

Title **Correction to enable Rel4 extensions in Location Reporting Control procedure**
Source **Nokia, Ericsson, Alcatel, Nortel Networks**
Agenda Item **7.3.4**

Please find attached in the zip file, as company proposal, the revisions 3 of the CR525 and 526 (revisions 2 are RAN3 approved CRs included in RP-020751).

| RAN3 Tdoc | Spec | curr. Vers. | new Vers. | REL | CR | Rev | Cat | Title | Work item |
|------------------|-------------|--------------------|------------------|------------|-----------|------------|------------|--|------------------|
| Company proposal | 25.413 | 4.6.0 | 4.7.0 | REL-4 | 525 | 3 | F | Correction to enable Rel4 extensions in Location Reporting Control procedure | TEI4 |
| Company proposal | 25.413 | 5.2.0 | 5.3.0 | REL-5 | 526 | 3 | A | Correction to enable Rel4 extensions in Location Reporting Control procedure | TEI4 |

Alcatel, Nokia, Ericsson and Nortel Networks had long discussions after RAN3#33 and finally agreed on the attached CRs 525r3 and 526r3. These CRs are submitted as company proposal as agreed at last RAN3#33 meeting. The intention of Alcatel, Nokia, Ericsson and Nortel Networks is to approve in TSG RAN those attached CRs 525r3 and 526r3 instead of the RAN3 approved ones (CRs 525r2/526r2 in RP-020751).

The differences between the RAN3 CRs 525r2/526r2 and the attached CRs are the following ones:

- 1- We have decided to move the Rel4 Vertical Accuracy Code, Positioning Priority, Response Time and Client Type IEs directly in the extension container at the top level of the LOCATION REPORTING CONTROL message. Indeed those IEs are not moved inside one IE group (used to be the Request Type Extension IE) in the extension container at the top level of the LOCATION REPORTING CONTROL message, because if in later release there is a need to introduce a new value for one of those IEs, this new value will force RNCes from previous releases to ignore the whole IE group (e.g. the Request Type Extension IE) in the extension container and then handled the request in a release 99 manner (the criticality is only on the Request Type Extension IE, not on each of the contained IEs).
With other words, a simple addition of a value in later release could jeopardise the whole Request Type Extension IE and the Rel4 LCS feature.
- 2- In the tabular format and in the ASN.1, all IEs are now optional and the conditions are moved in the procedural text.
- 3- Vertical Accuracy code is said dedicated to Geographical Area (obvious anyway, but better to say it).
- 4- Response Time is mandatory only if available at CN (no change to the conditions of previous CR525r2). When not available in CN, the RNC considers "Delay Tolerant".
- 5- Positioning Priority is mandatory only if available in CN (no change to the conditions of previous CR525r2). When not available in CN, the RNC considers "Normal Priority".
- 6- Client Type, previously mandatory when the Report Area is Geographical Area or SA, is now mandatory only when the Report Area is Geographical Area and mandatory if available at CN when the Report Area is SA.
- 7- We finally corrected some ASN.1 mistakes that have been introduced in the agreed CR 525r2 and 526r2.

We all hope that TSG RAN will agree to these CRs. They are the unique opportunity to make things clean and to avoid any future non backwards compatibility issues in the future.

CHANGE REQUEST

⌘ **25.413** **CR 525** ⌘ rev **3** ⌘ Current version: **4.6.0** ⌘

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

Proposed change affects: UICC apps ME Radio Access Network Core Network

| | | | |
|------------------------|--|-----------------|--|
| Title: | ⌘ Correction to enable Rel4 extensions in Location Reporting Control procedure. | | |
| Source: | ⌘ Nokia, Ericsson, Alcatel, Nortel Networks | | |
| Work item code: | ⌘ TEI4 | Date: | ⌘ 27 November 2002 |
| Category: | ⌘ F Use <u>one</u> of the following categories: A (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) Rel-6 (Release 6) |

| | |
|---------------------------|---|
| Reason for change: | ⌘ During RAN3#32, a RANAP Review ad hoc was held where a new issue was raised (see R3-022277). This issue B.9 was also discussed during an email discussion in order to prepare CRs for RAN3#33. Release 4 support of extended positioning in RANAP was approved at RAN3#23 in CR R3-012626 (revision 7!), based on the email discussion report in R3-012322. This CR introduced some new Rel4 IEs after the ellipsis notation in the SEQUENCE Type <i>Request Type</i> IE in the LOCATION REPORTING CONTROL message. However TR 25.921 in section 10.5.1 recommends that adding New IEs or IE groups should be achieved by using the protocol extension container and not by using the ellipsis notation for adding at the top level of message and adding in the SEQUENCE type. Indeed nothing mandates nor restricts an ASN.1 decoder implementation to behave according to one of the two opposite behaviors in the following scenario: - R4 Sept02 CN LOCATION REPORTING CONTROL -> R99 RNC: either skip those unknown Rel4 IEs received after the ellipsis notation (succesfull R99 treatment of the message) or ignore the whole Request Type IE because not fully comprehended (logical error, procedure rejected). Furthermore in the scenario of a R99 CN LOCATION REPORTING CONTROL sent to R4 Sept02 RNC, the RNC will be expecting those Rel4 IEs depending on their conditions and therefore when the conditions are true, we will always have an abstract syntax error that will end up in ignoring the whole Request Type IE (logical error, procedure rejected). <u>Revision 3:</u> Moreover, 1) There is no reason to get the Client Type as mandatory when the Report Area is Service Area since there is no need for specific formatting in the Location Report for that case: the response is always SAI. |
|---------------------------|---|

2) The Positioning priority is mandatory for event cases "Direct" and "Change of service area" whereas it should only be optional according to TS23.271 section 5.5.1 which states: "The following generic attributes are identified for the Location Service Request information flow: Priority, if needed". It is also in line with TS08.08 clause 3.2.1.71 that mentions the LCS priority IE as optional.

Summary of change: ⌘

The Rel4 *Vertical Accuracy Code*, *Positioning Priority*, *Response Time* and *Client Type* IEs are moved in the extension container at the top level of the LOCATION REPORTING CONTROL message.

Revision 3: Those IEs are not moved inside one IE group in the extension container at the top level of the LOCATION REPORTING CONTROL message, because if in later release there is a need to introduce a new value for one of those IEs, this new value will force RNCs from previous releases to ignore the whole IE group in the extension container and then handled the request in a release 99 manner.

Revision 3: The Client Type is not anymore mandatory when the Report Area is Service Area: in this case, it shall be included by the CN only if available. The Positioning priority is not mandatory anymore: it shall be included by the CN only if available.

The procedure text of the Location Reporting Control procedure is completed accordingly.

Finally, as a combined CR, this CR covers also the clarification of the issue B.2 (see R3-022277) and therefore adds the wording "the value refers to [x1]" in the semantic description for the *Positioning Priority* IE and *Response time* IE with [x1] as a new reference to 22.071 in RANAP in order to have a pointer towards the meaning of the values of those IEs.

