TSG-RAN Meeting #7
Madrid, Spain, 13 - 15 March 2000

TSGRP#7(00)0079

Title: **Agreed CRs to TS 25.413**

Source: **TSG-RAN WG3**

Agenda item: **6.4.3**

Tdoc_Num	Specification	CR_Num	Revision_Num	CR_Subject	CR_Category	WG_Status	Cur_Ver_Num	New_Ver_Num
R3-000704	25.413	066		CR to 25.413: Editorial changes to RANAP for better readability the level of indentation has been indicated by arrows.	D	agreed	3.0.0	3.1.0
R3-000512	25.413	026		Enhancement of the description of the message type IE	F	agreed	3.0.0	3.1.0
R3-000616	25.413	036		Clarification of when RELOCATION REQUEST ACKNOWLEDGE will contain the transparent container	F	agreed	3.0.0	3.1.0
R3-000617	25.413	037		Clarifying of failure situations for RAB Assignment	F	agreed	3.0.0	3.1.0

R3-000618	25.413	038		DL/UL GTP-PDU Sequence Numbers on wrong level in RAB Assignment Response	F	agreed	3.0.0	3.1.0
R3-000620	25.413	040		Clarification of the interaction between Event Reported and Direct Reported Location Reporting	F	agreed	3.0.0	3.1.0
R3-000623	25.413	043		Aligning the definition of N-PDU Sequence Number throughout RANAP	F	agreed	3.0.0	3.1.0
R3-000624	25.413	044		Cause value “RAB pre-empted” moved from IU RELEASE REQUEST to RAB RELEASE REQUEST	F	agreed	3.0.0	3.1.0
R3-000625	25.413	045		Clarification of relation between RAB and Radio Bearers	F	agreed	3.0.0	3.1.0
R3-000626	25.413	046		Cause value to use in connection with Relocation Preparation	F	agreed	3.0.0	3.1.0
R3-000627	25.413	047		Correction of range for security	F	agreed	3.0.0	3.1.0

				algorithms and number of keys				
R3-000629	25.413	049		Security information in Relocation messages	F	agreed	3.0.0	3.1.0
R3-000630	25.413	050		Resetting of HFN when new security keys are activated	C	agreed	3.0.0	3.1.0
R3-000640	25.413	052		Addition of exception to Error Indication	F	agreed	3.0.0	3.1.0
R3-000650	25.413	011	1	CR to 25.413: missing cause value in RANAP (CR11r1)	F	agreed	3.0.0	3.1.0
R3-000651	25.413	009	1	CR to 25.413: cause value range of cause miscelleneous in RANAP (CR9r1)	C	agreed	3.0.0	3.1.0
R3-000652	25.413	010	1	CR to 25.413: Cause value related to relocation (CR10r1)	F	agreed	3.0.0	3.1.0
R3-000678	25.413	062		Removal of interaction between Iu Release and Relocation Resource	C	agreed	3.0.0	3.1.0
R3-000679	25.413	063		CN intitiated RAB release during ongoing RAB Assingment	F	agreed	3.0.0	3.1.0

				procedure				
R3-000711	25.413	068		Relocation execution trigger	F	agreed	3.0.0	3.1.0

TSG-RAN Working Group 3 Meeting #11
Sophia Antipolis, France, 28th February – 3rd March 2000

***Document* R3-000512**
e.g. for 3GPP use the format TP-99xxx or for SMG, use the format P-99-xxx

CHANGE REQUEST

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25.413	CR	026	Current Version:	3.0.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG RAN #7	for approval	X	Strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [ ] UTRAN / Radio [X] Core Network [X]

Source: TSG-RAN WG3 **Date:** 28th Feb. – 3rd March 2000

Subject: Enhancement of the description of the Message Type IE

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change:

In the current ASN.1 part of the specification a message is identified by its Procedure Code in combination with the "type of message" (Initiating, Successful Outcome, Unsuccessful Outcome, Outcome). In the Tabular Format a message is identified by its *Message Type* IE. However, there is no clear connection between the two different types of identification. Further more, chapter 10 (Handling of Unknown, Unforeseen and Erroneous Protocol Data) is based on the usage of the Procedure Code and the "type of message".

In this CR the Message Type IE and the ASN.1 module "Elementary Procedure Definitions" are modified to achieve a better alignment between the different parts of the specification and thus ease the understanding of the specification. The modification is to describe the Message Type IE in a way that connects the ASN.1 and chapter 10 with the Tabular Format.

Clauses affected: 9.2.1.1, 9.3.2

Other specs affected:

Other 3G core specifications	X	→ List of CRs:	25.423 v3.0.0 CR-027, 25.433 v3.0.0 CR-042
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

9.2.1.1 Message Type

Message type uniquely identifies the message being sent. It is mandatory for all messages.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	~~M~~		~~INTEGER (1....256)~~	Assumed max no of messages is 256.
Procedure Code	M		ENUMERATED (RAB Assignment, RAB Release Request, Iu Release Request, Iu Release, Relocation Preparation, Relocation Resource Allocation, Relocation Detect, Relocation Complete Relocation Cancel, SRNS Context Transfer, SRNS Data Forwarding Initiation, SRNS Context Forwarding from Source RNC to CN, SRNS Context Forwarding to Target RNC from CN, Paging, Common ID, CN Invoke Trace, Security Mode Control, Location Reporting Control Location Report, Data Volume Report, Initial UE Message Direct Transfer, CN Information Broadcast, Overload Control, Reset, Error Indication, …)	
Type of Message	M		ENUMERATED (Initiating Message, Successful Outcome, Unsuccessful Outcome, Outcome)	

9.3.2 Elementary Procedure Definitions

```
-- **************************************************************
--
-- Elementary Procedure definitions
--
-- **************************************************************

RANAP-PDU-Descriptions -- { object identifier to be allocated }--
DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

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

IMPORTS
    Criticality,
    ProcedureCode
FROM RANAP-CommonDataTypes

    Iu-ReleaseCommand,
    Iu-ReleaseComplete,
    RelocationCommand,
    RelocationPreparationFailure,
    RelocationRequired,
    RelocationRequest,
    RelocationRequestAcknowledge,
    RelocationFailure,
    RelocationCancel,
    RelocationCancelAcknowledge,
    SRNS-ContextRequest,
    SRNS-ContextResponse,
    SecurityModeCommand,
    SecurityModeComplete,
    SecurityModeReject,
    DataVolumeReportRequest,
    DataVolumeReport,
    CN-InformationBroadcastRequest,
    CN-InformationBroadcastConfirm,
    CN-InformationBroadcastReject,
    Reset,
    ResetAcknowledge,
    RAB-ReleaseRequest,
    Iu-ReleaseRequest,
    RelocationDetect,
    RelocationComplete,
    Paging,
    CommonID,
    CN-InvokeTrace,
    LocationReportingControl,
    LocationReport,
    InitialUE-Message,
    DirectTransfer,
    Overload,
    ErrorIndication,
    SRNS-DataForwardCommand,
    ForwardSRNS-Context,
    RAB-AssignmentRequest,
    RAB-AssignmentResponse,
    PrivateMessage
FROM RANAP-PDU-Contents

    id-CN-InformationBroadcast,
    id-CN-InvokeTrace,
    id-CommonID,
    id-DataVolumeReport,
    id-DirectTransfer,
    id-ErrorIndication,
    id-ForwardSRNS-Context,
    id-InitialUE-Message,
    id-Iu-Release,
    id-Iu-ReleaseRequest,
    id-LocationReport,
```

```
    id-LocationReportingControl,
    id-OverloadControl,
    id-Paging,
    id-Private,
    id-RAB-Assignment,
    id-RAB-ReleaseRequest,
    id-RelocationCancel,
    id-RelocationComplete,
    id-RelocationDetect,
    id-RelocationPreparation,
    id-RelocationResourceAllocation,
    id-Reset,
    id-SRNS-ContextTransfer,
    id-SRNS-DataForward,
    id-SecurityModeControl
FROM RANAP-Constants;

-- **************************************************************
--
-- Interface Elementary Procedure Class
--
-- **************************************************************

RANAP-ELEMENTARY-PROCEDURE ::= CLASS {
    &InitiatingMessage              ,
    &SuccessfulOutcome              OPTIONAL,
    &UnsuccessfulOutcome                OPTIONAL,
    &Outcome                    OPTIONAL,
    &procedureCode          ProcedureCode   UNIQUE,
    &criticality            Criticality     DEFAULT ignore
}
WITH SYNTAX {
    INITIATING MESSAGE      &InitiatingMessage
    [SUCCESSFUL OUTCOME     &SuccessfulOutcome]
    [UNSUCCESSFUL OUTCOME       &UnsuccessfulOutcome]
    [OUTCOME            &Outcome]
    PROCEDURE CODE              &procedureCode
    [CRITICALITY            &criticality]
}

-- **************************************************************
--
-- Interface PDU Definition
--
-- **************************************************************

RANAP-PDU ::= CHOICE {
    initiatingMessage   InitiatingMessage,
    successfulOutcome   SuccessfulOutcome,
    unsuccessfulOutcome UnsuccessfulOutcome,
    outcome         Outcome,
    ...
}

InitiatingMessage ::= SEQUENCE {
    procedureCode   RANAP-ELEMENTARY-PROCEDURE.&procedureCode   ({RANAP-ELEMENTARY-PROCEDURES}),
    criticality RANAP-ELEMENTARY-PROCEDURE.&criticality     ({RANAP-ELEMENTARY-
PROCEDURES}{@procedureCode}),
    value       RANAP-ELEMENTARY-PROCEDURE.&InitiatingMessage   ({RANAP-ELEMENTARY-
PROCEDURES}{@procedureCode})
}

SuccessfulOutcome ::= SEQUENCE {
    procedureCode   RANAP-ELEMENTARY-PROCEDURE.&procedureCode   ({RANAP-ELEMENTARY-PROCEDURES}),
    criticality RANAP-ELEMENTARY-PROCEDURE.&criticality     ({RANAP-ELEMENTARY-
PROCEDURES}{@procedureCode}),
    value       RANAP-ELEMENTARY-PROCEDURE.&SuccessfulOutcome   ({RANAP-ELEMENTARY-
PROCEDURES}{@procedureCode})
}

UnsuccessfulOutcome ::= SEQUENCE {
    procedureCode   RANAP-ELEMENTARY-PROCEDURE.&procedureCode   ({RANAP-ELEMENTARY-PROCEDURES}),
    criticality RANAP-ELEMENTARY-PROCEDURE.&criticality     ({RANAP-ELEMENTARY-
PROCEDURES}{@procedureCode}),
    value       RANAP-ELEMENTARY-PROCEDURE.&UnsuccessfulOutcome ({RANAP-ELEMENTARY-
PROCEDURES}{@procedureCode})
}
```

```
Outcome ::= SEQUENCE {
    procedureCode   RANAP-ELEMENTARY-PROCEDURE.&procedureCode   ({RANAP-ELEMENTARY-PROCEDURES}),
    criticality RANAP-ELEMENTARY-PROCEDURE.&criticality     ({RANAP-ELEMENTARY-
PROCEDURES}{@procedureCode}),
    value       RANAP-ELEMENTARY-PROCEDURE.&Outcome     ({RANAP-ELEMENTARY-
PROCEDURES}{@procedureCode})
}

-- **************************************************************
--
-- Interface Elementary Procedure List
--
-- **************************************************************

RANAP-ELEMENTARY-PROCEDURES RANAP-ELEMENTARY-PROCEDURE ::= {
    RANAP-ELEMENTARY-PROCEDURES-CLASS-1 |
    RANAP-ELEMENTARY-PROCEDURES-CLASS-2 |
    RANAP-ELEMENTARY-PROCEDURES-CLASS-3 ,
    ...
}


RANAP-ELEMENTARY-PROCEDURES-CLASS-1 RANAP-ELEMENTARY-PROCEDURE ::= {
    iu-Release          |
    relocationPreparation       |
    relocationResourceAllocation    |
    relocationCancel        |
    sRNS-ContextTransfer        |
    securityModeControl     |
    dataVolumeReport        |
    cN-InformationBroadcast     |
    reset               ,
    ...
}

RANAP-ELEMENTARY-PROCEDURES-CLASS-2 RANAP-ELEMENTARY-PROCEDURE ::= {
    rAB-ReleaseRequest      |
    iu-ReleaseRequest       |
    relocationDetect        |
    relocationComplete      |
    paging              |
    commonID            |
    cN-InvokeTrace          |
    locationReportingControl    |
    locationReport          |
    initialUE-Message       |
    directTransfer          |
    overloadControl         |
    errorIndication         |
    sRNS-DataForward        |
    forwardSRNS-Context     ,
    ...
}

RANAP-ELEMENTARY-PROCEDURES-CLASS-3 RANAP-ELEMENTARY-PROCEDURE ::= {
    rAB-Assignment          |
    privateProcedure        ,
    ...
}

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

iu-Release RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  Iu-ReleaseCommand
    SUCCESSFUL OUTCOME  Iu-ReleaseComplete
    PROCEDURE CODE      ----id-Iu-Release
    CRITICALITY     ignore
}

relocationPreparation RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  RelocationRequired
    SUCCESSFUL OUTCOME  RelocationCommand
    UNSUCCESSFUL OUTCOME    RelocationPreparationFailure
    PROCEDURE CODE          id-RelocationPreparation
```

```
    CRITICALITY     ignore
}

relocationResourceAllocation RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  RelocationRequest
    SUCCESSFUL OUTCOME  RelocationRequestAcknowledge
    UNSUCCESSFUL OUTCOME    RelocationFailure
    PROCEDURE CODE          id-RelocationResourceAllocation
    CRITICALITY     ignore
}

relocationCancel RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  RelocationCancel
    SUCCESSFUL OUTCOME  RelocationCancelAcknowledge
    PROCEDURE CODE      ------id-RelocationCancel
    CRITICALITY     ignore
}

sRNS-ContextTransfer RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  SRNS-ContextRequest
    SUCCESSFUL OUTCOME  SRNS-ContextResponse
    PROCEDURE CODE      ------id-SRNS-ContextTransfer
    CRITICALITY     ignore
}

securityModeControl RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  SecurityModeCommand
    SUCCESSFUL OUTCOME  SecurityModeComplete
    UNSUCCESSFUL OUTCOME    SecurityModeReject
    PROCEDURE CODE      ------id-SecurityModeControl
    CRITICALITY     ignore
}

dataVolumeReport RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  DataVolumeReportRequest
    SUCCESSFUL OUTCOME  DataVolumeReport
    PROCEDURE CODE      ------id-DataVolumeReport
    CRITICALITY     ignore
}

cN-InformationBroadcast RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  CN-InformationBroadcastRequest
    SUCCESSFUL OUTCOME  CN-InformationBroadcastConfirm
    UNSUCCESSFUL OUTCOME    CN-InformationBroadcastReject
    PROCEDURE CODE          id-CN-InformationBroadcast
    CRITICALITY     ignore
}

reset RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  Reset
    SUCCESSFUL OUTCOME  ResetAcknowledge
    PROCEDURE CODE      ------id-Reset
    CRITICALITY     ignore
}

rAB-ReleaseRequest RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  RAB-ReleaseRequest
    PROCEDURE CODE      ------id-RAB-ReleaseRequest
    CRITICALITY     ignore
}

iu-ReleaseRequest RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  Iu-ReleaseRequest
    PROCEDURE CODE      ------id-Iu-ReleaseRequest
    CRITICALITY     ignore
}

relocationDetect RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  RelocationDetect
    PROCEDURE CODE      ------id-RelocationDetect
    CRITICALITY     ignore
}

relocationComplete RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  RelocationComplete
    PROCEDURE CODE      ------id-RelocationComplete
    CRITICALITY     ignore
}
```

```
paging RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  Paging
    PROCEDURE CODE      ———id-Paging
    CRITICALITY     ignore
}

commonID RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  CommonID
    PROCEDURE CODE      ———id-CommonID
    CRITICALITY     ignore
}

cN-InvokeTrace RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  CN-InvokeTrace
    PROCEDURE CODE      ———id-CN-InvokeTrace
    CRITICALITY     ignore
}

locationReportingControl RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  LocationReportingControl
    PROCEDURE CODE      ———id-LocationReportingControl
    CRITICALITY     ignore
}

locationReport RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  LocationReport
    PROCEDURE CODE      ———id-LocationReport
    CRITICALITY     ignore
}

initialUE-Message RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  InitialUE-Message
    PROCEDURE CODE      ———id-InitialUE-Message
    CRITICALITY     ignore
}

directTransfer RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  DirectTransfer
    PROCEDURE CODE      ———id-DirectTransfer
    CRITICALITY     ignore
}

overloadControl RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  Overload
    PROCEDURE CODE      ———id-OverloadControl
    CRITICALITY     ignore
}

errorIndication RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  ErrorIndication
    PROCEDURE CODE      ———id-ErrorIndication
    CRITICALITY     ignore
}

sRNS-DataForward RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  SRNS-DataForwardCommand
    PROCEDURE CODE      ———id-SRNS-DataForward
    CRITICALITY     ignore
}

forwardSRNS-Context RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  ForwardSRNS-Context
    PROCEDURE CODE      ———id-ForwardSRNS-Context
    CRITICALITY     ignore
}

rAB-Assignment RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  RAB-AssignmentRequest
    OUTCOME         RAB-AssignmentResponse
    PROCEDURE CODE      ———id-RAB-Assignment
    CRITICALITY     ignore
}

privateProcedure RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  PrivateMessage
    OUTCOME         PrivateMessage
    PROCEDURE CODE  ————————id-Private
```

```
    CRITICALITY     ignore
}

END
```

3GPP TSG-RAN3 Meeting #11
Sophia Antipolis, France, 28 Feb - 3 March 2000

***Document* R3-000616**
e.g. for 3GPP use the format TP-99xxx
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CHANGE REQUEST

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25.413	CR	036	Current Version:	3.0.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	RAN#7	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [ ] UTRAN / Radio [X] Core Network [X]

Source: RAN-WG3 **Date:** 2000-02-18

Subject: Clarification of when RELOCATION REQUEST ACKNOWLEDGE will contain the transparent container.

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: It needs to be clarified when the message RELOCATION REQUEST ACKNOWLEDGE shall contain the transparent container.

Clauses affected: 8.7.2

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments:

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8.7 Relocation Resource Allocation

8.7.1 General

The purpose of the Relocation Resource Allocation procedure is to allocate resources from target RNS for a relocation of SRNS. Procedure shall be co-ordinated in all Iu signalling connections existing for the UE. The procedure uses connection oriented signalling.

8.7.2 Successful Operation

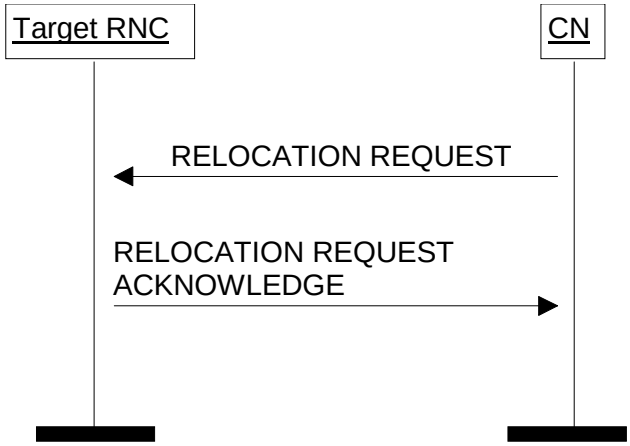

Figure 1: Relocation Resource Allocation procedure. Successful operation.

The CN shall initiate the procedure by generating RELOCATION REQUEST message. This message shall contain the information (if any)required by the UTRAN to build the new RAB configuration.

CN shall transmit the RELOCATION REQUEST message to target RNC and CN shall start the timer $T_{RELOCalloc.}$

Upon reception of the RELOCATION REQUEST message target RNC shall initiate allocation of requested resources. The following information elements received in RELOCATION REQUEST message:

- RAB-ID
- User plane mode
- Priority level, queuing and pre-emption indication

require special actions in RNC. The actions are the same as specified for the same IEs in the RAB Assignment procedure.

Following additional actions shall be executed in target RNC during Relocation Resource Allocation procedure:

If *Relocation Type* IE is set to 'Hard Handover':

- Target RNC may accept a requested RAB only if:

  1. the RAB can be supported by target RNC and
  2. the radio bearer for the RAB exists or target RNC will establish necessary radio resources for the RAB by Uu interface information to be generated by target RNC and to be included in RELOCATION REQUEST ACKNOWLEDGE message.

- Other RABs shall be rejected by the target RNC in the RELOCATION REQUEST ACKNOWLEDGE message with an appropriate value for *Cause* IE, e.g. 'Unable to Establish During Relocation'.

- If an existing radio bearer is not related to any RAB that is accepted by target RNC, the corresponding radio bearer shall be ignored by target RNC. No actions to release the radio bearer shall be taken by target RNC.

If *RelocationType* IE is set to 'SRNS Relocation':

- Target RNC may accept a RAB only if the radio bearer for the RAB exists and can be used for the RAB by the target RNC.

- If an existing radio bearer is not related to any RAB that is accepted by target RNC, the corresponding radio bearer shall be ignored during the relocation of SRNS and the radio bearer shall be released by Uu interface protocols after completion of relocation of SRNS.

After all necessary resources for accepted RABs including the Iu user plane, are successfully allocated, target RNC shall send RELOCATION REQUEST ACKNOWLEDGE message to CN.

The RELOCATION REQUEST ACKNOWLEDGE message ~~sent by the target RNC~~received by the CN may optionally contain a transparent container, which shall be transferred by CN to the source RNC or the external relocation source ~~using the RANAP message RELOCATION COMMAND~~while completing the Relocation Preparation procedure.

The target RNC shall include the target to source RNC transparent container in the RELOCATION REQUEST ACKNOWLEDGE message if the relocation type indicates “UE involved in relocation of SRNS”. If two CNs are involved in the relocation of SRNS, the target RNC may, however, decide to send the container to only one CN.

Transmission and reception of RELOCATION REQUEST ACKNOWLEDGE message terminates the procedure in UTRAN and CN respectively.

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Document R3-000617
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or for SMG, use the format P-99-xxx

CHANGE REQUEST

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25.413	CR	037	Current Version:	3.0.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	RAN #7	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [ ] UTRAN / Radio [X] Core Network [X]

Source: RAN-WG3 **Date:** 2000-02-18

Subject: Clarifying of failure situations for RAB Assignment.

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	[X]	**Release:**	Phase 2	[ ]
A	Corresponds to a correction in an earlier release	[ ]		Release 96	[ ]
B	Addition of feature	[ ]		Release 97	[ ]
C	Functional modification of feature	[ ]		Release 98	[ ]
D	Editorial modification	[ ]		Release 99	[X]
				Release 00	[ ]

Reason for change: It needs to be clarified how the RNC shall respond in case the CN tries to release a RAB that is unknown in the RNC and also how the RNC shall react if a RAB ASSIGNMENT REQUEST message is received for a queued RAB.

