAB-DataVolumeReportItem    INTEGER ::= 30
id-RAB-DataVolumeReportList    INTEGER ::= 31
id-RAB-DataVolumeReportRequestItem INTEGER ::= 32
id-RAB-DataVolumeReportRequestList INTEGER ::= 33
id-RAB-FailedItem             INTEGER ::= 34
id-RAB-FailedList             INTEGER ::= 35
id-RAB-ID                     INTEGER ::= 36
id-RAB-QueuedItem             INTEGER ::= 37
id-RAB-QueuedList             INTEGER ::= 38
id-RAB-ReleaseFailedList      INTEGER ::= 39
id-RAB-ReleaseItem            INTEGER ::= 40
id-RAB-ReleaseList            INTEGER ::= 41
id-RAB-ReleasedItem           INTEGER ::= 42
id-RAB-ReleasedList           INTEGER ::= 43
id-RAB-ReleasedList-IuRelComp  INTEGER ::= 44
id-RAB-RelocationReleaseItem   INTEGER ::= 45
id-RAB-RelocationReleaseList   INTEGER ::= 46
id-RAB-SetupItem-RelocReq      INTEGER ::= 47
id-RAB-SetupItem-RelocReqAck   INTEGER ::= 48
id-RAB-SetupList-RelocReq     INTEGER ::= 49
id-RAB-SetupList-RelocReqAck   INTEGER ::= 50
id-RAB-SetupOrModifiedItem     INTEGER ::= 51
id-RAB-SetupOrModifiedList     INTEGER ::= 52
id-RAB-SetupOrModifyItem      INTEGER ::= 53
```

id-RAB-SetupOrModifyList	INTEGER ::= 54
id-RAC	INTEGER ::= 55
id-RelocationType	INTEGER ::= 56
id-RequestType	INTEGER ::= 57
id-SAI	INTEGER ::= 58
id-SAPI	INTEGER ::= 59
id-SourceID	INTEGER ::= 60
id-SourceRNC-ToTargetRNC-TransparentContainer	INTEGER ::= 61
id-TargetID	INTEGER ::= 62
id-TargetRNC-ToSourceRNC-TransparentContainer	INTEGER ::= 63
id-TemporaryUE-ID	INTEGER ::= 64
id-TraceReference	INTEGER ::= 65
id-TraceType	INTEGER ::= 66
id-TransportLayerAddress	INTEGER ::= 67
id-TriggerID	INTEGER ::= 68
id-UE-ID	INTEGER ::= 69
id-UL-GTP-PDU-SequenceNumber	INTEGER ::= 70
id-RAB-FailedtoReportItem	INTEGER ::= 71
id-RAB-FailedtoReportList	INTEGER ::= 72
id-KeyStatus	INTEGER ::= 75
id-DRX-CycleLengthCoefficient	INTEGER ::= 76
id-IuSigConIdList	INTEGER ::= 77
id-IuSigConIdItem	INTEGER ::= 78
id-IuSigConId	INTEGER ::= 79
id-DirectTransferInformationItem-RANAP-RelocInf	INTEGER ::= 80
id-DirectTransferInformationList-RANAP-RelocInf	INTEGER ::= 81
id-RAB-ContextItem-RANAP-RelocInf	INTEGER ::= 82
id-RAB-ContextList-RANAP-RelocInf	INTEGER ::= 83
id-RAB-ContextFailedtoTransferItem	INTEGER ::= 84
id-RAB-ContextFailedtoTransferList	INTEGER ::= 85
id-GlobalRNC-ID	INTEGER ::= 86
id-RAB-ReleasedItem-IuRelComp	INTEGER ::= 87
id-MessageStructure	INTEGER ::= 88
id-Alt-RAB-Parameters	INTEGER ::= 89
id-Ass-RAB-Parameters	INTEGER ::= 90
id-RAB-ModifyList	INTEGER ::= 91
id-RAB-ModifyItem	INTEGER ::= 92
id-TypeOfError	INTEGER ::= 93
id-BroadcastAssistanceDataDecipheringKeys	INTEGER ::= 94
id-LocationRelatedDataRequestType	INTEGER ::= 95
id-GlobalCN-ID	INTEGER ::= 96
id-LastKnownServiceArea	INTEGER ::= x1

END