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 of change in the content (ASN.1) of the LOCATION REPORTING CONTROL message.

The CR has an impact under protocol and functional point of view.

The impact can be considered isolated because the change affects the Location Reporting Control function.

It should be noted that this CR introduces a not backward compatible change compared to previous Rel4 version of RANAP specification, as shown in the following scenarios:

R4 Sept02 CN LOCATION REPORTING CONTROL -> R4 Dec02 RNC: it does not work for ASN.1 decoder implementation not capable of skipping those unknown IEs received after the ellipsis notation. It works otherwise in R99 manner.

R4 Dec02 CN LOCATION REPORTING CONTROL -> R4 Sept02 RNC: it does not work at all.

Consequences if not approved:

⌘ If Rel4 CNs and RNCs are not upgraded based on that CR, the R99 Location Reporting Control function does not work at all in the following cases:

- R99 CN LOCATION REPORTING CONTROL -> R4 Sept02 RNC
- R4 Sept02 CN LOCATION REPORTING CONTROL -> R99 RNC for ASN.1 decoder implementation not capable of skipping those unknown IEs received after the ellipsis notation.

It should be noted that this CR is not backward compatible change compared to previous Rel4 version of RANAP specification in order to enable forward compatibility with R99 functionality and R99 nodes.

Revision 3: Moreover, the Positioning Priority and Client Type would be required from the CN even if not available, and the Client Type would be signalled even when not needed in the RNC.

| | | | | | | | | | | | | |
|------------------------------|---|---|---|---|---|--|--|---|--|---|---------------------------|---------------------------------|
| Clauses affected: | ⌘ | 2, 8.19.2, 9.1.29, 9.2.1.16, 9.2.1.x2 (new), 9.2.1.x3 (new), 9.2.1.x4 (new), 9.2.1.x5 (new), 9.3.3, 9.3.4 and 9.3.6 | | | | | | | | | | |
| Other specs affected: | | <table border="1"><tr><td>Y</td><td>N</td></tr><tr><td>X</td><td></td></tr><tr><td></td><td>X</td></tr><tr><td></td><td>X</td></tr></table> | Y | N | X | | | X | | X | Other core specifications | ⌘ Mirror CR526rev3 25.413 REL-5 |
| | Y | N | | | | | | | | | | |
| | X | | | | | | | | | | | |
| | X | | | | | | | | | | | |
| | X | | | | | | | | | | | |
| | | Test specifications | | | | | | | | | | |
| | | O&M Specifications | | | | | | | | | | |
| Other comments: | ⌘ | Suggestions for new numbers: - new reference number in Rel4, x1=26 - new section number in Rel4, 9.2.1.x2=9.2.1.46a - new section number in Rel4, 9.2.1.x3=9.2.1.46b - new section number in Rel4, 9.2.1.x4=9.2.1.46c - new section number in Rel4, 9.2.1.x5=9.2.1.46d | | | | | | | | | | |

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.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply".
- For a non-specific reference, the latest version applies".

- [1] 3GPP TR 23.930: "Iu Principles".
- [2] 3GPP TS 25.410: "UTRAN Iu Interface: General Aspects and Principles".
- [3] 3GPP TS 25.401: "UTRAN Overall Description".
- [4] 3GPP TR 25.931: "UTRAN Functions, Examples on Signalling Procedures".
- [5] 3GPP TS 25.412: "UTRAN Iu interface signalling transport".
- [6] 3GPP TS 25.415: "UTRAN Iu interface user plane protocols".
- [7] 3GPP TS 23.107: "Quality of Service (QoS) concept and architecture".
- [8] 3GPP TS 24.008: "Mobile radio interface layer 3 specification; Core network protocols; Stage 3".
- [9] 3GPP TS 25.414: "UTRAN Iu interface data transport and transport signalling".
- [10] 3GPP TS 25.331: Radio Resource Control (RRC) protocol specification".
- [11] 3GPP TS 08.08: "Mobile services Switching Centre - Base Station System (MSC-BSS) interface; Layer 3 specification".
- [12] 3GPP TS 12.08: "Subscriber and equipment trace".
- [13] ITU-T Recommendation X.691 (1997): "Information technology - ASN.1 encoding rules: Specification of Packed Encoding Rules (PER)".
- [14] ITU-T Recommendation X.680 (1997): "Information technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation".
- [15] ITU-T Recommendation X.681 (1997): "Information technology - Abstract Syntax Notation One (ASN.1): Information object specification".
- [16] 3GPP TS 23.110: "UMTS Access Stratum, Services and Functions".
- [17] 3GPP TS 25.323: "Packet Data Convergence Protocol (PDCP) specification".
- [18] 3GPP TR 25.921: "Guidelines and principles for protocol description and error handling".
- [19] 3GPP TS 23.003: "Numbering, addressing and identification".
- [20] 3GPP TS 23.032: "Universal Geographical Area Description (GAD)".
- [21] 3GPP TS 23.060: "General Packet Radio Service (GPRS); Service description; Stage 2".
- [22] 3GPP TS 24.080: "Mobile radio Layer 3 supplementary services specification; Formats and coding".
- [23] 3GPP TS 29.108: "Application of the Radio Access Network Application Part (RANAP) on the E-interface".
- [24] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".

[25] 3GPP TS 12.20: "Base Station System (BSS) management information".

[x1] 3GPP TS 22.071: "Location Services (LCS); Service description - Stage 1".

8.19.2 Successful Operation



Figure 21: 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. If the *Vertical Accuracy Code* IE is included, the *Accuracy Code* IE in the *Request Type* IE shall be present and understood as the horizontal accuracy code, 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.

Any of the *Vertical Accuracy Code* IE, *Response Time* IE, *Positioning Priority* IE or *Client Type* IE shall be included according to the following rules:

- Vertical Accuracy Code shall be included, if available, in connection with Geographical Area,
- Response time shall be included, if available, in connection with request for start of direct reporting of Geographical Area,
- Client type shall be included in connection with request for start of direct reporting of Geographical Area and, if available, in request for direct reporting of SAI,
- Positioning Priority shall be included, if available, in connection with request for start of direct reporting or in connection with request for start of reporting upon change of Service Area.

When no *Positioning Priority* IE is included, the RNC shall consider the request as if “Normal Priority” value had been received.

When no *Response Time* IE is included, the RNC shall consider the request as if “Delay Tolerant” value had been received.

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.

