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

TSGRP#7(00)0080

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
R3-000712	25.413	069		Start Timer TDATAfwd upon reception of RELOCATION COMMAND	F	agreed	3.0.0	3.1.0
R3-000959	25.413	073		Alignment of PDCP Sequence Number Length with RAN 2	F	agreed	3.0.0	3.1.0
R3-000978	25.413	074		Proposed changes to RANAP ASN.1 descriptions for private messages	C	agreed	3.0.0	3.1.0
R3-000799	25.413	024	2	Corrections of RANAP RAB parameters	F	agreed	3.0.0	3.1.0
R3-000800	25.413	031	1	Definition of global RAB ID in RANAP	C	agreed	3.0.0	3.1.0
R3-000801	25.413	032	1	Renaming NAS Binding information to RAB ID and removing local RAB ID in	C	agreed	3.0.0	3.1.0

				RANAP				
R3-000885	25.413	051	1	Clarification of Elementary Procedure Definition	C	agreed	3.0.0	3.1.0
R3-000884	25.413	042	1	Clarifications in the Paging and Common ID procedures	F	agreed	3.0.0	3.1.0
R3-000732	25.413	025	1	Clarification on criticality modelling	F	agreed	3.0.0	3.1.0
R3-000733	25.413	028	1	This is an update to tdoc R3-000532. New CR28r1.	C	agreed	3.0.0	3.1.0
R3-000865	25.413	071	2	Addition of Call Trace Deactivation functionality	B	agreed	3.0.0	3.1.0
R3-000938	25.413	072	1	CR to 25.413: Addition of a Cause Value - 'Repeated Integrity Checking Failure' for Iu Release Request	C	agreed	3.0.0	3.1.0
R3-000963	25.413	056	2	Update to R3-000950: CR56r2	F	agreed	3.0.0	3.1.0
R3-000936	25.413	070	2	Target Cell ID at SRNS Relocation with UE involvement	C	agreed	3.0.0	3.1.0
R3-000948	25.413	067	4	Iu signalling connection identity:	F	agreed	3.0.0	3.1.0

				CR67r4				
R3-000847	25.413	054	1	CR to 25.413: Editorial correction of cause in RANAP	F	agreed	3.0.0	3.1.0
R3-000842	25.413	053	2	Addition of Paging related parameter: CR53r2	C	agreed	3.0.0	3.1.0
R3-000844	25.413	055	1	CR to 25.413: Modifying Conditions for security information in Source RNC to Target RNC Transparent Container	C	agreed	3.0.0	3.1.0
R3-000846	25.413	058	1	CR to 25.413: Clarification of CN actions for Iu Release Request	D	agreed	3.0.0	3.1.0

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Sophia Antipolis, France, 28 Feb –3 March 2000

***Document* R3-000712**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

25.413	CR	069	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: Start Timer $T_{DATAfwd}$ upon reception of RELOCATION COMMAND

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: Currently the start of the timer $T_{DATAfwd}$ is only specified for the SRNS Data Forwarding procedure i.e. for inter-system handover. The timer $T_{DATAfwd}$ is also needed for intra system handover and consequently the start of the timer $T_{DATAfwd}$ needs to be specified for the Relocation Preparation procedure.

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:

8.6.2 Successful Operation

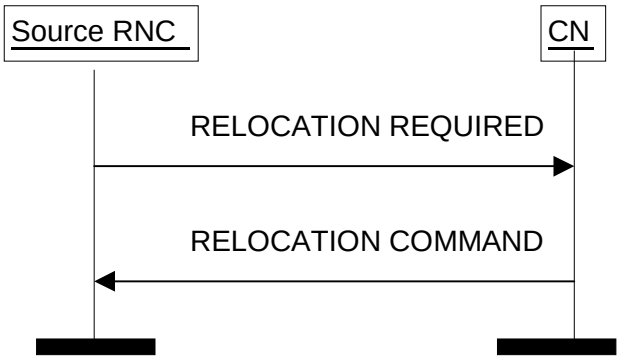

Figure 1: Relocation Preparation procedure. Successful operation.

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. Upon reception of the RELOCATION COMMAND message from the PS domain, the source RNC shall start the timer $T_{DATAfwd.}$

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.

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Sophia Anitpolis, France, 28 Feb – 3 March

***Document* R3-000959**
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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	073	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: R-WG3 **Date:** 3 March 2000

Subject: Alignment of PDCP Sequence Number Length with RAN 2

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: RAN2 have indicated that they have selected an 18 bit sequence number for PDCP, and so the N-PDU Sequence numbers in RANAP should be extended accordingly.

Clauses affected: 9.2.1.33, 9.2.1.34, 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: This CR assumes that the related R2 CR(s) are approved.


help.doc

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

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~~65535)	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~~ 16 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~~65535)	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~~ 16 bit sequence number.

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;

-- ********************** --
--  LOTS OF ASN.1 REMOVED   --
-- ********************** --

-- D

DataVolumeReference         ::= INTEGER (0..255)

DataVolumeReportingIndication ::= ENUMERATED {
    do-report,
    do-not-report
}

DeliveryOfErroneousSDU ::= ENUMERATED {
    yes,
    no,
    no-error-detection-consideration
}
```

```
DeliveryOrder::= ENUMERATED {
    delivery-order-requested,
    delivery-order-not-requested
}

DL-GTP-PDU-SequenceNumber       ::= INTEGER (0..65535)
-- Reference: xx.xxx

DL-N-PDU-SequenceNumber         ::= INTEGER (0..4095655535)
-- Reference: xx.xxx

D-RNTI                  ::= OCTET STRING (SIZE (20))

-- ********************** --
--  LOTS OF ASN.1 REMOVED   --
-- ********************** --

-- U

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

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

UL-N-PDU-SequenceNumber         ::= INTEGER (0..655354095)

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

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

END
```

3GPP TSG RAN WG3 Meeting #11
Sophia Antipolis, France
28th Feb – 3rd March, 2000

Document* *R3-000978

CHANGE REQUEST

25.413	**CR**	**074**	Current Version:	3.0.0

↑ *CR number as allocated by MCC support team*

For submission to: RAN#7 *list expected approval meeting # here ↑*	for approval	X	strategic		*(for SMG use only)*
	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: R-WG3 **Date:** 3rd March 2000

Subject: Proposed changes to RANAP ASN.1 descriptions for private messages

Work item: 7

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:

During RAN3#9 it was agreed to remove private extensions within the messages in RAN3 protocols, but keep them at message level. As a result, it is no longer clear from the ASN.1 descriptions what the scope of the private messages is. This CR proposes changes to the ASN.1 descriptions in order to clarify this.

In addition, there are currently discrepancies between the ASN.1 descriptions within the 3 protocol specifications (25.413, 25.423 and 25.433). This proposal is aligned with 25.423 CR061r1 and 25.433 CR073r1 to provide consistent ASN.1 descriptions.

Clauses affected: Chapters 9.3.1, 9.3.2, 9.3.3, 9.3.5, 9.3.6, 9.3.7

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:

9.3 Message and Information Element Abstract Syntax (with ASN.1)

9.3.1 Usage of ~~protocol~~ private ~~extension~~ message mechanism for non-standard use

The ~~protocol~~ private ~~extension~~ message mechanism for non-standard use may be used

- for special operator- (and/or vendor) specific features considered not to be part of the basic functionality, i.e. the functionality required for a complete and high-quality specification in order to guarantee multivendor interoperability.
- by vendors for research purposes, e.g. to implement and evaluate new algorithms/features before such features are proposed for standardisation

The ~~extension~~ private message mechanism shall not be used for basic functionality. Such functionality shall be standardised.

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~~privateMessage,
    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]
    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     |
    privateMessage      ,
    ...
}

RANAP-ELEMENTARY-PROCEDURES-CLASS-3 RANAP-ELEMENTARY-PROCEDURE ::= {
```

```
    rAB-Assignment          |
    privateProcedureprivateMessage      ,
    ...
}

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

```
}

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

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

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

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

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

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

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

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

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

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

privateProcedure privateMessage RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  PrivateMessage
    OUTCOME         PrivateMessage
    CODE            id-PrivateprivateMessage
    CRITICALITY     ignore
}

END
```

9.3.3 PDU Definitions

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

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

BEGIN

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

IMPORTS
    DataVolumeReference,
    AreaIdentity,
    CN-DomainIndicator,
    CategorisationParameters,
    Cause,
    CriticalityDiagnostics,
    ChosenEncryptionAlgorithm,
    ChosenIntegrityProtectionAlgorithm,
    ChosenUP-Version,
    ClassmarkInformation2,
    ClassmarkInformation3,
    DL-GTP-PDU-SequenceNumber,
    DL-N-PDU-SequenceNumber,
    DataVolumeReportingIndication,
    EncryptionInformation,
    IntegrityProtectionInformation,
    IuTransportAssociation,
    L3-Information,
    LAI,
```

```
    NAS-BindingInformation,
    NAS-BroadcastInformation,
    NAS-PDU,
    NonSearchingIndication,
    NumberOfSteps,
    OMC-ID,
    OldBSS-ToNewBSS-Information,
    PagingAreaID,
    PagingCause,
    PermanentNAS-UE-ID,
    RAB-ID,
    RAB-Parameters,
    RAC,
    RelocationType,
    RequestType,
    SAI,
    SAPI,
    SourceID,
    SourceRNC-ToTargetRNC-TransparentContainer,
    TargetID,
    TargetRNC-ToSourceRNC-TransparentContainer,
    TemporaryUE-ID,
    TraceReference,
    TraceType,
    UnsuccessfullyTransmittedDataVolume,
    TransportLayerAddress,
    TriggerID,
    UE-ID,
    UL-GTP-PDU-SequenceNumber,
    UL-N-PDU-SequenceNumber,
    UP-ModeVersions,
    UserPlaneMode
FROM RANAP-IEs

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

    maxNrOfErrors,
    maxNrOfPieces,
    maxNrOfRABs,
    maxNrOfVol,

    id-AreaIdentity,
    id-CN-BroadcastInformationPiece,
    id-CN-BroadcastInformationPieceList,
    id-CN-DomainIndicator,
```

```
    id-Cause,
    id-ChosenEncryptionAlgorithm,
    id-ChosenIntegrityProtectionAlgorithm,
    id-ClassmarkInformation2,
    id-ClassmarkInformation3,
    id-CriticalityDiagnostics,
    id-DL-GTP-PDU-SequenceNumber,
    id-EncryptionInformation,
    id-IntegrityProtectionInformation,
    id-IuTransportAssociation,
    id-L3-Information,
    id-LAI,
    id-NAS-PDU,
    id-NonSearchingIndication,
    id-NumberOfSteps,
    id-OMC-ID,
    id-OldBSS-ToNewBSS-Information,
    id-PagingAreaID,
    id-PagingCause,
    id-PermanentNAS-UE-ID,
    id-RAB-ContextItem,
    id-RAB-ContextList,
    id-RAB-DataForwardingItem,
    id-RAB-DataForwardingItem-SRNS-CtxReq,
    id-RAB-DataForwardingList,
    id-RAB-DataForwardingList-SRNS-CtxReq,
    id-RAB-DataVolumeReportItem,
    id-RAB-DataVolumeReportList,
    id-RAB-DataVolumeReportRequestItem,
    id-RAB-DataVolumeReportRequestList,
    id-RAB-FailedItem,
    id-RAB-FailedList,
    id-RAB-ID,
    id-RAB-QueuedItem,
    id-RAB-QueuedList,
    id-RAB-ReleaseFailedList,
    id-RAB-ReleaseItem,
    id-RAB-ReleaseList,
    id-RAB-ReleasedItem,
    id-RAB-ReleasedList,
    id-RAB-ReleasedList-IuRelComp,
    id-RAB-RelocationReleaseItem,
    id-RAB-RelocationReleaseList,
    id-RAB-SetupItem-RelocReq,
    id-RAB-SetupItem-RelocReqAck,
    id-RAB-SetupList-RelocReq,
    id-RAB-SetupList-RelocReqAck,
    id-RAB-SetupOrModifiedItem,
    id-RAB-SetupOrModifiedList,
    id-RAB-SetupOrModifyItem,
    id-RAB-SetupOrModifyList,
    id-RAC,
    id-RelocationType,
    id-RequestType,
    id-SAI,
    id-SAPI,
```

```
    id-SourceID,
    id-SourceRNC-ToTargetRNC-TransparentContainer,
    id-TargetID,
    id-TargetRNC-ToSourceRNC-TransparentContainer,
    id-TemporaryUE-ID,
    id-TraceReference,
    id-TraceType,
    id-TransportLayerAddress,
    id-TriggerID,
    id-UE-ID,
    id-UL-GTP-PDU-SequenceNumber
FROM RANAP-Constants;

-- **************************************************************
--
-- Common Container Lists
--
-- **************************************************************

RAB-IE-ContainerList                 { RANAP-PROTOCOL-IES      : IEsSetParam } ::= ProtocolIE-ContainerList     { 1, maxNrOfRABs,
{IEsSetParam} }
RAB-IE-ContainerPairList             { RANAP-PROTOCOL-IES-PAIR : IEsSetParam } ::= ProtocolIE-ContainerPairList { 1, maxNrOfRABs,
{IEsSetParam} }
ProtocolError-IE-ContainerList       { RANAP-PROTOCOL-IES      : IEsSetParam } ::= ProtocolIE-ContainerList     { 1, maxNrOfRABs,
{IEsSetParam} }
CN-BroadcastInfPiece-IE-ContainerList { RANAP-PROTOCOL-IES      : IEsSetParam } ::= ProtocolIE-ContainerList     { 1, maxNrOfPieces,
{IEsSetParam} }

-- **************************************************************
--
-- Iu RELEASE ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Iu Release Command
--
-- **************************************************************

Iu-ReleaseCommand ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {Iu-ReleaseCommandIEs} },
    protocolExtensions      ProtocolExtensionContainer { {Iu-ReleaseCommandExtensions} }            OPTIONAL,
    ...
}

Iu-ReleaseCommandIEs RANAP-PROTOCOL-IES ::= {
    { ID id-Cause                   CRITICALITY ignore  TYPE Cause                  PRESENCE mandatory },
    ...
}

Iu-ReleaseCommandExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
```

```
--
-- Iu Release Complete
--
-- **********************************************************

Iu-ReleaseComplete ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {Iu-ReleaseCompleteIEs} },
    protocolExtensions      ProtocolExtensionContainer { {Iu-ReleaseCompleteExtensions} }           OPTIONAL,
    ...
}

Iu-ReleaseCompleteIEs RANAP-PROTOCOL-IES ::= {
    { ID id-RAB-DataVolumeReportList        CRITICALITY ignore  TYPE RAB-DataVolumeReportList       PRESENCE conditional
    -- This group is only present if data volume reporting for PS domain is required --                    } |
    { ID id-RAB-ReleasedList-IuRelComp      CRITICALITY ignore  TYPE RAB-ReleasedList-IuRelComp     PRESENCE conditional
    -- This group is only present for RABs towards the PS domain when the release was initiated by UTRAN --                 } |
    { ID id-CriticalityDiagnostics          CRITICALITY ignore  TYPE CriticalityDiagnostics         PRESENCE optional    },
    ...
}

RAB-DataVolumeReportList                ::= RAB-IE-ContainerList { {RAB-DataVolumeReportItemIEs} }

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

RAB-DataVolumeReportItem ::= SEQUENCE {
    rAB-ID                      RAB-ID,
    dl-UnsuccessfullyTransmittedDataVolume      DataVolumeList      OPTIONAL
    -- This IE is only present if data volume reporting for PS domain is required --,
    iE-Extensions                   ProtocolExtensionContainer { {RAB-DataVolumeReportItem-ExtIEs} }      OPTIONAL,
    ...
}

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

RAB-ReleasedList-IuRelComp              ::= RAB-IE-ContainerList { {RAB-ReleasedItem-IuRelComp-IEs} }

RAB-ReleasedItem-IuRelComp-IEs RANAP-PROTOCOL-IES ::= {
    { ID id-RAB-ID                  CRITICALITY ignore  TYPE RAB-ID                 PRESENCE mandatory } |
    { ID id-DL-GTP-PDU-SequenceNumber       CRITICALITY ignore  TYPE DL-GTP-PDU-SequenceNumber      PRESENCE mandatory   } |
    { ID id-UL-GTP-PDU-SequenceNumber       CRITICALITY ignore  TYPE UL-GTP-PDU-SequenceNumber      PRESENCE mandatory   },
    ...
}

Iu-ReleaseCompleteExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **********************************************************
--
-- RELOCATION PREPARATION ELEMENTARY PROCEDURE
--
```

```
-- **************************************************************

-- **************************************************************
--
-- Relocation Required
--
-- **************************************************************

RelocationRequired ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RelocationRequiredIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RelocationRequiredExtensions} }           OPTIONAL,
        ...
}

RelocationRequiredIEs RANAP-PROTOCOL-IES ::= {
    { ID id-RelocationType              CRITICALITY ignore  TYPE RelocationType                 PRESENCE mandatory } |
    { ID id-Cause                   CRITICALITY ignore  TYPE Cause                  PRESENCE mandatory } |
    { ID id-SourceID                CRITICALITY ignore  TYPE SourceID                   PRESENCE mandatory} |
    { ID id-TargetID                CRITICALITY reject  TYPE TargetID                   PRESENCE mandatory} |
    { ID id-ClassmarkInformation2           CRITICALITY ignore  TYPE ClassmarkInformation2      PRESENCE conditional
    -- This is only present when initiating an inter system handover towards GSM BSC --                    } |
    { ID id-ClassmarkInformation3           CRITICALITY ignore  TYPE ClassmarkInformation3      PRESENCE conditional
    -- This is only present when initiating an inter system handover towards GSM BSC --                    } |
    { ID id-SourceRNC-ToTargetRNC-TransparentContainer
                            CRITICALITY reject  TYPE SourceRNC-ToTargetRNC-TransparentContainer PRESENCE mandatory } |
    { ID id-OldBSS-ToNewBSS-Information     CRITICALITY ignore  TYPE OldBSS-ToNewBSS-Information    PRESENCE conditional
    -- This is only present when initiating an inter system handover towards GSM BSC --                    } ,
    ...
}

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

-- **************************************************************
--
-- Relocation Command
--
-- **************************************************************

RelocationCommand ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RelocationCommandIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RelocationCommandExtensions} }           OPTIONAL,
    ...
}

RelocationCommandIEs RANAP-PROTOCOL-IES ::= {
    { ID id-TargetRNC-ToSourceRNC-TransparentContainer
                            CRITICALITY reject  TYPE TargetRNC-ToSourceRNC-TransparentContainer PRESENCE conditional
    -- Must be included if applicable and if not sent via other CN --                           } |
    { ID id-L3-Information              CRITICALITY ignore  TYPE L3-Information             PRESENCE conditional
    -- This IE is only present when the source of an inter system handover is GSM BSS --                  } |
    { ID id-RAB-RelocationReleaseList       CRITICALITY ignore  TYPE RAB-RelocationReleaseList      PRESENCE optional } |
    { ID id-RAB-DataForwardingList          CRITICALITY ignore  TYPE RAB-DataForwardingList     PRESENCE conditional
    -- This group if applicable is only present for RABs towards the PS domain --                      } |
    { ID id-CriticalityDiagnostics          CRITICALITY ignore  TYPE CriticalityDiagnostics         PRESENCE optional },
```

```
    ...
}

RAB-RelocationReleaseList               ::= RAB-IE-ContainerList { {RAB-RelocationReleaseItemIEs} }

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

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

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

RAB-DataForwardingList                  ::= RAB-IE-ContainerList { {RAB-DataForwardingItemIEs} }

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

RAB-DataForwardingItem ::= SEQUENCE {
    rAB-ID                      RAB-ID,
    transportLayerAddress               TransportLayerAddress,
    iuTransportAssociation              IuTransportAssociation,
    iE-Extensions                   ProtocolExtensionContainer { {RAB-DataForwardingItem-ExtIEs} }        OPTIONAL,
    ...
}

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

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

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

RelocationPreparationFailure ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RelocationPreparationFailureIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RelocationPreparationFailureExtensions} }       OPTIONAL,
        ...
}

RelocationPreparationFailureIEs RANAP-PROTOCOL-IES ::= {
```

```
    { ID id-Cause                   CRITICALITY ignore  TYPE Cause                  PRESENCE mandatory } |
    { ID id-CriticalityDiagnostics          CRITICALITY ignore  TYPE CriticalityDiagnostics         PRESENCE optional },
    ...
}

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

-- **************************************************************
--
-- 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 mandatory   } |
    { 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 mandatory   } |
    { 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 ::= {
    ...
```

```
}

-- **************************************************************
--
-- RELOCATION CANCEL ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Relocation Cancel
--
-- **************************************************************

RelocationCancel ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RelocationCancelIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RelocationCancelExtensions} }          OPTIONAL,
    ...
}

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

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

-- **************************************************************
--
-- Relocation Cancel Acknowledge
--
-- **************************************************************

RelocationCancelAcknowledge ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RelocationCancelAcknowledgeIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RelocationCancelAcknowledgeExtensions} }        OPTIONAL,
    ...
}

RelocationCancelAcknowledgeIEs RANAP-PROTOCOL-IES ::= {
    { ID id-CriticalityDiagnostics          CRITICALITY ignore  TYPE CriticalityDiagnostics      PRESENCE optional },
    ...
}

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

-- **************************************************************
--
-- SRNS CONTEXT TRANSFER OPEARATION
--
-- **************************************************************
```

```
-- **************************************************************
--
-- SRNS Context Request
--
-- **************************************************************

SRNS-ContextRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {SRNS-ContextRequestIEs} },
    protocolExtensions      ProtocolExtensionContainer { {SRNS-ContextRequestExtensions} }          OPTIONAL,
    ...
}

SRNS-ContextRequestIEs RANAP-PROTOCOL-IES ::= {
    { ID id-RAB-DataForwardingList-SRNS-CtxReq  CRITICALITY ignore  TYPE RAB-DataForwardingList-SRNS-CtxReq     PRESENCE mandatory   },
    ...
}

RAB-DataForwardingList-SRNS-CtxReq          ::= RAB-IE-ContainerList { {RAB-DataForwardingItem-SRNS-CtxReq-IEs} }

RAB-DataForwardingItem-SRNS-CtxReq-IEs RANAP-PROTOCOL-IES ::= {
    { ID id-RAB-DataForwardingItem-SRNS-CtxReq  CRITICALITY ignore  TYPE RAB-DataForwardingItem-SRNS-CtxReq     PRESENCE mandatory   },
    ...
}

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

RAB-DataForwardingItem-SRNS-CtxReq-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

SRNS-ContextRequestExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- SRNS Context Response
--
-- **************************************************************

SRNS-ContextResponse ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {SRNS-ContextResponseIEs} },
    protocolExtensions      ProtocolExtensionContainer { {SRNS-ContextResponseExtensions} }         OPTIONAL,
    ...
}

SRNS-ContextResponseIEs RANAP-PROTOCOL-IES ::= {
    { ID id-Cause                   CRITICALITY ignore  TYPE Cause                  PRESENCE mandatory } |
    { ID id-RAB-ContextList             CRITICALITY ignore  TYPE RAB-ContextList             PRESENCE mandatory } |
    { ID id-CriticalityDiagnostics          CRITICALITY ignore  TYPE CriticalityDiagnostics      PRESENCE optional },
    ...
}
```

```
RAB-ContextList                    ::= RAB-IE-ContainerList { {RAB-ContextItemIEs} }

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

RAB-ContextItem ::= SEQUENCE {
    rAB-ID                      RAB-ID,
    dl-GTP-PDU-SequenceNumber          DL-GTP-PDU-SequenceNumber,
    ul-GTP-PDU-SequenceNumber          UL-GTP-PDU-SequenceNumber,
    dl-N-PDU-SequenceNumber            DL-N-PDU-SequenceNumber,
    ul-N-PDU-SequenceNumber            UL-N-PDU-SequenceNumber,
    iE-Extensions                  ProtocolExtensionContainer { {RAB-ContextItem-ExtIEs} }      OPTIONAL,
    ...
}

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

SRNS-ContextResponseExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- 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 },
    ...
}

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 ::= {
    ...
}

-- **************************************************************
--
-- DATA VOLUME REPORT ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Data Volume Report Request
--
-- **************************************************************

DataVolumeReportRequest ::= SEQUENCE {
```

```
    protocolIEs         ProtocolIE-Container       { {DataVolumeReportRequestIEs} },
    protocolExtensions      ProtocolExtensionContainer { {DataVolumeReportRequestExtensions} }      OPTIONAL,
    ...
}

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

RAB-DataVolumeReportRequestList             ::= RAB-IE-ContainerList { {RAB-DataVolumeReportRequestItemIEs} }

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

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

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

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

-- **************************************************************
--
-- Data Volume Report
--
-- **************************************************************

DataVolumeReport ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {DataVolumeReportIEs} },
    protocolExtensions      ProtocolExtensionContainer { {DataVolumeReportExtensions} }          OPTIONAL,
    ...
}

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

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

-- **************************************************************
--
-- CN INFORMATION BROADCAST
```

```
--
-- **************************************************************

-- **************************************************************
--
-- CN Information Broadcast Request
--
-- **************************************************************

CN-InformationBroadcastRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {CN-InformationBroadcastRequestIEs} },
    protocolExtensions      ProtocolExtensionContainer { {CN-InformationBroadcastRequestExtensions} }     OPTIONAL,
    ...
}

CN-InformationBroadcastRequestIEs RANAP-PROTOCOL-IES ::= {
    { ID id-CN-DomainIndicator          CRITICALITY ignore  TYPE CN-DomainIndicator             PRESENCE mandatory } |
    { ID id-CN-BroadcastInformationPieceList    CRITICALITY ignore  TYPE CN-BroadcastInformationPieceList    PRESENCE mandatory   },
    ...
}

CN-BroadcastInformationPieceList            ::= CN-BroadcastInfPiece-IE-ContainerList { {CN-BroadcastInformationPieceIEs} }

CN-BroadcastInformationPieceIEs RANAP-PROTOCOL-IES ::= {
    { ID id-CN-BroadcastInformationPiece        CRITICALITY ignore  TYPE CN-BroadcastInformationPiece     PRESENCE mandatory   },
    ...
}

CN-BroadcastInformationPiece ::= SEQUENCE {
    nAS-BroadcastInformation            NAS-BroadcastInformation,
    areaIdentity                    AreaIdentity,
    categorisationParameters            CategorisationParameters,
    iE-Extensions                   ProtocolExtensionContainer { {CN-BroadcastInformationPiece-ExtIEs} }        OPTIONAL,
    ...
}

CN-BroadcastInformationPiece-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

CN-InformationBroadcastRequestExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- CN Information Broadcast Confirm
--
-- **************************************************************

CN-InformationBroadcastConfirm ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {CN-InformationBroadcastConfirmIEs} },
    protocolExtensions      ProtocolExtensionContainer { {CN-InformationBroadcastConfirmExtensions} }     OPTIONAL,
    ...
}
```

```
CN-InformationBroadcastConfirmIEs RANAP-PROTOCOL-IES ::= {
    { ID id-CN-DomainIndicator          CRITICALITY ignore  TYPE CN-DomainIndicator            PRESENCE mandatory } |
    { ID id-CriticalityDiagnostics          CRITICALITY ignore  TYPE CriticalityDiagnostics      PRESENCE optional },
    ...
}

CN-InformationBroadcastConfirmExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- CN Information Broadcast Reject
--
-- **************************************************************

CN-InformationBroadcastReject ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {CN-InformationBroadcastRejectIEs} },
    protocolExtensions      ProtocolExtensionContainer { {CN-InformationBroadcastRejectExtensions} }   OPTIONAL,
    ...
}

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

CN-InformationBroadcastRejectExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- RESET ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Reset
--
-- **************************************************************

Reset ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {ResetIEs} },
    protocolExtensions      ProtocolExtensionContainer { {ResetExtensions} }                   OPTIONAL,
    ...
}

ResetIEs RANAP-PROTOCOL-IES ::= {
    { ID id-Cause                   CRITICALITY ignore  TYPE Cause                 PRESENCE mandatory } |
    { ID id-CN-DomainIndicator          CRITICALITY ignore  TYPE CN-DomainIndicator            PRESENCE mandatory },
    ...
}
```