Clauses affected: 8.2.2

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

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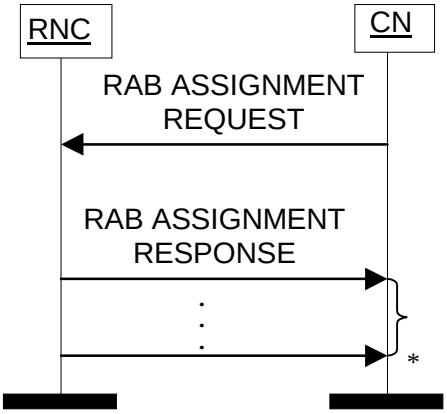
8.2 RAB Assignment

8.2.1 General

The purpose of the RAB Assignment procedure is to enable modifications and/or releases of already established RABs and/or the establishment of new RABs for a given UE. The procedure uses connection oriented signaling.

8.2.2 Successful Operation



* it can be several responses

Figure 1: RAB Assignment procedure.

The CN shall initiate the procedure by sending a RAB ASSIGNMENT REQUEST message. When sending the RAB ASSIGNMENT REQUEST, the CN shall start the $T_{RABAssgt}$ timer.

The CN may request UTRAN to:

- establish
- modify
- release

One or several RABs with one RAB ASSIGNMENT REQUEST message.

The message shall contain the information required by the UTRAN to build the new RAB configuration, such as

- list of RABs to establish or modify with their bearer characteristics
- list of RABs to release

For each RAB requested to establish or modify, the message shall contain:

- RAB ID
- NAS Binding Information
- RAB parameters (including e.g. Allocation/Retention Priority)
- Data Volume Reporting Indication (only for PS)
- User Plane Mode
- Transport Layer Address

- Iu Transport Association
- DL GTP-PDU sequence number (only in case of handover from GPRS to UMTS)
- UL GTP-PDU sequence number (only in case of handover from GPRS to UMTS)
- DL N-PDU sequence number (only in case of handover from GPRS to UMTS)
- DL N-PDU sequence number (only in case of handover from GPRS to UMTS)

For each RAB request to release, the message shall contain:

- RAB ID
- Cause

For each RAB requested to establish the message shall contain:

DL GTP-PDU sequence number (in case of the RAB being established for an existing PDP context or in case of handover from GPRS to UMTS)

UL GTP-PDU sequence number (in case of the RAB being established for an existing PDP context or in case of handover from GPRS to UMTS)

Upon reception of the RAB ASSIGNMENT REQUEST message UTRAN shall execute the requested RAB configuration.

The RAB ID shall identify uniquely the RAB over the Iu instance on which the RAB ASSIGNMENT REQUEST message is received. If conflict arises with already established RABs (e.g. same RAB ID already in use over that particular Iu instance), the RNC shall respond to the RAB ASSIGNMENT REQUEST message with the unsuccessful outcome for that particular requested RAB.

The RNC shall pass the *NAS Binding Information* IE transparently to the radio interface protocol for each RAB requested to establish or modify.

The RNC shall establish the resources according to the values of the *Allocation/Retention Priority* IE (priority level, pre-emption indication, queuing) and the resource situation as follows:

- The RNC shall consider the priority level of the requested RAB, when deciding on the resource allocation.
- If the requested RAB is allowed for queuing and the resource situation requires, RNC may place the RAB in the establishment queue.
- The priority levels and the pre-emption indicators may (singularly or in combination) be used to determine whether the RAB assignment has to be performed unconditionally and immediately. If the requested RAB is allowed to pre-empt and the resource situation requires, RNC may trigger the pre-emption procedure which may then cause the forced release of a lower priority RAB vulnerable for pre-emption, if no free resource is immediately available.Whilst the process and the extent of the pre-emption procedure is operator dependent, the pre-emption indicators, if given in the RAB ASSIGNMENT REQUEST, shall be treated as follows:

    1. the last received "Pre-emption Vulnerability indicator" and priority levels shall prevail.
    2. if the "Pre-emption Capability indicator" is set, then this allocation request may trigger the running of the pre-emption procedure.
    3. if the "Pre-emption Capability indicator" is not set, then this allocation request may not trigger the pre-emption procedure.
    4. if the "Pre-emption Vulnerability indicator" is set, then this connection is vulnerable and shall be included in the pre-emption process.
    5. if the "Pre-emption Vulnerability" bit is not set, then this connection is not vulnerable to pre-emption and shall not be included in the pre-emption process.
    6. if no priority has been indicated, both "Pre-emption Capability" and "Pre-emption Vulnerability" indicators shall not be considered.

- The UTRAN pre-emption process shall keep the following rules:

  1. UTRAN shall only pre-empt RABs with lower priority, in ascending order of priority.

  2. The pre-emption can be done for RABs belonging to the same UE or to other UEs.

UTRAN shall report to CN the outcome of the request by sending RAB ASSIGNMENT RESPONSE message(s).

UTRAN shall report to CN, in one RAB ASSIGNMENT RESPONSE message, the result for all the requested RABs, such as:

- List of RABs successfully established
- List of RABs successfully modified RABs
- List of RABs released
- List of RABs failed to establish or modify or release
- List of RABs queued

If the RAB ID of a RAB requested to be released is unknown in the RNC, this shall be reported as a RAB failed to release with the cause value “Invalid RAB ID”.

In case a request to modify or release a RAB contains the RAB ID of a RAB being queued, the RAB shall be taken out of the queue and treated according to the second request. No response message connected to the first request neeeds to be sent to the CN.

If none of the RABs have been queued, the CN shall stop timer $T_{RABAssgt.}$ And the *RAB Assignment* procedure terminates. In that case, the procedure shall also be terminated in UTRAN.

When the request to establish or modify one or several RABs is put in the queue, UTRAN shall start the timer $T_{QUEUING}$. This timer specifies the maximum time for queuing of the request of establishment or modification. The same timer $T_{QUEUING}$ is supervising all RABs being queued.

For each RABs that are queued the following outcomes shall be possible:

- successfully established or modified
- failed to establish or modify
- failed due to expiry of the timer $T_{QUEUING}$

For the queued RABs, indicated in the first RAB ASSIGNMENT RESPONSE message, UTRAN shall report the outcome of the queuing in the case of $T_{QUEUING}$ expiry, for every RAB individually or for several RABs in subsequent RAB ASSIGNMENT RESPONSE message(s). This is left to implementation. UTRAN shall stop $T_{QUEUING}$ when all RABs have been either successfully established or modified or failed to establish or modify. The *RAB Assignment* procedure is then terminated both in CN and UTRAN.

When CN receives the response that one or several RABs are queued, CN shall expect UTRAN to provide the outcome of the queuing function for each RAB before expiry of the $T_{RABAssgt}$ timer. In case the timer $T_{RABAssgt}$ expires, the CN shall consider the *RAB Assignment* procedure terminated and the not reported RABs shall be considered as failed.

In the case the timer $T_{QUEUING}$ expires, the *RAB Assignment* procedure terminates in UTRAN for all queued RABs, and UTRAN shall respond for all of them in one RAB ASSIGNMENT RESPONSE message. The *RAB Assignment* procedure shall also be terminated in CN.

UTRAN shall report the outcome of a specific RAB to establish or modify only after the transport network control plane signalling, which is needed for RAB establishment or modification, has been executed. The transport network control plane signalling shall use the *Transport Layer Address* IE and *Iu Transport Association* IE.

After reporting the outcome of a specific RAB to establish or modify, the RNC shall initiate the user plane mode as requested by the CN in the *User Plane Mode* IE. This initialisation is described in ref.[6].

When UTRAN reports unsuccessful modification of RAB configuration the cause value should be precise enough to enable the core network to know the reason for unsuccessful modification. Typical cause values are: "Requested Traffic Class not Available", "Invalid RAB Parameters Value", "Requested Maximum Bit Rate not Available", "Requested

Guaranteed Bit Rate not Available", "Requested Transfer Delay not Achievable", "Invalid RAB Parameters Combination", "Condition Violation for SDU Parameters", "Condition Violation for Traffic Handling Priority", "Condition Violation for Guaranteed Bit Rate", "User Plane Versions not Supported", "Iu UP Failure".

8.2.3 Unsuccessful Operation

The unsuccessful operation for this Class 3 Elementary procedure is described under the Successful Operation chapter.

8.2.4 Abnormal Conditions

Interactions with Relocation Preparation:

If the relocation becomes absolutely necessary during the RAB Assignment in order to keep the communication with the UE, the RNC may interrupt the ongoing RAB Assignment procedure and initiate the Relocation Preparation procedure as follows:

1. The RNC shall terminate the RAB Assignment procedure indicating unsuccessful RAB configuration modification:
   - for all queued RABs,
   - for RABs not already established or modified and
   - for RABs not already released with the cause 'Relocation triggered'.
2. The RNC shall terminate the RAB Assignment procedure indicating successful RAB configuration modification:
   - for RABs already established or modified but not yet reported to the CN and
   - for RABs already released but not yet reported to the CN.
3. The RNC shall report this outcome of the procedure in one RAB ASSIGNMENT RESPONSE message.
4. The RNC shall invoke relocation by sending the RELOCATION REQUIRED to the active CN node(s).
5. The CN shall terminate the RAB Assignment procedure at reception of the RAB ASSIGNMENT RESPONSE message.

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25.413	CR	038	Current Version:	3.0.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

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Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME		UTRAN / Radio	X	Core Network	X

Source:	RAN-WG3	**Date:**	2000-02-18

Subject:	DL/UL GTP-PDU Sequence Numbers on wrong level in RAB Assignment Response

Work item:	

Category: *(only one category shall be marked with an X)*				**Release:**		
	F	Correction	X		Phase 2	
	A	Corresponds to a correction in an earlier release			Release 96	
	B	Addition of feature			Release 97	
	C	Functional modification of feature			Release 98	
	D	Editorial modification			Release 99	X
					Release 00	

Reason for change:	DL and UL GTP-PDU Sequence Numbers in RAB ASSIGNMENT RESPONSE message belong to the RAB Released Group and shall thus be indented to show this. The corresponding change must also be done in the ASN.1 code.

Clauses affected:	9.1.2 and 9.3.3

Other specs affected:			
	Other 3G core specifications		→ List of CRs:
	Other GSM core specifications		→ List of CRs:
	MS test specifications		→ List of CRs:
	BSS test specifications		→ List of CRs:
	O&M specifications		→ List of CRs:

Other comments:	

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9.1.2 RAB ASSIGNMENT RESPONSE

This message is sent by the RNC to report the outcome of the request from the message RAB ASSIGNMENT REQUEST.

Direction: RNC → CN

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
RABs setup or modified	C - ifNoOtherGroup	0 to <maxnoofRABs>		
RAB ID	M		9.2.1.2	The same RAB ID must only be present in one group.
Chosen UP Version	O		9.2.1.20	Included at least when a choice is made by UTRAN
Transport Layer Address	C - ifPS		9.2.2.1.	
Iu Transport Association	C - ifPS		9.2.2.2	
RABs released	C – ifNoOtherGroup	0 to <maxnoofRABs>		
RAB ID	M		9.2.1.2	The same RAB ID must only be present in one group.
Data Volume	C – ifReqPS	0 to <maxnoofVol>		
Unsuccessfully Transmitted DL Data Volume	M		9.2.3.13	
Data Volume Reference	O		9.2.3.14	
DL GTP-PDU Sequence Number	C-ifUiPS		9.2.2.3	
UL GTP-PDU Sequence Number	C-ifUiPS		9.2.2.4	
RABs queued	C – ifNoOtherGroup	0 to <maxnoofRABs>		
RAB ID	M		9.2.1.2	The same RAB ID must only be present in one group.
RABs failed to setup or modify	C – ifNoOtherGroup	0 to <maxnoofRABs>		
RAB ID	M		9.2.1.2	The same RAB ID must only be present in one group.
Cause	M		9.2.1.4	
RABs failed to release	C – ifNoOtherGroup	0 to <maxnoofRABs>		
RAB ID	M		9.2.1.2	The same RAB ID must only be present in one group.
Cause	M		9.2.1.4.	

Condition	Explanation
IfPS	This IE is only present for RABs towards the PS domain.
IfNoOtherGroup	This group must be present at least when no other group is present, i.e. at least one group must be present.
IfReqPS	This IE is only present if data volume reporting for PS domain is required.
IfUiPS	This group is only present for RABs towards the PS domain when the release was initiated by UTRAN.

Range bound	Explanation
MaxnoofRABs	Maximum no. of RABs for one UE. Value is 256.
MaxnoofVol	Maximum no. of reported data volume for one RAB(value is 2).

9.3.3 PDU Definitions

****** LOTS OF UNAFFECTED ASN.1 DESCRIPTION FROM SECTION 9.3.3 REMOVED ******

```
-- **************************************************************
--
-- RAB Assignment Response
--
-- **************************************************************

RAB-AssignmentResponse ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RAB-AssignmentResponseIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RAB-AssignmentResponseExtensions} }       OPTIONAL,
    ...
}

RAB-AssignmentResponseIEs RANAP-PROTOCOL-IES ::= {
    { ID id-RAB-SetupOrModifiedList         CRITICALITY ignore  TYPE RAB-SetupOrModifiedList        PRESENCE conditional
    -- This group must be present at least when no other group is present, ie. at least one group must be present --          } |
    { ID id-RAB-ReleasedList            CRITICALITY ignore  TYPE RAB-ReleasedList               PRESENCE conditional
    -- This group must be present at least when no other group is present, ie. at least one group must be present --          } |
    { ID id-DL-GTP-PDU-SequenceNumber       CRITICALITY ignore  TYPE DL-GTP-PDU-SequenceNumber       PRESENCE conditional
    -- This IE is only present for RABs towards the PS domain when the release is UTRAN initiated --                  } |
    { ID id-UL-GTP-PDU-SequenceNumber       CRITICALITY ignore  TYPE UL-GTP-PDU-SequenceNumber       PRESENCE conditional
    -- This IE is only present for RABs towards the PS domain when the release is UTRAN initiated --                  } |
    { ID id-RAB-QueuedList              CRITICALITY ignore  TYPE RAB-QueuedList             PRESENCE conditional
    -- This group must be present at least when no other group is present, ie. at least one group must be present --          } |
    { ID id-RAB-FailedList              CRITICALITY ignore  TYPE RAB-FailedList             PRESENCE conditional
    -- This group must be present at least when no other group is present, ie. at least one group must be present --          } |
    { ID id-RAB-ReleaseFailedList           CRITICALITY ignore  TYPE RAB-ReleaseFailedList       PRESENCE conditional
    -- This group must be present at least when no other group is present, ie. at least one group must be present --          },
    ...
}

RAB-SetupOrModifiedList                 ::= RAB-IE-ContainerList { {RAB-SetupOrModifiedItemIEs} }

RAB-SetupOrModifiedItemIEs RANAP-PROTOCOL-IES ::= {
    { ID id-RAB-SetupOrModifiedItem         CRITICALITY ignore  TYPE RAB-SetupOrModifiedItem        PRESENCE mandatory   },
    ...
}
```

```
RAB-SetupOrModifiedItem ::= SEQUENCE {
    rAB-ID                      RAB-ID,
    chosenUP-Version                ChosenUP-Version    OPTIONAL,
    transportLayerAddress               TransportLayerAddress   OPTIONAL
    -- This IE is only present for RABs towards the PS domain --,
    iuTransportAssociation              IuTransportAssociation  OPTIONAL
    -- This IE is only present for RABs towards the PS domain --,
    iE-Extensions                   ProtocolExtensionContainer { {RAB-SetupOrModifiedItem-ExtIEs} }       OPTIONAL,
    ...
}

RAB-SetupOrModifiedItem-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

RAB-ReleasedList                    ::= RAB-IE-ContainerList { {RAB-ReleasedItemIEs} }

RAB-ReleasedItemIEs RANAP-PROTOCOL-IES ::= {
    { ID id-RAB-ReleasedItem            CRITICALITY ignore  TYPE RAB-ReleasedItem               PRESENCE mandatory },
    ...
}

RAB-ReleasedItem ::= SEQUENCE {
    rAB-ID                      RAB-ID,
    dl-dataVolumes                  DataVolumeList      OPTIONAL
    -- This IE is only present if data volume reporting for PS domain is required --,
    dL-GTP-PDU-SequenceNumber       DL-GTP-PDU-SequenceNumber           OPTIONAL
    -- This IE is only present for RABs towards the PS domain when the release is UTRAN initiated -- ,
    uL-GTP-PDU-SequenceNumber       UL-GTP-PDU-SequenceNumber           OPTIONAL
    -- This IE is only present for RABs towards the PS domain when the release is UTRAN initiated -- ,
    iE-Extensions                   ProtocolExtensionContainer { {RAB-ReleasedItem-ExtIEs} }        OPTIONAL,
    ...
}

RAB-ReleasedItem-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

DataVolumeList ::= SEQUENCE (SIZE (1..maxNrOfVol)) OF
    SEQUENCE {
        dl-UnsuccessfullyTransmittedDataVolume      UnsuccessfullyTransmittedDataVolume,
        dataVolumeReference             DataVolumeReference OPTIONAL,
        iE-Extensions                   ProtocolExtensionContainer { {DataVolumeList-ExtIEs} }      OPTIONAL,
        ...
    }

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

RAB-QueuedList                      ::= RAB-IE-ContainerList { {RAB-QueuedItemIEs} }
```

```
RAB-QueuedItemIEs RANAP-PROTOCOL-IES ::= {
    { ID id-RAB-QueuedItem              CRITICALITY ignore  TYPE RAB-QueuedItem             PRESENCE mandatory   },
    ...
}

RAB-QueuedItem ::= SEQUENCE {
    rAB-ID                      RAB-ID,
    iE-Extensions                   ProtocolExtensionContainer { {RAB-QueuedItem-ExtIEs} }       OPTIONAL,
    ...
}

RAB-QueuedItem-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

RAB-ReleaseFailedList ::= RAB-FailedList

RAB-AssignmentResponseExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- PRIVATE ELEMENTARY PROCEDURE
--
-- **************************************************************

PrivateMessage ::= SEQUENCE {
    privateExtensions       PrivateExtensionContainer  { {PrivateExtensions} },
    ...
}

PrivateExtensions RANAP-PRIVATE-EXTENSION ::= {
    ...
}

END
```

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25.413	CR	040	Current Version:	3.0.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

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Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [ ] UTRAN / Radio [X] Core Network [X]

Source: RAN-WG3 **Date:** 2000-02-18

Subject: Clarification of the interaction between Event Reported and Direct Reported Location Reporting.

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	[X]	**Release:**	Phase 2	[ ]
A	Corresponds to a correction in an earlier release	[ ]		Release 96	[ ]
B	Addition of feature	[ ]		Release 97	[ ]
C	Functional modification of feature	[ ]		Release 98	[ ]
D	Editorial modification	[ ]		Release 99	[X]
				Release 00	[ ]

Reason for change: It needs to be clarified how event reported and direct reported location reporting are interacting. This CR proposes such a clarification.

It is also proposed that it is clarified that “change of area” means “change of service area”.

Clauses affected: 8.19.2, 9.2.1.16, 9.3.4

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

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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.

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 report upon change of ~~the~~Service area or
- to stop reporting.

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 coordinates.

The geographical coordinates shall only be reported directly.

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.

~~The valid information for the location reporting shall be the latest received from the CN.~~

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 co-ordinates.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Request Type				
Event	M		ENUMERATED(Stop, Direct, Change of service area, ...)	
Report area	M		ENUMERATED(Service Area, Geographical Coordinates, ...)	

9.3.4 Information Element Definitions

****** LOTS OF UNAFFECTED ASN.1 DESCRIPTION FROM SECTION 9.3.4 REMOVED ******

```
-- E

EncryptionAlgorithm             ::= INTEGER { no-encryption (0), standard-UMTS-encryption-algorith-UEA1 (1) } (0..15)

EncryptionInformation ::= SEQUENCE {
    permittedAlgorithms     PermittedEncryptionAlgorithms,
    key             EncryptionKey,
    iE-Extensions           ProtocolExtensionContainer { {EncryptionInformation-ExtIEs} } OPTIONAL
}

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

EncryptionKey               ::= BIT STRING (SIZE (128))
-- Reference: 33.102

Event ::= ENUMERATED {
    stop,
    direct,
    change-of-servicearea,
    ...
}

-- F
-- G

GeographicalArea ::= CHOICE {
    point               GA-Point,
    pointWithUnCertainty        GA-PointWithUnCertainty,
    polygon             GA-Polygon,
    ...
}
```

****** LOTS OF UNAFFECTED ASN.1 DESCRIPTION FROM SECTION 9.3.4 REMOVED ******

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25.413	CR	043	Current Version:	3.0.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

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Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [ ] UTRAN / Radio [X] Core Network [X]

Source: RAN-WG3 **Date:** 2000-02-18

Subject: Aligning the definition of N-PDU Sequence Number throughout RANAP.

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X
A	Corresponds to a correction in an earlier release	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

Reason for change:

The definition of UL and DL NPD-U used in the procedure descriptions are not in agreement with the description used when defining the IEs in section 9.2. The definitions should be based on the definition in section 9.2.

To be in agreement with TS 25.323 PDCP SDU should be used instead of PDCP PDU.

The abbreviations N-PDU, PDCP and SDU need to be added.

Clauses affected: 3.3, 8.11, 8.13, 8.14, 9.2.1.33, 9.2.1.34

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:


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3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

AAL2	ATM Adaptation Layer type 2
AS	Access Stratum
ASN.1	Abstract Syntax Notation One
ATM	Asynchronous Transfer Mode
CN	Core Network
CRNC	Controlling RNC
CS	Circuit Switched
DRNC	Drift RNC
DRNS	Drift RNS
EP	Elementary Procedure
IMEI	International Mobile Equipment Identity
IMSI	Internation Mobile Subscriber Identity
MSC	Mobile services Switching Center
NAS	Non Access Stratum
N-PDU	Network – Protocol Data Unit
P-TMSI	Packet TMSI
PDCP	Packet Data Convergence Protocol
PDU	Protocol Data Unit
PS	Packet Switched
QoS	Quality of Service
RAB	Radio Access Bearer
RNC	Radio Network Controller
RNS	Radio Network Subsystem
RANAP	Radio Access Network Application Part
SAI	Service Area Identifier
SCCP	Signalling Connection Control Part
SDU	Service Data Unit
SGSN	Serving GPRS Support Node
SRNC	Serving RNC
SRNS	Serving RNS
TEID	Tunnel Endpoint Identifier
TMSI	Temporary Mobile Subscriber Identity
UE	User Equipment
UTRAN	UMTS Terrestrial Radio Access Network

8.11 SRNS Context Transfer

8.11.1 General

The purpose of the SRNS Context Transfer procedure is to trigger the transfer of SRNS contexts from the source RNC to the CN (PS domain) in case of inter system forward handover. The procedure uses connection oriented signalling.