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 |
| Vertical Accuracy Code | O | | 9.2.1.x2 | | YES | Ignore |
| Response Time | O | | 9.2.1.x3 | | YES | Ignore |
| Positioning Priority | O | | 9.2.1.x4 | | YES | Ignore |
| Client Type | O | | 9.2.1.x5 | | YES | ignore |

9.2.1 Radio Network Layer Related IEs

Lots of unaffected parts in 9.2.1 not shown

9.2.1.16 Request Type

This element indicates the type of UE location to be reported from RNC and it is either a Service Area or Geographical Area.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
|---------------------------|----------------------------------|-------|---|---|
| Request Type | | | | |
| >Event | M | | ENUMERATED(Stop Change of service area, Direct, Change of service area, ..., Stop Direct) | |
| >Report Area | M | | ENUMERATED(Service Area, Geographical Area, ...) | When the Event IE is set to "Stop Change of service area" or to "Stop Direct", the value of the Report area IE shall be the same as in the LOCATION REPORTING CONTROL message that initiated the location reporting. |
| >Horizontal Accuracy Code | O | | INTEGER(0..127) | The requested accuracy "r" is derived from the "accuracy code" k by $r = 10 \times (1.1^k - 1)$. <u>When the Vertical Accuracy Code IE is present, the Accuracy Code IE shall be present as well and it defines the horizontal accuracy code.</u> |
| >Vertical Accuracy Code | O | | INTEGER(0..127) | The requested accuracy "v" is derived from the "accuracy code" k by $v = 45 \times (1.025^k - 1)$. |
| >Response time | C – ifDirect & GeoAreaReportArea | | ENUMERATED (Low-Delay, Delay-Tolerant, ...) | |
| >Positioning Priority | C – ifDirect & ChangeArea | | ENUMERATED(High-Priority, Normal-Priority, ...) | |
| >Client type | C – ifDirect | | ENUMERATED(Emergency Services, Value Added Services, PLMN Operator Services, Lawful Intercept Services, ..., PLMN Operator –broadcast services, PLMN Operator –O&M, PLMN Operator –anonymous statistics, PLMN Operator –Target MS service support) | Identifies the type of client |

| Condition | Explanation |
|------------------------------|---|
| ifDirect & GeoAreaReportArea | This IE shall be present if the <i>Event</i> IE is set to 'Direct' and the <i>Report Area</i> IE is set to 'Geographical Area'. |
| ifDirect | This IE shall be present if the <i>Event</i> IE is set to 'Direct'. |
| ifDirect & ChangeArea | This IE shall be present if the <i>Event</i> IE is set to 'Direct' or "Change of Service Area". |

Lots of unaffected parts in 9.2.1 not shown

9.2.1.46 Global CN-ID

Global CN-ID is used to globally identify a CN node.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
|---------------------|----------|-------|-------------------------|---|
| Global CN-ID | | | | |
| >PLMN identity | M | | OCTET STRING (SIZE (3)) | <ul style="list-style-type: none"> - digits 0 to 9, two digits per octet, - each digit encoded 0000 to 1001, - 1111 used as filler - bit 4 to 1 of octet n encoding digit 2n-1 - bit 8 to 5 of octet n encoding digit 2n <p>-The PLMN identity consists of 3 digits from MCC followed by either</p> <ul style="list-style-type: none"> -a filler plus 2 digits from MNC (in case of 2 digit MNC) or -3 digits from MNC (in case of a 3 digit MNC). |
| >CN-ID | M | | INTEGER (0..4095) | |

9.2.1.x2 Vertical Accuracy Code

This element includes information about the requested vertical accuracy.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
|-------------------------------|----------|-------|-----------------------|--|
| Vertical Accuracy Code | | | | |
| >Vertical Accuracy Code | M | | INTEGER(0..127) | The requested accuracy "v" is derived from the "accuracy code" k by $v = 45x(1.025^k - 1)$. |

9.2.1.x3 Response Time

This element includes information about the requested response time.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
|----------------------|----------|-------|---|---------------------------|
| Response Time | | | | |
| >Response Time | M | | ENUMERATED (Low Delay, Delay Tolerant, ...) | The value refers to [x1]. |

9.2.1.x4 Positioning Priority

This element includes information about the requested positioning priority.

| <u>IE/Group Name</u> | <u>Presence</u> | <u>Range</u> | <u>IE type and reference</u> | <u>Semantics description</u> |
|-----------------------------|-----------------|--------------|---|------------------------------|
| Positioning Priority | | | | |
| >Positioning Priority | M | | ENUMERATED(High Priority, Normal Priority, ...) | The value refers to [x1]. |

9.2.1.x5 Client Type

This element includes information about the client type.

| <u>IE/Group Name</u> | <u>Presence</u> | <u>Range</u> | <u>IE type and reference</u> | <u>Semantics description</u> |
|----------------------|-----------------|--------------|--|--------------------------------|
| Client Type | | | | |
| >Client Type | M | | ENUMERATED(Emergency Services, Value Added Services, PLMN Operator Services, Lawful Intercept Services, ..., PLMN Operator - broadcast services, PLMN Operator - O&M, PLMN Operator - anonymous statistics, PLMN Operator - Target MS service support) | Identifies the type of client. |

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,
    ClientType,
    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,

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NonSearchingIndication,
NumberOfSteps,
OMC-ID,
OldBSS-ToNewBSS-Information,
PagingAreaID,
PagingCause,
PDP-TypeInformation,
PermanentNAS-UE-ID,
PositioningPriority,
RAB-ID,
RAB-Parameters,
RAC,
RelocationType,
RequestType,
Requested-RAB-Parameter-Values,
ResponseTime,
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,
VerticalAccuracyCode,
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-ClientType,
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-PositioningPriority,
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,

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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-ResponseTime,
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,
id-VerticalAccuracyCode
FROM RANAP-Constants;

```

Lots of unaffected ASN1 in 9.3.3 not shown


```

-- *****
--
-- LOCATION REPORTING CONTROL ELEMENTARY PROCEDURE
--
-- *****
--
-- *****
--
-- Location Reporting Control
--
-- *****

LocationReportingControl ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container  { {LocationReportingControlIEs} },
    protocolExtensions   ProtocolExtensionContainer { {LocationReportingControlExtensions} }    OPTIONAL,
    ...
}

LocationReportingControlIEs RANAP-PROTOCOL-IES ::= {
    { ID id-RequestType          CRITICALITY ignore  TYPE RequestType          PRESENCE mandatory },
    ...
}

LocationReportingControlExtensions RANAP-PROTOCOL-EXTENSION ::= {
-- Extension for Release 4 to enhance the location request over Iu --
{ ID id-VerticalAccuracyCode          CRITICALITY ignore  EXTENSION VerticalAccuracyCode          PRESENCE optional },
-- Extension for Release 4 to enhance the location request over Iu --
{ ID id-ResponseTime                CRITICALITY ignore  EXTENSION ResponseTime                PRESENCE optional },
-- Extension for Release 4 to enhance the location request over Iu --
{ ID id-PositioningPriority          CRITICALITY ignore  EXTENSION PositioningPriority          PRESENCE optional },
-- Extension for Release 4 to enhance the location request over Iu --
{ ID id-ClientType                  CRITICALITY ignore  EXTENSION ClientType                  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

IMPORTS
    maxNrOfErrors,
    maxNrOfPDPDirections,
    maxNrOfPoints,
    maxNrOfRABs,
    maxNrOfSeparateTrafficDirections,
    maxRAB-Subflows,
    maxRAB-SubflowCombination,
    maxNrOfLevels,
    maxNrOfAltValues,

    id-MessageStructure,
    id-TypeOfError

FROM RANAP-Constants

    Criticality,
    ProcedureCode,
    ProtocolIE-ID,
    TriggeringMessage
FROM RANAP-CommonDataTypes