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

-- **************************************************************
--
-- Reset Acknowledge
--
-- **************************************************************

ResetAcknowledge ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {ResetAcknowledgeIEs} },
    protocolExtensions      ProtocolExtensionContainer { {ResetAcknowledgeExtensions} }          OPTIONAL,
    ...
}

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

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

-- **************************************************************
--
-- RAB RELEASE REQUEST ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- RAB Release Request
--
-- **************************************************************

RAB-ReleaseRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RAB-ReleaseRequestIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RAB-ReleaseRequestExtensions} }           OPTIONAL,
    ...
}

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

RAB-ReleaseList                     ::= RAB-IE-ContainerList { {RAB-ReleaseItemIEs} }

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

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

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

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

-- **************************************************************
--
-- Iu RELEASE REQUEST ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Iu Release Request
--
-- **************************************************************

Iu-ReleaseRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {Iu-ReleaseRequestIEs} },
    protocolExtensions      ProtocolExtensionContainer { {Iu-ReleaseRequestExtensions} }            OPTIONAL,
    ...
}

Iu-ReleaseRequestIEs RANAP-PROTOCOL-IES ::= {
    { ID id-Cause                   CRITICALITY ignore  TYPE Cause                  PRESENCE mandatory },
    ...
}

Iu-ReleaseRequestExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- RELOCATION DETECT ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Relocation Detect
--
-- **************************************************************

RelocationDetect ::= SEQUENCE {
```

```
    protocolIEs         ProtocolIE-Container       { {RelocationDetectIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RelocationDetectExtensions} }          OPTIONAL,
    ...
}

RelocationDetectIEs RANAP-PROTOCOL-IES ::= {
    ...
}

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

-- **************************************************************
--
-- RELOCATION COMPLETE ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Relocation Complete
--
-- **************************************************************

RelocationComplete ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RelocationCompleteIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RelocationCompleteExtensions} }           OPTIONAL,
    ...
}

RelocationCompleteIEs RANAP-PROTOCOL-IES ::= {
    ...
}

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

-- **************************************************************
--
-- PAGING ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Paging
--
-- **************************************************************

Paging ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {PagingIEs} },
    protocolExtensions      ProtocolExtensionContainer { {PagingExtensions} }                   OPTIONAL,
    ...
}
```

```
PagingIEs RANAP-PROTOCOL-IES ::= {
    { ID id-CN-DomainIndicator          CRITICALITY ignore  TYPE CN-DomainIndicator            PRESENCE mandatory } |
    { ID id-PermanentNAS-UE-ID          CRITICALITY ignore  TYPE PermanentNAS-UE-ID            PRESENCE mandatory } |
    { ID id-TemporaryUE-ID              CRITICALITY ignore  TYPE TemporaryUE-ID            PRESENCE optional } |
    { ID id-PagingAreaID                CRITICALITY ignore  TYPE PagingAreaID              PRESENCE optional } |
    { ID id-PagingCause             CRITICALITY ignore  TYPE PagingCause                PRESENCE optional } |
    { ID id-NonSearchingIndication          CRITICALITY ignore  TYPE NonSearchingIndication      PRESENCE optional },
    ...
}

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

-- **************************************************************
--
-- COMMON ID ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Common ID
--
-- **************************************************************

CommonID ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {CommonID-IEs} },
    protocolExtensions      ProtocolExtensionContainer { {CommonIDExtensions} }                OPTIONAL,
    ...
}

CommonID-IEs RANAP-PROTOCOL-IES ::= {
    { ID id-PermanentNAS-UE-ID          CRITICALITY ignore  TYPE PermanentNAS-UE-ID            PRESENCE mandatory },
    ...
}

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

-- **************************************************************
--
-- CN INVOKE TRACE ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- CN Invoke Trace
--
-- **************************************************************

CN-InvokeTrace ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {CN-InvokeTraceIEs} },
```

```
    protocolExtensions      ProtocolExtensionContainer { {CN-InvokeTraceExtensions} }           OPTIONAL,
    ...
}

CN-InvokeTraceIEs RANAP-PROTOCOL-IES ::= {
    { ID id-TraceType               CRITICALITY ignore  TYPE TraceType                  PRESENCE mandatory} |
    { ID id-TraceReference              CRITICALITY ignore  TYPE TraceReference             PRESENCE mandatory  } |
    { ID id-TriggerID               CRITICALITY ignore  TYPE TriggerID                PRESENCE optional } |
    { ID id-UE-ID                   CRITICALITY ignore  TYPE UE-ID                  PRESENCE optional   } |
    { ID id-OMC-ID                  CRITICALITY ignore  TYPE OMC-ID                 PRESENCE optional   },
    ...
}

CN-InvokeTraceExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

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

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

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

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

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

-- **************************************************************
--
-- LOCATION REPORT ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Location Report
--
-- **************************************************************
```

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

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

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

-- **************************************************************
--
-- INITIAL UE MESSAGE ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Initial UE Message
--
-- **************************************************************

InitialUE-Message ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {InitialUE-MessageIEs} },
    protocolExtensions      ProtocolExtensionContainer { {InitialUE-MessageExtensions} }            OPTIONAL,
    ...
}

InitialUE-MessageIEs RANAP-PROTOCOL-IES ::= {
    { ID id-CN-DomainIndicator          CRITICALITY ignore  TYPE CN-DomainIndicator             PRESENCE mandatory } |
    { ID id-LAI                CRITICALITY ignore  TYPE LAI                    PRESENCE mandatory  } |
    { ID id-RAC                CRITICALITY ignore  TYPE RAC                    PRESENCE conditional
    -- This IE is only present for RABs towards the PS domain --                                    } |
    { ID id-SAI                CRITICALITY ignore  TYPE SAI                    PRESENCE mandatory  } |
    { ID id-NAS-PDU                CRITICALITY ignore  TYPE NAS-PDU                    PRESENCE mandatory},
    ...
}

InitialUE-MessageExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- DIRECT TRANSFER ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
```

```
-- Direct Transfer
--
-- **************************************************************

DirectTransfer ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {DirectTransferIEs} },
    protocolExtensions      ProtocolExtensionContainer { {DirectTransferExtensions} }            OPTIONAL,
    ...
}

DirectTransferIEs RANAP-PROTOCOL-IES ::= {
    { ID id-NAS-PDU                 CRITICALITY ignore  TYPE NAS-PDU                  PRESENCE mandatory} |
    { ID id-LAI                CRITICALITY ignore  TYPE LAI                     PRESENCE conditional
    -- This IE is only present if the message is directed to the PS domain --                          } |
    { ID id-RAC                CRITICALITY ignore  TYPE RAC                     PRESENCE conditional
    -- This IE is only present if the message is directed to the PS domain --                          } |
    { ID id-SAPI                    CRITICALITY ignore  TYPE SAPI                    PRESENCE conditional
    -- This IE is always used in downlink direction--                                                 },
    ...
}

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

-- **************************************************************
--
-- OVERLOAD CONTROL ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Overload
--
-- **************************************************************

Overload ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {OverloadIEs} },
    protocolExtensions      ProtocolExtensionContainer { {OverloadExtensions} }                OPTIONAL,
    ...
}

OverloadIEs RANAP-PROTOCOL-IES ::= {
    { ID id-NumberOfSteps               CRITICALITY ignore  TYPE NumberOfSteps              PRESENCE optional},
    ...
}

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

-- **************************************************************
--
-- ERROR INDICATION ELEMENTARY PROCEDURE
--
```

```
-- **************************************************************

-- **************************************************************
--
-- Error Indication
--
-- **************************************************************

ErrorIndication ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {ErrorIndicationIEs} },
    protocolExtensions      ProtocolExtensionContainer { {ErrorIndicationExtensions} }          OPTIONAL,
    ...
}

ErrorIndicationIEs RANAP-PROTOCOL-IES ::= {
    { ID id-Cause                   CRITICALITY ignore  TYPE Cause                  PRESENCE conditional
    -- At least either of Cause IE or Criticality IE shall be present --                                  } |
    { ID id-CriticalityDiagnostics          CRITICALITY ignore  TYPE CriticalityDiagnostics      PRESENCE conditional
    -- At least either of Cause IE or Criticality IE shall be present --                                  } |
    { ID id-CN-DomainIndicator          CRITICALITY ignore  TYPE CN-DomainIndicator            PRESENCE optional  } |
    { ID id-IuTransportAssociation          CRITICALITY ignore  TYPE IuTransportAssociation      PRESENCE optional } |
    { ID id-TransportLayerAddress           CRITICALITY ignore  TYPE TransportLayerAddress       PRESENCE optional },
    ...
}

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

-- **************************************************************
--
-- SRNS DATA FORWARD ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- SRNS Data Forward Command
--
-- **************************************************************

SRNS-DataForwardCommand ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {SRNS-DataForwardCommandIEs} },
    protocolExtensions      ProtocolExtensionContainer { {SRNS-DataForwardCommandExtensions} }      OPTIONAL,
    ...
}

SRNS-DataForwardCommandIEs RANAP-PROTOCOL-IES ::= {
    { ID id-RAB-DataForwardingList          CRITICALITY ignore  TYPE RAB-DataForwardingList      PRESENCE conditional
    -- This group is only present for RABs towards the PS domain --                                      },
    ...
}

SRNS-DataForwardCommandExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
-- **************************************************************
--
-- FORWARD SRNS CONTEXT ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Forward SRNS Context
--
-- **************************************************************

ForwardSRNS-Context ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {ForwardSRNS-ContextIEs} },
    protocolExtensions      ProtocolExtensionContainer { {ForwardSRNS-ContextExtensions} }          OPTIONAL,
    ...
}

ForwardSRNS-ContextIEs RANAP-PROTOCOL-IES ::= {
    { ID id-RAB-ContextList             CRITICALITY ignore  TYPE RAB-ContextList               PRESENCE mandatory },
    ...
}

ForwardSRNS-ContextExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- RAB ASSIGNMENT ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- RAB Assignment Request
--
-- **************************************************************

RAB-AssignmentRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RAB-AssignmentRequestIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RAB-AssignmentRequestExtensions} }        OPTIONAL,
    ...
}

RAB-AssignmentRequestIEs RANAP-PROTOCOL-IES ::= {
    { ID id-RAB-SetupOrModifyList           CRITICALITY ignore  TYPE RAB-SetupOrModifyList       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-ReleaseList             CRITICALITY ignore  TYPE RAB-ReleaseList               PRESENCE conditional
    -- This group must be present at least when no other group is present, ie. at least one group must be present --          },
    ...
}

RAB-SetupOrModifyList                   ::= RAB-IE-ContainerPairList { {RAB-SetupOrModifyItem-IEs} }
```

```
RAB-SetupOrModifyItem-IEs RANAP-PROTOCOL-IES-PAIR ::= {
    { ID id-RAB-SetupOrModifyItem           FIRST CRITICALITY  reject   FIRST TYPE  RAB-SetupOrModifyItemFirst
                            SECOND CRITICALITY ignore   SECOND TYPE RAB-SetupOrModifyItemSecond
                                                                     PRESENCE mandatory  },
    ...
}

RAB-SetupOrModifyItemFirst ::= SEQUENCE {
    rAB-ID                      RAB-ID,
    rAB-Parameters                  RAB-Parameters,
    userPlaneInformation                UserPlaneInformation,
    transportLayerAddress               TransportLayerAddress,
    iuTransportAssociation              IuTransportAssociation,
    iE-Extensions                   ProtocolExtensionContainer { {RAB-SetupOrModifyItemFirst-ExtIEs} }       OPTIONAL,
    ...
}

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

RAB-SetupOrModifyItemSecond ::= SEQUENCE {
    nAS-BindingInformation              NAS-BindingInformation,
    dataVolumeReportingIndication           DataVolumeReportingIndication   OPTIONAL
    -- This IE, if applicable, is only present for RABs towards the PS domain --,
    dl-GTP-PDU-SequenceNumber           DL-GTP-PDU-SequenceNumber   OPTIONAL
    -- This IE, if applicable, is only present for RABs towards the PS domain --,
    ul-GTP-PDU-SequenceNumber           UL-GTP-PDU-SequenceNumber   OPTIONAL
    -- This IE, if applicable, is only present for RABs towards the PS domain --,
    dl-N-PDU-SequenceNumber             DL-N-PDU-SequenceNumber     OPTIONAL
    -- This IE, if applicable, is only present for RABs towards the PS domain --,
    ul-N-PDU-SequenceNumber             UL-N-PDU-SequenceNumber     OPTIONAL
    -- This IE, if applicable, is only present for RABs towards the PS domain --,
    iE-Extensions                   ProtocolExtensionContainer { {RAB-SetupOrModifyItemSecond-ExtIEs} }      OPTIONAL,
    ...
}

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

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

-- **************************************************************
--
-- 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 --,
    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 PROCEDUREMESSAGE
--
-- **************************************************************

PrivateMessage ::= SEQUENCE {
    privateExtensionsprivateIEs     PrivateExtensionContainer  PrivateIE-Container  { {PrivateExtensionsPrivateMessage-IEs} },
    ...
}

PrivateExtensions PrivateMessage-IEs RANAP-PRIVATE-EXTENSION IES ::= {
    ...
}

END
```

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),
    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)


CriticalityDiagnostics ::= SEQUENCE {
    procedureCode           ProcedureCode           OPTIONAL,
    triggeringMessage       TriggeringMessage       OPTIONAL,
    criticalityResponse     Criticality         OPTIONAL,
    iEsCriticalityResponses     CriticalityDiagnostics-IE-List  OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { {CriticalityDiagnostics-ExtIEs} } OPTIONAL,
    ...
}

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

CriticalityDiagnostics-IE-List ::= SEQUENCE (SIZE (1..maxNrOfErrors)) OF
    SEQUENCE {
        criticalityResponse     Criticality,
        iE-ID               ProtocolIE-ID,
        iE-Extensions           ProtocolExtensionContainer { {CriticalityDiagnostics-IE-List-ExtIEs} } OPTIONAL,
        ...
    }

CriticalityDiagnostics-IE-List-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

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

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

ChosenEncryptionAlgorithm       ::= PermittedEncryptionAlgorithms

ChosenIntegrityProtectionAlgorithm  ::= PermittedIntegrityProtectionAlgorithms

ChosenUP-Version ::= ENUMERATED {
    version1,
    version2,
```

```
    ...
}

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

ClassmarkInformation2           ::= OCTET STRING

ClassmarkInformation3           ::= OCTET STRING

CN-DomainIndicator ::= ENUMERATED {
    cs-domain,
    ps-domain
}

-- D

DataVolumeReference         ::= INTEGER (0..255)

DataVolumeReportingIndication ::= ENUMERATED {
    do-report,
    do-not-report
}

DeliveryOfErroneousSDU ::= ENUMERATED {
    yes,
    no,
    no-error-detection-consideration
}

DeliveryOrder::= ENUMERATED {
    delivery-order-requested,
    delivery-order-not-requested
}

DL-GTP-PDU-SequenceNumber       ::= INTEGER (0..65535)
-- Reference: xx.xxx

DL-N-PDU-SequenceNumber         ::= INTEGER (0..4095)
-- Reference: xx.xxx

D-RNTI                  ::= OCTET STRING (SIZE (20))

-- 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-area,
    ...
}

-- F
-- G

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

GeographicalCoordinates ::= SEQUENCE {
    latitudeSign            ENUMERATED { north, south },
    latitude            INTEGER (0..8388607),
    longitude           INTEGER (-8388608..8388607),
    iE-Extensions           ProtocolExtensionContainer { {GeographicalCoordinates-ExtIEs} } OPTIONAL,
    ...
}

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

GA-Point ::= SEQUENCE {
    geographicalCoordinates     GeographicalCoordinates,
    iE-Extensions           ProtocolExtensionContainer { {GA-Point-ExtIEs} } OPTIONAL,
    ...
}

GA-Point-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

GA-PointWithUnCertainty ::=SEQUENCE {
    geographicalCoordinates     GeographicalCoordinates,
    iE-Extensions           ProtocolExtensionContainer { {GA-PointWithUnCertainty-ExtIEs} } OPTIONAL,
    uncertaintyCode         INTEGER (0..127)
}

GA-PointWithUnCertainty-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

GA-Polygon ::= SEQUENCE (SIZE (1..maxNrOfPoints)) OF
    SEQUENCE {
        geographicalCoordinates     GeographicalCoordinates,
        iE-Extensions           ProtocolExtensionContainer { {GA-Polygon-ExtIEs} } OPTIONAL,
```

```
        ...
    }

GA-Polygon-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

GlobalRNC-ID ::= SEQUENCE {
    pLMN-ID             PLMN-ID,
    rNC-ID              RNC-ID,
    iE-Extensions           ProtocolExtensionContainer { {GlobalRNC-ID-ExtIEs} } OPTIONAL
}

GlobalRNC-ID-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

GTP-TEI                 ::= OCTET STRING (SIZE (4))
-- Reference: xx.xxx

GuaranteedBitrate           ::= INTEGER (0..16000000)
-- Unit is bits per sec

-- H

-- I

IMEI                    ::= TBCD-STRING (SIZE (8))
-- Reference: 23.003

IMSI                    ::= TBCD-STRING (SIZE (3..8))
-- Reference: 23.003

IntegrityProtectionAlgorithm        ::= INTEGER { standard-UMTS-integrity-algorithm-UIA1 (0) } (0..15)

IntegrityProtectionInformation ::= SEQUENCE {
    permittedAlgorithms     PermittedIntegrityProtectionAlgorithms,
    key             IntegrityProtectionKey,
    iE-Extensions           ProtocolExtensionContainer { {IntegrityProtectionInformation-ExtIEs} } OPTIONAL
}

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

IntegrityProtectionKey          ::= BIT STRING (SIZE (128))

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

-- J
-- K
-- 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 ::= {
    ...
}

L3-Information              ::= OCTET STRING

-- M

MaxBitrate              ::= INTEGER (0..16000000)
-- Unit is bits per sec

MaxSDU-Size             ::= INTEGER
-- MaxSDU-Size              ::= INTEGER (0..32768)
-- Unit is bit