8.11.2 Successful Operation

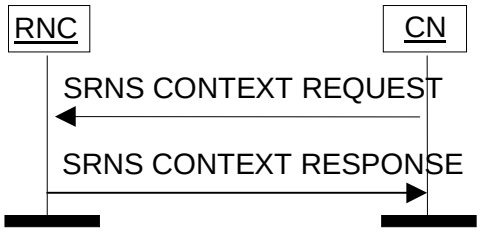

Figure 1: SRNS Context Transfer procedure.

The CN shall initiate the procedure by sending a SRNS CONTEXT REQUEST message tothe source RNC. The SRNS CONTEXT REQUEST message shall include the list of RABs whose contexts should be transferred.

The source RNC shall respond to the CN with a SRNS CONTEXT RESPONSE message containing the RAB Context information for the referenced RABs. For each RAB, the following information elements shall be included:

- RAB ID
- the sequence number for the next downlink GTP-PDU to be sent to the UE i.e. DL GTP-PDU Sequence Number
- the sequence number for the next uplink GTP-PDU to be tunnelled to the GGSN i.e. UL GTP-PDU Sequence Number
- the radio interface sequence number (PDCP) of the next downlink N-PDU (PDCP SDU) that would have been sent to the UE by a source system ~~the sequence number of the UL ReceivePDCP PDU which carried the last segment of the last GTP PDU forwarded to SGSN in~~ i.e. DL N-PDU Sequence Number IE
- the radio interface sequence number (PDCP) of the next uplink N-PDU (PDCP SDU) that would have been expected from the UE by a source system ~~the sequence number of the DL Send PDCP PDU which carried the last segment of the last N-PDU sent to the UE in~~ i.e. UL N-PDU Sequence Number IE

Transmission and reception of the SRNS CONTEXT RESPONSE message shall terminate the procedure in the UTRAN and the CN respectively.

8.11.3 Unsuccessful Operation

-

8.11.4 Abnormal Conditions

-

8.12 SRNS Data Forwarding Initiation

8.12.1 General

The purpose of the SRNS Data Forwarding procedure is to trigger the transfer of N-PDUs from the RNC to the CN (PS domain) in case of inter system forward handover. The procedure uses connection oriented signalling.

8.12.2 Successful Operation

Figure 2: SRNS Data Forwarding Initiation procedure.

CN initiates the procedure by sending SRNS DATA FORWARD COMMAND message to UTRAN. SRNS DATA FORWARD COMMAND message includes the list of RABs whose data should be forwarded and the necessary information for establishing a GTP tunnel to be used for data forwarding.

Upon reception of SRNS DATA FORWARD COMMAND RNC starts the timer T(Data forwarding).

8.12.3 Abnormal Conditions

-

8.13 SRNS Context Forwarding from Source RNC to CN

8.13.1 General

The purpose of this procedure is to transfer SRNS contexts from the source RNC to the CN (PS domain) in case of handover via the CN. The procedure uses connection oriented signalling. SRNS contexts are sent for each concerned RAB and contain the sequence numbers of the GTP-PDUs next to be transmitted in the uplink and downlink directions and the next PDCP sequence numbers that would have been used to send and receive data from the UE.

8.13.2 Successful Operation

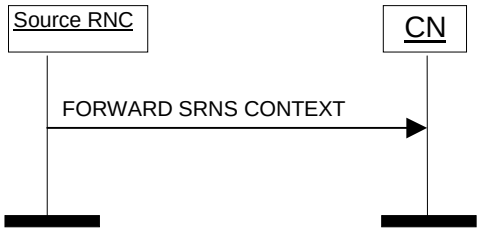

Figure 3: SRNS Context forwarding from source RNC to CN.

The source RNC initialises the procedure by sending FORWARD SRNS CONTEXT message to the CN. The FORWARD SRNS CONTEXT message contains the RAB Context information for each referenced RAB. For each RAB the following information is included

- the sequence number for the next downlink GTP-PDU to be sent to the UE, and
- the sequence number for the next uplink GTP-PDU to be tunnelled to the GGSN.
- the radio interface sequence number (PDCP) of the next uplink N-PDU (PDCP SDU) that would have been expected from the UE by a source system ~~the sequence number of the UL Receive PDCP-PDU which carried the last segment of the last GTP-PDU forwarded to SGSN in~~ i.e. *UL N-PDU Sequence Number* IE.

- the radio interface sequence number (PDCP) of the next downlink N-PDU (PDCP SDU) that would have been sent to the UE by a source system ~~the sequence number of the DL Send PDCP PDU which carried the last segment of the last GTP PDU sent to the UE in~~ i.e. *DL N-PDU Sequence Number* IE.

8.13.3 Abnormal Conditions

8.14 SRNS Context Forwarding to Target RNC from CN

8.14.1 General

The purpose of this procedure is to transfer SRNS contexts from the CN (PS domain) to the target RNC in case of handover via the CN. The procedure uses connection oriented signalling. SRNS contexts are sent for each referenced RAB and contain the sequence numbers of the GTP-PDUs next to be transmitted in the uplink and downlink directions and the next PDCP sequence numbers that would have been used to send and receive data from the UE.

8.14.2 Successful Operation

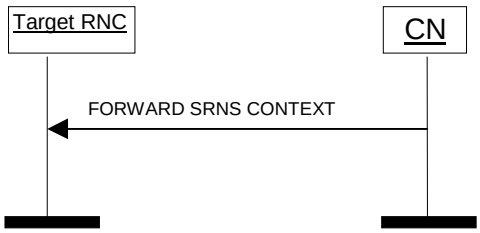

Figure 4: SRNS Context forwarding to target RNC from CN.

The CN initialises the procedure by sending FORWARD SRNS CONTEXT message to the target RNC. The FORWARD SRNS CONTEXT message contains the RAB Context information for each referenced RAB. For each RAB the following information is included

- the sequence number for the next downlink GTP-PDU to be sent to the UE, and
- the sequence number for the next uplink GTP-PDU to be tunnelled to the GGSN.
- the radio interface sequence number (PDCP) of the next uplink N-PDU (PDCP SDU) that would have been expected from the UE by a source system ~~the sequence number of the UL Receive PDCP PDU which carried the last segment of the last GTP PDU forwarded to SGSN in~~ i.e.*UL N-PDU Sequence Number* IE.
- the radio interface sequence number (PDCP) of the next downlink N-PDU (PDCP SDU) that would have been sent to the UE by a source system ~~the sequence number of the DL Send PDCP PDU which carried the last segment of the last GTP PDU sent to the UE in~~ i.e. DL *N-PDU Sequence Number* IE.~~.~~

8.14.3 Abnormal Conditions

-

9.2.1.33 DL N-PDU Sequence Number

This IE indicates the ~~Uu~~ radio interface sequence number (PDCP) of the next downlink N-PDU (PDCP S~~P~~DU) that would have been sent to the UE by a source system.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
DL N-PDU Sequence Number	M		INTEGER (0 ..4095)	This IE indicates the sequence number of the next DL N-PDU that would have been sent to the UE by a source system. This is the 12 bit sequence number.

9.2.1.34 UL N-PDU Sequence Number

This IE indicates the ~~Uu~~ radio interface sequence number (PDCP) of the next uplink N-PDU (PDCP S~~P~~DU) that would have been expected from the UE by a source system.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
UL N-PDU Sequence Number	M		INTEGER (0 ..4095)	This IE indicates the sequence number of the next UL N-PDU that would have been expected from the UE by a source system. This is the 12 bit sequence number.

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25.413	CR	044	Current Version:	3.0.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	RAN #7	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [ ] UTRAN / Radio [X] Core Network [X]

Source: RAN-WG3 **Date:** 2000-02-18

Subject: Cause value “RAB pre-empted” moved from IU RELEASE REQUEST to RAB RELEASE REQUEST.

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	[X]
A	Corresponds to a correction in an earlier release	[ ]
B	Addition of feature	[ ]
C	Functional modification of feature	[ ]
D	Editorial modification	[ ]

Release:

Phase 2	[ ]
Release 96	[ ]
Release 97	[ ]
Release 98	[ ]
Release 99	[X]
Release 00	[ ]

Reason for change: In case a RAB is pre-empted, the RNC shall send RAB RELEASE REQUEST with cause value “RAB Pre-empted” instead of sending IU RELEASE REQUEST.

Clauses affected: 8.3 and 8.4

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:


help.doc

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8.3 RAB Release Request

8.3.1 General

The purpose of the RAB Release Request procedure is to enable UTRAN to request the release of one or several radio access bearers. The procedure uses connection oriented signalling.

8.3.2 Successful Operation

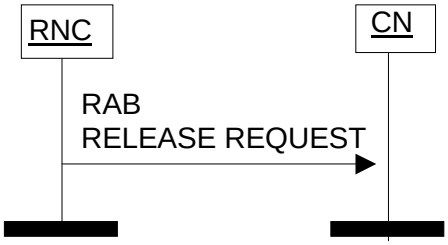

Figure 2: RAB Release Request procedure. Successful Operation.

The RNC shall initiate the procedure by generating a RAB RELEASE REQUEST message towards the CN. The *RABs to be released* IE shall indicate the list of RABs requested to release and the *Cause* IE associated to each RAB shall indicate the reason for the release, e.g. “RAB pre-empted”.

Upon reception of the RAB RELEASE REQUEST message, the CN shall initiate the appropriate release procedure for the identified RABs in the RAB RELEASE REQUEST message. The CN shall pass the cause value indicated in the RAB RELEASE REQUEST message unchanged (TBD) in the initiated release procedure.

8.3.3 Abnormal Conditions

8.4 Iu Release Request

8.4.1 General

The purpose of the Iu Release Request procedure is to enable UTRAN to request the CN to release the Iu connection for a particular UE due to some UTRAN generated reason (e.g. "O&M Intervention", "Unspecified Failure", ~~"RAB pre-empted",~~ "User Inactivity"). The procedure uses connection oriented signalling.

8.4.2 Successful Operation

Figure 3: Iu Release Request procedure. Successful Operation.

The RNS controlling the Iu connection(s) of that particular UE shall initiate the procedure by generating an IU RELEASE REQUEST message towards the CN. If two Iu connections exist for that particular UE, RNC shall sent an IU RELEASE REQUEST message to both CN domains. The procedure may be initiated for instance when the contact with a particular UE is lost or due to user inactivity.

The IU RELEASE REQUEST message shall indicate the cause value for the requested Iu connection release.

Interactions with Iu Release:

The CN shall analyse the cause for sending the IU RELEASE REQUEST message, and if accepted, the CN shall initiate the Iu Release procedure. The CN shall pass the cause value indicated in the IU RELEASE REQUEST message unchanged (TBD) in the initiated Iu Release procedure.

8.4.3 Abnormal Conditions

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Document R3-000625
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or for SMG, use the format P-99-xxx

CHANGE REQUEST

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25.413	CR	045	Current Version:	3.0.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	RAN#7	for approval	X	strategic		(for SMG use only)
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Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [ ] UTRAN / Radio [X] Core Network [ ]

Source: RAN-WG3 **Date:** 2000-02-18

Subject: Clarification of relation between RAB and Radio Bearers.

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: In section 8.7.2, it is not clearly stated that one RAB can correspond to several Radio Bearers.

Clauses affected: 8.7.2

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments:


help.doc

<--------- double-click here for help and instructions on how to create a CR.

8.7 Relocation Resource Allocation

8.7.1 General

The purpose of the Relocation Resource Allocation procedure is to allocate resources from target RNS for a relocation of SRNS. Procedure shall be co-ordinated in all Iu signalling connections existing for the UE. The procedure uses connection oriented signalling.

8.7.2 Successful Operation

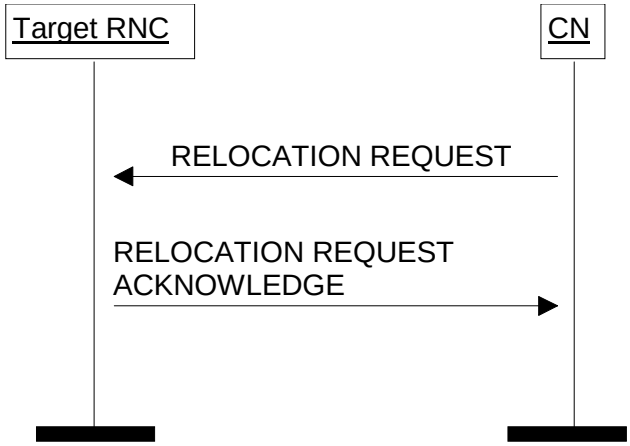

Figure 1: Relocation Resource Allocation procedure. Successful operation.

The CN shall initiate the procedure by generating RELOCATION REQUEST message. This message shall contain the information (if any)required by the UTRAN to build the new RAB configuration.

CN shall transmit the RELOCATION REQUEST message to target RNC and CN shall start the timer $T_{RELOCalloc.}$

Upon reception of the RELOCATION REQUEST message target RNC shall initiate allocation of requested resources. The following information elements received in RELOCATION REQUEST message:

- RAB-ID
- User plane mode
- Priority level, queuing and pre-emption indication

require special actions in RNC. The actions are the same as specified for the same IEs in the RAB Assignment procedure.

Following additional actions shall be executed in target RNC during Relocation Resource Allocation procedure:

If *Relocation Type* IE is set to 'Hard Handover':

- Target RNC may accept a requested RAB only if:

  1. the RAB can be supported by target RNC and
  2. the radio bearer(s) for the RAB exist(s) or target RNC will establish necessary radio resources for the RAB by Uu interface information to be generated by target RNC and to be included in RELOCATION REQUEST ACKNOWLEDGE message.

- Other RABs shall be rejected by the target RNC in the RELOCATION REQUEST ACKNOWLEDGE message with an appropriate value for *Cause* IE, e.g. 'Unable to Establish During Relocation'.

- If ~~an~~ existing radio bearer(s) ~~is~~are not related to any RAB that is accepted by target RNC, the ~~corresponding~~ radio bearers shall be ignored by target RNC. No actions to release the radio bearer(s) shall be taken by target RNC.

If *RelocationType* IE is set to 'SRNS Relocation':

- Target RNC may accept a RAB only if the radio bearer(s) for the RAB exist(s) and can be used for the RAB by the target RNC.

- If ~~an~~ existing radio bearers ~~is~~are not related to any RAB that is accepted by target RNC, the ~~corresponding~~ radio bearers shall be ignored during the relocation of SRNS and the radio bearers shall be released by Uu interface protocols after completion of relocation of SRNS.

After all necessary resources for accepted RABs including the Iu user plane, are successfully allocated, target RNC shall send RELOCATION REQUEST ACKNOWLEDGE message to CN.

The RELOCATION REQUEST ACKNOWLEDGE message sent by the target RNC may optionally contain a transparent container, which shall be transferred by CN to the source RNC using the RANAP message RELOCATION COMMAND.

Transmission and reception of RELOCATION REQUEST ACKNOWLEDGE message terminates the procedure in UTRAN and CN respectively.

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***Document* R3-000626**
e.g. for 3GPP use the format TP-99xxx
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CHANGE REQUEST

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25.413	CR	046	Current Version:	3.0.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	RAN #7	for approval	X	strategic		(for SMG use only)
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Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [ ] UTRAN / Radio [X] Core Network [X]

Source: RAN-WG3 **Date:** 2000-02-18

Subject: Cause value to use in connection with Relocation Preparation

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	[X]	**Release:**	Phase 2	[ ]
A	Corresponds to a correction in an earlier release	[ ]		Release 96	[ ]
B	Addition of feature	[ ]		Release 97	[ ]
C	Functional modification of feature	[ ]		Release 98	[ ]
D	Editorial modification	[ ]		Release 99	[X]
				Release 00	[ ]

Reason for change: If there is interaction between Relocation Preparation and another RANAP procedure and the RNC decides to terminate this other procedure, the cause value to use needs to be specified. It is proposed to use “Relocation Triggered”.

Clauses affected: 8.6.2

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

8.6 Relocation Preparation

8.6.1 General

The Purpose of the Relocation Preparation procedure is to prepare relocation of SRNS either with involving UE or without involving UE. Procedure shall be co-ordinated in all Iu signalling connections existing for the UE in order to allow Relocation Co-ordination in the target RNC. The procedure uses connection oriented signalling.

8.6.2 Successful Operation

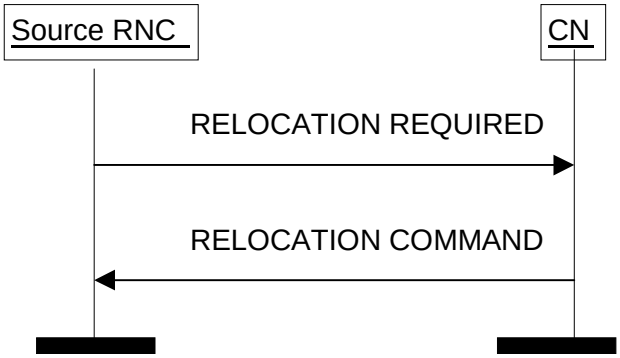

Figure 1: Relocation Preparation procedure. Successful operation.

The source RNC shall initiate the procedure by generating RELOCATION REQUIRED message. The source RNC shall decide whether to initiate the intra-system Relocation or the inter-system Relocation. In case of intra-system Relocation the source RNC shall indicate in the *Source ID* IE the RNC-ID of the source RNC and in the *Target ID* IE the RNC-ID of the target RNC. In case of inter-system Relocation the source RNC shall indicate in the *Source ID* IE the Service Area Identifier and in the *Target ID* IE the cell global identity of the target system. The source RNC shall indicate the appropriate cause value for the Relocation in the *Cause* IE.

The source RNC shall determine whether the relocation of SRNS shall be executed with or without involvement of UE. The source RNC shall set the *Relocation Type* IE accordingly to 'UE involved ' or 'UE not involved '.

The source RNC shall indicate in the RELOCATION REQUIRED message the amount of Iu signalling connections existing for the UE by setting correctly the *Number of Iu Instances* IE included in the *Source to Target RNC Transparent Containe*r IE. This container may also include the necessary information for Relocation co-ordination, security procedures and the handling of UE Capabilities. The container may include the RRC context to be relocated within the *RRC Container* IE.

The source RNC shall send the RELOCATION REQUIRED message to CN and the source RNC shall start the timer $T_{RELOCprep.}$

When the preparation including resource allocation in the target system is ready and CN has decided to continue the relocation of SRNS, CN shall send RELOCATION COMMAND message to the source RNC and the CN shall start the timer $T_{RELOCcompl}$.

For each RAB originating from the PS domain, the RELOCATION COMMAND message may contain Iu transport address and Iu transport association to be used for the forwarding of the DL N-PDU duplicates towards the relocation target.

The Relocation Preparation procedure is terminated in CN by transmission of RELOCATION COMMAND message.

If *Relocation Type* IE was set to 'UE involved ' by the source RNC and if the target system does not support all existing RABs, the RELOCATION COMMAND message shall contain a list of RABs indicating all the RABs that are not supported by the target system. The source RNC shall pass this information to radio protocols.

Upon reception of RELOCATION COMMAND belonging to ongoing Relocation Preparation procedure the source RNC shall stop the timer $T_{RELOCprep}$, RNC shall start the timer $T_{RELOCOverall}$ and RNC shall terminate the procedure.

When Relocation Preparation procedure is terminated successfully and when the source RNC is ready, the source RNC should trigger the execution of relocation of SRNS.

In case of intersystem handover to GSM the RNC shall include *MS Classmark 2* and *MS Classmark 3* IEs received from the UE in the RELOCATION REQUIRED message to CN.

Interactions with other procedures:

If, after RELOCATION REQUIRED message is sent and before the Relocation Preparation procedure is terminated, the source RNC receives a RANAP message initiating an other connection oriented RANAP class 1 or class 3 procedure (except Iu RELEASE COMMAND, which shall be handled normally) via the same Iu signalling connection, the source RNC shall either:

1. cancel the Relocation Preparation procedure i.e. execute Relocation Cancel procedure and after successful completion of Relocation Cancel procedure the source RNC shall continue the initiated RANAP procedure.

or

2. terminate the initiated RANAP procedure without any changes in UTRAN by sending appropriate response message with the cause value "Relocation Triggered" to CN. The source RNC shall then continue the relocation of SRNS.

If, after RELOCATION REQUIRED message is sent and before the Relocation Preparation procedure is terminated, the source RNC receives a connection oriented class 2 RANAP message via the same Iu signalling connection (except DIRECT TRANSFER message, which shall be handled normally) and if the source RNC does not decide to cancel the relocation of SRNS by initiating Relocation Cancel procedure, the source RNC shall ignore the received RANAP class 2 message.

After Relocation Preparation procedure is terminated successfully all RANAP messages (except Iu RELEASE COMMAND message, which shall be handled normally) received via the same Iu signalling bearer shall be ignored by the source RNC.

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CHANGE REQUEST

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25.413	CR	047	Current Version:	3.0.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	RAN#7	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [ ] UTRAN / Radio [X] Core Network [X]

Source: RAN-WG3 **Date:** 2000-02-18

Subject: Correction of range for security algorithms and number of keys.

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	[X]	**Release:**	Phase 2	[ ]
A	Corresponds to a correction in an earlier release	[ ]		Release 96	[ ]
B	Addition of feature	[ ]		Release 97	[ ]
C	Functional modification of feature	[ ]		Release 98	[ ]
D	Editorial modification	[ ]		Release 99	[X]
				Release 00	[ ]

Reason for change: The stated ranges for number of algorithms possible to include in the Integrity Protection Information and Encryption Information IEs need to be corrected. Also the number of possible keys needs to be corrected.

Clauses affected: 9.1.24, 9.2.1.11, 9.2.1.12, 9.2.1.13, 9.2.1.14, 9.3.4

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

9.1.24 SECURITY MODE COMMAND

This message is sent by the CN to trigger the integrity and ciphering functions over the radio interface.

Direction: CN → RNC

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
Integrity Protection Information	M		9.2.1.11	Integrity information includes key~~(s)~~ and permitted algorithms.
Encryption Information	O		9.2.1.12	Encryption information includes key~~(s)~~ and permitted algorithms.

9.2.1.11 Integrity Protection Information

This element contains the integrity protection information (key~~(s)~~ and permitted algorithms).

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Integrity Protection Information				
Permitted integrity Protection Algorithms				
Integrity Protection Algorithm	M	1 to 1~~5~~6	INTEGER (standard UIA1 (0))	Value R~~r~~ange is 0 to 15. Only one value used.
Integrity Protection Key	M		BIT STRING (128)	

9.2.1.12 Encryption Information

This element contains the user data encryption information (key~~(s)~~ and permitted algorithms) used to control any encryption equipment at the RNC.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Encryption Information				
Permitted Encryption Algorithms				
Encryption Algorithm	M	~~0~~1 to 1~~5~~6	INTEGER (no encryption (0), standard UEA1 (1))	Value R~~r~~ange is 0 to 15. Only two values used.
Encryption Key	M		Bit string (128)	

9.2.1.13 Chosen Integrity Protection Algorithm

This element indicates the integrity protection algorithm being used by the RNC.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Chosen Integrity Protection Algorithm	M		INTEGER (standard UIA1 (0))	Value R~~r~~ange is 0 to 15. Only one value used.