    ProtocolExtensionContainer{ },
    RANAP-PROTOCOL-EXTENSION
FROM RANAP-Containers;

-- A
```

Lots of unaffected ASN1 in 9.3.4 not shown

```
ClientType ::= ENUMERATED {
    emergency-Services,
    value-Added-Services,
    pLMN-Operator-Services,
    lawful-Intercept-Services,
```

```

...
pLMN-Operator-Broadcast-Services,
pLMN-Operator-Oper-M,
pLMN-Operator-Anonymous-Statistics,
pLMN-Operator-Target-MS-Service-Support
}

```

Lots of unaffected ASN1 in 9.3.4 not shown

```

PositioningPriority ::= ENUMERATED {
  high-Priority,
  normal-Priority,
...
}

```

Lots of unaffected ASN1 in 9.3.4 not shown

```

RequestType ::= SEQUENCE {
  event                Event,
  reportArea           ReportArea,
  horizontalAccuracyCode  INTEGER (0..127)  OPTIONAL,
  ...
  verticalAccuracyCode  INTEGER (0..127)  OPTIONAL,
  -- To be used if Geographical Coordinates shall be reported with a requested accuracy.
  responseTime         ResponseTime  OPTIONAL,
  -- This IE shall be present if the Event IE is set to 'Direct' and the Report Area IE is set to 'Geographical Area'.
  positioningPriority  PositioningPriority  OPTIONAL,
  -- This IE shall be present if the Event IE is set to 'Direct' or "Change of Service Area".
  clientType          ClientType  OPTIONAL,
  -- This IE shall be present if the Event IE is set to 'Direct'.
}

```

```

ResidualBitErrorRatio ::= SEQUENCE {
  mantissa             INTEGER (1..9),
  exponent             INTEGER (1..8),
  iE-Extensions       ProtocolExtensionContainer { {ResidualBitErrorRatio-ExtIEs} } OPTIONAL
}
-- ResidualBitErrorRatio = mantissa * 10^-exponent

```

```

ResidualBitErrorRatio-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
  ...
}

```

```

ResponseTime ::= ENUMERATED {
  lowdelay,
  delaytolerant,
...
}

```

Lots of unaffected ASN1 in 9.3.4 not shown

```
-- U
UE-ID ::= CHOICE {
    imsi          IMSI,
    imei          IMEI,
    ...
}

UL-GTP-PDU-SequenceNumber ::= INTEGER (0..65535)
UL-N-PDU-SequenceNumber   ::= INTEGER (0..65535)
UP-ModeVersions           ::= BIT STRING (SIZE (16))
USCH-ID                   ::= INTEGER (0..255)

UserPlaneMode ::= ENUMERATED {
    transparent-mode,
    support-mode-for-predefined-SDU-sizes,
    ...
}
}

-- V
VerticalAccuracyCode ::= INTEGER (0..127)

END
```

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

-- *****
--
-- Elementary Procedures
--
-- *****

id-RAB-Assignment                INTEGER ::= 0
id-Iu-Release                    INTEGER ::= 1
id-RelocationPreparation         INTEGER ::= 2
id-RelocationResourceAllocation  INTEGER ::= 3
id-RelocationCancel             INTEGER ::= 4
id-SRNS-ContextTransfer         INTEGER ::= 5
id-SecurityModeControl          INTEGER ::= 6
id-DataVolumeReport            INTEGER ::= 7
id-Reset                        INTEGER ::= 9
id-RAB-ReleaseRequest           INTEGER ::= 10
id-Iu-ReleaseRequest            INTEGER ::= 11
id-RelocationDetect             INTEGER ::= 12
id-RelocationComplete           INTEGER ::= 13
id-Paging                       INTEGER ::= 14
id-CommonID                     INTEGER ::= 15
id-CN-InvokeTrace               INTEGER ::= 16
id-LocationReportingControl     INTEGER ::= 17
id-LocationReport               INTEGER ::= 18
id-InitialUE-Message            INTEGER ::= 19
id-DirectTransfer               INTEGER ::= 20
id-OverloadControl              INTEGER ::= 21
id-ErrorIndication              INTEGER ::= 22
id-SRNS-DataForward             INTEGER ::= 23
id-ForwardSRNS-Context         INTEGER ::= 24
id-privateMessage               INTEGER ::= 25
id-CN-DeactivateTrace           INTEGER ::= 26
id-ResetResource                INTEGER ::= 27
id-RANAP-Relocation             INTEGER ::= 28
id-RAB-ModifyRequest            INTEGER ::= 29