MCC                 ::= TBCD-STRING (SIZE (2))
-- Reference: 24.008

MNC                 ::= TBCD-STRING (SIZE (2))
-- Reference: 24.008

-- N

NAS-BindingInformation          ::= OCTET STRING (SIZE (2))

NAS-BroadcastInformation        ::= OCTET STRING

NAS-PDU                 ::= OCTET STRING

NonSearchingIndication ::= ENUMERATED {
    non-searching,
    searching
}

NumberOfIuInstances         ::= INTEGER (1..2)

NumberOfSteps               ::= INTEGER (1..16)

-- O

OldBSS-ToNewBSS-Information     ::= OCTET STRING

OMC-ID                  ::= OCTET STRING (SIZE (3..22))
-- Reference: GSM TS 12.20

-- 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..15)) OF
    EncryptionAlgorithm

PermittedIntegrityProtectionAlgorithms ::= SEQUENCE (SIZE (0..15)) 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))

-- Q

QueuingAllowed ::= ENUMERATED {
    queueing-not-allowed,
    queueing-allowed
}

-- R

RAB-ID                  ::= INTEGER (1..maxNrOfRABs)

RAB-Parameters ::= SEQUENCE {
    trafficClass            TrafficClass,
    maxBitrate          MaxBitrate,
    guaranteedBitRate       GuaranteedBitrate,
```

```
    deliveryOrder           DeliveryOrder,
    maxSDU-Size         MaxSDU-Size,
    sDU-Parameters          SDU-Parameters,
    transferDelay           TransferDelay,
    trafficHandlingPriority     TrafficHandlingPriority,
    allocationOrRetentionPriority   AllocationOrRetentionPriority,
    sourceStatisticsDescriptor  SourceStatisticsDescriptor,
    iE-Extensions           ProtocolExtensionContainer { {RAB-Parameters-ExtIEs} } OPTIONAL,
    ...
}

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

RAC                 ::= OCTET STRING (SIZE (1))

RAI ::= SEQUENCE {
    lAI             LAI,
    rAC             RAC,
    iE-Extensions           ProtocolExtensionContainer { {RAI-ExtIEs} } OPTIONAL,
    ...
}

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

RateControlAllowed ::= ENUMERATED {
    not-allowed,
    allowed
}

RelocationType ::= ENUMERATED {
    ue-not-involved,
    ue-involved,
    ...
}

ReportArea ::= ENUMERATED {
    service-area,
    geographical-coordinates,
    ...
}

RequestType ::= SEQUENCE {
    event               Event,
    reportArea          ReportArea,
    ...
}

ResidualBitErrorRatio ::= CHOICE {
    notApplicable           NULL,
    value               ResidualBitErrorRatioIE
}
```

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

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

RNC-ID                  ::= INTEGER (0..4095)
-- RNC-ID                   ::= BIT STRING (SIZE (12))
-- Harmonized with RNSAP and NBAP definitions

RRC-Container               ::= OCTET STRING

-- S

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

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

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

SAPI ::= ENUMERATED {
    normal-priority,
    low-priority,
    ...
}

SDU-ErrorRatio ::= CHOICE {
    notApplicable           NULL,
    value               SDU-ErrorRatioIE
}

SDU-ErrorRatioIE ::= SEQUENCE {
    mantissa            INTEGER (1..9),
    exponent            INTEGER (1..6),
    iE-Extensions           ProtocolExtensionContainer { {SDU-ErrorRatioIE-ExtIEs} } OPTIONAL
}
-- ErrorRatio = mantissa * 10^-exponent

SDU-ErrorRatioIE-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

SDU-Parameters ::= SEQUENCE (SIZE (1..maxRAB-Subflows)) OF
    SEQUENCE {
```

```
        sDU-ErrorRatio          SDU-ErrorRatio,
        residualBitErrorRatio       ResidualBitErrorRatio,
        deliveryOfErroneousSDU      DeliveryOfErroneousSDU,
        subflowSDU-SizeParameters   SubflowSDU-SizeParameters,
        iE-Extensions           ProtocolExtensionContainer { {SDU-Parameters-ExtIEs} } OPTIONAL,
        ...
    }
    -- SDU-ErrorRatio is set to notApplicable when DeliveryOfErroneousSDU is
    -- set to no-error-detection-consideration.

SDU-Parameters-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

SourceID ::= CHOICE {
    sourceRNC-ID            SourceRNC-ID, -- If UMTS target
    sAI             SAI,          -- if GSM target
    ...
}

SourceRNC-ID                ::= GlobalRNC-ID

SourceRNC-ToTargetRNC-TransparentContainer ::= SEQUENCE {
    rRC-Container           RRC-Container,
    numberOfIuInstances     NumberOfIuInstances,
    relocationType          RelocationType,
    chosenIntegrityProtectionAlgorithm ChosenIntegrityProtectionAlgorithm   OPTIONAL
    -- Must be present for intra UMTS Handovers --,
    integrityProtectionKey      IntegrityProtectionKey          OPTIONAL
    -- Must be present for intra UMTS Handovers --,
    chosenEncryptionAlgorithmForSignalling 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 --,
    chosenEncryptionAlgorithmForCS   ChosenEncryptionAlgorithm       OPTIONAL
    -- Must be present for intra UMTS Handovers if ciphering is active --,
    chosenEncryptionAlgorithmForPS   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,
    ...
}

SourceRNC-ToTargetRNC-TransparentContainer-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

SourceStatisticsDescriptor ::= ENUMERATED {
    na,
    speech,
    unknown,
    ...
}

SubflowSDU-Size             ::= INTEGER (0..4095)
-- Unit is bit
```

```
SubflowSDU-SizeParameters ::= SEQUENCE (SIZE (1..maxRAB-SubflowCombination)) OF
    SEQUENCE {
        rateControlAllowed      RateControlAllowed,
        subflowSDU-Size         SubflowSDU-Size     OPTIONAL
        -- This IE is only present for RABs that have predefined SDU size(s) --,
        iE-Extensions           ProtocolExtensionContainer { {SubflowSDU-SizeParameters-ExtIEs} } OPTIONAL,
        ...
    }

SubflowSDU-SizeParameters-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- T

TargetID ::= CHOICE {
    targetRNC-ID            TargetRNC-ID, -- If UMTS target
    cGI             CGI,          -- If GSM target
    ...
}

TargetRNC-ID                ::= GlobalRNC-ID

TargetRNC-ToSourceRNC-TransparentContainer ::= SEQUENCE {
    rRC-Container           RRC-Container,
    iE-Extensions           ProtocolExtensionContainer { {TargetRNC-ToSourceRNC-TransparentContainer-ExtIEs} } OPTIONAL,
    ...
}

TargetRNC-ToSourceRNC-TransparentContainer-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

TBCD-STRING                 ::= OCTET STRING

TemporaryUE-ID ::= CHOICE {
    tMSI                TMSI,
    p-TMSI              P-TMSI,
    ...
}

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

TraceReference              ::= OCTET STRING (SIZE (2..3))

TraceType               ::= OCTET STRING (SIZE (1))
-- Reference: GSM TS 12.08

TrafficClass ::= ENUMERATED {
    conversational,
    streaming,
    interactive,
    background,
    ...
}
```

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

TransferDelay               ::= INTEGER (0..65535)
-- Unit is millisecond

UnsuccessfullyTransmittedDataVolume ::= INTEGER (0..4294967295)

TransportLayerAddress           ::= OCTET STRING (SIZE (20))

TriggerID               ::= OCTET STRING (SIZE (3..22))

-- U

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

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

UL-N-PDU-SequenceNumber         ::= INTEGER (0..4095)

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

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

END
```

9.3.5 Common Definitions

```
-- **************************************************************
--
-- Common definitions
--
-- **************************************************************

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

BEGIN

Criticality     ::= ENUMERATED { reject, ignore, notify }

Presence        ::= ENUMERATED { optional, conditional, mandatory }

~~PrivateExtensionID~~PrivateIE-ID  ::= CHOICE {
    local               INTEGER (0..65535),
    global              OBJECT IDENTIFIER
}
```

```
ProcedureCode       ::= INTEGER (0..255)

ProtocolExtensionID ::= INTEGER (0..65535)

ProtocolIE-ID       ::= INTEGER (0..65535)

TriggeringMessage   ::= ENUMERATED { initiating-message, successful-outcome, unsuccessfull-outcome, outcome }

END
```

9.3.6 Constant Definitions

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

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

BEGIN

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

id-RAB-Assignment           INTEGER ::= 0
id-Iu-Release               INTEGER ::= 1
id-RelocationPreparation        INTEGER ::= 2
id-RelocationResourceAllocation     INTEGER ::= 3
id-RelocationCancel         INTEGER ::= 4
id-SRNS-ContextTransfer         INTEGER ::= 5
id-SecurityModeControl          INTEGER ::= 6
id-DataVolumeReport         INTEGER ::= 7
id-CN-InformationBroadcast      INTEGER ::= 8
id-Reset                INTEGER ::= 9
id-RAB-ReleaseRequest           INTEGER ::= 10
id-Iu-ReleaseRequest            INTEGER ::= 11
id-RelocationDetect         INTEGER ::= 12
id-RelocationComplete           INTEGER ::= 13
id-Paging               INTEGER ::= 14
id-CommonID             INTEGER ::= 15
id-CN-InvokeTrace           INTEGER ::= 16
id-LocationReportingControl     INTEGER ::= 17
id-LocationReport           INTEGER ::= 18
id-InitialUE-Message            INTEGER ::= 19
id-DirectTransfer           INTEGER ::= 20
id-OverloadControl          INTEGER ::= 21
id-ErrorIndication          INTEGER ::= 22
id-SRNS-DataForward         INTEGER ::= 23
id-ForwardSRNS-Context          INTEGER ::= 24
```

```
id-~~Private~~privateMessage                INTEGER ::= 25

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

~~maxPrivateExtensions~~ maxPrivateIEs          INTEGER ::= 65535
maxProtocolExtensions           INTEGER ::= 65535
maxProtocolIEs              INTEGER ::= 65535

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

maxNrOfErrors               INTEGER ::= 256
maxNrOfPieces               INTEGER ::= 16
maxNrOfRABs             INTEGER ::= 256
maxNrOfVol              INTEGER ::= 2
maxNrOfPoints               INTEGER ::= 15

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

-- **************************************************************
--
-- 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

END
```

9.3.7 Container Definitions

```
-- **************************************************************
--
```

```
-- Container definitions
--
-- **************************************************************

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

BEGIN

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

IMPORTS
    Criticality,
    Presence,
    PrivateExtensionIDPrivateIE-ID,
    ProtocolExtensionID,
    ProtocolIE-ID
FROM RANAP-CommonDataTypes

    maxPrivateExtensionsmaxPrivateIEs,
    maxProtocolExtensions,
    maxProtocolIEs
FROM RANAP-Constants;

-- **************************************************************
--
-- Class Definition for Protocol IEs
--
-- **************************************************************

RANAP-PROTOCOL-IES ::= CLASS {
    &id             ProtocolIE-ID                   UNIQUE,
    &criticality            Criticality,
    &Value,
    &presence           Presence
}
WITH SYNTAX {
    ID              &id
    CRITICALITY         &criticality
    TYPE                &Value
    PRESENCE            &presence
}

-- **************************************************************
--
-- Class Definition for Protocol IEs
--
-- **************************************************************

RANAP-PROTOCOL-IES-PAIR ::= CLASS {
    &id             ProtocolIE-ID                   UNIQUE,
    &firstCriticality       Criticality,
```

```
    &FirstValue,
    &secondCriticality      Criticality,
    &SecondValue,
    &presence           Presence
}
WITH SYNTAX {
    ID              &id
    FIRST CRITICALITY       &firstCriticality
    FIRST TYPE          &FirstValue
    SECOND CRITICALITY      &secondCriticality
    SECOND TYPE         &SecondValue
    PRESENCE            &presence
}

-- **************************************************************
--
-- Class Definition for Protocol Extensions
--
-- **************************************************************

RANAP-PROTOCOL-EXTENSION ::= CLASS {
    &id             ProtocolExtensionID                 UNIQUE,
    &criticality            Criticality,
    &Extension
}
WITH SYNTAX {
    ID              &id
    CRITICALITY         &criticality
    EXTENSION           &Extension
}

-- **************************************************************
--
-- Class Definition for Private ~~Extensions~~IEs
--
-- **************************************************************

RANAP-PRIVATE-~~EXTENSION~~ IES ::= CLASS {
    &id             ~~PrivateExtensionID~~PrivateIE-ID,
    &criticality            Criticality,
    &~~Extension~~Value
}
WITH SYNTAX {
    ID              &id
    CRITICALITY         &criticality
    ~~EXTENSION~~TYPE           &~~Extension~~Value
}

-- **************************************************************
--
-- Container for Protocol IEs
--
-- **************************************************************

ProtocolIE-Container {RANAP-PROTOCOL-IES : IEsSetParam} ::=
    SEQUENCE (SIZE (0..maxProtocolIEs)) OF
```

```
    ProtocolIE-Field {{IEsSetParam}}

ProtocolIE-Field {RANAP-PROTOCOL-IES : IEsSetParam} ::= SEQUENCE {
    id              RANAP-PROTOCOL-IES.&id              ({IEsSetParam}),
    criticality         RANAP-PROTOCOL-IES.&criticality         ({IEsSetParam}{@id}),
    value               RANAP-PROTOCOL-IES.&Value               ({IEsSetParam}{@id})
}

-- **************************************************************
--
-- Container for Protocol IE Pairs
--
-- **************************************************************

ProtocolIE-ContainerPair {RANAP-PROTOCOL-IES-PAIR : IEsSetParam} ::=
    SEQUENCE (SIZE (0..maxProtocolIEs)) OF
    ProtocolIE-FieldPair {{IEsSetParam}}

ProtocolIE-FieldPair {RANAP-PROTOCOL-IES-PAIR : IEsSetParam} ::= SEQUENCE {
    id              RANAP-PROTOCOL-IES-PAIR.&id         ({IEsSetParam}),
    firstCriticality        RANAP-PROTOCOL-IES-PAIR.&firstCriticality   ({IEsSetParam}{@id}),
    firstValue          RANAP-PROTOCOL-IES-PAIR.&FirstValue         ({IEsSetParam}{@id}),
    secondCriticality       RANAP-PROTOCOL-IES-PAIR.&secondCriticality  ({IEsSetParam}{@id}),
    secondValue         RANAP-PROTOCOL-IES-PAIR.&SecondValue            ({IEsSetParam}{@id})
}

-- **************************************************************
--
-- Container Lists for Protocol IE Containers
--
-- **************************************************************

ProtocolIE-ContainerList {INTEGER : lowerBound, INTEGER : upperBound, RANAP-PROTOCOL-IES : IEsSetParam} ::=
    SEQUENCE (SIZE (lowerBound..upperBound)) OF
    ProtocolIE-Container {{IEsSetParam}}

ProtocolIE-ContainerPairList {INTEGER : lowerBound, INTEGER : upperBound, RANAP-PROTOCOL-IES-PAIR : IEsSetParam} ::=
    SEQUENCE (SIZE (lowerBound..upperBound)) OF
    ProtocolIE-ContainerPair {{IEsSetParam}}

-- **************************************************************
--
-- Container for Protocol Extensions
--
-- **************************************************************

ProtocolExtensionContainer {RANAP-PROTOCOL-EXTENSION : ExtensionSetParam} ::=
    SEQUENCE (SIZE (1..maxProtocolExtensions)) OF
    ProtocolExtensionField {{ExtensionSetParam}}

ProtocolExtensionField {RANAP-PROTOCOL-EXTENSION : ExtensionSetParam} ::= SEQUENCE {
    id              RANAP-PROTOCOL-EXTENSION.&id            ({ExtensionSetParam}),
    criticality         RANAP-PROTOCOL-EXTENSION.&criticality       ({ExtensionSetParam}{@id}),
    extensionValue          RANAP-PROTOCOL-EXTENSION.&Extension     ({ExtensionSetParam}{@id})
}
```

```
-- **************************************************************
--
-- Container for Private ~~Extensions~~IEs
--
-- **************************************************************

~~PrivateExtensionContainer~~ PrivateIE-Container {RANAP-PRIVATE-~~EXTENSION~~ IES : ~~ExtensionSetParam~~IEsSetParam} ::=
    SEQUENCE (SIZE (1..~~maxPrivateExtensions~~maxPrivateIEs)) OF
    ~~PrivateExtensionField~~ PrivateIE-Field {{~~ExtensionSetParam~~IEsSetParam}}

~~PrivateExtensionField~~ PrivateIE-Field {RANAP-PRIVATE-~~EXTENSION~~ IES : ~~ExtensionSetParam~~IEsSetParam} ::= SEQUENCE {
    id              RANAP-PRIVATE-~~EXTENSION~~IES.&id          ({~~ExtensionSetParam~~IEsSetParam}),
    criticality         RANAP-PRIVATE-~~EXTENSION~~IES.&criticality     ({~~ExtensionSetParam~~IEsSetParam}{@id}),
    ~~extensionValue~~value         RANAP-PRIVATE-~~EXTENSION~~IES.&~~Extension~~Value      ({~~ExtensionSetParam~~IEsSetParam}{@id})
}

END
```

3GPP TSG-RAN3 Meeting #10
Gothenburg, Sweden, 24-28 Jan 2000

Document R3-000799
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	24r2	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:** 2000-02-29

Subject: Corrections of RANAP RAB parameters

Work item: ~~10.2~~

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:

The current RANAP V3.0.0 is misaligned with 23.107 QoS. This contribution corrects the RAB asymmetry and the rate control and guaranteed bit rate aspects. It also provides the support CS NT data rate control.
Semantic description and usage of the RAB attributes have also been added based on 23.107 V3.1.0, all as proposed in R3-000072.

It also incorporates the additional corrections described in R3-000071 and proposed in R3-000078.

The comments given by the Iu SWG Group meeting #10 are incorporated:

- ASN.1 is provided
- Add that if no priority Information Element has been received, both "Preemption Capability" and "Preemption Vulnerability" bits shall be regarded as capable ~~o~~or vulnerable to preemption.
- Source Statistics descriptor is made conditional to conversstational and streaming traffic class
- Cause values proposed in R3-000188 failure cases and bit rate asymmetry.

Revision Information:
r1:
- Clarification of description of 'RAB Subflow Combination bit rate' IE.
- Removal of one comma sign from the enumerated RAB Asymmetry Indicator in the tabular format.

r2: (based on comments in R3-000660)
- A missing comma in the second to the last new cause value corrected.
- Corrections to follow naming convention for IEs and containers, and rules for placing the comments.
- Alignment of the alphabetical order of IE modules.
- Correction of spelling errors.

Clauses affected: 8.2.1, 9.2.1.3, 9.2.1.4

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:	This CR results from the merging of CR contents of Tdocs R3-000072 and R3-000078 modified and approved, thus resolving the problem of overlapping changes in the two Tdocs.

help.doc

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

8.2 RAB Assignment
8.2.1 General

…..

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 Maximum Bit Rate for DL not Available", "Requested Maximum Bit Rate for UL not Available", "Requested Guaranteed Bit Rate not Available", "Requested Guaranteed Bit Rate for DL not Available", "Requested Guaranteed Bit Rate for UL 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".

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, ...)	**Desc.:** This IE indicates the type of application for which the Radio Access Bearer service is optimised
RAB Asymmetry Indicator	M		ENUMERATED (Symmetric bidirectional~~Symetric, bidirectional~~, Asymmetric Unidirectional downlink, Asymmetric Unidirectional Uplink, Asymmetric Bidirectional, ...)	**Desc.:** This IE indicates asymmetry or symmetry of the RAB and traffic direction
Maximum Bit Rate	M	1 to <Nbr-SeparateTrafficDirections>	INTEGER (~~0~~1..16,000,000)	**Desc.:** This IE indicates the maximum number of bits delivered by UTRAN and to UTRAN at a SAP within a period of time, divided by the duration of the period. The unit is: bit/s **Usage**: When Nbr-SeparateTrafficDirections is equal to 2, then Maximum Bit Rate attribute for downlink is signalled first, then Maximum Bit Rate attribute for uplink
Guaranteed Bit Rate	C-iftraffic-Conv-Stream~~M~~	0 to <Nbr-SeparateTrafficDirections>	INTEGER (0..16,000,000)	**Desc.:** This IE indicates the guaranteed number of bits delivered at a SAP within a period of time (provided that there is data to deliver), divided by the duration of the period. The unit is: bit/s **Usage:** 1. When Nbr-SeparateTrafficDirections is equal to 2, then Guaranteed Bit Rate for downlink is signalled first, then Guaranteed Bit Rate for uplink 2. Delay and reliability attributes only apply up to the guaranteed bit rate 3. Conditional value: • Set to lowest rate controllable RAB Subflow Combination rate given by the largest RAB Subflow Combination SDU size, when present and calculated Iu Transmission Interval~~periodicly~~ • Set to N/A (=0) when traffic class indicates Interactive or Background

Delivery Order	M		ENUMERATED (delivery order requested, delivery order not requested)	**Desc:** This IE indicates that whether the RAB shall provide in-sequence SDU delivery or not **Usage:** 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)	**Desc.:** This IE indicates the maximum allowed SDU size The unit is: bit. **Usage:** Conditional value: set to largest RAB Subflow Combination compound SDU size when present among the different RAB Subflow Combination ~~The unit is bit~~
SDU parameters		1 to <maxRAB-Subflows>	See below	**Desc.:** This IE contains the parameters characterizing the RAB SDUs **Usage** Given per subflow with first occurence corresponding to subflow#1 etc…
Transfer Delay	C-iftraffic-Conv-Stream~~M~~		INTEGER (0..65535)	**Desc.:** This IE indicates the maximum delay for 95th percentile of the distribution of delay for all delivered SDUs during the lifetime of a RAB, where delay for an SDU is defined as the time from a request to transfer an SDU at one SAP to its delivery at the other SAP ~~Delay attribute~~ ~~-~~The u~~U~~nit is: millisecond. **Usage:** ~~- Set to N/A (65535) when traffic class is set interactive or background.~~
Traffic Handling priority	C - iftraffic-cInteractiv ~~M~~		INTEGER {spare (0), highest (1), lowest (14), no priority used (15)} (0…15)	**Desc.:** This IE specifies the relative importance for handling of all SDUs belonging to the radio access bearer compared to the SDUs of other bearers **Usage:** ~~Conditional value: set to N/A (=0) for all traffic classes except "Interactive"~~ -
Allocation/Retention priority	~~M~~O		See below	**Desc.:** This IE specifies the relative importance compared to other Radio access bearers for allocation and retention of the Radio access bearer. **Usage:** If this IE is not received, the request is regarded as it cannot trigger the preemption process and it is vulnerable to the preemption process.
Source Statistics descriptor	C-iftraffic-Conv-Stream~~M~~		ENUMERATED (~~N/A,~~ speech, unknown, …)	**Desc.:** This IE specifies characteristics of the source of submitted SDUs **Usage:** ~~Conditional value: set to N/A when traffic class is set to Interactive or Background~~ -

Range Bound	Explanation
Nbr-SeparateTrafficDirection	Number of Traffic Directions being signalled separately

Range Bound	Explanation
MaxRABSubflows	Number of RAB Sublfows

Condition	Explanation
IftrafficConv-Stream	This IE is only present when traffic class indicates “Conversational” or “Streaming”
IftrafficInteractiv	This IE is only present when traffic class indicates “Interactiv”

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	C-ifErrorneousSDU			**Desc.:** This IE indicates the fraction of SDUs lost or detected as erroneous. This is a Reliability attribute **Usage:** The attribute is coded as follows: Mantissa * 10 $^{-\text{exponent}}$
Mantissa	M		INTEGER (1..9)	
Exponent	M		INTEGER (1..6)	
~~Choice **Residual Bit Error Ratio**~~	~~M~~			~~Reliability attribute~~
~~**NULL**~~				
Residual Bit Error Ratio	M			**Desc.:** This IE indicates the undetected bit error ratio for each subflow in the delivered SDU. This is a Reliability attribute. **Usage:** The attribute is coded as follows: Mantissa * 10 $^{-\text{exponent}}$
Mantissa	M		INTEGER (1..9)	
Exponent	M		INTEGER (1..8)	
Delivery of Erroneous SDU	M		ENUMERATED (yes, no, ~~)~~no-error-detection-consideration)	**Desc.:** This IE indicates whether SDUs with detected errors shall be delivered or not. In case of unequal error protection, the attribute is set per subflow This is a Reliability attribute **Usage:** Yes: error detection applied, erroneous SDU delivered No. Error detection is applied , erroneous SDU discarded

				no-error-detection-consideration: SDUs delivered without considering error detection
~~Subflow~~ SDU format information~~size~~ Parameter	C - ifrate-controllableRAB	1 to <maxRAB-SubflowCombinations>		**Desc.:** This IE contains the list of possible exact sizes of SDUs and/or RAB Subflow Combination bitrates **Usage:** 1. The SDU sizes only are present when the RAB SDU of predefined sizes are transferred, when transferred, at constant time interval 2. The RAB Subflow Combination bit rates only are present when the RAB SDU are transferred at predefined time intervals

Range Bound	Explanation
MaxRABSubflowCombinations	Number of RAB Sublfow Combinations

Condition	Explanation
IfErroneousSDU	This IE is not present when Delivery Of Erroneous SDU is set to "-"
IfratecontrollableRAB	When signalled, this IE indicates that the RAB is rate controllable

IE/Group Name	Presence	Range	IE type and reference	Semantics description
~~Subflow~~ SDU format information~~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	C-ifalone ~~O~~		INTEGER (0…4095)	**Desc.:** This IE indicates the exact size of the SDU. The unit is: bit. **Usage:** This IE is only present for RABs that have predefined SDU size(s). When thie IE not present and SDU parameters is present, then all Subflow SDU sizes equal the Maximum SDU size.
RAB Subflow Combination bit rate	C-ifalone		INTEGER (0..16,000,000)	**Desc.**: This IE indicates the RAB Subflow Combination bit rate. The unit is: bit/s. **Usage:** This IE is only present for RABs that have predefined rate controllable bit rates. When this IE is not present and SDU format information parameters is present then all Subflow SDUs are transmitted (~~,~~ when there is data to be transmitted)~~,~~ at a constant time interval.