9.2.1.14 Chosen Encryption Algorithm

This element indicates the encryption algorithm being used by the RNC.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Chosen Encryption Algorithm	M		INTEGER (no encryption (0), standard UEA1 (1))	Value R~~r~~ange is 0 to 15. Only two values used.

9.3.4 Information Element Definitions

****** LOTS OF UNAFFECTED ASN.1 DESCRIPTION FROM SECTION 9.3.4 REMOVED ******

```
-- P

PagingAreaID ::= CHOICE {
    lAI             LAI,
    rAI             RAI,
    ...
}

PagingCause ::= ENUMERATED {
    speech-call,
    cs-data-call,
    ps-data-call,
    sms,
    ...
}

PermanentNAS-UE-ID ::= CHOICE {
    iMSI                IMSI,
    ...
}

PermittedEncryptionAlgorithms ::= SEQUENCE (SIZE (0~~1~~..15~~6~~)) OF
    EncryptionAlgorithm

PermittedIntegrityProtectionAlgorithms ::= SEQUENCE (SIZE (0~~1~~..15~~6~~)) OF
    IntegrityProtectionAlgorithm

PLMN-ID                 ::= TBCD-STRING (SIZE (3))

Pre-emptionCapability ::= ENUMERATED {
    can-not-trigger-pre-emption,
    can-trigger-pre-emption
}

Pre-emptionVulnerability ::= ENUMERATED {
    not-vulnerable-to-pre-emption,
    vulnerable-to-pre-emption
}
```

```
PriorityLevel               ::= INTEGER { spare (0), highest (1), lowest (14), no-priority (15) } (0..15)

P-TMSI                  ::= OCTET STRING (SIZE (4))
```

****** LOTS OF UNAFFECTED ASN.1 DESCRIPTION FROM SECTION 9.3.4 REMOVED ******

3GPP TSG-RAN3 Meeting #11
Sophia Antipolis, France, 28 Feb - 3 March 2000

Document R3-000629
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.413	CR	049	Current Version:	3.0.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	RAN #7	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [ ] UTRAN / Radio [X] Core Network [X]

Source: RAN-WG3 **Date:** 2000-02-22

Subject: Security Information in Relocation messages.

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: Since Relocation can be triggered before the Security Mode Control procedure has been executed, security data to include in the relocation messages are not always available. Therefore a change from mandatory to conditional needs to be done for these data.

Clauses affected: 9.1.8, 9.1.9, 9.2.1.28, 9.3.3, 9.3.4

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:	
Other GSM core specifications	[ ]	→ List of CRs:	
MS test specifications	[ ]	→ List of CRs:	
BSS test specifications	[ ]	→ List of CRs:	
O&M specifications	[ ]	→ List of CRs:	

Other comments:


help.doc

<--------- double-click here for help and instructions on how to create a CR.

9.1.8 RELOCATION REQUEST

This message is sent by the CN to request the target RNC to allocate necessary resources for a relocation.

Direction: CN → RNC

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
Permanent NAS UE Identity	C - ifAvail		9.2.3.2	
Cause	M		9.2.1.4	
CN Domain Indicator	M		9.2.1.5	
Source RNC to target RNC transparent container	M		9.2.1.28	
RABs to be setup		0 to <maxnoofRABs>		
RAB ID	M		9.2.1.2	
NAS Binding Information	M		9.2.3.1	
RAB parameters	M		9.2.1.3	
Data Volume Reporting Indication	C - ifPS		9.2.1.17	
User Plane Information				
User Plane mode	M		9.2.1.18	
UP Mode Versions	M		9.2.1.19	
Transport Layer Address	M		9.2.2.1	
Iu Transport Association	M		9.2.2.2	
Integrity Protection Information	~~M~~C - ifAvail		9.2.1.11	Integrity Protection Information includes key and permitted algorithms.
Encryption Information	O		9.2.1.12	Encryption Information includes key and permitted algorithms.

Condition	Explanation
ifAvail	This IE is only present if available at the sending side.
IfPS	This IE is only present for RABs towards the PS domain.

Range bound	Explanation
maxnoofRABs	Maximum no. of RABs for one UE. Value is 256.

9.1.9 RELOCATION REQUEST ACKNOWLEDGE

This message is sent by the target RNC to inform the CN about the result of the resource allocation for the requested relocation.

Direction: RNC → CN

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
Target RNC to Source RNC Transparent Container	C - IfApplNotOtherCN		9.2.1.30	
RABs setup	C - ifPS	0 to <maxnoofRABs		
RAB ID	M		9.2.1.2	
Chosen UP Version	O		9.2.1.20	Included at least when a choice is made by UTRAN.
Transport Layer Address	M		9.2.2.1	
Iu Transport Association	M		9.2.2.2	
RABs failed to setup	C - ifNoOtherGroup	0 to <maxnoofRABs		
RAB ID	M		9.2.1.2	
Cause	M		9.2.1.4	
Chosen Integrity Protection Algorithm	~~M~~C - ifAvail		9.2.1.13	Indicates which algorithm that will be used by the target RNC.
Chosen Encryption Algorithm	O		9.2.1.14	Indicates which algorithm that will be used by the target RNC.
Criticality Diagnostics	O		9.2.1.35	

Condition	Explanation
IfPS	This Group is only present for RABs towards the PS domain.
IfNoOtherGroup	This group must be present at least when no other group is present, i.e. at least one group must be present.
IfApplNotOtherCN	Must be included if applicable and if not sent via the other CN.
ifAvail	This IE is only present if available at the sending side.

Range bound	Explanation
maxnoofRABs	Maximum no. of RABs for one UE. Value is 256.

9.2.1.28 Source RNC to Target RNC Transparent Container

Source RNC to Target RNC Transparent Container IE is an information element that is produced by Source RNC and is transmitted to target RNC. In inter system relocation the IE is transmitted either from external relocation source to target RNC or from source RNC to the external relocation target.

This IE is transparent to CN.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
RRC Container	M		OCTET STRING	Contents defined in TS 25.331 [10]
Number of Iu Instances	M		INTEGER (1...2)	
Relocation Type	M		9.2.1.23	
Chosen Integrity Protection Algorithm	C – ifIntraUMTSandAvail		9.2.1.13	Indicates which integrity protection algorithm that has been used by the source RNC.
Integrity Protection Key	C – ifIntraUMTSandAvail		Bit String (128)	Indicates which integrity protection key that has been used by the source RNC.
Chosen Encryption Algorithm	C - ifIntraUMTSandCiph		9.2.1.14	Indicates which algorithm that has been used by the source RNC for ciphering of signalling data.
Ciphering Key	C - ifIntraUMTSandCiph		Bit String (128)	Indicates which ciphering key that has been used by the source RNC for ciphering of signalling data.
Chosen Encryption Algorithm	C - ifIntraUMTSandCiph		9.2.1.14	Indicates which algorithm that has been used by the source RNC for ciphering of CS user data.
Chosen Encryption Algorithm	C - ifIntraUMTSandCiph		9.2.1.14	Indicates which algorithm that has been used by the source RNC for ciphering of PS user data.
d-RNTI	O		INTEGER (0..1048575)	

Condition	Explanation
IfIntraUMTSandAvail	Must be present for intra UMTS Handovers if available
IfIntraUMTSandCiph	Must be present for intra UMTS Handovers if ciphering is active

9.3.3 PDU Definitions

****** LOTS OF UNAFFECTED ASN.1 DESCRIPTION FROM SECTION 9.3.3 REMOVED ******

```
-- **************************************************************
--
-- RELOCATION RESOURCE ALLOCATION ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Relocation Request
--
-- **************************************************************

RelocationRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RelocationRequestIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RelocationRequestExtensions} }            OPTIONAL,
    ...
}

RelocationRequestIEs RANAP-PROTOCOL-IES ::= {
    { ID id-PermanentNAS-UE-ID          CRITICALITY ignore  TYPE PermanentNAS-UE-ID             PRESENCE conditional
    -- This IE is only present if available at the sending side --                                    } |
    { ID id-Cause                   CRITICALITY ignore  TYPE Cause                  PRESENCE mandatory  } |
    { ID id-CN-DomainIndicator          CRITICALITY ignore  TYPE CN-DomainIndicator             PRESENCE mandatory } |
    { ID id-SourceRNC-ToTargetRNC-TransparentContainer
                            CRITICALITY reject  TYPE SourceRNC-ToTargetRNC-TransparentContainer PRESENCE mandatory } |
    { ID id-RAB-SetupList-RelocReq          CRITICALITY ignore  TYPE RAB-SetupList-RelocReq      PRESENCE mandatory   } |
    { ID id-IntegrityProtectionInformation      CRITICALITY ignore  TYPE IntegrityProtectionInformation      PRESENCE mandatoryconditional
    -- This IE is only present if available at the sending side --                                    } |
    { ID id-EncryptionInformation           CRITICALITY ignore  TYPE EncryptionInformation       PRESENCE optional },

    ...
}

RAB-SetupList-RelocReq                  ::= RAB-IE-ContainerList { {RAB-SetupItem-RelocReq-IEs} }

RAB-SetupItem-RelocReq-IEs RANAP-PROTOCOL-IES ::= {
```

```
    { ID id-RAB-SetupItem-RelocReq          CRITICALITY reject  TYPE RAB-SetupItem-RelocReq       PRESENCE mandatory   },
    ...
}

RAB-SetupItem-RelocReq ::= SEQUENCE {
    rAB-ID                      RAB-ID,
    nAS-BindingInformation              NAS-BindingInformation,
    rAB-Parameters                  RAB-Parameters,
    dataVolumeReportingIndication           DataVolumeReportingIndication   OPTIONAL
    -- This IE is only present if available at the sending side --,
    userPlaneInformation                UserPlaneInformation,
    transportLayerAddress               TransportLayerAddress,
    iuTransportAssociation              IuTransportAssociation,
    iE-Extensions                   ProtocolExtensionContainer { {RAB-SetupItem-RelocReq-ExtIEs} }        OPTIONAL,
    ...
}

RAB-SetupItem-RelocReq-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

UserPlaneInformation ::= SEQUENCE {
    userPlaneMode                   UserPlaneMode,
    uP-ModeVersions                 UP-ModeVersions,
    iE-Extensions                   ProtocolExtensionContainer { {UserPlaneInformation-ExtIEs} }       OPTIONAL,
    ...
}

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

RelocationRequestExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- Relocation Request Acknowledge
--
-- **************************************************************

RelocationRequestAcknowledge ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RelocationRequestAcknowledgeIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RelocationRequestAcknowledgeExtensions} }       OPTIONAL,
    ...
}

RelocationRequestAcknowledgeIEs RANAP-PROTOCOL-IES ::= {
    { ID id-TargetRNC-ToSourceRNC-TransparentContainer
                            CRITICALITY ignore  TYPE TargetRNC-ToSourceRNC-TransparentContainer PRESENCE conditional
```

```
    -- Must be included if applicapble and if not sent via the other CN --                                  } |
    { ID id-RAB-SetupList-RelocReqAck       CRITICALITY ignore  TYPE RAB-SetupList-RelocReqAck       PRESENCE conditional
    -- This Group is only present for RABs towards the PS domain --                                        } |
    { ID id-RAB-FailedList              CRITICALITY ignore  TYPE RAB-FailedList             PRESENCE conditional
    -- This group must be present at least when tno other group is present, i.e. at least one group must be present --         } |
    { ID id-ChosenIntegrityProtectionAlgorithm  CRITICALITY ignore  TYPE ChosenIntegrityProtectionAlgorithm      PRESENCE mandatoryconditional
    -- This IE is only present if available at the sending side --                                          } |
    { ID id-ChosenEncryptionAlgorithm       CRITICALITY ignore  TYPE ChosenEncryptionAlgorithm       PRESENCE optional } |
    { ID id-CriticalityDiagnostics          CRITICALITY ignore  TYPE CriticalityDiagnostics          PRESENCE optional },
    ...
}

RAB-SetupList-RelocReqAck               ::= RAB-IE-ContainerList { {RAB-SetupItem-RelocReqAck-IEs} }

RAB-SetupItem-RelocReqAck-IEs RANAP-PROTOCOL-IES ::= {
    { ID id-RAB-SetupItem-RelocReqAck       CRITICALITY reject  TYPE RAB-SetupItem-RelocReqAck       PRESENCE mandatory   },
    ...
}

RAB-SetupItem-RelocReqAck ::= SEQUENCE {
    rAB-ID                      RAB-ID,
    chosenUP-Version                ChosenUP-Version        OPTIONAL,
    transportLayerAddress               TransportLayerAddress,
    iuTransportAssociation              IuTransportAssociation,
    iE-Extensions                   ProtocolExtensionContainer { {RAB-SetupItem-RelocReqAck-ExtIEs} }        OPTIONAL,
    ...
}

RAB-SetupItem-RelocReqAck-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

RAB-FailedList                      ::= RAB-IE-ContainerList { {RAB-FailedItemIEs} }

RAB-FailedItemIEs RANAP-PROTOCOL-IES ::= {
    { ID id-RAB-FailedItem              CRITICALITY ignore  TYPE RAB-FailedItem             PRESENCE mandatory   },
    ...
}

RAB-FailedItem ::= SEQUENCE {
    rAB-ID                      RAB-ID,
    cause                       Cause,
    iE-Extensions                   ProtocolExtensionContainer { {RAB-FailedItem-ExtIEs} }       OPTIONAL,
    ...
}

RAB-FailedItem-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

RelocationRequestAcknowledgeExtensions RANAP-PROTOCOL-EXTENSION ::= {
```

```
    ...
}

-- **************************************************************
--
-- Relocation Failure
--
-- **************************************************************

RelocationFailure ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RelocationFailureIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RelocationFailureExtensions} }            OPTIONAL,
    ...
}

RelocationFailureIEs RANAP-PROTOCOL-IES ::= {
    { ID id-Cause                   CRITICALITY ignore  TYPE Cause                  PRESENCE mandatory  } |
    { ID id-CriticalityDiagnostics          CRITICALITY ignore  TYPE CriticalityDiagnostics         PRESENCE optional },
    ...
}

RelocationFailureExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

****** LOTS OF UNAFFECTED ASN.1 DESCRIPTION FROM SECTION 9.3.3 REMOVED ******

9.3.4 Information Element Definitions

****** LOTS OF UNAFFECTED ASN.1 DESCRIPTION FROM SECTION 9.3.4 REMOVED ******

```
SourceRNC-ToTargetRNC-TransparentContainer ::= SEQUENCE {
    rRC-Container           RRC-Container,
    numberOfIuInstances     NumberOfIuInstances,
    relocationType          RelocationType,
    chosenIntegrityProtectionAlgorithm ChosenIntegrityProtectionAlgorithm   OPTIONAL
    -- Must be present for intra UMTS Handovers if available --,
    integrityProtectionKey      IntegrityProtectionKey          OPTIONAL
    -- Must be present for intra UMTS Handovers if available--,
    chosenEncryptionAlgorithForSignalling ChosenEncryptionAlgorithm     OPTIONAL
    -- Must be present for intra UMTS Handovers if ciphering is active --,
    cipheringKey            EncryptionKey               OPTIONAL
    -- Must be present for intra UMTS Handovers if ciphering is active --,
    chosenEncryptionAlgorithForCS   ChosenEncryptionAlgorithm       OPTIONAL
    -- Must be present for intra UMTS Handovers if ciphering is active --,
    chosenEncryptionAlgorithForPS   ChosenEncryptionAlgorithm       OPTIONAL
    -- Must be present for intra UMTS Handovers if ciphering is active --,
    d-RNTI              D-RNTI                  OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { {SourceRNC-ToTargetRNC-TransparentContainer-ExtIEs} } OPTIONAL,
    ...
}
```

****** LOTS OF UNAFFECTED ASN.1 DESCRIPTION FROM SECTION 9.3.4 REMOVED ******

3GPP TSG-RAN3 Meeting #11
Sophia Antipolis, France, 28 Feb - 3 March 2000

Document R3-000630
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.413	CR	050	Current Version:	3.0.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	RAN #7	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME		UTRAN / Radio	X	Core Network	X

Source: RAN-WG3 **Date:** 2000-02-18

Subject: Resetting of HFN when new security keys are activated.

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction		**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature	X		Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: Since HFN shall be reset to zero when new security keys are activated, information needs to be included in the SECURITY MODE CONTROL message saying if the indicated keys are new or if old ones are still used.

Clauses affected: 9.1.24, 9.3.2, 9.3.3, 9.3.4, 9.3.6

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments:


help.doc

<---------- double-click here for help and instructions on how to create a CR.

9.1.24 SECURITY MODE COMMAND

This message is sent by the CN to trigger the integrity and ciphering functions over the radio interface.

Direction: CN → RNC

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
Integrity Protection Information	M		9.2.1.11	Integrity information includes key(s) and permitted algorithms.
Encryption Information	O		9.2.1.12	Encryption information includes key(s) and permitted algorithms.
Key status	M		9.2.1.36	

9.2.1.36 Key Status

This IE tells if the keys included in Security Mode Command are new or if the have been used previously.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Key status			ENUMERATED (old, new, …)	

9.3.2 Elementary Procedure Definitions

```
-- **************************************************************
--
-- Elementary Procedure definitions
--
-- **************************************************************

RANAP-PDU-Descriptions -- { object identifier to be allocated }--
DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

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

IMPORTS
    Criticality,
    ProcedureCode
FROM RANAP-CommonDataTypes

    Iu-ReleaseCommand,
    Iu-ReleaseComplete,
    RelocationCommand,
    RelocationPreparationFailure,
    RelocationRequired,
    RelocationRequest,
    RelocationRequestAcknowledge,
    RelocationFailure,
    RelocationCancel,
    RelocationCancelAcknowledge,
    SRNS-ContextRequest,
    SRNS-ContextResponse,
    SecurityModeCommand,
    SecurityModeComplete,
    SecurityModeReject,
    DataVolumeReportRequest,
    DataVolumeReport,
    CN-InformationBroadcastRequest,
    CN-InformationBroadcastConfirm,
    CN-InformationBroadcastReject,
    Reset,
    ResetAcknowledge,
    RAB-ReleaseRequest,
    Iu-ReleaseRequest,
    RelocationDetect,
```

```
    RelocationComplete,
    Paging,
    CommonID,
    CN-InvokeTrace,
    LocationReportingControl,
    LocationReport,
    InitialUE-Message,
    DirectTransfer,
    Overload,
    ErrorIndication,
    SRNS-DataForwardCommand,
    ForwardSRNS-Context,
    RAB-AssignmentRequest,
    RAB-AssignmentResponse,
    PrivateMessage
FROM RANAP-PDU-Contents

    id-CN-InformationBroadcast,
    id-CN-InvokeTrace,
    id-CommonID,
    id-DataVolumeReport,
    id-DirectTransfer,
    id-ErrorIndication,
    id-ForwardSRNS-Context,
    id-InitialUE-Message,
    id-Iu-Release,
    id-Iu-ReleaseRequest,
    id-KeyStatus,
    id-LocationReport,
    id-LocationReportingControl,
    id-OverloadControl,
    id-Paging,
    id-Private,
    id-RAB-Assignment,
    id-RAB-ReleaseRequest,
    id-RelocationCancel,
    id-RelocationComplete,
    id-RelocationDetect,
    id-RelocationPreparation,
    id-RelocationResourceAllocation,
    id-Reset,
    id-SRNS-ContextTransfer,
    id-SRNS-DataForward,
    id-SecurityModeControl
FROM RANAP-Constants;
```

****** LOTS OF UNAFFECTED ASN.1 DESCRIPTION FROM SECTION 9.3.2 REMOVED ******

9.3.3 PDU Definitions

****** LOTS OF UNAFFECTED ASN.1 DESCRIPTION FROM SECTION 9.3.3 REMOVED ******

```
-- **************************************************************
--
-- SECURITY MODE CONTROL ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Security Mode Command
--
-- **************************************************************

SecurityModeCommand ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {SecurityModeCommandIEs} },
    protocolExtensions      ProtocolExtensionContainer { {SecurityModeCommandExtensions} }          OPTIONAL,
    ...
}

SecurityModeCommandIEs RANAP-PROTOCOL-IES ::= {
    { ID id-IntegrityProtectionInformation      CRITICALITY ignore  TYPE IntegrityProtectionInformation    PRESENCE mandatory   } |
    { ID id-EncryptionInformation           CRITICALITY ignore  TYPE EncryptionInformation        PRESENCE optional } |
    { ID id-KeyStatus                       CRITICALITY ignore  TYPE KeyStatus                    PRESENCE mandatory},
    ...
}

SecurityModeCommandExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- Security Mode Complete
--
-- **************************************************************

SecurityModeComplete ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {SecurityModeCompleteIEs} },
    protocolExtensions      ProtocolExtensionContainer { {SecurityModeCompleteExtensions} }         OPTIONAL,
    ...
}
```

```
SecurityModeCompleteIEs RANAP-PROTOCOL-IES ::= {
    { ID id-ChosenIntegrityProtectionAlgorithm  CRITICALITY ignore  TYPE ChosenIntegrityProtectionAlgorithm   PRESENCE mandatory   } |
    { ID id-ChosenEncryptionAlgorithm       CRITICALITY ignore  TYPE ChosenEncryptionAlgorithm       PRESENCE optional } |
    { ID id-CriticalityDiagnostics          CRITICALITY ignore  TYPE CriticalityDiagnostics       PRESENCE optional },
    ...
}

SecurityModeCompleteExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- Security Mode Reject
--
-- **************************************************************

SecurityModeReject ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {SecurityModeRejectIEs} },
    protocolExtensions      ProtocolExtensionContainer { {SecurityModeRejectExtensions} }           OPTIONAL,
    ...
}

SecurityModeRejectIEs RANAP-PROTOCOL-IES ::= {
    { ID id-Cause                   CRITICALITY ignore  TYPE Cause                  PRESENCE mandatory  } |
    { ID id-CriticalityDiagnostics          CRITICALITY ignore  TYPE CriticalityDiagnostics          PRESENCE optional },
    ...
}

SecurityModeRejectExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

****** LOTS OF UNAFFECTED ASN.1 DESCRIPTION FROM SECTION 9.3.3 REMOVED ******

9.3.4 Information Element Definitions

****** LOTS OF UNAFFECTED ASN.1 DESCRIPTION FROM SECTION 9.3.4 REMOVED ******

```
IuTransportAssociation ::= CHOICE {
    gTP-TEI             GTP-TEI,
    bindingID           BindingID,
    ...
}

-- J
-- K

KeyStatus   ::= ENUMERATED {
    old,
    new,
    ...
}
-- L

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

LAI ::= SEQUENCE {
    pLMN-ID             PLMN-ID,
    lAC             LAC,
    iE-Extensions           ProtocolExtensionContainer { {LAI-ExtIEs} } OPTIONAL
}

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

****** LOTS OF UNAFFECTED ASN.1 DESCRIPTION FROM SECTION 9.3.4 REMOVED ******

9.3.6 Constant Definitions

****** LOTS OF UNAFFECTED ASN.1 DESCRIPTION FROM SECTION 9.3.6 REMOVED ******

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

id-AreaIdentity                     INTEGER ::= 0
id-CN-BroadcastInformationPiece             INTEGER ::= 1
id-CN-BroadcastInformationPieceList             INTEGER ::= 2
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-KeyStatus                    INTEGER ::= 75

END
```

3GPP RAN3 Meeting #11
Sophia Antipolis, France, 28 Feb - 3 March 00

***Document* R3-000640**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.413	CR	052	Current Version:	3.0.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	RAN #7	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [ ] UTRAN / Radio [X] Core Network [X]

Source: RAN WG3 **Date:** 23 Feb 00

Subject: Clarification of Abnormal Event Handling

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: The current specification does not allow the possibility for the default error handling to be overridden in specific cases. While no specific cases where this is needed have been identified in RANAP, the change is proposed to maintain alignment with RNSAP and NBAP, where exceptions have been made.