```

```

id-LocationRelatedData          INTEGER ::= 30

-- *****
--
-- Extension constants
--
-- *****

maxPrivateIEs                   INTEGER ::= 65535
maxProtocolExtensions           INTEGER ::= 65535
maxProtocolIEs                  INTEGER ::= 65535

-- *****
--
-- Lists
--
-- *****

maxNrOfDTs                      INTEGER ::= 15
maxNrOfErrors                   INTEGER ::= 256
maxNrOfIuSigConIds              INTEGER ::= 250
maxNrOfPDPDirections            INTEGER ::= 2
maxNrOfPoints                   INTEGER ::= 15
maxNrOfRABs                     INTEGER ::= 256
maxNrOfSeparateTrafficDirections INTEGER ::= 2
maxNrOfVol                      INTEGER ::= 2
maxNrOfLevels                   INTEGER ::= 256
maxNrOfAltValues                INTEGER ::= 16

maxRAB-Subflows                 INTEGER ::= 7
maxRAB-SubflowCombination       INTEGER ::= 64

-- *****
--
-- 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 ::= 97 |
| id-VerticalAccuracyCode | INTEGER ::= 99 |
| <u>id-ResponseTime</u> | <u>INTEGER ::= 100</u> |
| <u>id-PositioningPriority</u> | <u>INTEGER ::= 101</u> |
| <u>id-ClientType</u> | <u>INTEGER ::= 102</u> |

END

CHANGE REQUEST

⌘ **25.413** **CR 526** ⌘ rev **3** ⌘ Current version: **5.2.0** ⌘

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

Proposed change affects: UICC apps ME Radio Access Network Core Network

| | | | |
|------------------------|--|-----------------|--|
| Title: | ⌘ Correction to enable Rel4 extensions in Location Reporting Control procedure. | | |
| Source: | ⌘ Nokia, Ericsson, Alcatel, Nortel Networks | | |
| Work item code: | ⌘ TEI4 | Date: | ⌘ 27 November 2002 |
| 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-5 Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6) |

Reason for change: ⌘ During RAN3#32, a RANAP Review ad hoc was held where a new issue was raised (see R3-022277). This issue B.9 was also discussed during an email discussion in order to prepare CRs for RAN3#33.

Release 4 support of extended positioning in RANAP was approved at RAN3#23 in CR R3-012626 (revision 7!), based on the email discussion report in R3-012322.

This CR introduced some new Rel4 IEs after the ellipsis notation in the SEQUENCE Type *Request Type* IE in the LOCATION REPORTING CONTROL message. However TR 25.921 in section 10.5.1 recommends that adding New IEs or IE groups should be achieved by using the protocol extension container and not by using the ellipsis notation for adding at the top level of message and adding in the SEQUENCE type.

Indeed nothing mandates nor restricts an ASN.1 decoder implementation to behave according to one of the two opposite behaviors in the following scenario:

- R4 Sept02 CN LOCATION REPORTING CONTROL -> R99 RNC: either skip those unknown Rel4 IEs received after the ellipsis notation (succesfull R99 treatment of the message) or ignore the whole Request Type IE because not fully comprehended (logical error, procedure rejected).

Furthermore in the scenario of a R99 CN LOCATION REPORTING CONTROL sent to R4 Sept02 RNC, the RNC will be expecting those Rel4 IEs depending on their conditions and therefore when the conditions are true, we will always have an abstract syntax error that will end up in ignoring the whole Request Type IE (logical error, procedure rejected).

Revision 3: Moreover,

- 1) There is no reason to get the Client Type as mandatory when the Report Area is Service Area since there is no need for specific formatting in the Location Report for that case: the response is always SAI.

2) The Positioning priority is mandatory for event cases "Direct" and "Change of service area" whereas it should only be optional according to TS23.271 section 5.5.1 which states: "The following generic attributes are identified for the Location Service Request information flow: Priority, if needed". It is also in line with TS08.08 clause 3.2.1.71 that mentions the LCS priority IE as optional.

Summary of change: ⌘ The Rel4 *Vertical Accuracy Code*, *Positioning Priority*, *Response Time* and *Client Type* IEs are moved in the extension container at the top level of the LOCATION REPORTING CONTROL message.

Revision 3: Those IEs are not moved inside one IE group in the extension container at the top level of the LOCATION REPORTING CONTROL message, because if in later release there is a need to introduce a new value for one of those IEs, this new value will force RNCs from previous releases to ignore the whole IE group in the extension container and then handled the request in a release 99 manner.

Revision 3: The Client Type is not anymore mandatory when the Report Area is Service Area: in this case, it shall be included by the CN only if available. The Positioning priority is not mandatory anymore: it shall be included by the CN only if available.

The procedure text of the Location Reporting Control procedure is completed accordingly.

Finally, as a combined CR, this CR covers also the clarification of the issue B.2 (see R3-022277) and therefore adds the wording "the value refers to [x1]" in the semantic description for the *Positioning Priority* IE and *Response time* IE with [x1] as a new reference to 22.071 in RANAP in order to have a pointer towards the meaning of the values of those IEs.

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 of change in the content (ASN.1) of the LOCATION REPORTING CONTROL message.

The CR has an impact under protocol and functional point of view.

The impact can be considered isolated because the change affects the Location Reporting Control function.

It should be noted that this CR introduces a not backward compatible change compared to previous Rel4 version of RANAP specification, as shown in the following scenarios:

R4 Sept02 CN LOCATION REPORTING CONTROL -> R4 Dec02 RNC: it does not work for ASN.1 decoder implementation not capable of skipping those unknown IEs received after the ellipsis notation. It works otherwise in R99 manner.

R4 Dec02 CN LOCATION REPORTING CONTROL -> R4 Sept02 RNC: it does not work at all.

Consequences if not approved: ⌘ If Rel4 CNs and RNCs are not upgraded based on that CR, the R99 Location Reporting Control function does not work at all in the following cases:

- R99 CN LOCATION REPORTING CONTROL -> R4 Sept02 RNC
- R4 Sept02 CN LOCATION REPORTING CONTROL -> R99 RNC for ASN.1 decoder implementation not capable of skipping those unknown IEs received after the ellipsis notation.

It should be noted that this CR is not backward compatible change compared to previous Rel4 version of RANAP specification in order to enable forward compatibility with R99 functionality and R99 nodes.

Revision 3: Moreover, the Positioning Priority and Client Type would be required from the CN even if not available, and the Client Type would be signalled even when not needed in the RNC.

| | | | | | | | | | | | | |
|------------------------------|---|---|---|---|---|--|--|---|--|---|---------------------------|----------------------------------|
| Clauses affected: | ⌘ | 2, 8.19.2, 9.1.29, 9.2.1.16, 9.2.1.x2 (new), 9.2.1.x3 (new), 9.2.1.x4 (new), 9.2.1.x5 (new), 9.3.3, 9.3.4 and 9.3.6 | | | | | | | | | | |
| Other specs affected: | | <table border="1"><tr><td>Y</td><td>N</td></tr><tr><td>X</td><td></td></tr><tr><td></td><td>X</td></tr><tr><td></td><td>X</td></tr></table> | Y | N | X | | | X | | X | Other core specifications | ⌘ Initial CR525rev3 25.413 REL-4 |
| | Y | N | | | | | | | | | | |
| | X | | | | | | | | | | | |
| | X | | | | | | | | | | | |
| | X | | | | | | | | | | | |
| | | Test specifications | | | | | | | | | | |
| | | O&M Specifications | | | | | | | | | | |
| Other comments: | ⌘ | Suggestions for new numbers: - new reference number in Rel4, x1=30 - new section number in Rel4, 9.2.1.x2=9.2.1.46a - new section number in Rel4, 9.2.1.x3=9.2.1.46b - new section number in Rel4, 9.2.1.x4=9.2.1.46c - new section number in Rel4, 9.2.1.x5=9.2.1.46d | | | | | | | | | | |

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.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply".
- For a non-specific reference, the latest version applies".

- [1] 3GPP TR 23.930: "Iu Principles".
- [2] 3GPP TS 25.410: "UTRAN Iu Interface: General Aspects and Principles".
- [3] 3GPP TS 25.401: "UTRAN Overall Description".
- [4] 3GPP TR 25.931: "UTRAN Functions, Examples on Signalling Procedures".
- [5] 3GPP TS 25.412: "UTRAN Iu interface signalling transport".
- [6] 3GPP TS 25.415: "UTRAN Iu interface user plane protocols".
- [7] 3GPP TS 23.107: "Quality of Service (QoS) concept and architecture".
- [8] 3GPP TS 24.008: "Mobile radio interface layer 3 specification; Core network protocols; Stage 3".
- [9] 3GPP TS 25.414: "UTRAN Iu interface data transport and transport signalling".
- [10] 3GPP TS 25.331: Radio Resource Control (RRC) protocol specification".
- [11] 3GPP TS 48.008: "3rd Generation Partnership Project (3GPP) Technical Specification Group GSM EDGE Radio Access Network; Mobile-services Switching Centre – Base Station System (MSC - BSS) interface; Layer 3 specification".
- [12] 3GPP TS 12.08: "Subscriber and equipment trace".
- [13] ITU-T Recommendation X.691 (1997): "Information technology - ASN.1 encoding rules: Specification of Packed Encoding Rules (PER)".
- [14] ITU-T Recommendation X.680 (1997): "Information technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation".
- [15] ITU-T Recommendation X.681 (1997): "Information technology - Abstract Syntax Notation One (ASN.1): Information object specification".
- [16] 3GPP TS 23.110: "UMTS Access Stratum, Services and Functions".
- [17] 3GPP TS 25.323: "Packet Data Convergence Protocol (PDCP) specification".
- [18] 3GPP TR 25.921: "Guidelines and principles for protocol description and error handling".
- [19] 3GPP TS 23.003: "Numbering, addressing and identification".
- [20] 3GPP TS 23.032: "Universal Geographical Area Description (GAD)".
- [21] 3GPP TS 23.060: "General Packet Radio Service (GPRS); Service description; Stage 2".
- [22] 3GPP TS 24.080: "Mobile radio Layer 3 supplementary services specification; Formats and coding".
- [23] 3GPP TS 29.108: "Application of the Radio Access Network Application Part (RANAP) on the E-interface".

- [24] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".
- [25] 3GPP TS 12.20: "Base Station System (BSS) management information".
- [26] 3GPP TS 23.236: "Intra-domain connection of Radio Access Network (RAN) nodes to multiple Core Network (CN) nodes".
- [27] 3GPP TS 43.051: "3rd Generation Partnership Project; Technical Specification Group GSM/EDGE Radio Access Network; Overall description - Stage 2".
- [28] 3GPP TS 25.305: "Stage 2 Functional Specification of Location Services (LCS) in UTRAN".
- [29] 3GPP TS 43.059: "Functional stage 2 description of Location Services (LCS) in GERAN".
- [x1] 3GPP TS 22.071: "Location Services (LCS); Service description - Stage 1".

8.19.2 Successful Operation



Figure 21: 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. If the *Vertical Accuracy Code* IE is included, the *Accuracy Code* IE in the *Request Type* IE shall be present and understood as the horizontal accuracy code, 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.

Any of the *Vertical Accuracy Code* IE, *Response Time* IE, *Positioning Priority* IE or *Client Type* IE shall be included according to the following rules:

- Vertical Accuracy Code shall be included, if available, in connection with Geographical Area,
- Response time shall be included, if available, in connection with request for start of direct reporting of Geographical Area,
- Client type shall be included in connection with request for start of direct reporting of Geographical Area and, if available, in request for direct reporting of SAI,
- Positioning Priority shall be included, if available, in connection with request for start of direct reporting or in connection with request for start of reporting upon change of Service Area.

When no *Positioning Priority* IE is included, the RNC shall consider the request as if “Normal Priority” value had been received.

When no *Response Time* IE is included, the RNC shall consider the request as if “Delay Tolerant” value had been received.

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.

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 |
| Vertical Accuracy Code | O | | 9.2.1.x2 | | YES | ignore |
| Response Time | O | | 9.2.1.x3 | | YES | ignore |
| Positioning Priority | O | | 9.2.1.x4 | | YES | ignore |
| Client Type | O | | 9.2.1.x5 | | YES | ignore |

9.2.1 Radio Network Layer Related IEs

Lots of unaffected parts in 9.2.1 not shown

9.2.1.16 Request Type

This element indicates the type of UE location to be reported from RNC and it is either a Service Area or Geographical Area.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
|---------------------------|----------------------------------|-------|---|---|
| Request Type | | | | |
| >Event | M | | ENUMERATED(Stop Change of service area, Direct, Change of service area, ..., Stop Direct) | |
| >Report Area | M | | ENUMERATED(Service Area, Geographical Area, ...) | When the Event IE is set to "Stop Change of service area" or to "Stop Direct", the value of the Report area IE shall be the same as in the LOCATION REPORTING CONTROL message that initiated the location reporting. |
| >Horizontal Accuracy Code | O | | INTEGER(0..127) | The requested accuracy "r" is derived from the "accuracy code" k by $r = 10 \times (1.1^k - 1)$. <u>When the Vertical Accuracy Code IE is present, the Accuracy Code IE shall be present as well and it defines the horizontal accuracy code.</u> |
| >Vertical Accuracy Code | O | | INTEGER(0..127) | The requested accuracy "v" is derived from the "accuracy code" k by $v = 45 \times (1.025^k - 1)$. |
| >Response time | C – ifDirect & GeoAreaReportArea | | ENUMERATED (Low-Delay, Delay-Tolerant, ...) | |
| >Positioning Priority | C – ifDirect & ChangeArea | | ENUMERATED(High-Priority, Normal-Priority, ...) | |
| >Client type | C – ifDirect | | ENUMERATED(Emergency Services, Value Added Services, PLMN Operator Services, Lawful Intercept Services, ..., PLMN Operator –broadcast services, PLMN Operator –O&M, PLMN Operator –anonymous statistics, PLMN Operator –Target MS service support) | Identifies the type of client |

| Condition | Explanation |
|------------------------------|---|
| ifDirect & GeoAreaReportArea | This IE shall be present if the <i>Event</i> IE is set to 'Direct' and the <i>Report Area</i> IE is set to 'Geographical Area'. |
| ifDirect | This IE shall be present if the <i>Event</i> IE is set to 'Direct'. |
| ifDirect & ChangeArea | This IE shall be present if the <i>Event</i> IE is set to 'Direct' or "Change of Service Area". |

Lots of unaffected parts in 9.2.1 not shown

9.2.1.46 Global CN-ID

Global CN-ID is used to globally identify a CN node.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
|---------------------|----------|-------|-------------------------|---|
| Global CN-ID | | | | |
| >PLMN identity | M | | OCTET STRING (SIZE (3)) | <ul style="list-style-type: none"> - digits 0 to 9, two digits per octet, - each digit encoded 0000 to 1001, - 1111 used as filler - bit 4 to 1 of octet n encoding digit 2n-1 - bit 8 to 5 of octet n encoding digit 2n <p>-The PLMN identity consists of 3 digits from MCC followed by either</p> <ul style="list-style-type: none"> -a filler plus 2 digits from MNC (in case of 2 digit MNC) or -3 digits from MNC (in case of a 3 digit MNC). |
| >CN-ID | M | | INTEGER (0..4095) | |

9.2.1.x2 Vertical Accuracy Code

This element includes information about the requested vertical accuracy.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
|-------------------------------|----------|-------|-----------------------|--|
| Vertical Accuracy Code | | | | |
| >Vertical Accuracy Code | M | | INTEGER(0..127) | The requested accuracy "v" is derived from the "accuracy code" k by $v = 45x(1.025^k - 1)$. |

9.2.1.x3 Response Time

This element includes information about the requested response time.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
|----------------------|----------|-------|---|---------------------------|
| Response Time | | | | |
| >Response Time | M | | ENUMERATED (Low Delay, Delay Tolerant, ...) | The value refers to [x1]. |

9.2.1.x4 Positioning Priority

This element includes information about the requested positioning priority.

| <u>IE/Group Name</u> | <u>Presence</u> | <u>Range</u> | <u>IE type and reference</u> | <u>Semantics description</u> |
|-----------------------------|-----------------|--------------|--|------------------------------|
| Positioning Priority | | | | |
| >Positioning Priority | M | | ENUMERATED(High Priority, Normal Priority, ...) | The value refers to [x1]. |

9.2.1.x5 Client Type

This element includes information about the client type.

| <u>IE/Group Name</u> | <u>Presence</u> | <u>Range</u> | <u>IE type and reference</u> | <u>Semantics description</u> |
|----------------------|-----------------|--------------|---|--------------------------------|
| Client Type | | | | |
| >Client Type | M | | ENUMERATED(Emergency Services, Value Added Services, PLMN Operator Services, Lawful Intercept Services, ..., PLMN Operator - broadcast services, PLMN Operator - O&M, PLMN Operator - anonymous statistics, PLMN Operator - Target MS service support) | Identifies the type of client. |

9.2.1.47 New BSS to Old BSS Information

The coding of this element is described in [11].

| <u>IE/Group Name</u> | <u>Presence</u> | <u>Range</u> | <u>IE type and reference</u> | <u>Semantics description</u> |
|--------------------------------|-----------------|--------------|------------------------------|------------------------------|
| New BSS To Old BSS Information | M | | OCTET STRING | Contents defined in [11]. |

Lots of unaffected parts in 9.2.1 not shown

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,
    LocationRelatedDataRequestTypeSpecificToGERANIuMode,
    DataVolumeReference,
    CellLoadInformation,
    AreaIdentity,
    CN-DomainIndicator,
    Cause,
    ClientType,
    CriticalityDiagnostics,
    ChosenEncryptionAlgorithm,
    ChosenIntegrityProtectionAlgorithm,
    ClassmarkInformation2,
    ClassmarkInformation3,
    DL-GTP-PDU-SequenceNumber,
    DL-N-PDU-SequenceNumber,
    DataVolumeReportingIndication,
    DRX-CycleLengthCoefficient,
    EncryptionInformation,
    GERAN-BSC-Container,
    GERAN-Classmark,
    GlobalCN-ID,
    GlobalRNC-ID,
    InformationTransferID,
    IntegrityProtectionInformation,
    InterSystemInformation-TransparentContainer,
    IuSignallingConnectionIdentifier,
    IuTransportAssociation,