Ifalone	At least either of Subflow SDU size IE or RAB Subflow Combination bit rate IE shall be present when SDU format information parameter is present

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)	**Desc.**: This IE indicates the priority of the request. **Usage:** The priority level and the preemption indicators may be used to determine whether the request has to be performed unconditionally and immediately
Pre-emption Capability	M		ENUMERATED(cannot trigger pre-emption, can trigger pre-emption)	**Descr.:** This IE indicates the pre-emption capability of the request on other RABs **Usage:** The RAB ~~.~~ shall not pre-empt other RABs or , the ~~The~~ RAB may pre-empt other RABs The Preemption Capability indicator applies to the allocation of resources for a RAB and as such it provides the trigger to the pre-emption procedures/processes of the RNS.
Pre-emption Vulnerability	M		ENUMERATED(not vulnerable to pre-emption, vulnerable to pre-emption)	**Desc.:** This IE indicates the vulnerability of the RAB to preemption of other RABs. **Usage**: The RAB shall not be pre-empted by other RABs or ~~,~~ ~~The~~the RAB might be pre-empted by other RABs. Preemption Vulnerability indicator applies for the entire duration of the RAB, unless modified and as such indicates whether the RAB is a target of the preemption procedures/processes of the RNS
Queuing allowed	M		ENUMERATED(queueing not allowed, queueing allowed)	**Desc.:** This IE indicates whether the request can be placed into a resource allocation queue or not. **Usage:** Queuning of the RAB is allowed Queuing of the RAB is not allowed Queuing allowed indicator applies for the entire duration of the RAB, unless modified.

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 Maximum Bit Rate for DL not Available, Requested Maximum Bit Rate for UL not Available, Requested Guaranteed Bit Rate not Available, Requested Guaranteed Bit Rate for DL not Available, Requested Guaranteed Bit Rate for UL 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 (…)	

9.3.4 Information Element Definitions

Unchanged parts has been removed

```
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),
    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),
    requested-maximum-bit-rate-for-DLdl-not-available (33),
    requested-maximum-bitr-ate-for-ULul-not-available (34),
    requested-guaranteed-bit-rate-for-DLdl-not-available (35),
    requested-guaranteed-bit-rate-for-ULul-not-available (36)
    ----
} (1..64)

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

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

Unchanged parts has been removed

```
-- M

MaxBitrate              ::= INTEGER (01..16000000)
-- Unit is bits per sec
```

Unchanged parts has been removed

```
RAB-AsymmetryIndicator::= ENUMERATED {
    SsymmetricB-bidirectional,
    AasymmetricU-unidirectional-downlink,
    AasymmetricU-unidirectionalU-uplink,
    AasymmetricB-bidirectional,
    ...
}

RAB-ID                  ::= INTEGER (1..maxNrOfRABs)

RAB-Parameters ::= SEQUENCE {
    trafficClass            TrafficClass,
    rAB-AsymmetryIndicator          RAB-AsymmetryIndicator,
    maxBitrate          MaxBitrate,
    guaranteedBitRate       GuaranteedBitrate OPTIONAL
    -- This IE is only present when traffic class indicates Conversational or Streaming -- OPTIONAL,
    deliveryOrder           DeliveryOrder,
```

```
    maxSDU-Size         MaxSDU-Size,
    sDU-Parameters          SDU-Parameters,
    transferDelay           TransferDelay OPTIONAL
    -- This IE is only present when traffic class indicates Conversational or Streaming --OPTIONAL,
    trafficHandlingPriority     TrafficHandlingPriority OPTIONAL
    -- This IE is only present when traffic class indicates Interactiv --OPTIONAL,
    allocationOrRetentionPriority   AllocationOrRetentionPriority OPTIONAL,
    sourceStatisticsDescriptor  SourceStatisticsDescriptor OPTIONAL
    -- This IE is only present when traffic class indicates Conversational or Streaming --OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { {RAB-Parameters-ExtIEs} } OPTIONAL,
    ...
}

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

RABs-SubflowCombinationBitRate  ::= INTEGER (0..16000000)
```

Unchanged parts has been removed

```
ResidualBitErrorRatio ::= CHOICE {
    notApplicable           NULL,
    value                   ResidualBitErrorRatioIE
}

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

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

RNC-ID                  ::= INTEGER (0..4095)
-- RNC-ID                   ::= BIT STRING (SIZE (12))
-- Harmonized with RNSAP and NBAP definitions

RRC-Container               ::= OCTET STRING

-- S

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

SAI ::= SEQUENCE {
    pLMN-ID             PLMN-ID,
    lAC             LAC,
    sAC             SAC,
```

```
    iE-Extensions           ProtocolExtensionContainer { {SAI-ExtIEs} } OPTIONAL
}

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

SAPI ::= ENUMERATED {
    normal-priority,
    low-priority,
    ...
}

SDU-ErrorRatio ::= CHOICE {
    notApplicable           NULL,
    value                   SDU-ErrorRatioIE
}

SDU-ErrorRatioIE ::= SEQUENCE {
    mantissa            INTEGER (1..9),
    exponent            INTEGER (1..6),
    iE-Extensions           ProtocolExtensionContainer { {SDU-ErrorRatioIE-ExtIEs} } OPTIONAL
}
-- SDU-ErrorRatio = mantissa * 10^-exponent

SDU-ErrorRatioIE-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

SDU-FormatInformationParameters ::= SEQUENCE (SIZE (1..maxRAB-SubflowCombination)) OF
    SEQUENCE {
        subflowSDU-Size         SubflowSDU-Size     OPTIONAL
        -- This IE is only present for RABs that have predefined SDU size(s) --,
        rAB-SubflowCombinationBitRate   RAB-SubflowCombinationBitRate   OPTIONAL
        -- At least either of subflowSDU-Size or rABsubflowCombinationBitRate --
        -- shall be present when SDUformatInformationParameter is present --,
        iE-Extensions           ProtocolExtensionContainer { {SDU-FormatInformationParameters-ExtIEs} } OPTIONAL,
        ...
    }

SDU-FormatInformationParameters-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

SDU-Parameters ::= SEQUENCE (SIZE (1..maxRAB-Subflows)) OF
    SEQUENCE {
        sDU-ErrorRatio          SDU-ErrorRatio OPTIONAL
        -- This IE is not present when Delivery Of Erroneous SDU is set to no-error-detection-consideration --, -- OPTIONAL,
        residualBitErrorRatio       ResidualBitErrorRatio,
        deliveryOfErroneousSDU      DeliveryOfErroneousSDU,
        subflowSDUf-FormatInformation-SizeParameters    SubflowSDUf-FormatInformation-SizeParameters OPTIONAL
        -- When signalled, this IE indicates that the RAB is rate controllable -- OPTIONAL,
        iE-Extensions           ProtocolExtensionContainer { {SDU-Parameters-ExtIEs} } OPTIONAL,
```

```
        ...
    }
    -- SDU-ErrorRatio is set to notApplicable when DeliveryOfErroneousSDU is
    -- set to no-error-detection-consideration.

SDU-Parameters-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}


SourceID ::= CHOICE {
    sourceRNC-ID            SourceRNC-ID, -- If UMTS target
    sAI             SAI,          -- if GSM target
    ...
}

SourceRNC-ID                ::= GlobalRNC-ID

SourceRNC-ToTargetRNC-TransparentContainer ::= SEQUENCE {
    rRC-Container           RRC-Container,
    numberOfIuInstances     NumberOfIuInstances,
    relocationType          RelocationType,
    chosenIntegrityProtectionAlgorithm ChosenIntegrityProtectionAlgorithm   OPTIONAL
    -- Must be present for intra UMTS Handovers --,
    integrityProtectionKey      IntegrityProtectionKey          OPTIONAL
    -- Must be present for intra UMTS Handovers --,
    chosenEncryptionAlgorithmForSignalling 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 --,
    chosenEncryptionAlgorithmForCS   ChosenEncryptionAlgorithm       OPTIONAL
    -- Must be present for intra UMTS Handovers if ciphering is active --,
    chosenEncryptionAlgorithmForPS   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,
    ...
}

SourceRNC-ToTargetRNC-TransparentContainer-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

SourceStatisticsDescriptor ::= ENUMERATED {
    na,
    speech,
    unknown,
    ...
}

SubflowSDU-Size             ::= INTEGER (0..4095)
-- Unit is bit
```

```
SubflowSDUformatInformation-SizeParameters ::= SEQUENCE (SIZE (1..maxRAB-SubflowCombination)) OF
    SEQUENCE {
        rateControlAllowed      RateControlAllowed,
        subflowSDU-Size         SubflowSDU-Size     OPTIONAL
        -- This IE is only present for RABs that have predefined SDU size(s) --,
        rABsubflowCombinationBitRate    RABsubflowCombinationBitRate    OPTIONAL
        -- At least either of subflowSDU-Size or rABsubflowCombinationBitRate --
        --shall be present when SDUformatInformationParameter is present --
        iE-Extensions           ProtocolExtensionContainer { {SubflowSDU-SizeParameters-ExtIEs} } OPTIONAL,
        ...
    }

SubflowSDU-SizeParameters-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- T
```

Unchanged parts has been removed

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Sophia Antipolis, France, 28 Feb – 3 Mar, 2000

***Document* R3-000800**
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	031r1	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:** 01 Mar 2000

Subject: Definition of global RAB ID in 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	X		Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: The RAB identifier is changed to be global identifier for the connection covering both the radio bearer and the Iu bearer. This is according to the decision made in RAN-3 #10 meeting. This CR specifies the coding of the RAB identifier. The definition of NAS Binding Information in TS 24.008 according to N1 CR N1-000211 is to be removed. The size of RAB ID is changed to 8 bits.

Clauses affected: 9.2.1.2

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.

9.2.1.2 RAB ID

This element uniquely identifies the radio access bearer for a specific CN domain for a particular UE, which makes the RAB ID unique 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 even when the RAB is relocated to another Iu connection.

The purpose of the element is to bind data stream from the Non-Access Stratum point of view (e.g. bearer of call or PDP context) and radio access bearer in Access Stratum. The value is also used in the RNC to relate Radio Bearers to a RAB. The content of this information element is ~~transparently~~ transferred unchanged from the CN node (i.e., MSC or SGSN) via RNC to UE by RANAP messages and RRC messages. For RRC messages refer to TS 25.331 [10].

The element contains binary representation of either the Stream Identifier (SI) for CS domain or the Network Service Access Point Identifier (NSAPI) for PS domain. These identifiers are coded in the RAB ID element in accordance with the coding of the Stream Identifier IE and with the coding of the NSAPI IE in TS 24.008 [8].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
RAB ID	M		BIT STRING (8) ~~INTEGER (1...256)~~	

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Sophia Antipolis, France, 28 Feb – 3 Mar, 2000

Document R3-000801
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	032r1	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: (U)SIM [ ] ME [ ] UTRAN / Radio [X] Core Network [X]
(at least one should be marked with an X)

Source: RAN-WG3 **Date:** 01 Mar 2000

Subject: Renaming NAS Binding information to RAB ID and removing local RAB ID in 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	X		Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: The *NAS Binding Information* IE was intended to be transparent to the RNC i.e. on the AS level but currently this NAS level Information is incorrectly used in the AS level. This CR proposes to make the NAS Binding Information totally transparent to the RNC and AS level in accordance with the architectural principle. The changes to the chapter 9.2.1.2 are specified in a separate CR 031.

Clauses affected: 8.2.2, 9.1.1, 9.1.8, 9.2.3.1, 9.2.4.1

Other specs affected:

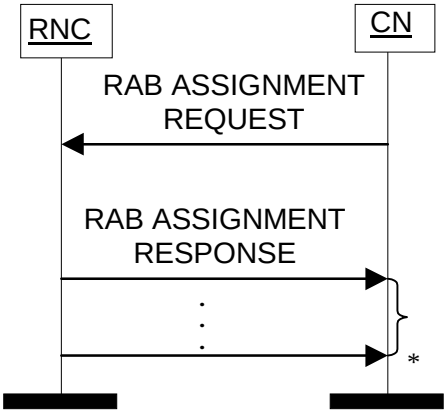
Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:


help.doc

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

8.2.2 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 for the specific CN domain for the particular UE, which makes the RAB ID unique over the Iu ~~instance~~ connection 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 contents of ~~*NAS Binding Information*~~ *RAB ID* 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".

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.

9.1.8 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		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.

9.2.3.1 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)	

9.2.4.1 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~~	
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
maxnoofDT	Maximum no. of DT information. Value is 15.

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25.413	CR	051r1	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: (U)SIM [ ] ME [ ] UTRAN / Radio [X] Core Network [X]
(at least one should be marked with an X)

Source: RAN-WG3 **Date:** 2000-03-01

Subject: Clarification of Elementary Procedure Definition

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: The current EP definition does not mention the interactions between EPs. This CR clarifies the definition.

Clauses affected: 3.1

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.

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply.

Relocation of SRNS: Relocation of SRNS is a UMTS functionality used to relocate the serving RNS role from one RNS to another RNS. This UMTS functionality is realised by several elementary procedures executed in several interfaces and by several protocols and it may involve a change in the radio resources used between UTRAN and UE.

It is also possible to relocate the serving RNS role from

- one RNS within UMTS to another relocation target external to UMTS
- functionality equivalent to the serving RNS role from another relocation source external to UMTS to another RNS.

Serving RNS (SRNS): A role an RNS can take with respect to a specific connection between an UE and UTRAN. There is one Serving RNS for each UE that has a connection to UTRAN. The Serving RNS is in charge of the radio connection between a UE and the UTRAN. The Serving RNS terminates the Iu for this UE.

Serving RNC (SRNC): SRNC is the RNC belonging to SRNS.

Source RNS: A role, with respect to a specific connection between UTRAN and CN, that RNS takes when it decides to initiate a relocation of SRNS.

Source RNC: Source RNC is the RNC belonging to source RNS.

Target RNS: A role an RNS gets with respect to a specific connection between UTRAN and CN when it is being a subject of a relocation of SRNS which is being made towards that RNS.

Target RNC: Target RNC is the RNC belonging to target RNS.

Elementary Procedure: The RANAP protocol consists of Elementary Procedures (EPs). An Elementary Procedure is a unit of interaction between the RNS and the CN. These Elementary Procedures are defined separately and are intended to be used to build up complete sequences in a flexible manner. If the independence between some EPs is restricted, it is described under the relevant EP description. Unless otherwise stated by the restrictions, the EPs may be invoked independently of each other as stand alone procedures, which can be active in parallel.

An EP consists of an initiating message and possibly a response message. Three kinds of EPs are used:

- **Class 1:** Elementary Procedures with response (success or failure).
- **Class 2:** Elementary Procedures without response.
- **Class 3:** Elementary Procedures with possibility of multiple responses.

For Class 1 EPs, the types of responses can be as follows:

Successful

- A signalling message explicitly indicates that the elementary procedure successfully completed with the receipt of the response.

Unsuccessful

- A signalling message explicitly indicates that the EP failed.
- On time supervision expiry (i.e. absence of expected response).

Class 2 EPs are considered always successful.

Class 3 EPs have one or several response messages reporting both successful, unsuccessful outcome of the requests and temporary status information about the requests. This type of EP only terminates through response(s) or EP timer expiry.

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25.413	CR	042r1	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:** 2000-03-01

Subject: Clarifications in the Paging and Common ID procedures.

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 should be clarified that the Permanent NAS UE Identity is always the IMSI for release 99.

It needs to be clarified that the paging cause in the PAGING message is transferred transparently to the UE.

It needs to be clarified how the RNC shall react if the Non Searching Indication IE is not included in the Paging message.

Clauses affected: 8.15 and 8.16

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.

8.15 Paging

8.15.1 General

The purpose of the Paging procedure is to enable the CN to page a UE for a UE terminating service request. The procedure uses connectionless signalling.

8.15.2 Successful Operation

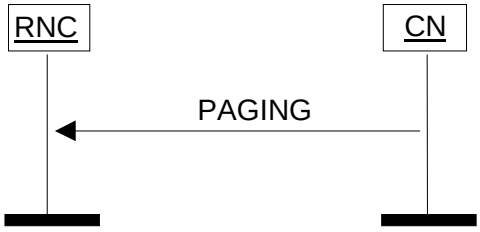

Figure 1: Paging procedure. Successful Operation.

The CN shall initiate the procedure by sending a PAGING message. This message shall contain information necessary for RNC to be able to page the UE, like:

- CN Domain Indicator
- Permanent NAS UE Identity
- Temporary UE Identity
- Paging Area
- Paging Cause
- Non Searching Indicator

The *CN Domain Indicator* IE shall be used by the RNC to identify from which CN domain the PAGING message originates.

The *Permanent NAS UE Identity* IE (~~e.g.~~i.e. IMSI) shall be used by the UTRAN paging co-ordination function to check if a signalling connection towards the ~~an~~other CN domain already exists for this UE. In that case, the radio interface paging message can be sent via that connection instead of using the paging broadcast channel.

The *Temporary UE Identity* IE (e.g. TMSI) is the identity of the user that shall be used over the paging channel. If the *Temporary UE Identity* IE is not included in the PAGING message, the RNC shall use the Permanent UE Identity instead.

The *Paging Area* IE shall be used by the RNC to identify the area in which the radio interface paging message shall be broadcast in case no signalling connection, as described above, already exists for the UE. If the *Paging Area* IE is not included in the PAGING message, the whole RNC area shall be used as Paging Area.

The *Paging Cause* IE shall indicate to the RNC the reason for sending the PAGING message. The paging cause is transfered transparently to theUE.

The *Non Searching Indication* IE shall be used by the RNC to decide whether the UTRAN paging co-ordination function needs to be activated or not. In the absence of this IE, UTRAN paging co-ordination shall be performed.

It should be noted that each PAGING message on the Iu interface relates to only one UE and therefore the RNC has to pack the pages into the relevant radio interface paging message.

The core network is responsible for the paging repetition over the Iu interface.

8.15.3 Abnormal Conditions

-

8.16 Common ID

8.16.1 General

The purpose of the Common ID procedure is to ~~allow the RNC to create a reference between~~ inform the RNC about the permanent NAS UE Identity (i.e. IMSI) of a user. This is used by the RNC e.g. to create a reference between the permanent NAS UE identity of the user and the RRC connection of that user for UTRAN paging co-ordination. The procedure uses connection oriented signalling.

8.16.2 Successful Operation

Figure 2: Common ID procedure.

After having established an Iu signalling connection, and if the Permanent NAS UE identity (i.e. IMSI) is available, the CN shall send a COMMON ID message , containing the *Permanent NAS UE Identity* IE to the RNC. The RNC associates the permanent identity to the RRC Connection of that user and shall save it for the duration of the RRC connection.

8.16.3 Abnormal Conditions

-

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25.413 **CR** **025r1** 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 *list expected approval meeting # here ↑*

for approval [X]
for information [ ]

Strategic [ ]
non-strategic [ ]
(for SMG use only)

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

Subject: Clarification of Criticality Modelling and Protocol Error Handling

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 the current RANAP specification the description of the handling of IEs/IE groups with Criticality Information is a bit ambiguous. It is specified that if an IE with Criticality Information is received but not understood then it shall be ignored/rejected. However, it is not as clear that this is the case for an entire IE group. It is further more not clear what happens if one out of several repetitions of an IE/IE group is not understood by the receiving node.

On the other hand, it is clear that the reporting of a rejected or ignored item (IE/IE group) can only be done for the item on which criticality information is defined. This means that if parts of an IE group (where the individual IEs does not have criticality information of its own) is not understood then the whole IE group is what can be indicated in the Criticality Diagnostics, not individual IEs within the IE group.

Further more, the discrimination between Transfer Syntax Errors, Abstract Syntax Errors and Semantic/Logical Errors is not clear.

This CR aims at clarifying that if an IE group with Criticality Information is received but not understood then the whole IE group (not individual IEs within the IE group) shall be ignored/rejected. The CR further more aims at clarifying that if an IE/IE group is not understood then it shall be ignored and the receiving node shall continue with the procedure ("ignore" and "ignore and notify" cases) as if the ignored IE/IE group was not received, with the exception of the reporting of Criticality Diagnostics ("ignore and notify" case). Finally, the CR improves the discrimination between Transfer Syntax Errors, Abstract Syntax Errors and Semantic/Logical Errors.

Clauses affected: 10

Other specs Other 3G core specifications [X] → List of CRs: 25.423 v3.0.0 CR-026r1, 25.433 v3.0.0 CR-041r1

affected:	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:	

10 Handling of Unknown, Unforeseen and Erroneous Protocol Data

10.1 General

Protocol Error cases can be divided into ~~two~~ three classes:

- Transfer Syntax ~~error~~Error
- Abstract Syntax ~~error~~Error
- Logical Error

Protocol errors can occur in the following functions within a receiving node:

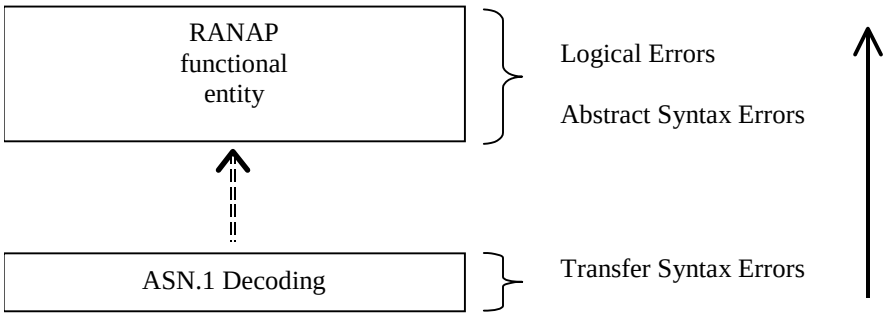

Figure X: Protocol Errors in RANAP.

10.2 Transfer Syntax Error

A Transfer Syntax Error occurs when the receiver is not able to decode the received physical message ~~i.e. the transfer syntax can not be opened~~. Transfer syntax errors are always detected in the process of ASN.1 decoding. If a Transfer Syntax Error occurs, the receiver should initiate Error Indication procedure with appropriate cause value for the Transfer Syntax protocol error.

10.3 Abstract Syntax Error

10.3.1 General

An Abstract Syntax Error occurs when the receiving functional RANAP entity receives IEs or IE groups that cannot be understood. The abstract syntax error also appears if the logical range of an IE is violated (e.g.: ASN.1 definition: 0 to 15, the logical range is 0 to 10 (values 11 to 15 are undefined), and 12 will be received; this case will be handled as an abstract syntax error using criticality information sent by the originator of the message)

10.3.2 Definition of Criticality Information

In the RANAP messages there is criticality information set for individual IEs and/or ~~sequences of~~ IE groups. This criticality information instructs the receiver how to act when receiving an IE or an IE group that is not comprehended, i.e. the entire item (IE or IE group) which is not (fully or partially) comprehended shall be treated in accordance with its own criticality information as specified in chapter 10.3.3. ~~An IE shall be regarded as not comprehended if the receiving node either cannot decode the IE or does not comprehend the function represented by the IE value. The case of the not comprehended IE is an Abstract Syntax Error~~.

If an Abstract Syntax Error occurs, the receiver shall read the remaining message and shall then for each detected Abstract Syntax Error act according to the Criticality Information for the IE/IE group ~~or sequences of IEs~~ due to which Abstract Syntax Error occurred in accordance with chapter 10.3.~~2~~3.

The receiving node shall take different actions depending on the value of the Criticality Information. The three possible values of the Criticality Information for an IE/IE group are:

- Reject IE
- Ignore IE and Notify Sender
- Ignore IE

10.3.~~2~~3 Handling of the Criticality Information at Reception

10.3.~~2~~3.1 Procedure Code

The receiving node shall treat the different types of criticality information of the *Procedure Code* according to the following:

Reject IE:

- If a message is received with a *Procedure Code* marked with "*Reject IE*" which the receiving node does not comprehend, the receiving node shall reject the procedure using the Error Indication procedure.

Ignore IE and Notify Sender:

- If a message is received with a *Procedure Code* marked with "*Ignore IE and Notify Sender*" which the receiving node does not comprehend, the receiving node shall ignore the procedure and initiate the Error Indication procedure.

Ignore IE:

- If a message is received with a *Procedure Code* marked with "*Ignore IE*" which the receiving node does not comprehend, the receiving node shall ignore the procedure.

10.3.~~2~~3.2 IEs other than the Procedure Code

The receiving node shall treat the different types of criticality information of an IE/IE group other than the *Procedure Code* according to the following:

Reject IE:

- If a message *initiating* a procedure is received containing one or more IEs/IE groups marked with "*Reject IE*" which the receiving node does not comprehend; none of the functional requests of the message shall be executed. The receiving node shall reject the procedure and report the rejection of one or more IEs/IE groups using the message normally used to report unsuccessful outcome of the procedure.

- If a message *initiating* a procedure that does not have a message to report unsuccessful outcome is received containing one or more IEs/IE groups marked with "*Reject IE*" which the receiving node does not comprehend, the receiving node shall initiate the Error Indication procedure.

- If a *response* message is received containing one or more IEs marked with "*Reject IE*" that the receiving node does not comprehend, the receiving node shall initiate local error handling.

Ignore IE and Notify Sender:

- If a message *initiating* a procedure is received containing one or more IEs/IE groups marked with "*Ignore IE and Notify Sender*" which the receiving node does not comprehend, the receiving node shall ignore the content of the not comprehended IEs/IE groups, continue with the procedure as if the not comprehended IEs/IE groups were not received (except for the reporting) using only the understood IEs/IE groups, and report in the response message of the procedure that one or more IEs/IE groups have been ignored ~~in the response message of the procedure~~.

- If a *response* message is received containing one or more IEs/IE groups marked with "*Ignore IE and Notify Sender*" which the receiving node does not comprehend, the receiving node shall ignore the content of the not comprehended IEs/IE groups and initiate the Error Indication procedure.

Ignore IE:

- If a message *initiating* a procedure is received containing one or more IEs/IE groups marked with "*Ignore IE*" which the receiving node does not comprehend, the receiving node shall ignore the content of the not comprehended IEs/IE groups and continue with the procedure as if the not comprehended IEs/IE groups were not received using only the understood IEs/IE groups.

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 as defined by the class of the elementary procedure, irrespective of the criticality information of the IE's/IE groups 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.

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

TSGR3#(00)0733

Agenda Item: 7

Source: RAN-WG3

Title: Introduction of 'Repetition Number' into 'Criticality Diagnostics' IE

Effected Specifications / Releases: TS25.413 v3.0.0 / Release 99

Document for: approval

Date: 22nd February 2000

In comparison to the original CR (R3-000532) in the indentation of the *RepetitionNumber* IE has been corrected within the Message Tabular Format.

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Document R3-000733
e.g. for 3GPP use the format TP-99xxx
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25.413	CR	028r1	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 *list expected approval meeting # here ↑*	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:** 28 Feb 2000

Subject: Introduction of 'Repetition Number' into 'Criticality Diagnostics' IE

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: If a repeated IE has criticality information applied to EACH repetition, it must be possible to report the repetition number of the not comprehended information element.

Clauses affected: 9.2.1.35 Criticality Diagnostics IE; 9.3.4 Information Element Definitions

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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9.2.1.35 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
Repetition Number	O		INTEGER (0..255)	The repetition number of the not understood IE if applicable

Range bound	Explanation
maxnooferrors	Maximum no. of IE errors allowed to be reported with a single message. The value for maxnooferrors is 256.

9.3.4 Information Element Definitions

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

   .

   .

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


CriticalityDiagnostics ::= SEQUENCE {
    procedureCode           ProcedureCode           OPTIONAL,
    triggeringMessage       TriggeringMessage       OPTIONAL,
    criticalityResponse     Criticality         OPTIONAL,
    iEsCriticalityResponses     CriticalityDiagnostics-IE-List  OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { {CriticalityDiagnostics-ExtIEs} } OPTIONAL,
    ...
}

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

CriticalityDiagnostics-IE-List ::= SEQUENCE (SIZE (1..maxNrOfErrors)) OF
    SEQUENCE {
        criticalityResponse     Criticality,
        iE-ID               ProtocolIE-ID,
        repetitionNumber        RepetitionNumber        OPTIONAL,
        iE-Extensions           ProtocolExtensionContainer { {CriticalityDiagnostics-IE-List-ExtIEs} } OPTIONAL,
        ...
    }

CriticalityDiagnostics-IE-List-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

CGI ::= SEQUENCE {
    pLMN-ID             PLMN-ID,
    lAC             LAC,
    cI              CI,
    iE-Extensions           ProtocolExtensionContainer { {CGI-ExtIEs} } OPTIONAL
}
```

```
    .
    .
    .
RelocationType ::= ENUMERATED {
    ue-not-involved,
    ue-involved,
    ...
}

RepetitionNumber ::= INTEGER (0..255)

ReportArea ::= ENUMERATED {
    service-area,
    geographical-coordinates,
    ...
}
```