Clauses affected: 10.4

Other specs affected:

Other 3G core specifications	X	→ List of CRs:	25.423 (055), 25.433 (045)
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:


help.doc

<--------- double-click here for help and instructions on how to create a CR.

10.4 Logical Error Handling

Logical error situations occur when a message is comprehended correctly, but the information contained within the message is not valid (i.e. semantic error), or describes a procedure which is not compatible with the state of the receiver. In these conditions, the following behaviour shall be performed (unless otherwise specified) as defined by the class of the elementary procedure, irrespective of the criticality of the IE's containing the erroneous values.

Class 1:

Where the logical error occurs in a request message of a class 1 procedure, and the procedure has a failure message, the failure message shall be sent with an appropriate cause value. Typical cause values are:

- Semantic Error
- Message not compatible with receiver state

Where the logical error is contained in a request message of a class 1 procedure, and the procedure does not have a failure message, the ERROR INDICATION procedure shall be initiated with an appropriate cause value.

Where the logical error exists in a response message of a class 1 procedure, local error handling shall be initiated.

Class 2:

Where the logical error occurs in a message of a class 2 procedure, the ERROR INDICATION procedure shall be initiated with an appropriate cause value.

Class 3:

Where the logical error occurs in a request message of a class 3 procedure, and the procedure has a failure message, the failure message shall be sent with an appropriate cause value. Typical cause values are:

- Semantic Error
- Message not compatible with receiver state

Where the logical error is contained in a request message of a class 3 procedure, and the procedure does not have a failure message, the ERROR INDICATION procedure shall be initiated with an appropriate cause value.

Where the logical error exists in a response message of a class 3 procedure, local error handling shall be initiated.

3GPP-RAN-WG3 Meeting #11
Sophia AntiPolis, France, 28 February - 3 March 2000

Document R3-000650
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.413	CR	011r1	Current Version:	3.0.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN#7	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME		UTRAN / Radio	X	Core Network	X

Source: TSG-RAN WG3 **Date:** 28 February 2000

Subject: CR to 25.413: missing cause value in RANAP

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X	
A	Corresponds to a correction in an earlier release		
B	Addition of feature		
C	Functional modification of feature		
D	Editorial modification		

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

Reason for change: The cause 'Semantic Error' and 'Message not compatible with receiver state' are described in current RANAP but the cause value related to those are missing in the cause IE. These are proposed to add.

Clauses affected: 8.27.2, 9.2.1.4, 9.3.4

Other specs affected:

Other 3G core specifications		→	List of CRs:
Other GSM core specifications		→	List of CRs:
MS test specifications		→	List of CRs:
BSS test specifications		→	List of CRs:
O&M specifications		→	List of CRs:

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

8.27.2 Successful Operation

Figure 133: Error Indication procedure, CN originated.

Figure 234: Error Indication procedure, RNC originated.

When the conditions defined in chapter [*Handling of unknown, unforeseen and erroneous protocol data*] are fulfilled, the Error Indication procedure is initiated by an ERROR INDICATION message sent from the receiving node.

When the ERROR INDICATION message is triggered due to the reception of an Iu user plane PDU(s) with an unknown Iu transport association, the appropriate cause value and both the *IU TRANSPORT ASSOCIATION IE* and the *TRANSPORT ADDRESS IE* shall be included in the message.

Examples for possible cause values for protocol error indications are:

- 'Transfer Syntax Error'
- 'Logical Error: Unknown Iu Transport Association'
- 'Semantic Error'
- 'Message not compatible with receiver state'

9.2.1.4 Cause

The purpose of the cause information element is to indicate the reason for a particular event for the RANAP protocol.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Cause group	M		ENUMERATED (Radio Network Layer, Transport Layer, NAS, Protocol, Miscellaneous, Non-standard, …)	
CHOICE *Cause group*				
Radio Network Layer				
Radio Network Layer Cause	O	1 to 64	INTEGER (RAB pre-empted, Trelocoverall Expiry, Trelocprep Expiry, Treloccomplete Expiry, Tqueing Expiry, Relocation Triggered, Unable to Establish During Relocation, Unknown Target RNC, Relocation Cancelled, Successful Relocation, Requested Ciphering and/or Integrity Protection Algorithms not Supported, Change of Ciphering and/or Integrity Protection is not supported, Failure in the Radio Interface Procedure, Release due to UTRAN Generated Reason, User Inactivity, Time Critical Relocation, Requested Traffic Class not Available, Invalid RAB Parameters Value, Requested Maximum Bit Rate not Available, Requested Guaranteed Bit Rate not Available, Requested Transfer Delay not Achievable, Invalid RAB Parameters Combination, Condition Violation for SDU Parameters, Condition Violation	

			for Traffic Handling Priority, Condition Violation for Guaranteed Bit Rate, User Plane Versions not Supported, Iu UP Failure, …)	
Transmission Network				
Transport Layer Cause	O	65 to 80	INTEGER (Logical Error: Unknown Iu Transport Association,…)	
NAS				
NAS Cause	O	81 to 96	INTEGER (User Restriction Start Indication, User Restriction End Indication, Normal Release, …)	
Protocol				
Protocol Cause	O	97 to 112	INTEGER (Transfer Syntax Error, Semantic Error (98), Message not compatible with receiver state (99), …)	
Miscellaneous				
Miscellaneous Cause	O	113 to 128	INTEGER (O&M Intervention, No Resource Available, Unspecified Failure, Network Optimisation, …)	
Non-standard				
Non-standard Cause	O	129 to 256	INTEGER (…)	

9.3.4 Information Element Definitions

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

RANAP-IEs -- { object identifier to be allocated }--
DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS
    maxNrOfErrors,
```

```
    maxNrOfRABs,
    maxNrOfPoints,
    maxRAB-Subflows,
    maxRAB-SubflowCombination
FROM RANAP-Constants

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

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

-- A

AllocationOrRetentionPriority ::= SEQUENCE {
    priorityLevel         PriorityLevel,
    pre-emptionCapability     Pre-emptionCapability,
    pre-emptionVulnerability  Pre-emptionVulnerability,
    queuingAllowed            QueuingAllowed,
    iE-Extensions         ProtocolExtensionContainer { {AllocationOrRetentionPriority-ExtIEs} }
OPTIONAL,
    ...
}

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

AreaIdentity ::= CHOICE {
    sAI              SAI,
    geographicalArea      GeographicalArea,
    ...
}

-- B

BindingID                ::= OCTET STRING (SIZE (4))

-- C

CategorisationParameters      ::= INTEGER (0..15)

Cause ::= CHOICE {
    radioNetwork          CauseRadioNetwork,
    transmissionNetwork       CauseTransmissionNetwork,
```

```
    nAS             CauseNAS,
    protocol        CauseProtocol,
    misc            CauseMisc,
    non-Standard        CauseNon-Standard,
    ...
}

CauseMisc ::= INTEGER {
    om-intervention (129),
    no-resource-available (130),
    unspecified-failure (131),
    network-optimisation (132)
} (129..256)

CauseNAS ::= INTEGER {
    user-restriction-start-indication (81),
    user-restriction-end-indication (82),
    normal-release (83)
} (81..96)

CauseProtocol ::= INTEGER {
    transfer-syntax-error (97),
    semantic-error (98),
    message-not-compatible-with-receiver-state (99)
} (97..112)

CauseRadioNetwork ::= INTEGER {
    rab-pre-empted (1),
    trelocoverall-expiry (2),
    trelocprep-expiry (3),
    treloccomplete-expiry (4),
    tqueing-expiry (5),
    relocation-triggered (6),
    unable-to-establish-during-relocation (8),
    unknown-target-rnc (9),
    relocation-cancelled (10),
    successful-relocation (11),
    requested-ciphering-and-or-integrity-protection-algorithms-not-supported (12),
    ciphering-and-or-integrity-protection-already-active (13),
    failure-in-the-radio-interface-procedure (14),
    release-due-to-utran-generated-reason (15),
    user-inactivity (16),
    time-critical-relocation (17),
    requested-traffic-class-not-available (18),
    invalid-rab-parameters-value (19),
    requested-maximum-bit-rate-not-available (20),
    requested-guaranteed-bit-rate-not-available (21),
    requested-transfer-delay-not-achievable (22),
    invalid-rab-parameters-combination (23),
```

```
    condition-violation-for-sdu-parameters (24),
    condition-violation-for-traffic-handling-priority (25),
    condition-violation-for-guaranteed-bit-rate (26),
    user-plane-versions-not-supported (27),
    iu-up-failure (28)
} (1..64)

CauseNon-Standard ::= INTEGER (129..256)

CauseTransmissionNetwork ::= INTEGER {
    logical-error-unknown-iu-transport-association (65)
} (65..80)
```

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Sophia AntiPolis, France, 28 February - 3 March 2000

***Document* R3-000651**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.413	CR	009r1	Current Version:	3.0.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN#7	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME		UTRAN / Radio	X	Core Network	X

Source: NEC, Telecom Modus **Date:** 28 Febuary 2000

Subject: CR to 25.413: cause value range of cause miscelleneous in RANAP

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: The value range related to cause micelleneous group in ASN.1 of RANAP is conflict with cause.non-standard group. This CR provides the correction. The correct vaule range for the cause micelleneous group is from 113 to 128 instead of 129 to 256.

Clauses affected: 9.3.4

Other specs affected:

Other 3G core specifications		→	List of CRs:
Other GSM core specifications		→	List of CRs:
MS test specifications		→	List of CRs:
BSS test specifications		→	List of CRs:
O&M specifications		→	List of CRs:

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

9.3.4 Information Element Definitions

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

RANAP-IEs -- { object identifier to be allocated }--
DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS
    maxNrOfErrors,
    maxNrOfRABs,
    maxNrOfPoints,
    maxRAB-Subflows,
    maxRAB-SubflowCombination
FROM RANAP-Constants

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

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

-- A

AllocationOrRetentionPriority ::= SEQUENCE {
    priorityLevel         PriorityLevel,
    pre-emptionCapability     Pre-emptionCapability,
    pre-emptionVulnerability  Pre-emptionVulnerability,
    queuingAllowed            QueuingAllowed,
    iE-Extensions         ProtocolExtensionContainer { {AllocationOrRetentionPriority-ExtIEs} }
OPTIONAL,
    ...
}

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

AreaIdentity ::= CHOICE {
```

```
    sAI             SAI,
    geographicalArea     GeographicalArea,
    ...
}

-- B

BindingID                ::= OCTET STRING (SIZE (4))

-- C

CategorisationParameters      ::= INTEGER (0..15)

Cause ::= CHOICE {
    radioNetwork          CauseRadioNetwork,
    transmissionNetwork       CauseTransmissionNetwork,
    nAS             CauseNAS,
    protocol          CauseProtocol,
    misc              CauseMisc,
    non-Standard          CauseNon-Standard,
    ...
}

CauseMisc ::= INTEGER {
    om-intervention (129113),
    no-resource-available (130114),
    unspecified-failure (131115),
    network-optimisation (132116)
} (129113..256116128)

CauseNAS ::= INTEGER {
    user-restriction-start-indication (81),
    user-restriction-end-indication (82),
    normal-release (83)
} (81..96)

CauseProtocol ::= INTEGER {
    transfer-syntax-error (97)
} (97..112)

CauseRadioNetwork ::= INTEGER {
    rab-pre-empted (1),
    trelocoverall-expiry (2),
    trelocprep-expiry (3),
    treloccomplete-expiry (4),
    tqueing-expiry (5),
    relocation-triggered (6),
    unable-to-establish-during-relocation (8),
    unknown-target-rnc (9),
```

```
    relocation-cancelled (10),
    successful-relocation (11),
    requested-ciphering-and-or-integrity-protection-algorithms-not-supported (12),
    ciphering-and-or-integrity-protection-already-active (13),
    failure-in-the-radio-interface-procedure (14),
    release-due-to-utran-generated-reason (15),
    user-inactivity (16),
    time-critical-relocation (17),
    requested-traffic-class-not-available (18),
    invalid-rab-parameters-value (19),
    requested-maximum-bit-rate-not-available (20),
    requested-guaranteed-bit-rate-not-available (21),
    requested-transfer-delay-not-achievable (22),
    invalid-rab-parameters-combination (23),
    condition-violation-for-sdu-parameters (24),
    condition-violation-for-traffic-handling-priority (25),
    condition-violation-for-guaranteed-bit-rate (26),
    user-plane-versions-not-supported (27),
    iu-up-failure (28)
} (1..64)

CauseNon-Standard ::= INTEGER (129..256)

CauseTransmissionNetwork ::= INTEGER {
    logical-error-unknown-iu-transport-association (65)
} (65..80)
```

3GPP-RAN-WG3 Meeting #11
Sophia AntiPolis, France, 28 February - 3 March 2000

Document R3-000652
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.413	CR	010r1	Current Version:	3.0.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN#7	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME		UTRAN / Radio	X	Core Network	X

Source: NEC, Telecom Modus **Date:** 28 February 2000

Subject: CR to 25.413: Cause value related to relocation

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X
A	Corresponds to a correction in an earlier release	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

Reason for change:

Cause values which show the timer TRELOCalloc expiry, and the Relocation failure in Target CN/RNC or Target system are not present in current RANAP. This CR proposes to add these cause value as shown below:

- "TRELOCalloc Expiry" in Radio Network Layer Cause group
- "Relocation Failure in Target CN/RNC or Target System" in Radio Network Layer Cause group

Clauses affected: 8.6, 9.2.1.4, 9.3.4

Other specs affected:

Other 3G core specifications		→	List of CRs:
Other GSM core specifications		→	List of CRs:
MS test specifications		→	List of CRs:
BSS test specifications		→	List of CRs:
O&M specifications		→	List of CRs:

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

8.6 Relocation Preparation

8.6.1 General

The Purpose of the Relocation Preparation procedure is to prepare relocation of SRNS either with involving UE or without involving UE. Procedure shall be co-ordinated in all Iu signalling connections existing for the UE in order to allow Relocation Co-ordination in the target RNC. The procedure uses connection oriented signalling.

8.6.2 Successful Operation

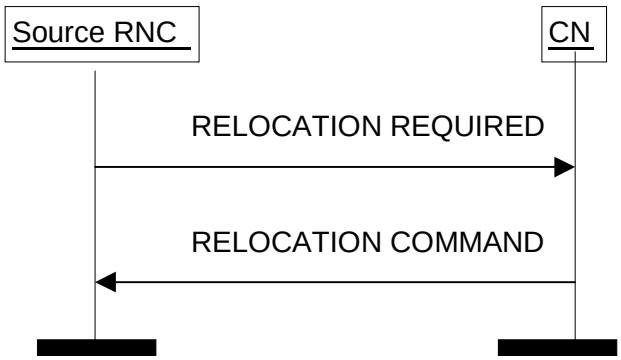

Figure 15: Relocation Preparation procedure. Successful operation.

The source RNC shall initiate the procedure by generating RELOCATION REQUIRED message. The source RNC shall decide whether to initiate the intra-system Relocation or the inter-system Relocation. In case of intra-system Relocation the source RNC shall indicate in the *Source ID* IE the RNC-ID of the source RNC and in the *Target ID* IE the RNC-ID of the target RNC. In case of inter-system Relocation the source RNC shall indicate in the *Source ID* IE the Service Area Identifier and in the *Target ID* IE the cell global identity of the target system. The source RNC shall indicate the appropriate cause value for the Relocation in the *Cause* IE.

The source RNC shall determine whether the relocation of SRNS shall be executed with or without involvement of UE. The source RNC shall set the *Relocation Type* IE accordingly to 'UE involved ' or 'UE not involved '.

The source RNC shall indicate in the RELOCATION REQUIRED message the amount of Iu signalling connections existing for the UE by setting correctly the *Number of Iu Instances* IE included in the *Source to Target RNC Transparent Container* IE. This container may also include the necessary information for Relocation co-ordination, security procedures and the handling of UE Capabilities. The container may include the RRC context to be relocated within the *RRC Container* IE.

The source RNC shall send the RELOCATION REQUIRED message to CN and the source RNC shall start the timer $T_{RELOCprep}$.

When the preparation including resource allocation in the target system is ready and CN has

decided to continue the relocation of SRNS, CN shall send RELOCATION COMMAND message to the source RNC and the CN shall start the timer $T_{RELOCcompl}$.
For each RAB originating from the PS domain, the RELOCATION COMMAND message may contain Iu transport address and Iu transport association to be used for the forwarding of the DL N-PDU duplicates towards the relocation target.
The Relocation Preparation procedure is terminated in CN by transmission of RELOCATION COMMAND message.
If *Relocation Type* IE was set to 'UE involved ' by the source RNC and if the target system does not support all existing RABs, the RELOCATION COMMAND message shall contain a list of RABs indicating all the RABs that are not supported by the target system. The source RNC shall pass this information to radio protocols.
Upon reception of RELOCATION COMMAND belonging to ongoing Relocation Preparation procedure the source RNC shall stop the timer $T_{RELOCprep}$, RNC shall start the timer $T_{RELOCOverall}$ and RNC shall terminate the procedure.
When Relocation Preparation procedure is terminated successfully and when the source RNC is ready, the source RNC should trigger the execution of relocation of SRNS.
In case of intersystem handover to GSM the RNC shall include *MS Classmark 2* and *MS Classmark 3* IEs received from the UE in the RELOCATION REQUIRED message to CN.
Interactions with other procedures:
If, after RELOCATION REQUIRED message is sent and before the Relocation Preparation procedure is terminated, the source RNC receives a RANAP message initiating an other connection oriented RANAP class 1 or class 3 procedure (except Iu RELEASE COMMAND, which shall be handled normally) via the same Iu signalling connection, the source RNC shall either:

1. cancel the Relocation Preparation procedure i.e. execute Relocation Cancel procedure and after successful completion of Relocation Cancel procedure the source RNC shall continue the initiated RANAP procedure.

or

2. terminate the initiated RANAP procedure without any changes in UTRAN by sending appropriate response message to CN. The source RNC shall then continue the relocation of SRNS.

If, after RELOCATION REQUIRED message is sent and before the Relocation Preparation procedure is terminated, the source RNC receives a connection oriented class 2 RANAP message via the same Iu signalling connection (except DIRECT TRANSFER message, which shall be handled normally) and if the source RNC does not decide to cancel the relocation of SRNS by initiating Relocation Cancel procedure, the source RNC shall ignore the received RANAP class 2 message.
After Relocation Preparation procedure is terminated successfully all RANAP messages (except Iu RELEASE COMMAND message, which shall be handled normally) received via the same Iu signalling bearer shall be ignored by the source RNC.

8.6.3 Unsuccessful Operation

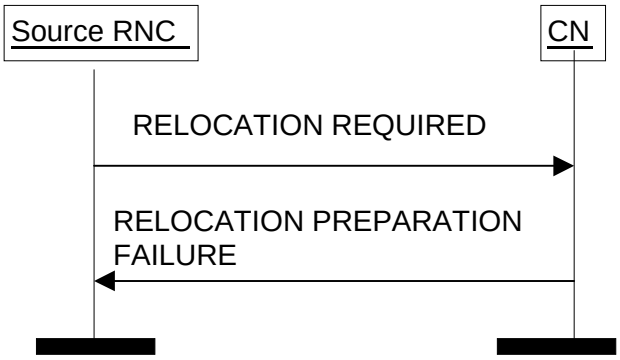

Figure 26: Relocation Preparation procedure. Unsuccessful operation.

If CN or target system is not able to even partially accept the relocation of SRNS or a failure occurs during the Relocation Preparation procedure in the CN or CN decides not to continue the relocation of SRNS, CN shall send RELOCATION PREPARATION FAILURE message to the source RNC.
RELOCATION PREPARATION FAILURE shall contain appropriate value for the *Cause*. IE' e.g. '$T_{RELOCalloc}$ expiry', 'Relocation Failure in Target CN/RNC or Target System'
Transmission of RELOCATION PREPARATION FAILURE terminates the procedure in CN. Reception of RELOCATION PREPARATION FAILURE terminates the procedure in UTRAN.
When Relocation preparation is unsuccessfully terminated the existing Iu signalling connection can be used normally.
If the Relocation Preparation procedure is terminated unsuccessfully, CN shall release the possibly existing Iu signalling connection for the same UE and related to the same relocation of SRNS towards the target RNC by initiating Iu Release procedure towards target RNC with an appropriate value for the *Cause* IE, e.g. 'Relocation Cancelled'.
Interactions with Relocation Cancel procedure:
If there is no response from the CN to the RELOCATION REQUIRED message before timer $T_{RELOCprep}$ expires in the source RNC, the source RNC shall cancel the Relocation Preparation procedure by initiating the Relocation Cancel procedure with appropriate value for the *Cause* IE, e.g. '$T_{RELOCprep}$ expiry'.

8.6.4 Abnormal Conditions

If the target RNC, which was indicated in the RELOCATION REQUIRED message, is not known to the CN:

1. The CN shall reject the relocation of SRNS by sending a RELOCATION PREPARATION FAILURE message to the source RNC with *Cause* IE set to 'Unknown target RNC'.

2. The CN shall continue to use the existing Iu connection towards the source RNC.

8.6.5 Co-ordination of Two Iu Signalling Connections

If Relocation Preparation procedure is to be initiated by RNC, RNC shall initiate simultaneously Relocation Preparation procedure on all Iu signalling connections existing for the UE.
The source RNC shall not trigger the execution of relocation of SRNS unless it has received

RELOCATION COMMAND message from all Iu signalling connections existing for the UE.
If the source RNC receives RELOCATION PREPARATION FAILURE message from CN, RNC shall initiate Relocation Cancel procedure on the other Iu signalling connection for the UE if the other Iu signalling connection exists and if the Relocation Preparation procedure is still ongoing or the procedure has terminated successfully in that Iu signalling connection.