```

```

KeyStatus,
L3-Information,
LAI,
LastKnownServiceArea,
NAS-PDU,
NAS-SynchronisationIndicator,
NewBSS-To-OldBSS-Information,
NonSearchingIndication,
NumberOfSteps,
OMC-ID,
OldBSS-ToNewBSS-Information,
PagingAreaID,
PagingCause,
PDP-TypeInformation,
PermanentNAS-UE-ID,
PositioningPriority,
ProvidedData,
RAB-ID,
RAB-Parameters,
RAC,
RelocationType,
RequestType,
Requested-RAB-Parameter-Values,
ResponseTime,
RRC-Container,
SAI,
SAPI,
Service-Handover,
SNA-Access-Information,
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,
VerticalAccuracyCode,
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-ClientType,
id-CriticalityDiagnostics,
id-DRX-CycleLengthCoefficient,
id-DirectTransferInformationItem-RANAP-RelocInf,
id-DirectTransferInformationList-RANAP-RelocInf,
id-DL-GTP-PDU-SequenceNumber,
id-EncryptionInformation,
id-GERAN-BSC-Container,
id-GERAN-Classmark,
id-GERAN-Iumode-RAB-Failed-RABAssgntResponse-Item,
id-GERAN-Iumode-RAB-FailedList-RABAssgntResponse,
id-GlobalCN-ID,
id-GlobalRNC-ID,
id-InformationTransferID,
id-IntegrityProtectionInformation,
id-InterSystemInformation-TransparentContainer,
id-IuSigConId,
id-IuSigConIdItem,
id-IuSigConIdList,
id-IuTransportAssociation,
id-KeyStatus,
id-L3-Information,
id-LAI,
id-LastKnownServiceArea,
id-LocationRelatedDataRequestTypeSpecificToGERANIuMode,
id-NAS-PDU,
id-NewBSS-To-OldBSS-Information,