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***Document* R3-000865**
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25.413	CR	071r2	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 [ ]

Source: RAN WG3 **Date:** 28 Feb 2000

Subject: Addition of Call Trace Deactivation functionality

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	X		Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: Adding Call Trace Deactivation functionality as a result of TSG-SA5 response liaison statements

Clauses affected:
7 Functions of RANAP
8.1 Elementary Procedures
8.28 (8.28.1, 8.28.2, 8.28.3) CN Deactivate Trace (new)
9.1 Message Contents
9.1.40 CN Deactivate Trace (new)
9.3.2 Elementary Procedure Definitions
9.3.3 PDU Definitions
9.3.6 Constant Definitions

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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7 Functions of RANAP

NOTE: This section needs to be checked after the Iu functions have been specified.

RANAP protocol has the following functions:

- Relocating serving RNC. This function enables to change the serving RNC functionality as well as the related Iu resources (RAB(s) and Signalling connection) from one RNC to another.
- Overall RAB management. This function is responsible for setting up, modifying and releasing RABs.
- Queuing the setup of RAB. The purpose of this function is to allow placing some requested RABs into a queue, and indicate the peer entity about the queuing.
- Requesting RAB release. While the overall RAB management is a function of the CN, the UTRAN has the capability to request the release of RAB.
- Release of all Iu resources. This function is used to explicitly release all resources related to one UE from the corresponding Iu connection.
- Requesting the release of all Iu resources. While the Iu release is managed from the CN, the UTRAN has the capability to request the release of all Iu resources from the corresponding Iu connection.
- SRNS context forwarding function. This function is responsible for transferring SRNS context from the RNC to the CN for intersystem forward handover in case of packet forwarding.
- Controlling overload in the Iu interface. This function allows adjusting the load in the Iu interface.
- Resetting the Iu. This function is used for resetting an Iu interface.
- Sending the UE Common ID (permanent NAS UE identity) to the RNC. This function makes the RNC aware of the UE's Common ID.
- Paging the user. This function provides the CN for capability to page the UE.
- Controlling the tracing of the UE activity. This function allows setting the trace mode for a given UE. This function also allows the deactivation of a previously established trace.
- Transport of NAS information between UE and CN. This function has three sub-classes.
    1. Transport of the initial NAS signalling message from the UE to CN. This function transfers transparently the NAS information. As a consequence also the Iu signalling connection is set up.
    2. Transport of NAS signalling messages between UE and CN, This function transfers transparently the NAS signalling messages on the existing Iu signalling connection.
    3. Transport of NAS information to be broadcasted to UEs. This function allows setting the NAS information to be broadcasted to the UEs from the CN.
- Controlling the security mode in the UTRAN. This function is used to send the security keys (ciphering and integrity check) to the UTRAN, and setting the operation mode for security functions.
- Controlling location reporting. This function allows the CN to set the mode in which the UTRAN reports the location of the UE
- Location reporting. This function is used for transferring the actual location information from RNC to the CN.
- Data volume reporting function. This function is responsible for reporting unsuccessfully transmitted DL data volume over UTRAN for specific RABs.
- Reporting general error situations. This function allows reporting of general error situations, for which function specific error messages have not been defined.

These functions are implemented by one or several RANAP elementary procedures described in the following section.

8 RANAP Procedures

8.1 Elementary Procedures

In the following tables, all EPs are divided into Class 1, Class 2 and Class 3 EPs:

Table 1: Class 1

Elementary Procedure	Initiating Message	Successful Outcome	Unsuccessful Outcome	
		Response message	Response message	
Iu Release	IU RELEASE COMMAND	IU RELEASE COMPLETE		
Relocation Preparation	RELOCATION REQUIRED	RELOCATION COMMAND	RELOCATION PREPARATION FAILURE	
Relocation Resource Allocation	RELOCATION REQUEST	RELOCATION REQUEST ACKNOWLEDGE	RELOCATION FAILURE	
Relocation Cancel	RELOCATION CANCEL	RELOCATION CANCEL ACKNOWLEDGE		
SRNS Context Transfer	SRNS CONTEXT REQUEST	SRNS CONTEXT RESPONSE		
Security Mode Control	SECURITY MODE COMMAND	SECURITY MODE COMPLETE	SECURITY MODE REJECT	
Data Volume Report	DATA VOLUME REPORT REQUEST	DATA VOLUME REPORT		
Cn Information Broadcast	CN INFORMATION BROADCAST REQUEST	CN INFORMATION BROADCAST CONFIRM	CN INFORMATION BROADCAST REJECT	
Reset	RESET	RESET ACKNOW-LEDGE		

Table 2: Class 2

Elementary Procedure	Message
RAB Release Request	RAB RELEASE REQUEST
Iu Release Request	IU RELEASE REQUEST
Relocation Detect	RELOCATION DETECT
Relocation Complete	RELOCATION COMPLETE
SRNS Data Forwarding Initiation	SRNS DATA FORWARD COMMAND
SRNS Context Forwarding from Source RNC to CN	FORWARD SRNS CONTEXT
SRNS Data Forwarding to Target RNC from CN	FORWARD SRNS CONTEXT
Paging	PAGING
Common ID	COMMON ID
CN Invoke Trace	CN INVOKE TRACE
CN Deactivate Trace	CN DEACTIVATE TRACE
Location Reporting Control	LOCATION REPORTING CONTROL
Location Report	LOCATION REPORT
Initial UE Message	INITIAL UE MESSAGE
Direct Transfer	DIRECT TRANSFER
Overload Control	OVERLOAD
Error Indication	ERROR INDICATION

Table 3: Class 3

Elementary Procedure	Initiating Message	Respone Message
RAB Assignment	RAB ASSIGNMENT REQUEST	RAB ASSIGNMENT RESPONSE x N (N>=1)

The following applies concerning interaction between Elementary Procedures:

- The Reset procedure can interact with all EPs.
- The Iu Release procedure can interact with all EPs except the *Reset* procedure

8.27 Error Indication

8.27.1 General

The Error Indication procedure is initiated by a node to report detected errors in one incoming message, provided they cannot be reported by an appropriate failure message.

If the error situation arises due to reception of a message utilising dedicated signalling, then the Error Indication procedure uses connection oriented signalling. Otherwise the procedure uses connectionless signalling.

8.27.2 Successful Operation

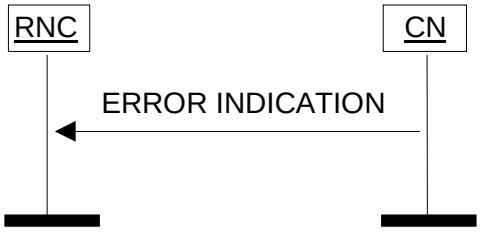

Figure 1: Error Indication procedure, CN originated.

Figure 2: 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'

8.27.3 Abnormal Conditions

-

8.28 CN Deactivate Trace

8.28.1 General

The purpose of the CN Deactivate Trace procedure is to inform the RNC that it should stop producing a trace record for the indicated trace reference. The procedure uses the connection oriented mode signalling.

8.28.2 Successful Operation

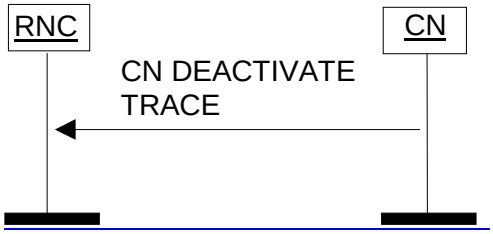

Figure 19: CN Deactivate Trace Procedure.

The trace deactivate is invoked by the CN sending a CN DEACTIVATE TRACE message to the UTRAN.

The *Trace Reference* IE and, if present, the *Trigger ID* IE are used to indicate which trace shall be stopped.

8.28.3 Abnormal Conditions

If the RNC receives a CN DEACTIVATE TRACE message with an unknown trace reference, the RNC shall take no action.

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
CN DEACTIVATE TRACE	9.1.40

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.

9.1.39 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.

9.1.40 CN DEACTIVATE TRACE

This message is sent by the CN to request the RNC to stop producing a trace record for the indicated trace reference.

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 Reference	M		9.2.1.8	
Trigger ID	O		9.2.1.7	

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,
    CN-DeactivateTrace,
    LocationReportingControl,
    LocationReport,
    InitialUE-Message,
    DirectTransfer,
    Overload,
    ErrorIndication,
    SRNS-DataForwardCommand,
    ForwardSRNS-Context,
    RAB-AssignmentRequest,
    RAB-AssignmentResponse,
    PrivateMessage
FROM RANAP-PDU-Contents

    id-CN-DeactivateTrace,
    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]
    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          |
    cN-DeactivateTrace      |
    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
    CODE            id-Iu-Release
    CRITICALITY     ignore
}
```

```
.
<<- material removed for brevity ->>
.

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

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

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

9.3.3 PDU Definitions

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

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

BEGIN

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

IMPORTS
    DataVolumeReference,
    AreaIdentity,
    CN-DomainIndicator,
    CategorisationParameters,
    Cause,
    CriticalityDiagnostics,
    ChosenEncryptionAlgorithm,
    ChosenIntegrityProtectionAlgorithm,
    ChosenUP-Version,
    ClassmarkInformation2,
    ClassmarkInformation3,
    DL-GTP-PDU-SequenceNumber,
    DL-N-PDU-SequenceNumber,
    DataVolumeReportingIndication,
    EncryptionInformation,
    IntegrityProtectionInformation,
    IuTransportAssociation,
    L3-Information,
    LAI,
    NAS-BindingInformation,
    NAS-BroadcastInformation,
    NAS-PDU,
    NonSearchingIndication,
    NumberOfSteps,
    OMC-ID,
    OldBSS-ToNewBSS-Information,
    PagingAreaID,
    PagingCause,
    PermanentNAS-UE-ID,
    RAB-ID,
    RAB-Parameters,
    RAC,
    RelocationType,
    RequestType,
    SAI,
    SAPI,
    SourceID,
    SourceRNC-ToTargetRNC-TransparentContainer,
    TargetID,
    TargetRNC-ToSourceRNC-TransparentContainer,
    TemporaryUE-ID,
    TraceReference,
    TraceType,
    UnsuccessfullyTransmittedDataVolume,
    TransportLayerAddress,
    TriggerID,
    UE-ID,
    UL-GTP-PDU-SequenceNumber,
    UL-N-PDU-SequenceNumber,
    UP-ModeVersions,
    UserPlaneMode
FROM RANAP-IEs

    PrivateExtensionContainer{},
    ProtocolExtensionContainer{},
    ProtocolIE-ContainerList{},
```

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

    maxNrOfErrors,
    maxNrOfPieces,
    maxNrOfRABs,
    maxNrOfVol,

    id-AreaIdentity,
    id-CN-BroadcastInformationPiece,
    id-CN-BroadcastInformationPieceList,
    id-CN-DomainIndicator,
    id-Cause,
    id-ChosenEncryptionAlgorithm,
    id-ChosenIntegrityProtectionAlgorithm,
    id-ClassmarkInformation2,
    id-ClassmarkInformation3,
    id-CriticalityDiagnostics,
    id-DL-GTP-PDU-SequenceNumber,
    id-EncryptionInformation,
    id-IntegrityProtectionInformation,
    id-IuTransportAssociation,
    id-L3-Information,
    id-LAI,
    id-NAS-PDU,
    id-NonSearchingIndication,
    id-NumberOfSteps,
    id-OMC-ID,
    id-OldBSS-ToNewBSS-Information,
    id-PagingAreaID,
    id-PagingCause,
    id-PermanentNAS-UE-ID,
    id-RAB-ContextItem,
    id-RAB-ContextList,
    id-RAB-DataForwardingItem,
    id-RAB-DataForwardingItem-SRNS-CtxReq,
    id-RAB-DataForwardingList,
    id-RAB-DataForwardingList-SRNS-CtxReq,
    id-RAB-DataVolumeReportItem,
    id-RAB-DataVolumeReportList,
    id-RAB-DataVolumeReportRequestItem,
    id-RAB-DataVolumeReportRequestList,
    id-RAB-FailedItem,
    id-RAB-FailedList,
    id-RAB-ID,
    id-RAB-QueuedItem,
    id-RAB-QueuedList,
    id-RAB-ReleaseFailedList,
    id-RAB-ReleaseItem,
    id-RAB-ReleaseList,
    id-RAB-ReleasedItem,
    id-RAB-ReleasedList,
    id-RAB-ReleasedList-IuRelComp,
    id-RAB-RelocationReleaseItem,
    id-RAB-RelocationReleaseList,
    id-RAB-SetupItem-RelocReq,
    id-RAB-SetupItem-RelocReqAck,
    id-RAB-SetupList-RelocReq,
    id-RAB-SetupList-RelocReqAck,
    id-RAB-SetupOrModifiedItem,
    id-RAB-SetupOrModifiedList,
    id-RAB-SetupOrModifyItem,
    id-RAB-SetupOrModifyList,
    id-RAC,
    id-RelocationType,
    id-RequestType,
    id-SAI,
    id-SAPI,
    id-SourceID,
    id-SourceRNC-ToTargetRNC-TransparentContainer,
    id-TargetID,
    id-TargetRNC-ToSourceRNC-TransparentContainer,
```

```
    id-TemporaryUE-ID,
    id-TraceReference,
    id-TraceType,
    id-TransportLayerAddress,
    id-TriggerID,
    id-UE-ID,
    id-UL-GTP-PDU-SequenceNumber
FROM RANAP-Constants;

-- **************************************************************
--
-- Common Container Lists
--
-- **************************************************************

RAB-IE-ContainerList                 { RANAP-PROTOCOL-IES      : IEsSetParam } ::= ProtocolIE-
ContainerList     { 1, maxNrOfRABs,   {IEsSetParam} }
RAB-IE-ContainerPairList             { RANAP-PROTOCOL-IES-PAIR : IEsSetParam } ::= ProtocolIE-
ContainerPairList { 1, maxNrOfRABs,   {IEsSetParam} }
ProtocolError-IE-ContainerList       { RANAP-PROTOCOL-IES      : IEsSetParam } ::= ProtocolIE-
ContainerList     { 1, maxNrOfRABs,   {IEsSetParam} }
CN-BroadcastInfPiece-IE-ContainerList { RANAP-PROTOCOL-IES      : IEsSetParam } ::= ProtocolIE-
ContainerList     { 1, maxNrOfPieces, {IEsSetParam} }

.
<<- material removed for brevity ->>
.

-- **************************************************************
--
-- CN INVOKE TRACE ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- CN Invoke Trace
--
-- **************************************************************

CN-InvokeTrace ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {CN-InvokeTraceIEs} },
    protocolExtensions      ProtocolExtensionContainer { {CN-InvokeTraceExtensions} }
    OPTIONAL,
    ...
}

CN-InvokeTraceIEs RANAP-PROTOCOL-IES ::= {
    { ID id-TraceType               CRITICALITY ignore  TYPE TraceType                  PRESENCE
mandatory   } |
    { ID id-TraceReference              CRITICALITY ignore  TYPE TraceReference             PRESENCE
mandatory   } |
    { ID id-TriggerID               CRITICALITY ignore  TYPE TriggerID                  PRESENCE
optional    } |
    { ID id-UE-ID                   CRITICALITY ignore  TYPE UE-ID                  PRESENCE
optional    } |
    { ID id-OMC-ID                  CRITICALITY ignore  TYPE OMC-ID                 PRESENCE
optional    },
    ...
}

CN-InvokeTraceExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- CN DEACTIVATE TRACE ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- CN Deactivate Trace
--
-- **************************************************************

CN-DeactivateTrace ::= SEQUENCE {
```

```
    protocolIEs          ProtocolIE-Container       { {CN-DeactivateTraceIEs} },
    protocolExtensions      ProtocolExtensionContainer { {CN-DeactivateTraceExtensions} }
    OPTIONAL,
    ...
}

CN-DeactivateTraceIEs RANAP-PROTOCOL-IES ::= {
    { ID id-TraceReference              CRITICALITY ignore  TYPE TraceReference             PRESENCE
mandatory } |
    { ID id-TriggerID                CRITICALITY ignore  TYPE TriggerID                  PRESENCE
optional },
    ...
}

CN-DeactivateTraceExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

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

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

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

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

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

9.3.6 Constant Definitions

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

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

BEGIN

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

id-RAB-Assignment           INTEGER ::= 0
id-Iu-Release               INTEGER ::= 1
id-RelocationPreparation        INTEGER ::= 2
id-RelocationResourceAllocation     INTEGER ::= 3
id-RelocationCancel         INTEGER ::= 4
id-SRNS-ContextTransfer         INTEGER ::= 5
id-SecurityModeControl          INTEGER ::= 6
id-DataVolumeReport         INTEGER ::= 7
id-CN-InformationBroadcast      INTEGER ::= 8
id-Reset                INTEGER ::= 9
id-RAB-ReleaseRequest           INTEGER ::= 10
id-Iu-ReleaseRequest            INTEGER ::= 11
id-RelocationDetect         INTEGER ::= 12
id-RelocationComplete           INTEGER ::= 13
id-Paging               INTEGER ::= 14
id-CommonID             INTEGER ::= 15
id-CN-InvokeTrace           INTEGER ::= 16
id-LocationReportingControl     INTEGER ::= 17
id-LocationReport           INTEGER ::= 18
id-InitialUE-Message            INTEGER ::= 19
id-DirectTransfer           INTEGER ::= 20
id-OverloadControl          INTEGER ::= 21
id-ErrorIndication          INTEGER ::= 22
id-SRNS-DataForward         INTEGER ::= 23
id-ForwardSRNS-Context          INTEGER ::= 24
id-Private              INTEGER ::= 25
id-CN-DeactivateTrace       INTEGER ::= 26

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

maxPrivateExtensions            INTEGER ::= 65535
maxProtocolExtensions           INTEGER ::= 65535
maxProtocolIEs              INTEGER ::= 65535
```