9.2.1.4 Cause

The purpose of the cause information element is to indicate the reason for a particular event for the RANAP protocol.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Cause group	M		ENUMERATED (Radio Network Layer, Transport Layer, NAS, Protocol, Miscellaneous, Non-standard, …)	
CHOICE *Cause group*				
Radio Network Layer				
Radio Network Layer Cause	O	1 to 64	INTEGER (RAB pre-empted, Trelocoverall Expiry, Trelocprep Expiry, Treloccomplete Expiry, Tqueing Expiry, Relocation Triggered, Unable to Establish During Relocation, Unknown Target RNC, Relocation Cancelled, Successful Relocation, Requested Ciphering and/or Integrity Protection Algorithms not Supported, Change of Ciphering and/or Integrity Protection is not supported, Failure in the Radio Interface Procedure, Release due to UTRAN Generated Reason, User Inactivity, Time Critical Relocation, Requested Traffic Class not Available, Invalid RAB Parameters Value, Requested Maximum Bit Rate not Available, Requested Guaranteed Bit Rate not Available, Requested Transfer Delay not Achievable, Invalid RAB Parameters Combination, Condition Violation for SDU Parameters, Condition Violation	

			for Traffic Handling Priority, Condition Violation for Guaranteed Bit Rate, User Plane Versions not Supported, Iu UP Failure, TRELOCalloc Expiry (7), Relocation Failure in Target CN/RNC or Target System (29), …)	
Transmission Network				
Transport Layer Cause	O	65 to 80	INTEGER (Logical Error: Unknown Iu Transport Association,…)	
NAS				
NAS Cause	O	81 to 96	INTEGER (User Restriction Start Indication, User Restriction End Indication, Normal Release, …)	
Protocol				
Protocol Cause	O	97 to 112	INTEGER (Transfer Syntax Error, …)	
Miscellaneous				
Miscellaneous Cause	O	113 to 128	INTEGER (O&M Intervention, No Resource Available, Unspecified Failure, Network Optimisation, …)	
Non-standard				
Non-standard Cause	O	129 to 256	INTEGER (…)	

9.3.4 Information Element Definitions

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

RANAP-IEs -- { object identifier to be allocated }--
DEFINITIONS AUTOMATIC TAGS ::=

BEGIN
```

```
IMPORTS
    maxNrOfErrors,
    maxNrOfRABs,
    maxNrOfPoints,
    maxRAB-Subflows,
    maxRAB-SubflowCombination
FROM RANAP-Constants

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

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

-- A

AllocationOrRetentionPriority ::= SEQUENCE {
    priorityLevel         PriorityLevel,
    pre-emptionCapability     Pre-emptionCapability,
    pre-emptionVulnerability  Pre-emptionVulnerability,
    queuingAllowed            QueuingAllowed,
    iE-Extensions         ProtocolExtensionContainer { {AllocationOrRetentionPriority-ExtIEs} }
OPTIONAL,
    ...
}

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

AreaIdentity ::= CHOICE {
    sAI              SAI,
    geographicalArea     GeographicalArea,
    ...
}

-- B

BindingID                ::= OCTET STRING (SIZE (4))

-- C

CategorisationParameters      ::= INTEGER (0..15)

Cause ::= CHOICE {
```

```
    radioNetwork          CauseRadioNetwork,
    transmissionNetwork       CauseTransmissionNetwork,
    nAS               CauseNAS,
    protocol          CauseProtocol,
    misc              CauseMisc,
    non-Standard          CauseNon-Standard,
    ...
}

CauseMisc ::= INTEGER {
    om-intervention (129),
    no-resource-available (130),
    unspecified-failure (131),
    network-optimisation (132)
} (129..256)

CauseNAS ::= INTEGER {
    user-restriction-start-indication (81),
    user-restriction-end-indication (82),
    normal-release (83)
} (81..96)

CauseProtocol ::= INTEGER {
    transfer-syntax-error (97)
} (97..112)

CauseRadioNetwork ::= INTEGER {
    rab-pre-empted (1),
    trelocoverall-expiry (2),
    trelocprep-expiry (3),
    treloccomplete-expiry (4),
    tqueing-expiry (5),
    relocation-triggered (6),
    trellocalloc-expiry(7),
    unable-to-establish-during-relocation (8),
    unknown-target-rnc (9),
    relocation-cancelled (10),
    successful-relocation (11),
    requested-ciphering-and-or-integrity-protection-algorithms-not-supported (12),
    ciphering-and-or-integrity-protection-already-active (13),
    failure-in-the-radio-interface-procedure (14),
    release-due-to-utran-generated-reason (15),
    user-inactivity (16),
    time-critical-relocation (17),
    requested-traffic-class-not-available (18),
    invalid-rab-parameters-value (19),
    requested-maximum-bit-rate-not-available (20),
    requested-guaranteed-bit-rate-not-available (21),
    requested-transfer-delay-not-achievable (22),
```

```
    invalid-rab-parameters-combination (23),
    condition-violation-for-sdu-parameters (24),
    condition-violation-for-traffic-handling-priority (25),
    condition-violation-for-guaranteed-bit-rate (26),
    user-plane-versions-not-supported (27),
    iu-up-failure (28),
    relocation-failure-in-target-CN-RNC-or-target-system(29)
} (1..64)

CauseNon-Standard ::= INTEGER (129..256)