```

id-NonSearchingIndication,
id-NumberOfSteps,
id-OMC-ID,
id-OldBSS-ToNewBSS-Information,
id-PagingAreaID,
id-PagingCause,
id-PermanentNAS-UE-ID,
id-PositioningPriority,
id-ProvidedData,
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-ResponseTime,


```

id-SAI,
id-SAPI,
id-SNA-Access-Information,
id-SourceID,
id-SourceRNC-ToTargetRNC-TransparentContainer,
id-SourceRNC-PDCP-context-info,
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,
id-VerticalAccuracyCode
FROM RANAP-Constants;

```

Lots of unaffected ASN1 in 9.3.3 not shown

```

-- *****
--
-- LOCATION REPORTING CONTROL ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- Location Reporting Control
--
-- *****

LocationReportingControl ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container          { {LocationReportingControlIEs} },
    protocolExtensions   ProtocolExtensionContainer { {LocationReportingControlExtensions} }    OPTIONAL,
    ...
}

LocationReportingControlIEs RANAP-PROTOCOL-IES ::= {
    { ID id-RequestType          CRITICALITY ignore   TYPE RequestType          PRESENCE mandatory },
    ...
}

LocationReportingControlExtensions RANAP-PROTOCOL-EXTENSION ::= {
-- Extension for Release 4 to enhance the location request over Iu --
    { ID id-VerticalAccuracyCode          CRITICALITY ignore   EXTENSION VerticalAccuracyCode          PRESENCE optional },
-- Extension for Release 4 to enhance the location request over Iu --
    { ID id-ResponseTime          CRITICALITY ignore   EXTENSION ResponseTime          PRESENCE optional },
-- Extension for Release 4 to enhance the location request over Iu --
    { ID id-PositioningPriority          CRITICALITY ignore   EXTENSION PositioningPriority          PRESENCE optional },
-- Extension for Release 4 to enhance the location request over Iu --

```

```
| { ID id-ClientType CRITICALITY ignore EXTENSION ClientType 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

IMPORTS
    maxNrOfErrors,
    maxNrOfPDPDirections,
    maxNrOfPoints,
    maxNrOfRABs,
    maxNrOfSeparateTrafficDirections,
    maxRAB-Subflows,
    maxRAB-SubflowCombination,
    maxNrOfLevels,
    maxNrOfAltValues,
    maxNrOfSNAs,
    maxNrOfLAs,
    maxNrOfPLMNSN,

    id-MessageStructure,
    id-TypeOfError,

    id-DownlinkCellLoadInformation,
    id-UplinkCellLoadInformation
FROM RANAP-Constants

    Criticality,
    ProcedureCode,
    ProtocolIE-ID,
    TriggeringMessage
FROM RANAP-CommonDataTypes

    ProtocolExtensionContainer{},
    RANAP-PROTOCOL-EXTENSION
FROM RANAP-Containers;

-- A