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Sophia Antipolis, France, 28 Feb - 3 Mar 2000

***Document* R3-000938**
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	72r1	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: R-WG3 **Date:** 02.03.2000

Subject: CR to 25.413: Addition of a Cause Value - 'Repeated Integrity Checking Failure' for Iu Release Request

Work item:

Category: *(only one category shall be marked with an X)*			**Release:**	
F	Correction		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: Following the liaison from S3 (R3-000778 / S3-000202), that in the event of repeated integrity checking failure, the RNC should initiate the release of the Iu connection. An additional Cause Value is required to distinguish the reason for this request.

Clauses affected: 8.4.1, 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.

8.4 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", "Repeated Integrity Checking Failure"). The procedure uses connection oriented signalling.

8.4.2 Successful Operation

Figure 1: 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

****** Lots of Un-Changed Text ******

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,~~...)~~ Repeated Integrity Checking 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 (…)	

**** Lots of Un-Changed Text ****

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),
    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),
    repeated-integrity-checking-failure (37)
} (1..64)

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

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


CriticalityDiagnostics ::= SEQUENCE {
    procedureCode           ProcedureCode           OPTIONAL,
    triggeringMessage       TriggeringMessage       OPTIONAL,
    criticalityResponse     Criticality         OPTIONAL,
    iEsCriticalityResponses     CriticalityDiagnostics-IE-List  OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { {CriticalityDiagnostics-ExtIEs} } OPTIONAL,
    ...
}

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

CriticalityDiagnostics-IE-List ::= SEQUENCE (SIZE (1..maxNrOfErrors)) OF
    SEQUENCE {
        criticalityResponse     Criticality,
        iE-ID               ProtocolIE-ID,
        iE-Extensions           ProtocolExtensionContainer { {CriticalityDiagnostics-IE-List-ExtIEs} } OPTIONAL,
        ...
    }

CriticalityDiagnostics-IE-List-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

CGI ::= SEQUENCE {
    pLMN-ID             PLMN-ID,
    lAC             LAC,
    cI              CI,
    iE-Extensions           ProtocolExtensionContainer { {CGI-ExtIEs} } OPTIONAL
}
```

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

ChosenEncryptionAlgorithm       ::= PermittedEncryptionAlgorithms

ChosenIntegrityProtectionAlgorithm  ::= PermittedIntegrityProtectionAlgorithms

ChosenUP-Version ::= ENUMERATED {
    version1,
    version2,
    ...
}

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

ClassmarkInformation2           ::= OCTET STRING

ClassmarkInformation3           ::= OCTET STRING

CN-DomainIndicator ::= ENUMERATED {
    cs-domain,
    ps-domain
}

-- D

DataVolumeReference         ::= INTEGER (0..255)

DataVolumeReportingIndication ::= ENUMERATED {
    do-report,
    do-not-report
}

DeliveryOfErroneousSDU ::= ENUMERATED {
    yes,
    no,
    no-error-detection-consideration
}

DeliveryOrder::= ENUMERATED {
    delivery-order-requested,
    delivery-order-not-requested
}

DL-GTP-PDU-SequenceNumber       ::= INTEGER (0..65535)
-- Reference: xx.xxx

DL-N-PDU-SequenceNumber         ::= INTEGER (0..4095)
-- Reference: xx.xxx

D-RNTI                  ::= OCTET STRING (SIZE (20))

-- 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-area,
    ...
}

-- F
-- G

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

GeographicalCoordinates ::= SEQUENCE {
    latitudeSign            ENUMERATED { north, south },
    latitude            INTEGER (0..8388607),
    longitude           INTEGER (-8388608..8388607),
    iE-Extensions           ProtocolExtensionContainer { {GeographicalCoordinates-ExtIEs} } OPTIONAL,
    ...
}

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

GA-Point ::= SEQUENCE {
    geographicalCoordinates     GeographicalCoordinates,
    iE-Extensions           ProtocolExtensionContainer { {GA-Point-ExtIEs} } OPTIONAL,
    ...
}

GA-Point-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

GA-PointWithUnCertainty ::=SEQUENCE {
    geographicalCoordinates     GeographicalCoordinates,
```

```
    iE-Extensions           ProtocolExtensionContainer { {GA-PointWithUnCertainty-ExtIEs} } OPTIONAL,
    uncertaintyCode         INTEGER (0..127)
}

GA-PointWithUnCertainty-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

GA-Polygon ::= SEQUENCE (SIZE (1..maxNrOfPoints)) OF
    SEQUENCE {
        geographicalCoordinates     GeographicalCoordinates,
        iE-Extensions           ProtocolExtensionContainer { {GA-Polygon-ExtIEs} } OPTIONAL,
        ...
    }

GA-Polygon-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

GlobalRNC-ID ::= SEQUENCE {
    pLMN-ID             PLMN-ID,
    rNC-ID              RNC-ID,
    iE-Extensions           ProtocolExtensionContainer { {GlobalRNC-ID-ExtIEs} } OPTIONAL
}

GlobalRNC-ID-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

GTP-TEI                 ::= OCTET STRING (SIZE (4))
-- Reference: xx.xxx

GuaranteedBitrate           ::= INTEGER (0..16000000)
-- Unit is bits per sec

-- H

-- I

IMEI                    ::= TBCD-STRING (SIZE (8))
-- Reference: 23.003

IMSI                    ::= TBCD-STRING (SIZE (3..8))
-- Reference: 23.003

IntegrityProtectionAlgorithm        ::= INTEGER { standard-UMTS-integrity-algorithm-UIA1 (0) } (0..15)

IntegrityProtectionInformation ::= SEQUENCE {
    permittedAlgorithms     PermittedIntegrityProtectionAlgorithms,
    key             IntegrityProtectionKey,
    iE-Extensions           ProtocolExtensionContainer { {IntegrityProtectionInformation-ExtIEs} } OPTIONAL
}

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

```
IntegrityProtectionKey          ::= BIT STRING (SIZE (128))

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

-- J
-- K
-- 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 ::= {
    ...
}

L3-Information              ::= OCTET STRING

-- M

MaxBitrate              ::= INTEGER (0..16000000)
-- Unit is bits per sec

MaxSDU-Size             ::= INTEGER
-- MaxSDU-Size              ::= INTEGER (0..32768)
-- Unit is bit

MCC                 ::= TBCD-STRING (SIZE (2))
-- Reference: 24.008

MNC                 ::= TBCD-STRING (SIZE (2))
-- Reference: 24.008

-- N

NAS-BindingInformation          ::= OCTET STRING (SIZE (2))

NAS-BroadcastInformation        ::= OCTET STRING

NAS-PDU                 ::= OCTET STRING

NonSearchingIndication ::= ENUMERATED {
    non-searching,
    searching
}

NumberOfIuInstances         ::= INTEGER (1..2)
```

```
NumberOfSteps               ::= INTEGER (1..16)

-- O

OldBSS-ToNewBSS-Information     ::= OCTET STRING

OMC-ID                  ::= OCTET STRING (SIZE (3..22))
-- Reference: GSM TS 12.20

-- 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..15)) OF
    EncryptionAlgorithm

PermittedIntegrityProtectionAlgorithms ::= SEQUENCE (SIZE (0..15)) 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))

-- Q

QueuingAllowed ::= ENUMERATED {
```

```
    queueing-not-allowed,
    queueing-allowed
}

-- R

RAB-ID                  ::= INTEGER (1..maxNrOfRABs)

RAB-Parameters ::= SEQUENCE {
    trafficClass            TrafficClass,
    maxBitrate          MaxBitrate,
    guaranteedBitRate       GuaranteedBitrate,
    deliveryOrder           DeliveryOrder,
    maxSDU-Size         MaxSDU-Size,
    sDU-Parameters          SDU-Parameters,
    transferDelay           TransferDelay,
    trafficHandlingPriority     TrafficHandlingPriority,
    allocationOrRetentionPriority   AllocationOrRetentionPriority,
    sourceStatisticsDescriptor  SourceStatisticsDescriptor,
    iE-Extensions           ProtocolExtensionContainer { {RAB-Parameters-ExtIEs} } OPTIONAL,
    ...
}

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

RAC                 ::= OCTET STRING (SIZE (1))

RAI ::= SEQUENCE {
    lAI             LAI,
    rAC             RAC,
    iE-Extensions           ProtocolExtensionContainer { {RAI-ExtIEs} } OPTIONAL,
    ...
}

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

RateControlAllowed ::= ENUMERATED {
    not-allowed,
    allowed
}

RelocationType ::= ENUMERATED {
    ue-not-involved,
    ue-involved,
    ...
}

ReportArea ::= ENUMERATED {
    service-area,
    geographical-coordinates,
    ...
}
```

```
RequestType ::= SEQUENCE {
    event               Event,
    reportArea          ReportArea,
    ...
}

ResidualBitErrorRatio ::= CHOICE {
    notApplicable           NULL,
    value               ResidualBitErrorRatioIE
}

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

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

RNC-ID                  ::= INTEGER (0..4095)
-- RNC-ID                   ::= BIT STRING (SIZE (12))
-- Harmonized with RNSAP and NBAP definitions

RRC-Container               ::= OCTET STRING

-- S

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

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

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

SAPI ::= ENUMERATED {
    normal-priority,
    low-priority,
    ...
}

SDU-ErrorRatio ::= CHOICE {
    notApplicable           NULL,
    value               SDU-ErrorRatioIE
}

SDU-ErrorRatioIE ::= SEQUENCE {
```

```
    mantissa            INTEGER (1..9),
    exponent            INTEGER (1..6),
    iE-Extensions           ProtocolExtensionContainer { {SDU-ErrorRatioIE-ExtIEs} } OPTIONAL
}
-- ErrorRatio = mantissa * 10^-exponent

SDU-ErrorRatioIE-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

SDU-Parameters ::= SEQUENCE (SIZE (1..maxRAB-Subflows)) OF
    SEQUENCE {
        sDU-ErrorRatio          SDU-ErrorRatio,
        residualBitErrorRatio       ResidualBitErrorRatio,
        deliveryOfErroneousSDU      DeliveryOfErroneousSDU,
        subflowSDU-SizeParameters   SubflowSDU-SizeParameters,
        iE-Extensions           ProtocolExtensionContainer { {SDU-Parameters-ExtIEs} } OPTIONAL,
        ...
    }
    -- SDU-ErrorRatio is set to notApplicable when DeliveryOfErroneousSDU is
    -- set to no-error-detection-consideration.

SDU-Parameters-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

SourceID ::= CHOICE {
    sourceRNC-ID            SourceRNC-ID, -- If UMTS target
    sAI             SAI,          -- if GSM target
    ...
}

SourceRNC-ID                ::= GlobalRNC-ID

SourceRNC-ToTargetRNC-TransparentContainer ::= SEQUENCE {
    rRC-Container           RRC-Container,
    numberOfIuInstances     NumberOfIuInstances,
    relocationType          RelocationType,
    chosenIntegrityProtectionAlgorithm ChosenIntegrityProtectionAlgorithm   OPTIONAL
    -- Must be present for intra UMTS Handovers --,
    integrityProtectionKey      IntegrityProtectionKey          OPTIONAL
    -- Must be present for intra UMTS Handovers --,
    chosenEncryptionAlgorithmForSignalling 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 --,
    chosenEncryptionAlgorithmForCS   ChosenEncryptionAlgorithm       OPTIONAL
    -- Must be present for intra UMTS Handovers if ciphering is active --,
    chosenEncryptionAlgorithmForPS   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,
    ...
}

SourceRNC-ToTargetRNC-TransparentContainer-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
```

```
    ...
}

SourceStatisticsDescriptor ::= ENUMERATED {
    na,
    speech,
    unknown,
    ...
}

SubflowSDU-Size             ::= INTEGER (0..4095)
-- Unit is bit

SubflowSDU-SizeParameters ::= SEQUENCE (SIZE (1..maxRAB-SubflowCombination)) OF
    SEQUENCE {
        rateControlAllowed      RateControlAllowed,
        subflowSDU-Size         SubflowSDU-Size     OPTIONAL
        -- This IE is only present for RABs that have predefined SDU size(s) --,
        iE-Extensions           ProtocolExtensionContainer { {SubflowSDU-SizeParameters-ExtIEs} } OPTIONAL,
        ...
    }

SubflowSDU-SizeParameters-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- T

TargetID ::= CHOICE {
    targetRNC-ID            TargetRNC-ID, -- If UMTS target
    cGI             CGI,          -- If GSM target
    ...
}

TargetRNC-ID                ::= GlobalRNC-ID

TargetRNC-ToSourceRNC-TransparentContainer ::= SEQUENCE {
    rRC-Container           RRC-Container,
    iE-Extensions           ProtocolExtensionContainer { {TargetRNC-ToSourceRNC-TransparentContainer-ExtIEs} } OPTIONAL,
    ...
}

TargetRNC-ToSourceRNC-TransparentContainer-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

TBCD-STRING                 ::= OCTET STRING

TemporaryUE-ID ::= CHOICE {
    tMSI                TMSI,
    p-TMSI              P-TMSI,
    ...
}

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

```
TraceReference              ::= OCTET STRING (SIZE (2..3))

TraceType               ::= OCTET STRING (SIZE (1))
-- Reference: GSM TS 12.08

TrafficClass ::= ENUMERATED {
    conversational,
    streaming,
    interactive,
    background,
    ...
}

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

TransferDelay               ::= INTEGER (0..65535)
-- Unit is millisecond

UnsuccessfullyTransmittedDataVolume ::= INTEGER (0..4294967295)

TransportLayerAddress           ::= OCTET STRING (SIZE (20))

TriggerID               ::= OCTET STRING (SIZE (3..22))

-- U

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

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

UL-N-PDU-SequenceNumber         ::= INTEGER (0..4095)

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

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

END
```

3GPP TSG-RA WG3 Meeting #11
Sophia Antipolis, France, 28 Feb - 3 Mar 2000

***Document* R3-000963**
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	56r2	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 *list expected approval meeting # here ↑*	for approval	X	strategic		*(for SMG use only)*
	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: R-WG3 **Date:** 23.02.2000

Subject: Coding and definition of RANAP Relocation Information

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 ASN.1 coding of the RANAP information that is placed in the RNSAP Relocation commit message is missing. This information is carried by the RNSAP protocol as a transparent OCTET STRING. Therefore RNSAP does not understand or encode/decode the content and RANAPs transfer syntax needs to be applied to that information, i.e. encoded and decoded according to RANAP specification. In the current RANAP ASN.1 description encoding and decoding are applied only to messages that are part of elementary procedures, and not for IEs alone. Therefore it is proposed to upgrade the 'RANAP Relocation Information' IE into a special procedure that handles this information including encoding and decoding it.

Clauses affected: 9.2.1.28

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.

****** New Section ******

9.1.43 RANAP RELOCATION INFORMATION ~~IN RNSAP~~

This message is part of a special RANAP Relocation Information procedure, and is sent between RNCs during Relocation~~handled internally within the RNC between the RANAP and RNSAP processes~~.

Direction: RNC - RNC~~internal~~

Signalling bearer mode: Not applicable.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Type	M		9.2.1.1	
~~RANAP Relocation Information~~	~~M~~		~~9.2.4.1~~	
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.

****** Next Modified Section ******

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.

****** Next Modified Section ******

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,
    RANAP-RelocationInformation~~InRNSAP~~
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-RANAP-RelocationInRNSAP,
    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]
    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-RelocationInRNSAP ,
    ...
}

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
    CODE            id-Iu-Release
    CRITICALITY     ignore
}

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

privateProcedure RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  PrivateMessage
    OUTCOME         PrivateMessage
    CODE            id-Private
    CRITICALITY     ignore
}

rANAP-RelocationInRNSAP RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  RANAP-RelocationInformationInRNSAP
    CODE            id-RANAP-RelocationInRNSAP
    CRITICALITY     ignore
}

END
```

9.3.3 PDU Definitions

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

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

BEGIN

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

IMPORTS
    DataVolumeReference,
    AreaIdentity,
    CN-DomainIndicator,
    CategorisationParameters,
    Cause,
    CriticalityDiagnostics,
    ChosenEncryptionAlgorithm,
    ChosenIntegrityProtectionAlgorithm,
    ChosenUP-Version,
    ClassmarkInformation2,
    ClassmarkInformation3,
    DL-GTP-PDU-SequenceNumber,
    DL-N-PDU-SequenceNumber,
    DataVolumeReportingIndication,
    EncryptionInformation,
    IntegrityProtectionInformation,
    IuTransportAssociation,
    L3-Information,
    LAI,
    NAS-BindingInformation,
    NAS-BroadcastInformation,
    NAS-PDU,
    NonSearchingIndication,
    NumberOfSteps,
    OMC-ID,
    OldBSS-ToNewBSS-Information,
    PagingAreaID,
    PagingCause,
    PermanentNAS-UE-ID,
    RAB-ID,
    RAB-Parameters,
    RAC,
    RelocationType,
    RequestType,
    SAI,
    SAPI,
```

```
    SourceID,
    SourceRNC-ToTargetRNC-TransparentContainer,
    TargetID,
    TargetRNC-ToSourceRNC-TransparentContainer,
    TemporaryUE-ID,
    TraceReference,
    TraceType,
    UnsuccessfullyTransmittedDataVolume,
    TransportLayerAddress,
    TriggerID,
    UE-ID,
    UL-GTP-PDU-SequenceNumber,
    UL-N-PDU-SequenceNumber,
    UP-ModeVersions,
    UserPlaneMode
FROM RANAP-IEs

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

    maxNrOfDTs,
    maxNrOfErrors,
    maxNrOfPieces,
    maxNrOfRABs,
    maxNrOfVol,

    id-AreaIdentity,
    id-CN-BroadcastInformationPiece,
    id-CN-BroadcastInformationPieceList,
    id-CN-DomainIndicator,
    id-Cause,
    id-ChosenEncryptionAlgorithm,
    id-ChosenIntegrityProtectionAlgorithm,
    id-ClassmarkInformation2,
    id-ClassmarkInformation3,
    id-CriticalityDiagnostics,
    id-DirectTransferInformationItem-RANAP-RelocInf,
    id-DirectTransferInformationList-RANAP-RelocInf,
    id-DL-GTP-PDU-SequenceNumber,
    id-EncryptionInformation,
    id-IntegrityProtectionInformation,
    id-IuTransportAssociation,
    id-L3-Information,
    id-LAI,
    id-NAS-PDU,
    id-NonSearchingIndication,
    id-NumberOfSteps,
    id-OMC-ID,
    id-OldBSS-ToNewBSS-Information,
    id-PagingAreaID,
    id-PagingCause,
    id-PermanentNAS-UE-ID,
    id-RAB-ContextItem,
    id-RAB-ContextList,
    id-RAB-ContextItem-RANAP-RelocInf,
    id-RAB-ContextList-RANAP-RelocInf,
    id-RAB-DataForwardingItem,
    id-RAB-DataForwardingItem-SRNS-CtxReq,
    id-RAB-DataForwardingList,
    id-RAB-DataForwardingList-SRNS-CtxReq,
    id-RAB-DataVolumeReportItem,
    id-RAB-DataVolumeReportList,
    id-RAB-DataVolumeReportRequestItem,
    id-RAB-DataVolumeReportRequestList,
    id-RAB-FailedItem,
    id-RAB-FailedList,
    id-RAB-ID,
    id-RAB-QueuedItem,
    id-RAB-QueuedList,
```

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

-- **************************************************************
--
-- Common Container Lists
--
-- **************************************************************