CauseTransmissionNetwork ::= INTEGER {
    logical-error-unknown-iu-transport-association (65)
} (65..80)
```

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e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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25.413	CR	062	Current Version:	3.0.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	RAN#7	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME		UTRAN / Radio	X	Core Network	X

Source: RAN-WG3 **Date:** 2000-02-25

Subject: Removal of interaction between Iu Release and Relocation Resource

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction		**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature	X		Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: After an unsuccessful Relocation Resource Allocation a subsequent Iu Release procedure should be avoided. There is the possibility the release the dedicated signalling connection between RNC and CN immediately while sending RELOCATION FAILURE.

Clauses affected: 8.7.3

Other specs affected:

Other 3G core specifications		→ List of CRs:	
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

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<--------- double-click here for help and instructions on how to create a CR.

8.7.3 Unsuccessful Operation

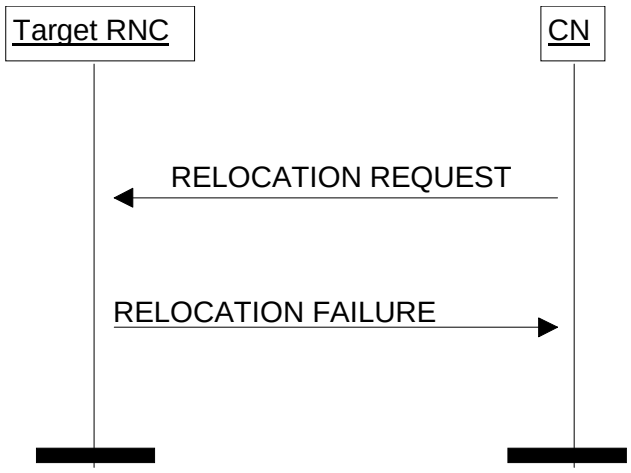

Figure 1: Relocation Resource Allocation procedure: Unsuccessful operation.

If target RNC can not even partially accept the relocation of SRNS or a failure occurs during the Relocation Resource Allocation procedure in the target RNC, the target RNC shall send RELOCATION FAILURE message to CN.

Transmission and reception of RELOCATION FAILURE message terminates the procedure in UTRAN and CN respectively.

~~**Interactions with Iu Release:**~~

When CN has received RELOCATION FAILURE message from target RNC, CN shall stop timer $T_{RELOCalloc}$ and shall assume possibly allocated resources within Target RNC completely released.~~CN shall initiate Iu Release procedure towards target RNC with an appropriate value for the *Cause* IE, e.g. 'Relocation Cancelled'.~~

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25.413	CR	063	Current Version:	3.0.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	RAN#7	for approval	X	strategic		*(for SMG use only)*
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME		UTRAN / Radio	X	Core Network	X

Source: RAN-WG3 **Date:** 2000-02-25

Subject: CN intitiated RAB release during ongoing RAB Assingment procedure

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: The RNC should be prepared to receive a RAB ASSIGNMENT REQUEST message with a release request for a certain RAB at any time and react properly.

Clauses affected: 8.2.2

Other specs affected:

Other 3G core specifications		→ List of CRs:	
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

help.doc

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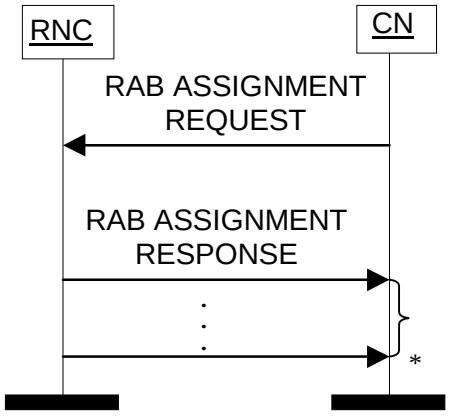
8.2 RAB Assignment

8.2.1 General

The purpose of the RAB Assignment procedure is to enable modifications and/or releases of already established RABs and/or the establishment of new RABs for a given UE. The procedure uses connection oriented signaling.

8.2.2 Successful Operation



* it can be several responses

Figure 1: RAB Assignment procedure.

The CN shall initiate the procedure by sending a RAB ASSIGNMENT REQUEST message. When sending the RAB ASSIGNMENT REQUEST, the CN shall start the $T_{RABAssgt}$ timer.

The CN may request UTRAN to:

- establish
- modify
- release

One or several RABs with one RAB ASSIGNMENT REQUEST message.

The message shall contain the information required by the UTRAN to build the new RAB configuration, such as

- list of RABs to establish or modify with their bearer characteristics
- list of RABs to release

For each RAB requested to establish or modify, the message shall contain:

- RAB ID
- NAS Binding Information
- RAB parameters (including e.g. Allocation/Retention Priority)
- Data Volume Reporting Indication (only for PS)
- User Plane Mode
- Transport Layer Address
- Iu Transport Association
- DL GTP-PDU sequence number (only in case of handover from GPRS to UMTS)

- UL GTP-PDU sequence number (only in case of handover from GPRS to UMTS)
- DL N-PDU sequence number (only in case of handover from GPRS to UMTS)
- DL N-PDU sequence number (only in case of handover from GPRS to UMTS)

For each RAB request to release, the message shall contain:

- RAB ID
- Cause

For each RAB requested to establish the message shall contain:

DL GTP-PDU sequence number (in case of the RAB being established for an existing PDP context or in case of handover from GPRS to UMTS)

UL GTP-PDU sequence number (in case of the RAB being established for an existing PDP context or in case of handover from GPRS to UMTS)

Upon reception of the RAB ASSIGNMENT REQUEST message UTRAN shall execute the requested RAB configuration.

The RAB ID shall identify uniquely the RAB over the Iu instance on which the RAB ASSIGNMENT REQUEST message is received. If conflict arises with already established RABs (e.g. same RAB ID already in use over that particular Iu instance), the RNC shall respond to the RAB ASSIGNMENT REQUEST message with the unsuccessful outcome for that particular requested RAB.

The RNC shall be prepared to receive a RAB ASSIGNMENT REQUEST message containing a *RABs to be released* IE at any time and shall always reply to it. If there is an ongoing RAB Assignment procedure for a RAB indicated within the *RABs to be released* IE, the RNC shall discard the preceding RAB Assignment procedure for that specific RAB, release any related resources and report the released RAB within the RAB ASSIGNMENT RESPONSE message.

The RNC shall pass the *NAS Binding Information* IE transparently to the radio interface protocol for each RAB requested to establish or modify.

The RNC shall establish the resources according to the values of the *Allocation/Retention Priority* IE (priority level, pre-emption indication, queuing) and the resource situation as follows:

- The RNC shall consider the priority level of the requested RAB, when deciding on the resource allocation.
- If the requested RAB is allowed for queuing and the resource situation requires, RNC may place the RAB in the establishment queue.
- The priority levels and the pre-emption indicators may (singularly or in combination) be used to determine whether the RAB assignment has to be performed unconditionally and immediately. If the requested RAB is allowed to pre-empt and the resource situation requires, RNC may trigger the pre-emption procedure which may then cause the forced release of a lower priority RAB vulnerable for pre-emption, if no free resource is immediately available.Whilst the process and the extent of the pre-emption procedure is operator dependent, the pre-emption indicators, if given in the RAB ASSIGNMENT REQUEST, shall be treated as follows:

  1. the last received "Pre-emption Vulnerability indicator" and priority levels shall prevail.
  2. if the "Pre-emption Capability indicator" is set, then this allocation request may trigger the running of the pre-emption procedure.
  3. if the "Pre-emption Capability indicator" is not set, then this allocation request may not trigger the pre-emption procedure.
  4. if the "Pre-emption Vulnerability indicator" is set, then this connection is vulnerable and shall be included in the pre-emption process.
  5. if the "Pre-emption Vulnerability" bit is not set, then this connection is not vulnerable to pre-emption and shall not be included in the pre-emption process.
  6. if no priority has been indicated, both "Pre-emption Capability" and "Pre-emption Vulnerability" indicators shall not be considered.

- The UTRAN pre-emption process shall keep the following rules:

  1. UTRAN shall only pre-empt RABs with lower priority, in ascending order of priority.

  2. The pre-emption can be done for RABs belonging to the same UE or to other UEs.

UTRAN shall report to CN the outcome of the request by sending RAB ASSIGNMENT RESPONSE message(s).

UTRAN shall report to CN, in one RAB ASSIGNMENT RESPONSE message, the result for all the requested RABs, such as:

- List of RABs successfully established
- List of RABs successfully modified RABs
- List of RABs released
- List of RABs failed to establish or modify or release
- List of RABs queued

If none of the RABs have been queued, the CN shall stop timer $T_{RABAssgt.}$ And the *RAB Assignment* procedure terminates. In that case, the procedure shall also be terminated in UTRAN.

When the request to establish or modify one or several RABs is put in the queue, UTRAN shall start the timer $T_{QUEUING}$. This timer specifies the maximum time for queuing of the request of establishment or modification. The same timer $T_{QUEUING}$ is supervising all RABs being queued.

For each RABs that are queued the following outcomes shall be possible:

- successfully established or modified
- failed to establish or modify
- failed due to expiry of the timer $T_{QUEUING}$

For the queued RABs, indicated in the first RAB ASSIGNMENT RESPONSE message, UTRAN shall report the outcome of the queuing in the case of $T_{QUEUING}$ expiry, for every RAB individually or for several RABs in subsequent RAB ASSIGNMENT RESPONSE message(s). This is left to implementation. UTRAN shall stop $T_{QUEUING}$ when all RABs have been either successfully established or modified or failed to establish or modify. The *RAB Assignment* procedure is then terminated both in CN and UTRAN.

When CN receives the response that one or several RABs are queued, CN shall expect UTRAN to provide the outcome of the queuing function for each RAB before expiry of the $T_{RABAssgt}$ timer. In case the timer $T_{RABAssgt}$ expires, the CN shall consider the *RAB Assignment* procedure terminated and the not reported RABs shall be considered as failed.

In the case the timer $T_{QUEUING}$ expires, the *RAB Assignment* procedure terminates in UTRAN for all queued RABs, and UTRAN shall respond for all of them in one RAB ASSIGNMENT RESPONSE message. The *RAB Assignment* procedure shall also be terminated in CN.

UTRAN shall report the outcome of a specific RAB to establish or modify only after the transport network control plane signalling, which is needed for RAB establishment or modification, has been executed. The transport network control plane signalling shall use the *Transport Layer Address* IE and *Iu Transport Association* IE.

After reporting the outcome of a specific RAB to establish or modify, the RNC shall initiate the user plane mode as requested by the CN in the *User Plane Mode* IE. This initialisation is described in ref.[6].

When UTRAN reports unsuccessful modification of RAB configuration the cause value should be precise enough to enable the core network to know the reason for unsuccessful modification. Typical cause values are: "Requested Traffic Class not Available", "Invalid RAB Parameters Value", "Requested Maximum Bit Rate not Available", "Requested Guaranteed Bit Rate not Available", "Requested Transfer Delay not Achievable", "Invalid RAB Parameters Combination", "Condition Violation for SDU Parameters", "Condition Violation for Traffic Handling Priority", "Condition Violation for Guaranteed Bit Rate", "User Plane Versions not Supported", "Iu UP Failure".

8.2.3 Unsuccessful Operation

The unsuccessful operation for this Class 3 Elementary procedure is described under the Successful Operation chapter.

8.2.4 Abnormal Conditions

Interactions with Relocation Preparation:

If the relocation becomes absolutely necessary during the RAB Assignment in order to keep the communication with the UE, the RNC may interrupt the ongoing RAB Assignment procedure and initiate the Relocation Preparation procedure as follows:

1. The RNC shall terminate the RAB Assignment procedure indicating unsuccessful RAB configuration modification:
   - for all queued RABs,
   - for RABs not already established or modified and
   - for RABs not already released with the cause 'Relocation triggered'.
2. The RNC shall terminate the RAB Assignment procedure indicating successful RAB configuration modification:
   - for RABs already established or modified but not yet reported to the CN and
   - for RABs already released but not yet reported to the CN.
3. The RNC shall report this outcome of the procedure in one RAB ASSIGNMENT RESPONSE message.
4. The RNC shall invoke relocation by sending the RELOCATION REQUIRED to the active CN node(s).
5. The CN shall terminate the RAB Assignment procedure at reception of the RAB ASSIGNMENT RESPONSE message.

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Sophia Antipolis, France, 28 February - 3 March 2000

***Document* R3-000704**
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25.413	CR	066	Current Version:	3.0.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN#7	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [ ] UTRAN / Radio [X] Core Network [ ]

Source: RAN WG3 **Date:** 22 Feb 2000

Subject: Editorial changes to RANAP

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction		**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification	X		Release 99	X
				Release 00	

Reason for change: Editorial changes to RANAP for better readability. The level of indentation has been indicated by arrows.

Clauses affected: 9.1, 9.2

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

9 Elements for RANAP Communication

9.1 Message Contents

NOTE: The messages have been defined in accordance to the quidelines specified in UMTS 25.921.

For each message there is, a table listing the signalling elements in their order of appearance in the transmitted message.

All the RANAP messages are listed in the following table:

Table 1: List of RANAP messages.

Message name	Reference
RAB ASSIGNMENT REQUEST	9.1.1
RAB ASSIGNMENT RESPONSE	9.1.2
RAB RELEASE REQUEST	9.1.3
IU RELEASE REQUEST	9.1.4
IU RELEASE COMMAND	9.1.5
IU RELEASE COMPLETE	9.1.6
RELOCATION REQUIRED	9.1.7
RELOCATION REQUEST	9.1.8
RELOCATION REQUEST ACKNOWLEDGE	9.1.9
RELOCATION COMMAND	9.1.10
RELOCATION DETECT	9.1.11
RELOCATION COMPLETE	9.1.12
RELOCATION PREPARATION FAILURE	9.1.13
RELOCATION FAILURE	9.1.14
RELOCATION CANCEL	9.1.15
RELOCATION CANCEL ACKNOWLEDGE	9.1.16
SRNS CONTEXT REQUEST	9.1.17
SRNS CONTEXT RESPONSE	9.1.18
SRNS DATA FORWARD COMMAND	9.1.19
FORWARD SRNS CONTEXT	9.1.20
PAGING	9.1.21
COMMON ID	9.1.22
CN INVOKE TRACE	9.1.23
SECURITY MODE COMMAND	9.1.24
SECURITY MODE COMPLETE	9.1.25
SECURITY MODE REJECT	9.1.26
LOCATION REPORTING CONTROL	9.1.27
LOCATION REPORT	9.1.28
DATA VOLUME REPORT REQUEST	9.1.29
DATA VOLUME REPORT	9.1.30
INITIAL UE MESSAGE	9.1.31
DIRECT TRANSFER	9.1.32
CN INFORMATION BROADCAST REQUEST	9.1.33
CN INFORMATION BROADCAST CONFIRM	9.1.34
CN INFORMATION BROADCAST REJECT	9.1.35
OVERLOAD	9.1.36
RESET	9.1.37
RESET ACKNOWLEDGE	9.1.38
ERROR INDICATION	9.1.39

All information elements in the message descriptions below are marked mandatory, optional or conditional according to the following table:

Table 2: Meaning of abbreviations used in RANAP messages.

Abbreviation	Meaning
M	IE's marked as Mandatory (M) will always be included in the message.
O	IE's marked as Optional (O) may or may not be included in the message.
C	IE's marked as Conditional (C) will be included in a message only if the condition is satisfied. Otherwise the IE is not included.

9.1.1 RAB ASSIGNMENT REQUEST

This message is sent by the CN to request the establishment, modification or release of one or more RABs for the same UE.

Direction: CN → RNC

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
RABs to be setup or modified	C – ifNoOtherGroup	0 to <maxnoofRABs>		
>RAB ID	M		9.2.1.2	The same RAB ID must only be present in one group.
>NAS Binding Information	M		9.2.3.1	
>RAB parameters	M		9.2.1.3	Includes all necessary parameters for RABs (both for MSC and SGSN) including QoS.
>Data Volume Reporting Indication	C - ifPS		9.2.1.17	
>User Plane Information				
>>User Plane mode	M		9.2.1.18	
>>UP Mode Versions	M		9.2.1.19	
>Transport Layer Address	M		9.2.2.1	
>Iu Transport Association	M		9.2.2.2	
>DL GTP-PDU sequence number	C- ifPS		9.2.2.3	
>UL GTP-PDU sequence number	C- ifPS		9.2.2.4	
>DL N-PDU sequence number	C- ifPS		9.2.1.33	
>UL N-PDU sequence number	C- ifPS		9.2.1.34	
RABs to be released	C - ifNoOtherGroup	0 to <maxnoofRABs>		
>RAB ID	M		9.2.1.2	The same RAB ID must only be present in one group.
>Cause	M		9.2.1.4	

Condition	Explanation
IfPS	This IE is only present for RABs towards the PS domain.
IfNoOtherGroup	This group must be present at least when no other group is present, i.e. at least one group must be present.

Range bound	Explanation
MaxnoofRABs	Maximum no. of RABs for one UE. Value is 256.

9.1.2 RAB ASSIGNMENT RESPONSE

This message is sent by the RNC to report the outcome of the request from the message RAB ASSIGNMENT REQUEST.

Direction: RNC → CN

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
RABs setup or modified	C - ifNoOtherGroup	0 to <maxnoofRABs>		
>RAB ID	M		9.2.1.2	The same RAB ID must only be present in one group.
>Chosen UP Version	O		9.2.1.20	Included at least when a choice is made by UTRAN
>Transport Layer Address	C - ifPS		9.2.2.1.	
>Iu Transport Association	C - ifPS		9.2.2.2	
RABs released	C – ifNoOtherGroup	0 to <maxnoofRABs>		
>RAB ID	M		9.2.1.2	The same RAB ID must only be present in one group.
>Data Volume	C – ifReqPS	0 to <maxnoofVol>		
>>Unsuccessfully Transmitted DL Data Volume	M		9.2.3.13	
>>Data Volume Reference	O		9.2.3.14	
DL GTP-PDU Sequence Number	C-ifUiPS		9.2.2.3	
UL GTP-PDU Sequence Number	C-ifUiPS		9.2.2.4	
RABs queued	C – ifNoOtherGroup	0 to <maxnoofRABs>		
>RAB ID	M		9.2.1.2	The same RAB ID must only be present in one group.
RABs failed to setup or modify	C – ifNoOtherGroup	0 to <maxnoofRABs>		
>RAB ID	M		9.2.1.2	The same RAB ID must only be present in one group.
>Cause	M		9.2.1.4	
RABs failed to release	C – ifNoOtherGroup	0 to <maxnoofRABs>		
>RAB ID	M		9.2.1.2	The same RAB ID must only be present in one group.
>Cause	M		9.2.1.4.	

Condition	Explanation
IfPS	This IE is only present for RABs towards the PS domain.
IfNoOtherGroup	This group must be present at least when no other group is present, i.e. at least one group must be present.
IfReqPS	This IE is only present if data volume reporting for PS domain is required.
IfUiPS	This group is only present for RABs towards the PS domain when the release was initiated by UTRAN.

Range bound	Explanation
MaxnoofRABs	Maximum no. of RABs for one UE. Value is 256.
MaxnoofVol	Maximum no. of reported data volume for one RAB(value is 2).

9.1.3 RAB RELEASE REQUEST

This message is sent by the RNC, to request the CN to release one or more RABs for the same UE.

Direction: RNC → CN

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
RABs to be released		1 to <maxnoofRABs>		
>RAB ID	M		9.2.1.2	
>Cause	M		9.2.1.4	

Range bound	Explanation
MaxnoofRABs	Maximum no. of RABs for one UE. Value is 256.

9.1.4 IU RELEASE REQUEST

This message is sent by the RNC to request the CN to release the Iu connection.

Direction: RNC → CN

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
Cause	M		9.2.1.4	

9.1.5 IU RELEASE COMMAND

This message is sent by the CN to order RNC to release all resources related to the Iu connection.

Direction: CN → RNC

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
Cause	M		9.2.1.4	

9.1.6 IU RELEASE COMPLETE

This message is sent by the RNC as response to the IU RELEASE COMMAND message.

Direction: RNC → CN

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
RABs Data Volume Report	C – ifReqPS	0 to <maxnoofRABs>		
>RAB ID	M		9.2.1.2	
>Data Volume		0 to <maxnoofVol>		
>>Unsuccessfully Transmitted DL Data Volume	M		9.2.3.13	
>>Data Volume Reference	O		9.2.3.14	
RABs Released	C-ifUiPS	0 to <maxnoofRABs>		
>RAB ID	M		9.2.1.2	
>DL GTP-PDU Sequence Number	M		9.2.2.3	
>UL GTP-PDU Sequence Number	M		9.2.2.4	
Criticality Diagnostics	O		9.2.1.35	

Condition	Explanation
IfReqPS	This Group is only present if data volume reporting for PS domain is required.
IfUiPS	This group is only present for RABs towards the PS domain when the release was initiated by UTRAN.

Range bound	Explanation
maxnoofRABs	Maximum no. of RABs for one UE. Value is 256.
MaxnoofVol	Maximum no. of reported data volume for one RAB. (value is 2)

9.1.7 RELOCATION REQUIRED

This message is sent by the source RNC to inform the CN that a relocation is to be performed.

Direction: RNC → CN

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
Relocation Type	M		9.2.1.23	
Cause	M		9.2.1.4	
Source ID	M		9.2.1.24	
Target ID	M		9.2.1.25	
MS Classmark 2	C - ifGSMtarget		9.2.1.26	Defined in UMTS 24.008 [8].
MS Classmark 3	C - ifGSMtarget		9.2.1.27	Defined in UMTS 24.008 [8].
Source RNC to target RNC transparent container	M		9.2.1.28	
Old BSS to new BSS Information	C - ifGSMtarget		9.2.1.29	Defined in GSM 08.08 [11].

Condition	Explanation
ifGSMtarget	This IE is only present when initiating an inter system handover towards GSM BSS.

9.1.8 RELOCATION REQUEST

This message is sent by the CN to request the target RNC to allocate necessary resources for a relocation.

Direction: CN → RNC

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
Permanent NAS UE Identity	C - ifAvail		9.2.3.2	
Cause	M		9.2.1.4	
CN Domain Indicator	M		9.2.1.5	
Source RNC to target RNC transparent container	M		9.2.1.28	
RABs to be setup		0 to <maxnoofRABs>		
>RAB ID	M		9.2.1.2	
>NAS Binding Information	M		9.2.3.1	
>RAB parameters	M		9.2.1.3	
>Data Volume Reporting Indication	C - ifPS		9.2.1.17	
>User Plane Information				
>>User Plane mode	M		9.2.1.18	
>>UP Mode Versions	M		9.2.1.19	
>Transport Layer Address	M		9.2.2.1	
>u Transport Association	M		9.2.2.2	
Integrity Protection Information	M		9.2.1.11	Integrity Protection Information includes key and permitted algorithms.
Encryption Information	O		9.2.1.12	Encryption Information includes key and permitted algorithms.

Condition	Explanation
ifAvail	This IE is only present if available at the sending side.
IfPS	This IE is only present for RABs towards the PS domain.

Range bound	Explanation
maxnoofRABs	Maximum no. of RABs for one UE. Value is 256.

9.1.9 RELOCATION REQUEST ACKNOWLEDGE

This message is sent by the target RNC to inform the CN about the result of the resource allocation for the requested relocation.

Direction: RNC → CN

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
Target RNC to Source RNC Transparent Container	C - IfApplNotOtherCN		9.2.1.30	
RABs setup	C - ifPS	0 to <maxnoofRABs		
>RAB ID	M		9.2.1.2	
>Chosen UP Version	O		9.2.1.20	Included at least when a choice is made by UTRAN.
>Transport Layer Address	M		9.2.2.1	
>Iu Transport Association	M		9.2.2.2	
RABs failed to setup	C - ifNoOtherGroup	0 to <maxnoofRABs		
>RAB ID	M		9.2.1.2	
>Cause	M		9.2.1.4	
Chosen Integrity Protection Algorithm	M		9.2.1.13	Indicates which algorithm that will be used by the target RNC.
Chosen Encryption Algorithm	O		9.2.1.14	Indicates which algorithm that will be used by the target RNC.
Criticality Diagnostics	O		9.2.1.35	

Condition	Explanation
IfPS	This Group is only present for RABs towards the PS domain.
IfNoOtherGroup	This group must be present at least when no other group is present, i.e. at least one group must be present.
IfApplNotOtherCN	Must be included if applicable and if not sent via the other CN.

Range bound	Explanation
maxnoofRABs	Maximum no. of RABs for one UE. Value is 256.

9.1.10 RELOCATION COMMAND

This message is sent by the CN to source RNC to inform that resources for the relocation are allocated in target RNC.

Direction: CN → RNC

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
Target RNC to Source RNC Transparent Container	C - ifApplNotOtherCN		9.2.1.30	
L3 Information	C - ifGSMsource		9.2.1.31	Defined in GSM 08.08 [11].
RABs to be released		0 to <maxnoofRABs		
>RAB ID	M		9.2.1.2	
RABs subject to data forwarding	C - ifPS	0 to <maxnoofRABs>		
>RAB ID	M		9.2.1.2	
>Transport Layer Address	M		9.2.2.1	
>Iu Transport Association	M		9.2.2.2	
Criticality Diagnostics	O		9.2.1.35	

Condition	Explanation
ifApplNotOtherCN	Must be included if applicable and if not sent via the other CN.
IfGSMsource	This IE is only present when the source of an inter system handover is GSM BSS.
IfPS	This Group is only present for RABs towards the PS domain.

Range bound	Explanation
maxnoofRABs	Maximum no. of RABs for one UE. Value is 256.

9.1.11 RELOCATION DETECT

This message is sent by the target RNC to inform the CN that the relocation execution trigger has been received.

Direction: RNC → CN

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	

9.1.12 RELOCATION COMPLETE

This message is sent by the target RNC to inform the CN that the relocation is completed.

Direction: RNC → CN

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	

9.1.13 RELOCATION PREPARATION FAILURE

This message is sent by the CN to the source RNC if the relocation preparation failed.

Direction: CN → RNC

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
Cause	M		9.2.1.4	
Criticality Diagnostics	O		9.2.1.35	

9.1.14 RELOCATION FAILURE

This message is sent by the target RNC to inform the CN that the requested resource allocation failed.

Direction: RNC → CN

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
Cause	M		9.2.1.4	
Criticality Diagnostics	O		9.2.1.35	

9.1.15 RELOCATION CANCEL

This message is sent by the source RNC to the CN to cancel an ongoing relocation.

Direction: RNC → CN

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
Cause	M		9.2.1.4	

9.1.16 RELOCATION CANCEL ACKNOWLEDGE

This message is sent by the CN to the source RNC when the relocation has been cancelled.

Direction: CN → RNC

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
Criticality Diagnostics	O		9.2.1.35	

9.1.17 SRNS CONTEXT REQUEST

This message is sent by the CN to source RNC to indicate the PS RABs for which context transfer shall be performed.

Direction: CN → RNC

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
RABs subject to data forwarding		1 to <maxnoofRABs>		
>RAB ID	M		9.2.1.2	

Range bound	Explanation
maxnoofRABs	Maximum no. of RABs for one UE. Value is 256.

9.1.18 SRNS CONTEXT RESPONSE

This message is sent by the source RNC as a response to SRNS CONTEXT REQUEST.

Direction: RNC → CN

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
Cause	M		9.2.1.4	
RABs Contexts		1 to <maxnoofRABs>		
>RAB ID	M		9.2.1.2	
>DL GTP-PDU Sequence Number	M		9.2.2.3	
>UL GTP-PDU Sequence Number	M		9.2.2.4	
>DL N-PDU Sequence Number	M		9.2.1.33	
>UL N-PDU Sequence Number	M		9.2.1.34	
Criticality Diagnostics	O		9.2.1.35	

Range bound	Explanation
maxnoofRABs	Maximum no. of RABs for one UE. Value is 256.

9.1.19 SRNS DATA FORWARD COMMAND

This message is sent by the CN to the RNC to trigger the transfer of N-PDUs from the RNC to the CN in inter system forward handover.

Direction: CN → RNC

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
RABs subject to data forwarding	C - ifPS	0 to <maxnoofRABs>		
>RAB ID	M		9.2.1.2	
>Transport Layer Address	M		9.2.2.1	
>Iu Transport Association	M		9.2.2.2	

Condition	Explanation
ifPS	This Group is only present for RABs towards the PS domain.

Range bound	Explanation
maxnoofRABs	Maximum no. of RABs for one UE. Value is 256.

9.1.20 FORWARD SRNS CONTEXT

This message is sent either by source RNC to the CN or by the CN to target RNC.

Direction: CN → RNC and RNC → CN

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
RAB Contexts x n		1 to <maxnoofRABs>		
>RAB ID	M		9.2.1.2	
>DL GTP-PDU Sequence Number	M		9.2.2.3	
>UL GTP-PDU Sequence Number	M		9.2.2.4	
>DL N-PDU Sequence Number	M		9.2.1.33	
>UL N-PDU Sequence Number	M		9.2.1.34	

Range bound	Explanation
maxnoofRABs	Maximum no. of RABs for one UE. Value is 256.

9.1.21 PAGING

This message is sent by the CN to request UTRAN to page a specific UE.

Direction: CN → RNC

Signalling bearer mode: Connectionless.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
CN Domain Indicator	M		9.2.1.5	
Permanent NAS UE Identity	M		9.2.3.2	
Temporary UE Identity	O		9.2.3.3	
Paging Area ID	O		9.2.1.21	
Paging Cause	O		9.2.3.4	
Non Searching Indication	O		9.2.1.22	

9.1.22 COMMON ID

This message is sent by the CN to inform RNC about the permanent NAS UE identity for a user.

Direction: CN → RNC

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
Permanent NAS UE Identity (e.g. IMSI)	M		9.2.3.2	

9.1.23 CN INVOKE TRACE

This message is sent by the CN to request the RNC to start to produce a trace record.

Direction: CN → RNC

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
Trace Type	M		9.2.1.6	
Trace Reference	M		9.2.1.8	
Trigger ID	O		9.2.1.7	
UE Identity	O		9.2.1.9	
OMC ID	O		9.2.1.10	

9.1.24 SECURITY MODE COMMAND

This message is sent by the CN to trigger the integrity and ciphering functions over the radio interface.

Direction: CN → RNC

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
Integrity Protection Information	M		9.2.1.11	Integrity information includes key(s) and permitted algorithms.
Encryption Information	O		9.2.1.12	Encryption information includes key(s) and permitted algorithms.

9.1.25 SECURITY MODE COMPLETE

This message is sent by the RNC as a successful response to SECURITY MODE COMMAND.

Direction: RNC → CN

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
Chosen Integrity Protection Algorithm	M		9.2.1.13	
Chosen Encryption Algorithm	O		9.2.1.14	
Criticality Diagnostics	O		9.2.1.35	

9.1.26 SECURITY MODE REJECT

This message is sent by the RNC as a unsuccessful response to SECURITY MODE COMMAND.

Direction: RNC → CN

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
Cause	M		9.2.1.4	
Criticality Diagnostics	O		9.2.1.35	

9.1.27 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
Message Type	M		9.2.1.1	
Request Type	M		9.2.1.16	

9.1.28 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
Message Type	M		9.2.1.1	
Area Identity	O		9.2.3.11	
Cause	O		9.2.1.4	

9.1.29 DATA VOLUME REPORT REQUEST

This message is sent by the CN to request unsuccesfully transmitted data volumes for specific RABs.

Direction: CN → RNC

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
RABs Data Volume Report		1 to <maxnoofRABs>		
>RAB ID	M		0	

Range bound	Explanation
maxnoofRABs	Maximum no. of RABs for one UE. Value is 256.

9.1.30 DATA VOLUME REPORT

This message is sent by the RNC and informs the CN about unsuccesfully transmitted data volumes for requested RABs.

Direction: RNC → CN

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
RABs Data Volume Report		1 to <maxnoofRABs>		
>RAB ID	M		9.2.1.2	
>Data Volume		0 to <maxnoofVol>		
>>Unsuccessfully Transmitted DL Data Volume	M		9.2.3.13	
>>Data Volume Reference	O		9.2.3.14	
Criticality Diagnostics	O		9.2.1.35	

Range bound	Explanation
maxnoofRABs	Maximum no. of RABs for one UE. Value is 256.
MaxnoofVol	Maximum no. of reported data volume for one RAB. (value is 2)

9.1.31 INITIAL UE MESSAGE

This message is sent by the RNC to transfer the radio interface initial layer 3 message to the CN.

Direction: RNC → CN

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
CN Domain Indicator	M		9.2.1.5	
LAI	M		9.2.3.7	
RAC	C - ifPS		9.2.3.8	
SAI	M		9.2.3.10	
NAS-PDU	M		9.2.3.6	

Condition	Explanation
ifPS	This IE is only present for RABs towards the PS domain.

9.1.32 DIRECT TRANSFER

This message is sent by both the CN and the RNC and is used for carrying NAS information over the Iu interface

Direction: RNC → CN and CN → RNC

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
NAS-PDU	M		9.2.3.6	
LAI	C – ifPS2CN		9.2.3.7	
RAC	C – ifPS2CN		9.2.3.8	
SAPI	C – ifDL		9.2.3.9	

Condition	Explanation
IfPS2CN	This IE is only present if the message is directed to the PS domain.
IfDL	This IE is always used in downlink direction.

9.1.33 CN INFORMATION BROADCAST REQUEST