```

Lots of unaffected ASN1 in 9.3.4 not shown

```

ClientType ::= ENUMERATED {
    emergency-Services,
    value-Added-Services,
    pLMN-Operator-Services,
    lawful-Intercept-Services,
    ...,
    pLMN-Operator-Broadcast-Services,
    pLMN-Operator-Oper-M,
    pLMN-Operator-Anonymous-Statistics,
    pLMN-Operator-Target-MS-Service-Support
}

```

Lots of unaffected ASN1 in 9.3.4 not shown

```

PositioningPriority ::= ENUMERATED {
    high-Priority,
    normal-Priority,
    ...
}

```

Lots of unaffected ASN1 in 9.3.4 not shown

```

RequestType ::= SEQUENCE {
    event                Event,
    reportArea           ReportArea,
    horizontalAccuracyCode  INTEGER (0..127)  OPTIONAL,
    ...
verticalAccuracyCode  INTEGER (0..127)  OPTIONAL,
    To be used if Geographical Coordinates shall be reported with a requested accuracy.
responseTime          ResponseTime  OPTIONAL,
    This IE shall be present if the Event IE is set to 'Direct' and the Report Area IE is set to 'Geographical Area'.
positioningPriority    PositioningPriority  OPTIONAL,
    This IE shall be present if the Event IE is set to 'Direct' or "Change of Service Area".
clientType            ClientType  OPTIONAL
-- This IE shall be present if the Event IE is set to 'Direct'.--
}

```

```

ResidualBitErrorRatio ::= SEQUENCE {
    mantissa             INTEGER (1..9),
    exponent             INTEGER (1..8),
    iE-Extensions       ProtocolExtensionContainer { {ResidualBitErrorRatio-ExtIEs} } OPTIONAL
}
-- ResidualBitErrorRatio = mantissa * 10^-exponent

```

```

ResidualBitErrorRatio-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

```

```

ResponseTime ::= ENUMERATED {
    lowdelay,
    delaytolerant,
    ...
}

```

}

| |
|--|
| Lots of unaffected ASN1 in 9.3.4 not shown |
|--|

-- U

```
UE-ID ::= CHOICE {  
    imsi          IMSI,  
    imei          IMEI,  
    ...  
}
```

```
UL-GTP-PDU-SequenceNumber ::= INTEGER (0..65535)
```

```
UL-N-PDU-SequenceNumber ::= INTEGER (0..65535)
```

```
UP-ModeVersions ::= BIT STRING (SIZE (16))
```

```
USCH-ID ::= INTEGER (0..255)
```

```
UserPlaneMode ::= ENUMERATED {  
    transparent-mode,  
    support-mode-for-predefined-SDU-sizes,  
    ...  
}
```

-- V

```
VerticalAccuracyCode ::= INTEGER (0..127)
```

END

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

-- *****
--
-- Elementary Procedures
--
-- *****

id-RAB-Assignment                INTEGER ::= 0
id-Iu-Release                    INTEGER ::= 1
id-RelocationPreparation         INTEGER ::= 2
id-RelocationResourceAllocation INTEGER ::= 3
id-RelocationCancel             INTEGER ::= 4
id-SRNS-ContextTransfer         INTEGER ::= 5
id-SecurityModeControl          INTEGER ::= 6
id-DataVolumeReport            INTEGER ::= 7
id-Reset                        INTEGER ::= 9
id-RAB-ReleaseRequest           INTEGER ::= 10
id-Iu-ReleaseRequest            INTEGER ::= 11
id-RelocationDetect             INTEGER ::= 12
id-RelocationComplete           INTEGER ::= 13
id-Paging                       INTEGER ::= 14
id-CommonID                     INTEGER ::= 15
id-CN-InvokeTrace              INTEGER ::= 16
id-LocationReportingControl     INTEGER ::= 17
id-LocationReport               INTEGER ::= 18
id-InitialUE-Message           INTEGER ::= 19
id-DirectTransfer               INTEGER ::= 20
id-OverloadControl              INTEGER ::= 21
id-ErrorIndication              INTEGER ::= 22
id-SRNS-DataForward             INTEGER ::= 23
id-ForwardSRNS-Context         INTEGER ::= 24
id-privateMessage               INTEGER ::= 25
id-CN-DeactivateTrace          INTEGER ::= 26
id-ResetResource                INTEGER ::= 27
id-RANAP-Relocation            INTEGER ::= 28
id-RAB-ModifyRequest            INTEGER ::= 29

```

```

id-LocationRelatedData          INTEGER ::= 30
id-InformationTransfer           INTEGER ::= 31

-- *****
--
-- Extension constants
--
-- *****

maxPrivateIEs                   INTEGER ::= 65535
maxProtocolExtensions           INTEGER ::= 65535
maxProtocolIEs                  INTEGER ::= 65535

-- *****
--
-- Lists
--
-- *****

maxNrOfDTs                      INTEGER ::= 15
maxNrOfErrors                   INTEGER ::= 256
maxNrOfIuSigConIds              INTEGER ::= 250
maxNrOfPDPDirections            INTEGER ::= 2
maxNrOfPoints                   INTEGER ::= 15
maxNrOfRABs                     INTEGER ::= 256
maxNrOfSeparateTrafficDirections INTEGER ::= 2
maxNrOfVol                      INTEGER ::= 2
maxNrOfLevels                   INTEGER ::= 256
maxNrOfAltValues                INTEGER ::= 16
maxNrOfPLMNsSN                  INTEGER ::= 32
maxNrOfLAs                      INTEGER ::= 65536
maxNrOfSNAs                     INTEGER ::= 65536

maxRAB-Subflows                 INTEGER ::= 7
maxRAB-SubflowCombination       INTEGER ::= 64

-- *****
--
-- 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 ::= 97 |
| id-VerticalAccuracyCode | INTEGER ::= 99 |
| <u>id-ResponseTime</u> | <u>INTEGER ::= 100</u> |
| <u>id-PositioningPriority</u> | <u>INTEGER ::= 101</u> |
| <u>id-ClientType</u> | <u>INTEGER ::= 102</u> |
| id-InterSystemInformation-TransparentContainer | INTEGER ::= 98 103 |
| id-NewBSS-To-OldBSS-Information | INTEGER ::= 99 104 |
| id-DownlinkCellLoadInformation | INTEGER ::= 100 105 |
| id-UplinkCellLoadInformation | INTEGER ::= 101 106 |
| id-SourceRNC-PDCP-context-info | INTEGER ::= 102 107 |
| id-InformationTransferID | INTEGER ::= 103 108 |
| id-SNA-Access-Information | INTEGER ::= 104 109 |
| id-ProvidedData | INTEGER ::= 105 110 |
| id-GERAN-BSC-Container | INTEGER ::= 106 112 |
| id-GERAN-Classmark | INTEGER ::= 107 113 |
| id-GERAN-Iumode-RAB-Failed-RABAssgntResponse-Item | INTEGER ::= 108 114 |
| id-GERAN-Iumode-RAB-FailedList-RABAssgntResponse | INTEGER ::= 109 115 |
| id-LocationRelatedDataRequestTypeSpecificToGERANIuMode | INTEGER ::= 110 116 |

END