RAB-IE-ContainerList                 { RANAP-PROTOCOL-IES      : IEsSetParam } ::= ProtocolIE-
ContainerList     { 1, maxNrOfRABs,   {IEsSetParam} }
RAB-IE-ContainerPairList             { RANAP-PROTOCOL-IES-PAIR : IEsSetParam } ::= ProtocolIE-
ContainerPairList { 1, maxNrOfRABs,   {IEsSetParam} }
ProtocolError-IE-ContainerList       { RANAP-PROTOCOL-IES      : IEsSetParam } ::= ProtocolIE-
ContainerList     { 1, maxNrOfRABs,   {IEsSetParam} }
CN-BroadcastInfPiece-IE-ContainerList { RANAP-PROTOCOL-IES      : IEsSetParam } ::= ProtocolIE-
ContainerList     { 1, maxNrOfPieces, {IEsSetParam} }
DirectTransfer-IE-ContainerList   { RANAP-PROTOCOL-IES      : IEsSetParam } ::= ProtocolIE-
ContainerList     { 1, maxNrOfDTs,    {IEsSetParam} }

-- **************************************************************
--
-- Iu RELEASE ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Iu Release Command
--
-- **************************************************************

Iu-ReleaseCommand ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {Iu-ReleaseCommandIEs} },
    protocolExtensions      ProtocolExtensionContainer { {Iu-ReleaseCommandExtensions} }
    OPTIONAL,
    ...
}

Iu-ReleaseCommandIEs RANAP-PROTOCOL-IES ::= {
    { ID id-Cause                   CRITICALITY ignore  TYPE Cause                  PRESENCE
mandatory   },
    ...
}

Iu-ReleaseCommandExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
```

```
}

-- **************************************************************
--
-- Iu Release Complete
--
-- **************************************************************

Iu-ReleaseComplete ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {Iu-ReleaseCompleteIEs} },
    protocolExtensions      ProtocolExtensionContainer { {Iu-ReleaseCompleteExtensions} }
    OPTIONAL,
    ...
}

Iu-ReleaseCompleteIEs RANAP-PROTOCOL-IES ::= {
    { ID id-RAB-DataVolumeReportList        CRITICALITY ignore  TYPE RAB-DataVolumeReportList
    PRESENCE conditional
    -- This group is only present if data volume reporting for PS domain is required --
                } |
    { ID id-RAB-ReleasedList-IuRelComp      CRITICALITY ignore  TYPE RAB-ReleasedList-IuRelComp
    PRESENCE conditional
    -- This group is only present for RABs towards the PS domain when the release was initiated by
UTRAN --                        } |
    { ID id-CriticalityDiagnostics          CRITICALITY ignore  TYPE CriticalityDiagnostics
    PRESENCE optional   },
    ...
}

RAB-DataVolumeReportList                ::= RAB-IE-ContainerList { {RAB-DataVolumeReportItemIEs} }

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

RAB-DataVolumeReportItem ::= SEQUENCE {
    rAB-ID                      RAB-ID,
    dl-UnsuccessfullyTransmittedDataVolume      DataVolumeList      OPTIONAL
    -- This IE is only present if data volume reporting for PS domain is required --,
    iE-Extensions                   ProtocolExtensionContainer { {RAB-DataVolumeReportItem-ExtIEs} }
            OPTIONAL,
    ...
}

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

RAB-ReleasedList-IuRelComp              ::= RAB-IE-ContainerList { {RAB-ReleasedItem-IuRelComp-IEs}
}

RAB-ReleasedItem-IuRelComp-IEs RANAP-PROTOCOL-IES ::= {
    { ID id-RAB-ID                  CRITICALITY ignore  TYPE RAB-ID                 PRESENCE
mandatory   } |
    { ID id-DL-GTP-PDU-SequenceNumber       CRITICALITY ignore  TYPE DL-GTP-PDU-SequenceNumber
    PRESENCE mandatory  } |
    { ID id-UL-GTP-PDU-SequenceNumber       CRITICALITY ignore  TYPE UL-GTP-PDU-SequenceNumber
    PRESENCE mandatory  },
    ...
}

Iu-ReleaseCompleteExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- RELOCATION PREPARATION ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Relocation Required
--
-- **************************************************************
```

```
RelocationRequired ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RelocationRequiredIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RelocationRequiredExtensions} }
    OPTIONAL,
        ...
}

RelocationRequiredIEs RANAP-PROTOCOL-IES ::= {
    { ID id-RelocationType              CRITICALITY ignore  TYPE RelocationType
    PRESENCE mandatory  } |
    { ID id-Cause                   CRITICALITY ignore  TYPE Cause                  PRESENCE
mandatory   } |
    { ID id-SourceID                CRITICALITY ignore  TYPE SourceID                   PRESENCE
mandatory   } |
    { ID id-TargetID                CRITICALITY reject  TYPE TargetID                   PRESENCE
mandatory   } |
    { ID id-ClassmarkInformation2           CRITICALITY ignore  TYPE ClassmarkInformation2
    PRESENCE conditional
    -- This is only present when initiating an inter system handover towards GSM BSC --
                } |
    { ID id-ClassmarkInformation3           CRITICALITY ignore  TYPE ClassmarkInformation3
    PRESENCE conditional
    -- This is only present when initiating an inter system handover towards GSM BSC --
                } |
    { ID id-SourceRNC-ToTargetRNC-TransparentContainer
                        CRITICALITY reject  TYPE SourceRNC-ToTargetRNC-TransparentContainer
PRESENCE mandatory  } |
    { ID id-OldBSS-ToNewBSS-Information     CRITICALITY ignore  TYPE OldBSS-ToNewBSS-Information
    PRESENCE conditional
    -- This is only present when initiating an inter system handover towards GSM BSC --
                } ,
    ...
}

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

-- **************************************************************
--
-- Relocation Command
--
-- **************************************************************

RelocationCommand ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RelocationCommandIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RelocationCommandExtensions} }
    OPTIONAL,
    ...
}

RelocationCommandIEs RANAP-PROTOCOL-IES ::= {
    { ID id-TargetRNC-ToSourceRNC-TransparentContainer
                        CRITICALITY reject  TYPE TargetRNC-ToSourceRNC-TransparentContainer
PRESENCE conditional
    -- Must be included if applicable and if not sent via other CN --
        } |
    { ID id-L3-Information              CRITICALITY ignore  TYPE L3-Information             PRESENCE
conditional
    -- This IE is only present when the source of an inter system handover is GSM BSS --
                    } |
    { ID id-RAB-RelocationReleaseList       CRITICALITY ignore  TYPE RAB-RelocationReleaseList
    PRESENCE optional   } |
    { ID id-RAB-DataForwardingList          CRITICALITY ignore  TYPE RAB-DataForwardingList
    PRESENCE conditional
    -- This group if applicable is only present for RABs towards the PS domain --
                } |
    { ID id-CriticalityDiagnostics          CRITICALITY ignore  TYPE CriticalityDiagnostics
    PRESENCE optional   },
    ...
}

RAB-RelocationReleaseList               ::= RAB-IE-ContainerList { {RAB-RelocationReleaseItemIEs} }

RAB-RelocationReleaseItemIEs RANAP-PROTOCOL-IES ::= {
    { ID id-RAB-RelocationReleaseItem       CRITICALITY ignore  TYPE RAB-RelocationReleaseItem
    PRESENCE mandatory  },
```

```
    ...
}

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

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

RAB-DataForwardingList                  ::= RAB-IE-ContainerList { {RAB-DataForwardingItemIEs} }

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

RAB-DataForwardingItem ::= SEQUENCE {
    rAB-ID                      RAB-ID,
    transportLayerAddress               TransportLayerAddress,
    iuTransportAssociation              IuTransportAssociation,
    iE-Extensions                   ProtocolExtensionContainer { {RAB-DataForwardingItem-ExtIEs} }
            OPTIONAL,
    ...
}

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

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

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

RelocationPreparationFailure ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RelocationPreparationFailureIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RelocationPreparationFailureExtensions} }
            OPTIONAL,
        ...
}

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

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

-- **************************************************************
--
-- 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 mandatory  } |
    { 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 mandatory  } |
    { 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 ::= {
    ...
}

-- **************************************************************
--
-- RELOCATION CANCEL ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Relocation Cancel
--
-- **************************************************************

RelocationCancel ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RelocationCancelIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RelocationCancelExtensions} }
    OPTIONAL,
    ...
}

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

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

-- **************************************************************
--
-- Relocation Cancel Acknowledge
--
-- **************************************************************

RelocationCancelAcknowledge ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RelocationCancelAcknowledgeIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RelocationCancelAcknowledgeExtensions} }
            OPTIONAL,
    ...
}

RelocationCancelAcknowledgeIEs RANAP-PROTOCOL-IES ::= {
    { ID id-CriticalityDiagnostics          CRITICALITY ignore  TYPE CriticalityDiagnostics
    PRESENCE optional   },
    ...
}

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

-- **************************************************************
--
-- SRNS CONTEXT TRANSFER OPEARATION
--
-- **************************************************************
```

```
-- **************************************************************
--
-- SRNS Context Request
--
-- **************************************************************

SRNS-ContextRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {SRNS-ContextRequestIEs} },
    protocolExtensions      ProtocolExtensionContainer { {SRNS-ContextRequestExtensions} }
    OPTIONAL,
    ...
}

SRNS-ContextRequestIEs RANAP-PROTOCOL-IES ::= {
    { ID id-RAB-DataForwardingList-SRNS-CtxReq  CRITICALITY ignore  TYPE RAB-DataForwardingList-
SRNS-CtxReq     PRESENCE mandatory  },
    ...
}

RAB-DataForwardingList-SRNS-CtxReq          ::= RAB-IE-ContainerList { {RAB-DataForwardingItem-SRNS-
CtxReq-IEs} }

RAB-DataForwardingItem-SRNS-CtxReq-IEs RANAP-PROTOCOL-IES ::= {
    { ID id-RAB-DataForwardingItem-SRNS-CtxReq  CRITICALITY ignore  TYPE RAB-DataForwardingItem-
SRNS-CtxReq     PRESENCE mandatory  },
    ...
}

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

RAB-DataForwardingItem-SRNS-CtxReq-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

SRNS-ContextRequestExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- SRNS Context Response
--
-- **************************************************************

SRNS-ContextResponse ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {SRNS-ContextResponseIEs} },
    protocolExtensions      ProtocolExtensionContainer { {SRNS-ContextResponseExtensions} }
    OPTIONAL,
    ...
}

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

RAB-ContextList                     ::= RAB-IE-ContainerList { {RAB-ContextItemIEs} }

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

RAB-ContextItem ::= SEQUENCE {
    rAB-ID                      RAB-ID,
    dl-GTP-PDU-SequenceNumber           DL-GTP-PDU-SequenceNumber,
```

```
    ul-GTP-PDU-SequenceNumber           UL-GTP-PDU-SequenceNumber,
    dl-N-PDU-SequenceNumber             DL-N-PDU-SequenceNumber,
    ul-N-PDU-SequenceNumber             UL-N-PDU-SequenceNumber,
    iE-Extensions                    ProtocolExtensionContainer { {RAB-ContextItem-ExtIEs} }
    OPTIONAL,
    ...
}

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

SRNS-ContextResponseExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- 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   },
    ...
}

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 ::= {
    ...
}

-- **************************************************************
--
-- DATA VOLUME REPORT ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Data Volume Report Request
--
-- **************************************************************

DataVolumeReportRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {DataVolumeReportRequestIEs} },
    protocolExtensions      ProtocolExtensionContainer { {DataVolumeReportRequestExtensions} }
    OPTIONAL,
    ...
}

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

RAB-DataVolumeReportRequestList             ::= RAB-IE-ContainerList { {RAB-
DataVolumeReportRequestItemIEs} }

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

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

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

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

-- **************************************************************
--
-- Data Volume Report
--
-- **************************************************************

DataVolumeReport ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {DataVolumeReportIEs} },
```

```
    protocolExtensions      ProtocolExtensionContainer { {DataVolumeReportExtensions} }
    OPTIONAL,
    ...
}

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

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

-- **************************************************************
--
-- CN INFORMATION BROADCAST
--
-- **************************************************************

-- **************************************************************
--
-- CN Information Broadcast Request
--
-- **************************************************************

CN-InformationBroadcastRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {CN-InformationBroadcastRequestIEs} },
    protocolExtensions      ProtocolExtensionContainer { {CN-InformationBroadcastRequestExtensions}
}       OPTIONAL,
    ...
}

CN-InformationBroadcastRequestIEs RANAP-PROTOCOL-IES ::= {
    { ID id-CN-DomainIndicator          CRITICALITY ignore  TYPE CN-DomainIndicator
    PRESENCE mandatory  } |
    { ID id-CN-BroadcastInformationPieceList    CRITICALITY ignore  TYPE CN-
BroadcastInformationPieceList       PRESENCE mandatory  },
    ...
}

CN-BroadcastInformationPieceList            ::= CN-BroadcastInfPiece-IE-ContainerList { {CN-
BroadcastInformationPieceIEs} }

CN-BroadcastInformationPieceIEs RANAP-PROTOCOL-IES ::= {
    { ID id-CN-BroadcastInformationPiece        CRITICALITY ignore  TYPE CN-
BroadcastInformationPiece       PRESENCE mandatory  },
    ...
}

CN-BroadcastInformationPiece ::= SEQUENCE {
    nAS-BroadcastInformation            NAS-BroadcastInformation,
    areaIdentity                    AreaIdentity,
    categorisationParameters            CategorisationParameters,
    iE-Extensions                   ProtocolExtensionContainer { {CN-BroadcastInformationPiece-
ExtIEs} }           OPTIONAL,
    ...
}

CN-BroadcastInformationPiece-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

CN-InformationBroadcastRequestExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- CN Information Broadcast Confirm
--
-- **************************************************************

CN-InformationBroadcastConfirm ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {CN-InformationBroadcastConfirmIEs} },
```

```
    protocolExtensions      ProtocolExtensionContainer { {CN-InformationBroadcastConfirmExtensions}
}       OPTIONAL,
    ...
}

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

CN-InformationBroadcastConfirmExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- CN Information Broadcast Reject
--
-- **************************************************************

CN-InformationBroadcastReject ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {CN-InformationBroadcastRejectIEs} },
    protocolExtensions      ProtocolExtensionContainer { {CN-InformationBroadcastRejectExtensions} }
        OPTIONAL,
    ...
}

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

CN-InformationBroadcastRejectExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- RESET ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Reset
--
-- **************************************************************

Reset ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {ResetIEs} },
    protocolExtensions      ProtocolExtensionContainer { {ResetExtensions} }
    OPTIONAL,
    ...
}

ResetIEs RANAP-PROTOCOL-IES ::= {
    { ID id-Cause                   CRITICALITY ignore  TYPE Cause                  PRESENCE
mandatory   } |
    { ID id-CN-DomainIndicator          CRITICALITY ignore  TYPE CN-DomainIndicator
    PRESENCE mandatory  },
    ...
}

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

-- **************************************************************
--
-- Reset Acknowledge
```

```
--
-- **************************************************************

ResetAcknowledge ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {ResetAcknowledgeIEs} },
    protocolExtensions      ProtocolExtensionContainer { {ResetAcknowledgeExtensions} }
    OPTIONAL,
    ...
}

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

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

-- **************************************************************
--
-- RAB RELEASE REQUEST ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- RAB Release Request
--
-- **************************************************************

RAB-ReleaseRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RAB-ReleaseRequestIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RAB-ReleaseRequestExtensions} }
    OPTIONAL,
    ...
}

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

RAB-ReleaseList                     ::= RAB-IE-ContainerList { {RAB-ReleaseItemIEs} }

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

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

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

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

-- **************************************************************
--
-- Iu RELEASE REQUEST ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
```

```
--
-- Iu Release Request
--
-- **************************************************************

Iu-ReleaseRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {Iu-ReleaseRequestIEs} },
    protocolExtensions      ProtocolExtensionContainer { {Iu-ReleaseRequestExtensions} }
    OPTIONAL,
    ...
}

Iu-ReleaseRequestIEs RANAP-PROTOCOL-IES ::= {
    { ID id-Cause                   CRITICALITY ignore  TYPE Cause                  PRESENCE
mandatory   },
    ...
}

Iu-ReleaseRequestExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- RELOCATION DETECT ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Relocation Detect
--
-- **************************************************************

RelocationDetect ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RelocationDetectIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RelocationDetectExtensions} }
    OPTIONAL,
    ...
}

RelocationDetectIEs RANAP-PROTOCOL-IES ::= {
    ...
}

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

-- **************************************************************
--
-- RELOCATION COMPLETE ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Relocation Complete
--
-- **************************************************************

RelocationComplete ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RelocationCompleteIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RelocationCompleteExtensions} }
    OPTIONAL,
    ...
}

RelocationCompleteIEs RANAP-PROTOCOL-IES ::= {
    ...
}

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

-- **************************************************************
--
```

```
-- PAGING ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Paging
--
-- **************************************************************

Paging ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {PagingIEs} },
    protocolExtensions      ProtocolExtensionContainer { {PagingExtensions} }
    OPTIONAL,
    ...
}

PagingIEs RANAP-PROTOCOL-IES ::= {
    { ID id-CN-DomainIndicator          CRITICALITY ignore  TYPE CN-DomainIndicator
    PRESENCE mandatory  } |
    { ID id-PermanentNAS-UE-ID          CRITICALITY ignore  TYPE PermanentNAS-UE-ID
    PRESENCE mandatory  } |
    { ID id-TemporaryUE-ID              CRITICALITY ignore  TYPE TemporaryUE-ID             PRESENCE
optional    } |
    { ID id-PagingAreaID                CRITICALITY ignore  TYPE PagingAreaID               PRESENCE
optional    } |
    { ID id-PagingCause             CRITICALITY ignore  TYPE PagingCause                PRESENCE
optional    } |
    { ID id-NonSearchingIndication          CRITICALITY ignore  TYPE NonSearchingIndication
    PRESENCE optional   },
    ...
}

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

-- **************************************************************
--
-- COMMON ID ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Common ID
--
-- **************************************************************

CommonID ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {CommonID-IEs} },
    protocolExtensions      ProtocolExtensionContainer { {CommonIDExtensions} }
    OPTIONAL,
    ...
}

CommonID-IEs RANAP-PROTOCOL-IES ::= {
    { ID id-PermanentNAS-UE-ID          CRITICALITY ignore  TYPE PermanentNAS-UE-ID
    PRESENCE mandatory  },
    ...
}

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

-- **************************************************************
--
-- CN INVOKE TRACE ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- CN Invoke Trace
--
-- **************************************************************
```

```
CN-InvokeTrace ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {CN-InvokeTraceIEs} },
    protocolExtensions      ProtocolExtensionContainer { {CN-InvokeTraceExtensions} }
    OPTIONAL,
    ...
}

CN-InvokeTraceIEs RANAP-PROTOCOL-IES ::= {
    { ID id-TraceType               CRITICALITY ignore  TYPE TraceType                  PRESENCE
mandatory   } |
    { ID id-TraceReference              CRITICALITY ignore  TYPE TraceReference             PRESENCE
mandatory   } |
    { ID id-TriggerID               CRITICALITY ignore  TYPE TriggerID                  PRESENCE
optional    } |
    { ID id-UE-ID                   CRITICALITY ignore  TYPE UE-ID                  PRESENCE
optional    } |
    { ID id-OMC-ID                  CRITICALITY ignore  TYPE OMC-ID                 PRESENCE
optional    },
    ...
}

CN-InvokeTraceExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

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

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

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

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

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

-- **************************************************************
--
-- LOCATION REPORT ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Location Report
--
-- **************************************************************