This message is sent by the CN and includes information to be broadcasted to all users.

Direction: CN → RNC

Signalling bearer mode: Connectionless.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
CN Domain Indicator	M		9.2.1.5	
CN Broadcast Information piece		1 to <maxnoofPieces>		
>NAS Broadcast Information	M		9.2.3.5	
>Area Identity	M		9.2.3.11	
>Categorisation Parameters	M		9.2.1.15	

Range bound	Explanation
maxnoofPieces	Maximum no. of Broadcast Information Pieces in one message. Value is 16.

9.1.34 CN INFORMATION BROADCAST CONFIRM

This message is sent by the RNC as a successful response to CN INFORMATION BROADCAST REQUEST.

Direction: RNC → CN

Signalling bearer mode: Connectionless.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
CN Domain Indicator	M		9.2.1.5	
Criticality Diagnostics	O		9.2.1.35	

9.1.35 CN INFORMATION BROADCAST REJECT

This message is sent by the RNC as a unsuccessful response to CN INFORMATION BROADCAST REQUEST.

Direction: RNC → CN

Signalling bearer mode: Connectionless.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
CN Domain Indicator	M		9.2.1.5	
Cause	M		9.2.1.4	
Criticality Diagnostics	O		9.2.1.35	

9.1.36 OVERLOAD

This message is sent by both the CN and the RNC to indicate that the node is overloaded.

Direction: RNC → CN and CN → RNC

Signalling bearer mode: Connectionless.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
Number of steps	O		9.2.1.32	

9.1.37 RESET

This message is sent by both the CN and the RNC and is used to request that the other node shall be reset.

Direction: RNC → CN and CN → RNC

Signalling bearer mode: Connectionless.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
Cause	M		9.2.1.4	
CN Domain Indicator	M		9.2.1.5	

9.1.38 RESET ACKNOWLEDGE

This message is sent by both the CN and the RNC as a response to RESET.

Direction: RNC → CN and CN → RNC

Signalling bearer mode: Connectionless.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
CN Domain Indicator	M		9.2.1.5	
Criticality Diagnostics	O		9.2.1.35	

9.1.39 ERROR INDICATION

This message is sent by both the CN and the RNC and is used to indicate that some error has been detected in the node.

Direction: RNC → CN and CN → RNC

Signalling bearer mode: Connection oriented or connectionless.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
Cause	C-ifalone		9.2.1.4	
Criticality Diagnostics	C-ifalone		9.2.1.35	
CN Domain Indicator	O		9.2.1.5	
Transport Layer Address	O		9.2.2.1	
Iu Transport Association	O		9.2.2.2	

Condition	Explanation
C_ifalone	At least either of Cause IE or Criticality Diagnostics IE shall be present.

9.2 Information Element Definitions

9.2.1 Radio Network Layer Related IEs

9.2.1.1 Message Type

Message type uniquely identifies the message being sent. It is mandatory for all messages.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		INTEGER (1....256)	Assumed max no of messages is 256.

9.2.1.2 RAB ID

This element uniquely identifies the radio access bearer over one Iu connection. The radio access bearer identification has only local significance in one Iu connection. The RAB ID shall remain the same for the duration of the RAB.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
RAB ID	M		INTEGER (1...256)	

9.2.1.3 RAB Parameters

The purpose of the RAB parameters IE group and other parameters within the RAB parameters IE group is to indicate all RAB attributes as defined in [7] for both directions.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
RAB parameters				
>Traffic Class	M		ENUMERATED (conversational, streaming, interactive, background, ...)	
>Maximum Bit Rate	M		INTEGER (0..16,000,000)	The unit is: bit
>Guaranteed Bit Rate	M		INTEGER (0..16,000,000)	The unit is: bit Delay and reliability attributes only apply up to the guaranteed bit rate Conditional value: • Set to lowest rate controllable RAB Subflow Combination rate given by the largest RAB Subflow Combination SDU size, when present and calculated periodicly • Set to N/A (=0) when traffic class indicates Interactive or Background
>Delivery Order	M		ENUMERATED (delivery order requested, delivery order not requested)	Delivery order requested: in sequence delivery shall be guaranteed by UTRAN on all RAB SDUs Delivery order not requested: in sequence delivery is not required from UTRAN
>Maximum SDU size	M		INTEGER (0..32768)	Conditional value: set to largest RAB Subflow Combination SDU size when present The unit is bit
>SDU parameters		1 to <maxRABSubflows>	See below	
>Transfer Delay	M		INTEGER (0..65535)	Delay attribute Unit is millisecond. Set to N/A (65535) when traffic class is set interactive or background.
>Traffic Handling priority	M		INTEGER {spare (0), highest (1), lowest (14), no priority used (15)} (0…15)	Conditional value: set to N/A (=0) for all traffic classes except "Interactive"
>Allocation/Retention priority	M		See below	
>Source Statistics descriptor	M		ENUMERATED (N/A, speech, unknown, …)	Conditional value: set to N/A when traffic class is set to Interactive or Background

Range Bound	Explanation
MaxRABSubflows	Number of RAB Sublfows

IE/Group Name	Presence	Range	IE type and reference	Semantics description
SDU parameters				
Choice SDU Error Ratio	M			Reliability attribute Conditional value: set to N/A (=1) when the Delivery of Erroneous SDU is set to "-"
>NULL				
>SDU Error Ratio				
>>Mantissa	M		INTEGER (1..9)	
>>Exponent	M		INTEGER (1..6)	
Choice Residual Bit Error Ratio	M			Reliability attribute
>NULL				
>Residual Bit Error Ratio				
>>Mantissa	M		INTEGER (1..9)	
>>Exponent	M		INTEGER (1..8)	
Delivery of Erroneous SDU	M		ENUMERATED (yes, no, -)	Reliability attribute Yes: error detection applied, erroneous SDU delivered No. Error detection is applied , erroneous SDU discarded -: SDUs delivered without considering error detection
Subflow SDU size Parameter	M	1 to <maxRABSubflow Combination>	INTEGER (0..4095)	

Range Bound	Explanation
MaxRABSubflowCombination	Number of RAB Sublfow Combination

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Subflow SDU size Parameter				
Rate Control allowed	M		ENUMERATED (not allowed, allowed)	Conditions on the horizontal setting. The rate control is set identical to all SDU format infomation of the same RAB SubFlow Combination
Subflow SDU size	O		INTEGER (0…4095)	This IE is only present for RABs that have predefined SDU size(s)

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Allocation/Retention priority				
Priority level	M		Integer {spare (0), highest (1), lowest (14), no priority used (15)} (0..15)	
Pre-emption Capability	M		ENUMERATED(cannot trigger pre-emption, can trigger pre-emption)	The RAB shall not pre-empt, The RAB may pre-empt
Pre-emption Vulnerability	M		ENUMERATED(not vulnerable to pre-emption, vulnerable to pre-emption)	The RAB shall not be pre-empted, The RAB might be pre-empted
Queuing allowed	M		ENUMERATED(queueing not allowed, queueing allowed)	Queuning of the RAB is allowed Queuing of the RAB is not allowed

9.2.1.4 Cause

The purpose of the cause information element is to indicate the reason for a particular event for the RANAP protocol.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Cause group	M		ENUMERATED (Radio Network Layer, Transport Layer, NAS, Protocol, Miscellaneous, Non-standard, …)	
CHOICE *Cause group*				
>*Radio Network Layer*				
>Radio Network Layer Cause	O	1 to 64	INTEGER (RAB pre-empted, Trelocoverall Expiry, Trelocprep Expiry, Treloccomplete Expiry, Tqueing Expiry, Relocation Triggered, Unable to Establish During Relocation, Unknown Target RNC, Relocation Cancelled, Successful Relocation, Requested Ciphering and/or Integrity Protection Algorithms not Supported, Change of Ciphering and/or Integrity Protection is not supported, Failure in the Radio Interface Procedure, Release due to UTRAN Generated Reason, User Inactivity, Time Critical Relocation, Requested Traffic Class not	

			Available, Invalid RAB Parameters Value, Requested Maximum Bit Rate not Available, Requested Guaranteed Bit Rate not Available, Requested Transfer Delay not Achievable, Invalid RAB Parameters Combination, Condition Violation for SDU Parameters, Condition Violation for Traffic Handling Priority, Condition Violation for Guaranteed Bit Rate, User Plane Versions not Supported, Iu UP Failure,…)	

>*Transmission Network*				
>Transport Layer Cause	O	65 to 80	INTEGER (Logical Error: Unknown Iu Transport Association,…)	
>*NAS*				
>NAS Cause	O	81 to 96	INTEGER (User Restriction Start Indication, User Restriction End Indication, Normal Release, …)	
>*Protocol*				
>Protocol Cause	O	97 to 112	INTEGER (Transfer Syntax Error, …)	
>*Miscellaneous*				
>Miscellaneous Cause	O	113 to 128	INTEGER (O&M Intervention, No Resource Available, Unspecified Failure, Network Optimisation, …)	
>*Non-standard*				
>Non-standard Cause	O	129 to 256	INTEGER (…)	

9.2.1.5 CN Domain Indicator

Indicates the CN domain from which the message originates or to which the message shall be sent.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CN Domain Indicator	M		ENUMERATED (CS domain, PS domain)	

9.2.1.6 Trace Type

A fixed length element indicating the type of trace information to be recorded.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Trace Type	M		OCTET STRING (1)	Coded as the Trace Type specified in UMTS TS based on GSM TS 12.08 [12].

9.2.1.7 Trigger ID

A variable length element indicating the identity of the entity which initiated the trace.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Trigger ID	M		OCTET STRING (3..22)	Typically an OMC identity.

9.2.1.8 Trace Reference

A fixed length element providing a trace reference number allocated by the triggering entity.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Trace Reference	M		OCTET STRING (2..3)	

9.2.1.9 UE Identity

This element identifies the element to be traced i.e. the subscriber or the user equipment.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Choice **UE Identity**	M			
>IMSI			OCTET STRING (SIZE (3..8))	- 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 -Number of decimal digits shall be from 6 to 15 starting with the digits from the PLMN-ID.
>IMEI			OCTET STRING (SIZE (8))	- 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 Number of decimal digits shall be 15.

9.2.1.10 OMC ID

A variable length element indicating the destination address of the Operation and Maintenance Center (OMC) to which trace information is to be sent.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
OMC ID	M		OCTET STRING (3..22)	Coded as the OMC ID specified in UMTSTS based on GSM TS 12.20.

9.2.1.11 Integrity Protection Information

This element contains the integrity protection information (key(s) and permitted algorithms).

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Integrity Protection Information				
Permitted integrity Protection Algorithms				
>Integrity Protection Algorithm	M	1 to 15	INTEGER (standard UIA1 (0))	Range is 0 to 15. Only one value used.
>Integrity Protection Key	M		BIT STRING (128)	

9.2.1.12 Encryption Information

This element contains the user data encryption information (key(s) and permitted algorithms) used to control any encryption equipment at the RNC.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Encryption Information				
Permitted Encryption Algorithms				
>Encryption Algorithm	M	0 to 15	INTEGER (no encryption (0), standard UEA1 (1))	Range is 0 to 15. Only two values used.
>Encryption Key	M		Bit string (128)	

9.2.1.13 Chosen Integrity Protection Algorithm

This element indicates the integrity protection algorithm being used by the RNC.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Chosen Integrity Protection Algorithm	M		INTEGER (standard UIA1 (0))	Range is 0 to 15. Only one value used.

9.2.1.14 Chosen Encryption Algorithm

This element indicates the encryption algorithm being used by the RNC.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Chosen Encryption Algorithm	M		INTEGER (no encryption (0), standard UEA1 (1))	Range is 0 to 15. Only two values used.

9.2.1.15 Categorisation Parameters

With each NAS Broadcast Information, this element is used by the RNC to determine how to prioritise the information and schedule the repetition cycle.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Categorisation Parameters	M		INTEGER	Range 0..15.

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 co-ordinates.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Request Type				
>Event	M		ENUMERATED(Stop, Direct, Change of area, ...)	
>Report area	M		ENUMERATED(Service Area, Geographical Coordinates, ...)	

9.2.1.17 Data Volume Reporting Indication

This information element indicates whether or not RNC has to calculate the unsuccessfully transmitted NAS data amount for the RAB and to report the amount of data when the RAB is released.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Data Volume Reporting Indication	M		ENUMERATED (do report, do not report)	

9.2.1.18 User Plane Mode

This element indicates the mode of operation of the Iu User plane requested for realising the RAB. The Iu user plane modes are defined in UMTS 25.415 [6] .

IE/Group Name	Presence	Range	IE type and reference	Semantics description
User Plane Mode	M		ENUMERATED (transparent mode, support mode for predefined SDU sizes, ...)	This IE contains the mode of operation of the Iu UP protocol

9.2.1.19 UP Mode Versions

UP mode versions IE is an information element that is sent by CN to RNC. It is a bit string that indicates the versions for the selected UP mode that are supported by the CN.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
UP Mode Versions	M		BIT STRING (16)	Indicates the versions of the selected UP mode that are supported by the CN Bit 0 set to '1' equals version 1 Bit 1 set to '1' equals version 2 , …

9.2.1.20 Chosen UP Version

Chosen UP version IE is an information element that is sent by RNC to CN. It indicates which version of the given UP mode the RNC selected to be used.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Chosen UP Version	M		INTEGER (1..16)	It indicates the version of the UP mode the RNC selected. Value 1 equals version 1 … Value 16 equals value 16

9.2.1.21 Paging Area ID

This element uniquely identifies the area, where the PAGING message shall be broadcasted. The Paging area ID is eithera Location Area ID or Routing Area ID.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Choice **Paging Area ID**				
>LAI			9.2.3.7	
>RAI				
>>LAI	M		9.2.3.7	
>>RAC	M		9.2.3.8	

9.2.1.22 Non Searching Indication

This parameter allows the RNC not to search Common ID when receiving a PAGING message from the CN.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Non Searching Indication	M		ENUMERATED (non-searching, searching)	

9.2.1.23 Relocation Type

This information element indicates whether the relocation of SRNS is to be executed with ot without involvement of the UE. If the UE is involved then a Uu interface handover command shall be sent to the UE to trigger the execution of the relocation. If the UE is not involved then the relocation execution is triggerd via Iur.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Relocation Type	M		ENUMERATED (UE not involved in relocation of SRNS,UE involved in relocation of SRNS)	

9.2.1.24 Source ID

Source ID identifies the source for the relocation of SRNS. The Source ID may be e.g. Source RNC-ID or serving cell ID.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Choice **Source ID**	M			
>Source RNC-ID	C - ifUMTStarget			
>>PLMN-ID	M		OCTET STRING (SIZE (3))	- 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 -The PLMN-ID consists of 3 digits from MCC followed by either -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).
>>RNC-ID	M		INTEGER (0..4095)	
>SAI	C - ifGSMtarget			

9.2.1.25 Target ID

Target ID identifies the target for the relocation of SRNS. The target ID may be e.g. Target RNC-ID (for UMTS-UMTS relocation) or Cell Global ID of the relocation target (in case of UMTS to GSM relocation).

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Choice **Target ID**	M			
>Target RNC-ID				
>>PLMN-ID	M		OCTET STRING (SIZE (3))	- 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 -The PLMN-ID consists of 3 digits from MCC followed by either -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).
>>RNC-ID	M		INTEGER (0..4095)	
>CGI				
>>PLMN-ID	M		OCTET STRING (SIZE (3))	- 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 -The PLMN-ID consists of 3 digits from MCC followed by either -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).
>>LAC	M		OCTET STRING (2)	0000 and FFFE not allowed.
>>CI	M		OCTET STRING (2)	

9.2.1.26 MS Classmark 2

The coding of this element is described in 24.008 [8].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
MS Classmark 2	M		OCTET STRING	Contents defined in TS 24.008 [8]

9.2.1.27 MS Classmark 3

The coding of this element is described in 24.008 [8].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
MS Classmark 3	M		OCTET STRING	Contents defined in TS 24.008 [8]

9.2.1.28 Source RNC to Target RNC Transparent Container

Source RNC to Target RNC Transparent Container IE is an information element that is produced by Source RNC and is transmitted to target RNC. In inter system relocation the IE is transmitted either from external relocation source to target RNC or from source RNC to the external relocation target.

This IE is transparent to CN.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
RRC Container	M		OCTET STRING	Contents defined in TS 25.331 [10]
Number of Iu Instances	M		INTEGER (1...2)	
Relocation Type	M		9.2.1.23	
Chosen Integrity Protection Algorithm	C – ifIntraUMTS		9.2.1.13	Indicates which integrity protection algorithm that has been used by the source RNC.
Integrity Protection Key	C – ifIntraUMTS		Bit String (128)	Indicates which integrity protection key that has been used by the source RNC.
Chosen Encryption Algorithm	C - ifIntraUMTSandCiph		9.2.1.14	Indicates which algorithm that has been used by the source RNC for ciphering of signalling data.
Ciphering Key	C - ifIntraUMTSandCiph		Bit String (128)	Indicates which ciphering key that has been used by the source RNC for ciphering of signalling data.
Chosen Encryption Algorithm	C - ifIntraUMTSandCiph		9.2.1.14	Indicates which algorithm that has been used by the source RNC for ciphering of CS user data.
Chosen Encryption Algorithm	C - ifIntraUMTSandCiph		9.2.1.14	Indicates which algorithm that has been used by the source RNC for ciphering of PS user data.
d-RNTI	O		INTEGER (0..1048575)	

Condition	Explanation
IfIntraUMTS	Must be present for intra UMTS Handovers
IfIntraUMTSandCiph	Must be present for intra UMTS Handovers if ciphering is active

9.2.1.29 Old BSS to New BSS Information

The coding of this element is described in GSM 08.08 [11].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Old BSS to New BSS Information	M		OCTET STRING	Contents defined in GSM 08.08 [11].

9.2.1.30 Target RNC to Source RNC Transparent Container

Target RNC to Source RNC Transparent Container IE is an information element that is produced by Target RNC and is transmitted to Source RNC. In inter system relocation the IE is transmitted either from external relocation target to source RNC or from target RNC to the external relocation source.

This IE is transparent to CN.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
RRC Container	M		OCTET STRING	Contents defined in TS 25.331 [10]

9.2.1.31 L3 Information

The coding of this element is described in GSM 08.08 [11].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
L3 Information	M		OCTET STRING	Contents defined in GSM 08.08 [11].

9.2.1.32 Number of Steps

Indicates the number of steps to reduce traffic in overload situation.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Number of Steps	M		INTEGER (1...16)	

9.2.1.33 DL N-PDU Sequence Number

This IE indicates the Uu interface sequence number (PDCP) of the next downlink N-PDU (PDCP PDU) that would have been sent to the UE by a source system.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
DL N-PDU Sequence Number	M		INTEGER (0 ..4095)	This IE indicates the sequence number of the next DL N-PDU that would have been sent to the UE by a source system. This is the 12 bit sequence number.

9.2.1.34 UL N-PDU Sequence Number

This IE indicates the Uu interface sequence number (PDCP) of the next uplink N-PDU (PDCP PDU) that would have been expected from the UE by a source system.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
UL N-PDU Sequence Number	M		INTEGER (0 ..4095)	This IE indicates the sequence number of the next UL N-PDU that would have been expected from the UE by a source system. This is the 12 bit sequence number.

9.2.1.35 Criticality Diagnostics IE

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Criticality Diagnostics				
Procedure Code	O		INTEGER (0..255)	Procedure code is to be used if Criticality diagnostics is part of Error Indication procedure, and not within the response message of the same operation that caused the error
Triggering Message	O		ENUMERATED(initiating message, successful outcome, unsuccessful outcome, outcome)	The Triggering Message is used only if the Criticality diagnostics is part of Error Indication procedure except when the procedure code is not understood.
Criticality Response	O		ENUMERATED(reject, ignore, notify)	This Criticality response IE is used for reporting the Criticality of the Triggering message
Information Element Criticality Diagnostics		0 to <maxnoof errors>		
>Criticality Response	M		ENUMERATED(reject, ignore, notify)	The Criticality response IE is used for reporting the criticality of the triggering IE. The value 'ignore' shall not be used.
>IE Id	M		INTEGER (0..65535)	The IE Id of the not understood IE

Range bound	Explanation
maxnooferrors	Maximum no. of IE errors allowed to be reported with a single message. The value for maxnooferrors is 256.

9.2.2 Transport Network Layer Related IEs

9.2.2.1 Transport Layer Address

For the PS domain this information element is an IP address to be used for the user plane transport. For the CS domain this address is to be used for Transport Network Control Plane signalling to set up the U-Plane connection.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Transport Layer Address	M		OCTET STRING (20)	The Radio Network layer is not supposed to interprete the address information. It should pass it to the transport layer for interpretation. For details on the Transport Layer Address, see ref. 25.414 [9].

9.2.2.2 Iu Transport Association

This element is used to associate the RAB and the corresponding user plane connection. For the CS domain this information element is the Binding ID to be used in Transport Network Control Plane signalling during set up of the U-Plane connection. In PS domain this information element is the GTP Tunnel Endpoint Identifier.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Choice **Iu transport association**				
>GTP TEID	C – ifPS		OCTET STRING (4)	
>Binding ID	C - ifCS		OCTET STRING (4)	

Condition	Explanation
-IfPS	This IE is only present for RABs towards the PS domain.
IfCS	This IE is only present for RABs towards the CS domain.

9.2.2.3 DL GTP-PDU Sequence Number

This IE indicates the sequence number of the GTP-PDU which is the next to be sent to the UE.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
DL GTP-PDU Sequence Number	M		INTEGER (0 ..65535)	This IE indicates the sequence number of the GTP-PDU which is next to be sent to the UE.

9.2.2.4 UL GTP-PDU Sequence Number

This IE indicates the sequence number of the GTP-PDU which is the next to be sent to the SGSN.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
UL GTP-PDU Sequence Number	M		INTEGER (0 ..65535)	This IE indicates the sequence number of the GTP-PDU which is next to be sent to the SGSN.

9.2.3 NAS Related IEs

9.2.3.1 NAS Binding Information

This element contains application specific information, to be used by the remote NAS entity at the UE side. It serves as the binding to a NAS call. This element is transparent to the RNC.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
NAS Binding Information	M		OCTET STRING (2)	

9.2.3.2 Permanent NAS UE Identity

This element is used to identify the UE commonly in UTRAN and in CN. RNC uses to find other existing signalling connections of this same UE (e.g. RRC or Iu signalling connections) Initially this is of the type of IMSI.

NOTE: IMSI is specified in the TS 23.003.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Choice **Permanent NAS UE Identity**	M			
>IMSI			OCTET STRING (SIZE (3..8))	- 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 -Number of decimal digits shall be from 6 to 15 starting with the digits from the PLMN-ID.

9.2.3.3 Temporary UE ID

Temporary Mobile Subscriber Identity, used for security reasons to hide the identity of a subscriber.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Choice **Temporary UE ID**				
>TMSI	M		OCTET STRING (4)	
>P-TMSI	M		OCTET STRING (4)	

9.2.3.4 Paging Cause

This element indicates the cause of paging to the UE.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Paging cause	M		ENUMERATED(speech call, CS data call, PS data call, SMS, ...)	

9.2.3.5 NAS Broadcast Information

This element identifies broadcast information that belongs to the non-access stratum (e.g. LAC, RA code etc). This information is transparent to RNC.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
NAS Broadcast Information	M		OCTET STRING	

9.2.3.6 NAS PDU

This information element contains the CN – UE or UE – CN message that is transferred without interpretation in the RNC. Typically it contains call control, session management, supplementary services, short message service and mobility management messages.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
NAS PDU	M		OCTET STRING	

9.2.3.7 LAI

This element is used to uniquely identify a Location Area.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
LAI				
>PLMN-ID	M		OCTET STRING (SIZE (3))	- 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 -The PLMN-ID consists of 3 digits from MCC followed by either -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).
>LAC	M		OCTET STRING (2)	0000 and FFFE not allowed.

9.2.3.8 RAC

This element is used to identify a Routing Area within a Location Area. It is used for PS services.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
RAC	M		OCTET STRING (1)	

9.2.3.9 SAPI

The SAPI element is used to indicate the specific service provided for the message.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
SAPI	M		ENUMERATED (SAPI 0, SAPI 3, ...)	

9.2.3.10 SAI

Service Area Identifier (SAI) information element is used to uniquely identify an area consisting of one or more cells belonging to the same Location Area. Such an area is called a Service Area and can be used for indicating the location of a UE to the CN.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
SAI				
>PLMN-ID	M		OCTET STRING (SIZE (3))	- 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 -The PLMN-ID consists of 3 digits from MCC followed by either -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).
>LAC	M		OCTET STRING (2)	0000 and FFFE not allowed.
>SAC	M		OCTET STRING (2)	

9.2.3.11 Area Identity

This information element is used for indicating the location of a UE and is either a Service Area or Geographical Area

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Choice **Area Identity**				
>**SAI**			9.2.3.10	
>**Geographical Area**			9.2.3.12	

9.2.3.12 Geographical Area

Geographical Area is used to identify an area, as seen from the CN, using geographical coordinates. The reference system is the same as the one used in UMTS 23.032.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Choice **Geographical Area**				
>**Point**			See below	Ellipsoid point
>**Point with uncertainty**			See below	Ellipsoid point with incertainty circle
>**Polygon**			See below	List of Ellipsoid points

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Point				
>Geographical Coordinates	M		See below	

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Point with uncertainty				
>Geographical Coordinates	M		See below	
>Uncertainty Code			INTEGER(0...127)	The uncertainty "r" is derived from the "uncertainty code" k by $r = 10x(1.1^k-1)$

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Polygon	M			
>Geographical Coordinates	M	1 to <maxnoofPoints>	See below	

Range bound	Explanation
maxnoofPoints	Maximum no. of points in polygon. Value is 15.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Geographical Coordinates				
>Latitude Sign	M		ENUMERATED (North, South)	
>Degrees of Latitude	M		INTEGER ($0...2^{23}-1$)	The IE value (N) is derived by this formula: $N \leq 2^{23} X /90 < N+1$ X being the latitude in degree (0°.. 90°)
>Degrees of Longitude	M		INTEGER ($-2^{23}...2^{23}-1$)	The IE value (N) is derived by this formula: $N \leq 2^{24} X /360 < N+1$ X being the longitude in degree (-180°..+180°)

9.2.3.13 Unsuccessfully Transmitted Data Volume

This information element indicates the data volume (octets) that is unsuccessfully transmitted over the radio interface in DL direction for the RAB.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Unsuccessfully Transmitted Data Volume	M		INTEGER ($0.. 2^{32}-1$)	Unit is octet.

9.2.3.14 Data Volume Reference

This information element indicates the time when the data volume is counted.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Data Volume Reference	O		INTEGER (0..255)	

9.2.4 RANAP Information used in non-RANAP Protocols

9.2.4.1 RANAP Relocation Information

The *RANAP Relocation Information* IE is transmitted from source to target RNC in the RNSAP message RELOCATION COMMIT.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
RANAP Relocation Information				
>Direct Transfer Information		0 to <MaxnoofDT>		Information received in one or more DIRECT TRANSFER messages and that needs to be transferred to target RNC for further transmission to the UE.
>>NAS-PDU	M		9.2.3.6	
>>SAPI	M		9.2.3.9	
>RAB Contexts		0 to <maxnoofRABs>		
>>NAS Binding Information	M		9.2.3.1	
>>DL GTP-PDU Sequence Number	M		9.2.2.3	
>>UL GTP-PDU Sequence Number	M		9.2.2.4	
>>DL N-PDU Sequence Number	M		9.2.1.33	
>>UL N-PDU Sequence Number	M		9.2.1.34	

Range bound	Explanation
maxnoofDT	Maximum no. of DT information. Value is 15.

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Sophia Antipolis, France, 28 Feb –3 March 2000

***Document* R3-000711**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

25.413	CR	068	Current Version:	3.0.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	RAN#7	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [ ] UTRAN / Radio [X] Core Network [X]

Source: RAN-WG3 **Date:** 2000-02-23

Subject: Relocation execution trigger

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X
A	Corresponds to a correction in an earlier release	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

Reason for change: The choice of relocation execution trigger should be considered an implementation matter.

Clauses affected:

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

8.8.2 Successful Operation

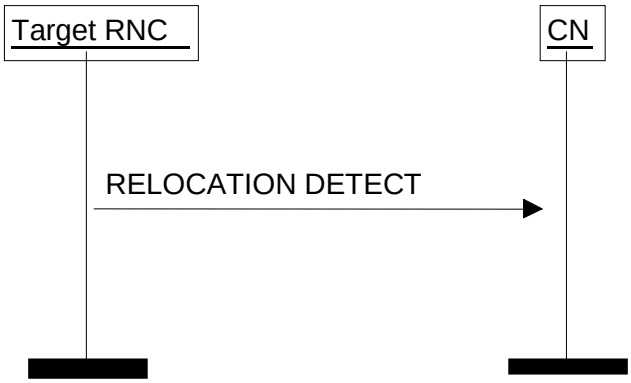

Figure 1: Relocation Detect procedure: Successful operation.

Target RNC shall send RELOCATION DETECT message to CN when relocation execution trigger is received.

If the type of relocation of SRNS is 'Hard Handover', the relocation execution trigger ~~is~~may be received from the Uu interface. If the type of relocation of SRNS is 'SRNS Relocation', the relocation execution trigger is the reception of RELOCATION COMMIT message from Iur interface.

When RELOCATION DETECT message is sent, target RNC shall start SRNC operation.

Upon reception of RELOCATION DETECT message, CN may switch the user plane from source RNC to target RNC.