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

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

```
    ...
}

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

-- **************************************************************
--
-- INITIAL UE MESSAGE ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Initial UE Message
--
-- **************************************************************

InitialUE-Message ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {InitialUE-MessageIEs} },
    protocolExtensions      ProtocolExtensionContainer { {InitialUE-MessageExtensions} }
    OPTIONAL,
    ...
}

InitialUE-MessageIEs RANAP-PROTOCOL-IES ::= {
    { ID id-CN-DomainIndicator          CRITICALITY ignore  TYPE CN-DomainIndicator
    PRESENCE mandatory  } |
    { ID id-LAI                 CRITICALITY ignore  TYPE LAI                    PRESENCE mandatory
    } |
    { ID id-RAC                 CRITICALITY ignore  TYPE RAC                    PRESENCE conditional

    -- This IE is only present for RABs towards the PS domain --
        } |
    { ID id-SAI                 CRITICALITY ignore  TYPE SAI                    PRESENCE mandatory
    } |
    { ID id-NAS-PDU                 CRITICALITY ignore  TYPE NAS-PDU                    PRESENCE
mandatory   },
    ...
}

InitialUE-MessageExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- DIRECT TRANSFER ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Direct Transfer
--
-- **************************************************************

DirectTransfer ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {DirectTransferIEs} },
    protocolExtensions      ProtocolExtensionContainer { {DirectTransferExtensions} }
    OPTIONAL,
    ...
}

DirectTransferIEs RANAP-PROTOCOL-IES ::= {
    { ID id-NAS-PDU                 CRITICALITY ignore  TYPE NAS-PDU                    PRESENCE
mandatory   } |
    { ID id-LAI                 CRITICALITY ignore  TYPE LAI                    PRESENCE conditional
    -- This IE is only present if the message is directed to the PS domain --
            } |
    { ID id-RAC                 CRITICALITY ignore  TYPE RAC                    PRESENCE conditional
    -- This IE is only present if the message is directed to the PS domain --
            } |
    { ID id-SAPI                    CRITICALITY ignore  TYPE SAPI                   PRESENCE
conditional
    -- This IE is always used in downlink direction--                                       },
    ...
```

```
}

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

-- **************************************************************
--
-- OVERLOAD CONTROL ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Overload
--
-- **************************************************************

Overload ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {OverloadIEs} },
    protocolExtensions      ProtocolExtensionContainer { {OverloadExtensions} }
    OPTIONAL,
    ...
}

OverloadIEs RANAP-PROTOCOL-IES ::= {
    { ID id-NumberOfSteps               CRITICALITY ignore  TYPE NumberOfSteps              PRESENCE
optional    },
    ...
}

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

-- **************************************************************
--
-- ERROR INDICATION ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Error Indication
--
-- **************************************************************

ErrorIndication ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {ErrorIndicationIEs} },
    protocolExtensions      ProtocolExtensionContainer { {ErrorIndicationExtensions} }
    OPTIONAL,
    ...
}

ErrorIndicationIEs RANAP-PROTOCOL-IES ::= {
    { ID id-Cause                   CRITICALITY ignore  TYPE Cause                  PRESENCE
conditional
    -- At least either of Cause IE or Criticality IE shall be present --
            } |
    { ID id-CriticalityDiagnostics          CRITICALITY ignore  TYPE CriticalityDiagnostics
    PRESENCE conditional
    -- At least either of Cause IE or Criticality IE shall be present --
            } |
    { ID id-CN-DomainIndicator          CRITICALITY ignore  TYPE CN-DomainIndicator
    PRESENCE optional   } |
    { ID id-IuTransportAssociation          CRITICALITY ignore  TYPE IuTransportAssociation
    PRESENCE optional   } |
    { ID id-TransportLayerAddress           CRITICALITY ignore  TYPE TransportLayerAddress
    PRESENCE optional   },
    ...
}

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

-- **************************************************************
--
```

```
-- SRNS DATA FORWARD ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- SRNS Data Forward Command
--
-- **************************************************************

SRNS-DataForwardCommand ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {SRNS-DataForwardCommandIEs} },
    protocolExtensions      ProtocolExtensionContainer { {SRNS-DataForwardCommandExtensions} }
    OPTIONAL,
    ...
}

SRNS-DataForwardCommandIEs RANAP-PROTOCOL-IES ::= {
    { ID id-RAB-DataForwardingList          CRITICALITY ignore  TYPE RAB-DataForwardingList
    PRESENCE conditional
    -- This group is only present for RABs towards the PS domain --
        },
    ...
}

SRNS-DataForwardCommandExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- FORWARD SRNS CONTEXT ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Forward SRNS Context
--
-- **************************************************************

ForwardSRNS-Context ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {ForwardSRNS-ContextIEs} },
    protocolExtensions      ProtocolExtensionContainer { {ForwardSRNS-ContextExtensions} }
    OPTIONAL,
    ...
}

ForwardSRNS-ContextIEs RANAP-PROTOCOL-IES ::= {
    { ID id-RAB-ContextList             CRITICALITY ignore  TYPE RAB-ContextList
    PRESENCE mandatory  },
    ...
}

ForwardSRNS-ContextExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- RAB ASSIGNMENT ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- RAB Assignment Request
--
-- **************************************************************

RAB-AssignmentRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RAB-AssignmentRequestIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RAB-AssignmentRequestExtensions} }
    OPTIONAL,
    ...
}

RAB-AssignmentRequestIEs RANAP-PROTOCOL-IES ::= {
```

```
    { ID id-RAB-SetupOrModifyList           CRITICALITY ignore  TYPE RAB-SetupOrModifyList
    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-ReleaseList             CRITICALITY ignore  TYPE RAB-ReleaseList
    PRESENCE conditional
    -- This group must be present at least when no other group is present, ie. at least one group
must be present --              },
    ...
}

RAB-SetupOrModifyList                   ::= RAB-IE-ContainerPairList { {RAB-SetupOrModifyItem-IEs} }

RAB-SetupOrModifyItem-IEs RANAP-PROTOCOL-IES-PAIR ::= {
    { ID id-RAB-SetupOrModifyItem           FIRST CRITICALITY  reject   FIRST TYPE  RAB-
SetupOrModifyItemFirst
                          SECOND CRITICALITY ignore   SECOND TYPE RAB-SetupOrModifyItemSecond
                                                                  PRESENCE mandatory  },
    ...
}

RAB-SetupOrModifyItemFirst ::= SEQUENCE {
    rAB-ID                      RAB-ID,
    rAB-Parameters                  RAB-Parameters,
    userPlaneInformation            UserPlaneInformation,
    transportLayerAddress           TransportLayerAddress,
    iuTransportAssociation          IuTransportAssociation,
    iE-Extensions                   ProtocolExtensionContainer { {RAB-SetupOrModifyItemFirst-ExtIEs}
}           OPTIONAL,
    ...
}

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

RAB-SetupOrModifyItemSecond ::= SEQUENCE {
    nAS-BindingInformation              NAS-BindingInformation,
    dataVolumeReportingIndication           DataVolumeReportingIndication   OPTIONAL
    -- This IE, if applicable, is only present for RABs towards the PS domain --,
    dl-GTP-PDU-SequenceNumber           DL-GTP-PDU-SequenceNumber   OPTIONAL
    -- This IE, if applicable, is only present for RABs towards the PS domain --,
    ul-GTP-PDU-SequenceNumber           UL-GTP-PDU-SequenceNumber   OPTIONAL
    -- This IE, if applicable, is only present for RABs towards the PS domain --,
    dl-N-PDU-SequenceNumber             DL-N-PDU-SequenceNumber     OPTIONAL
    -- This IE, if applicable, is only present for RABs towards the PS domain --,
    ul-N-PDU-SequenceNumber             UL-N-PDU-SequenceNumber     OPTIONAL
    -- This IE, if applicable, is only present for RABs towards the PS domain --,
    iE-Extensions                   ProtocolExtensionContainer { {RAB-SetupOrModifyItemSecond-
ExtIEs} }           OPTIONAL,
    ...
}

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

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

-- **************************************************************
--
-- 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 --,
    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 ::= {
    ...
}

-- **************************************************************
--
-- RANAP RELOCATION ELEMENTARY PROCEDURE
--
-- **************************************************************

RANAP-RelocationInformation~~InRNSAP~~ ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container        { {RANAP-RelocationInformation~~InRNSAP~~IEs} },
    protocolExtensions      ProtocolExtensionContainer { {RANAP-
RelocationInformation~~InRNSAP~~Extensions} }           OPTIONAL,
    ...
}

RANAP-RelocationInformation~~InRNSAP~~IEs RANAP-PROTOCOL-IES ::= {
    { ID id-DirectTransferInformationList-RANAP-RelocInf
                            CRITICALITY ignore  TYPE DirectTransferInformationList-RANAP-RelocInf
                                                                    PRESENCE mandatory  } |
    { ID id-RAB-ContextList-RANAP-RelocInf      CRITICALITY ignore  TYPE RAB-ContextList-RANAP-
RelocInf        PRESENCE mandatory  },
    ...
}

DirectTransferInformationList-RANAP-RelocInf        ::= DirectTransfer-IE-ContainerList {
{DirectTransferInformationItemIEs-RANAP-RelocInf} }

DirectTransferInformationItemIEs-RANAP-RelocInf RANAP-PROTOCOL-IES ::= {
    { ID id-DirectTransferInformationItem-RANAP-RelocInf
                            CRITICALITY ignore  TYPE DirectTransferInformationItem-RANAP-RelocInf
```

```
                                                                    PRESENCE mandatory  },
    ...
}

DirectTransferInformationItem-RANAP-RelocInf ::= SEQUENCE {
    nAS-PDU                         NAS-PDU,
    sAPI                            SAPI,
    iE-Extensions                       ProtocolExtensionContainer { {RANAP-
DirectTransferInformationItem-ExtIEs-RANAP-RelocInf} }          OPTIONAL,
    ...
}

RANAP-DirectTransferInformationItem-ExtIEs-RANAP-RelocInf RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

RAB-ContextList-RANAP-RelocInf              ::= RAB-IE-ContainerList { {RAB-ContextItemIEs-RANAP-
RelocInf} }

RAB-ContextItemIEs-RANAP-RelocInf RANAP-PROTOCOL-IES ::= {
    { ID id-RAB-ContextItem-RANAP-RelocInf      CRITICALITY ignore  TYPE RAB-ContextItem-RANAP-
RelocInf            PRESENCE mandatory  },
    ...
}

RAB-ContextItem-RANAP-RelocInf ::= SEQUENCE {
    nAS-BindingInformation              NAS-BindingInformation,
    dl-GTP-PDU-SequenceNumber           DL-GTP-PDU-SequenceNumber,
    ul-GTP-PDU-SequenceNumber           UL-GTP-PDU-SequenceNumber,
    dl-N-PDU-SequenceNumber             DL-N-PDU-SequenceNumber,
    ul-N-PDU-SequenceNumber             UL-N-PDU-SequenceNumber,
    iE-Extensions                       ProtocolExtensionContainer { {RAB-ContextItem-ExtIEs-RANAP-
RelocInf} }         OPTIONAL,
    ...
}

RAB-ContextItem-ExtIEs-RANAP-RelocInf RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

RANAP-RelocationInformation~~InRNSAP~~Extensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

END
```

****** Next Modified Section ******

9.3.6 Constant Definitions

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

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

BEGIN

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

id-RAB-Assignment           INTEGER ::= 0
id-Iu-Release               INTEGER ::= 1
id-RelocationPreparation        INTEGER ::= 2
id-RelocationResourceAllocation     INTEGER ::= 3
id-RelocationCancel         INTEGER ::= 4
id-SRNS-ContextTransfer         INTEGER ::= 5
id-SecurityModeControl          INTEGER ::= 6
id-DataVolumeReport         INTEGER ::= 7
id-CN-InformationBroadcast      INTEGER ::= 8
id-Reset                INTEGER ::= 9
id-RAB-ReleaseRequest           INTEGER ::= 10
id-Iu-ReleaseRequest            INTEGER ::= 11
id-RelocationDetect         INTEGER ::= 12
id-RelocationComplete           INTEGER ::= 13
id-Paging               INTEGER ::= 14
id-CommonID             INTEGER ::= 15
id-CN-InvokeTrace           INTEGER ::= 16
id-LocationReportingControl     INTEGER ::= 17
id-LocationReport           INTEGER ::= 18
id-InitialUE-Message            INTEGER ::= 19
id-DirectTransfer           INTEGER ::= 20
id-OverloadControl          INTEGER ::= 21
id-ErrorIndication          INTEGER ::= 22
id-SRNS-DataForward         INTEGER ::= 23
id-ForwardSRNS-Context          INTEGER ::= 24
id-Private              INTEGER ::= 25
id-RANAP-RelocationInRNSAP          INTEGER ::= 28

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

maxPrivateExtensions            INTEGER ::= 65535
maxProtocolExtensions           INTEGER ::= 65535
maxProtocolIEs              INTEGER ::= 65535

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

maxNrOfErrors               INTEGER ::= 256
maxNrOfPieces               INTEGER ::= 16
maxNrOfRABs             INTEGER ::= 256
maxNrOfVol              INTEGER ::= 2
maxNrOfPoints               INTEGER ::= 15
maxNrOfDTs              INTEGER ::= 15
```

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

-- **************************************************************
--
-- 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-DirectTransferInformationItem-RANAP-RelocInf      INTEGER ::= 7180
id-DirectTransferInformationList-RANAP-RelocInf      INTEGER ::= 7281
id-RAB-ContextItem-RANAP-RelocInf            INTEGER ::= 7382
id-RAB-ContextList-RANAP-RelocInf            INTEGER ::= 7483

END
```

****** New Section ******

11 Special Procedures for RNC to RNC Communication

11.1 General

This section specifies special procedures that are used for RNC to RNC communication, and use other transport means than the RANAP procedures specified in Section 8.

11.2 RANAP Relocation Information

11.2.1 General

The purpose of the RANAP Relocation Information procedure is to handle the RANAP related information that is carried transparently during relocation from source RNC to target RNC by RNSAP via Iur Interface.

11.2.2 Operation

When during relocation it becomes necessary in the Source RNC to ~~place~~ generate RANAP information ~~in RNSAP~~ for transfer to the relocation target ~~via Iur Interface~~, the RNC shall form a RANAP RELOCATION INFORMATION message. The message shall be encoded according to the encoding rules specified for RANAP in the similar manner as for the normal RANAP messages. The outcome of the encoding will be an octet string, which shall not be sent to the CN via the Iu Interface, but it shall be given to the appropriate local ~~RNSAP~~ process for transparent transfer to the target RNC ~~via Iur Interface~~.

When the RANAP process in the Target RNC receives ~~from the local RNSAP process~~ an octet string containing RANAP RELOCATION INFORMATION message that had been transparently transferred ~~by RNSAP~~ from the Source RNC ~~via Iur Interface~~, it shall decode it according to the encoding rules specified for RANAP. This process is similar to receiving any normal RANAP message. The decoded information shall be passed to the appropriate processes in the RNC.

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Document R3-000936
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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	070r2	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:** 2000-03-02

Subject: Target Cell ID at SRNS Relocation with UE involvement

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: When performing an SRNS Relocation with UE involvement (and inter system Hard Handover), the cell id of the target cell needs to be sent to the target RNC. This is not included in RANAP today. This CR proposes that it is introduced in the Source RNC to target RNC transparent container.

Clauses affected: 9.2.1.28, 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.

9.2.1.28 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~~C - ifUEnotinvolved		INTEGER (0..1048575)	
Target Cell ID	C - ifUEinvolved		INTEGER (0..268435455)	This information element identifies a cell unambiguously within a PLMN.

Condition	Explanation
IfIntraUMTS	Must be present for intra UMTS Handovers
IfIntraUMTSandCiph	Must be present for intra UMTS Handovers if ciphering is active
ifUEnotinvolved	Included for SRNS Relocation without UE involvement
ifUEinvolved	Included for SRNS Relocation with UE involvement

9.3.4 Information Element Definitions

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

```
-- S

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

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

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

SAPI ::= ENUMERATED {
    normal-priority,
    low-priority,
    ...
}

SDU-ErrorRatio ::= CHOICE {
    notApplicable           NULL,
    value               SDU-ErrorRatioIE
}

SDU-ErrorRatioIE ::= SEQUENCE {
    mantissa            INTEGER (1..9),
    exponent            INTEGER (1..6),
    iE-Extensions           ProtocolExtensionContainer { {SDU-ErrorRatioIE-ExtIEs} } OPTIONAL
}
-- ErrorRatio = mantissa * 10^-exponent

SDU-ErrorRatioIE-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
SDU-Parameters ::= SEQUENCE (SIZE (1..maxRAB-Subflows)) OF
    SEQUENCE {
        sDU-ErrorRatio          SDU-ErrorRatio,
        residualBitErrorRatio       ResidualBitErrorRatio,
        deliveryOfErroneousSDU      DeliveryOfErroneousSDU,
        subflowSDU-SizeParameters   SubflowSDU-SizeParameters,
        iE-Extensions           ProtocolExtensionContainer { {SDU-Parameters-ExtIEs} } OPTIONAL,
        ...
    }
    -- SDU-ErrorRatio is set to notApplicable when DeliveryOfErroneousSDU is
    -- set to no-error-detection-consideration.

SDU-Parameters-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

SourceID ::= CHOICE {
    sourceRNC-ID            SourceRNC-ID, -- If UMTS target
    sAI             SAI,          -- if GSM target
    ...
}



SourceRNC-ID                ::= GlobalRNC-ID


SourceRNC-ToTargetRNC-TransparentContainer ::= SEQUENCE {
    rRC-Container           RRC-Container,
    numberOfIuInstances     NumberOfIuInstances,
    relocationType          RelocationType,
    chosenIntegrityProtectionAlgorithm ChosenIntegrityProtectionAlgorithm   OPTIONAL
    -- Must be present for intra UMTS Handovers --,
    integrityProtectionKey      IntegrityProtectionKey          OPTIONAL
    -- Must be present for intra UMTS Handovers --,
    chosenEncryptionAlgorithmForSignalling 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 --,
    chosenEncryptionAlgorithmForCS   ChosenEncryptionAlgorithm       OPTIONAL
    -- Must be present for intra UMTS Handovers if ciphering is active --,
    chosenEncryptionAlgorithmForPS   ChosenEncryptionAlgorithm       OPTIONAL
    -- Must be present for intra UMTS Handovers if ciphering is active --,
    d-RNTI              D-RNTI                  OPTIONAL
    -- Included for SRNS Relocation without UE involvement --,
    targetCellId        TargetCellId            OPTIONAL
    -- Included for SRNS Relocation with UE involvement --,
    iE-Extensions           ProtocolExtensionContainer { {SourceRNC-ToTargetRNC-TransparentContainer-ExtIEs} } OPTIONAL,
    ...
}
```

```
SourceRNC-ToTargetRNC-TransparentContainer-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

SourceStatisticsDescriptor ::= ENUMERATED {
    na,
    speech,
    unknown,
    ...
}

SubflowSDU-Size             ::= INTEGER (0..4095)
-- Unit is bit

SubflowSDU-SizeParameters ::= SEQUENCE (SIZE (1..maxRAB-SubflowCombination)) OF
    SEQUENCE {
        rateControlAllowed      RateControlAllowed,
        subflowSDU-Size         SubflowSDU-Size     OPTIONAL
        -- This IE is only present for RABs that have predefined SDU size(s) --,
        iE-Extensions           ProtocolExtensionContainer { {SubflowSDU-SizeParameters-ExtIEs} } OPTIONAL,
        ...
    }

SubflowSDU-SizeParameters-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- T

TargetCellId                ::= INTEGER (0..268435455)

TargetID ::= CHOICE {
    targetRNC-ID            TargetRNC-ID, -- If UMTS target
    cGI             CGI,          -- If GSM target
    ...
}

TargetRNC-ID                ::= GlobalRNC-ID

TargetRNC-ToSourceRNC-TransparentContainer ::= SEQUENCE {
    rRC-Container           RRC-Container,
    iE-Extensions           ProtocolExtensionContainer { {TargetRNC-ToSourceRNC-TransparentContainer-ExtIEs} } OPTIONAL,
    ...
}

TargetRNC-ToSourceRNC-TransparentContainer-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

TBCD-STRING                 ::= OCTET STRING
```

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

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or for SMG, use the format P-99-xxx

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25.413	CR	67r4	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: (U)SIM [ ] ME [ ] UTRAN / Radio [X] Core Network [X]
(at least one should be marked with an X)

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

Subject: Iu signalling connection identity.

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 order to release radio resources when problems during SCCP failure conditions occur. Procedures need to be introduced to avoid hanging resources.

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:

help.doc

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

8 RANAP Procedures

8.1 Elementary Procedures

In the following tables, all EPs are divided into Class 1, Class 2 and Class 3 EPs:

Table 1: Class 1

Elementary Procedure	Initiating Message	Successful Outcome	Unsuccessful Outcome	
		Response message	Response message	
Iu Release	IU RELEASE COMMAND	IU RELEASE COMPLETE		
Relocation Preparation	RELOCATION REQUIRED	RELOCATION COMMAND	RELOCATION PREPARATION FAILURE	
Relocation Resource Allocation	RELOCATION REQUEST	RELOCATION REQUEST ACKNOWLEDGE	RELOCATION FAILURE	
Relocation Cancel	RELOCATION CANCEL	RELOCATION CANCEL ACKNOWLEDGE		
SRNS Context Transfer	SRNS CONTEXT REQUEST	SRNS CONTEXT RESPONSE		
Security Mode Control	SECURITY MODE COMMAND	SECURITY MODE COMPLETE	SECURITY MODE REJECT	
Data Volume Report	DATA VOLUME REPORT REQUEST	DATA VOLUME REPORT		
Cn Information Broadcast	CN INFORMATION BROADCAST REQUEST	CN INFORMATION BROADCAST CONFIRM	CN INFORMATION BROADCAST REJECT	
Reset	RESET	RESET ACKNOW-LEDGE		
Reset resource	RESET RESOURCE	RESET RESOURCE ACKNOWLEDGEMENT		

Table 2: Class 2

Elementary Procedure	Message
RAB Release Request	RAB RELEASE REQUEST
Iu Release Request	IU RELEASE REQUEST
Relocation Detect	RELOCATION DETECT
Relocation Complete	RELOCATION COMPLETE
SRNS Data Forwarding Initiation	SRNS DATA FORWARD COMMAND
SRNS Context Forwarding from Source RNC to CN	FORWARD SRNS CONTEXT
SRNS Data Forwarding to Target RNC from CN	FORWARD SRNS CONTEXT
Paging	PAGING
Common ID	COMMON ID
CN Invoke Trace	CN INVOKE TRACE
Location Reporting Control	LOCATION REPORTING CONTROL
Location Report	LOCATION REPORT
Initial UE Message	INITIAL UE MESSAGE
Direct Transfer	DIRECT TRANSFER
Overload Control	OVERLOAD
Error Indication	ERROR INDICATION

Table 3: Class 3

Elementary Procedure	Initiating Message	Respone Message
RAB Assignment	RAB ASSIGNMENT REQUEST	RAB ASSIGNMENT RESPONSE x N (N>=1)

The following applies concerning interaction between Elementary Procedures:

- The Reset procedure can interact with all EPs.
- The Iu Release procedure can interact with all EPs except the *Reset* procedure.

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

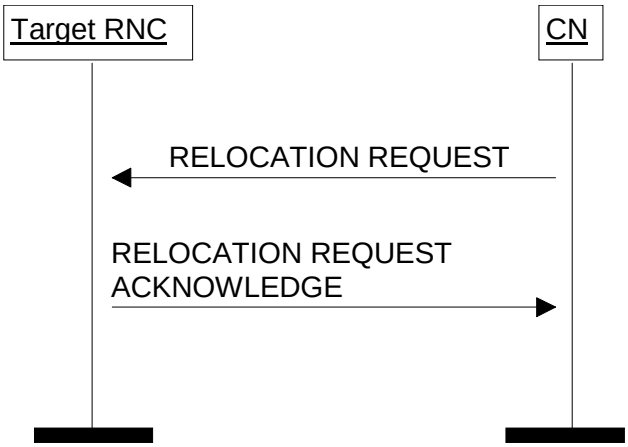

Figure 17: Relocation Resource Allocation procedure. Successful operation.

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
- Iu signalling connection identifier

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

The Iu signalling connection identifier contains an Iu signalling connection ~~identity~~identifier which is allocated by the CN, and which the RNC is required to store and remember for the duration of the Iu connection.

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 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.

8.7.3 Unsuccessful Operation

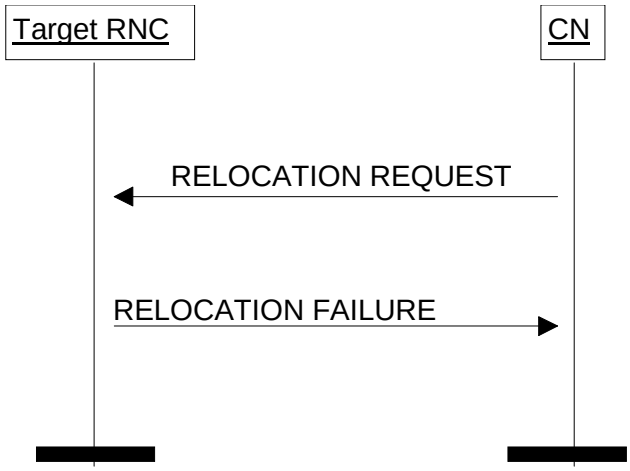

Figure 28: Relocation Resource Allocation procedure: Unsuccessful operation.

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 CN shall initiate Iu Release procedure towards target RNC with an appropriate value for the *Cause* IE, e.g. 'Relocation Cancelled'.

8.7.4 Abnormal Conditions

If after reception of the RELOCATION REQUEST message, the target RNC receives another RELOCATION REQUEST message on the same Iu connection, then target RNC shall discard the latter message and the original Relocation Resource Allocation procedure shall continue normally.

Interactions with Iu Release:

If CN decides to not continue the Relocation Resource Allocation procedure before the Relocation Resource Allocation procedure is completed, the CN shall stop timer $T_{RELOCalloc}$ and CN shall initiate Iu Release procedure towards target RNC with an appropriate value for the *Cause* IE, e.g. 'Relocation Cancelled'.

8.7.5 Co-ordination of Two Iu Signalling Connections

Co-ordination of two Iu signalling connections during Relocation Resource Allocation procedure shall be executed by target RNC when the *Number of Iu Instancies* IE received in RELOCATION REQUEST message indicates that two CN domains are involved in relocation of SRNS.

- If two CN domains are involved, following actions shall be taken by target RNC.Target RNC shall utilise the *Permanent NAS UE Identity* IE, received explicitly by each CN domain within RELOCATION REQUEST message, to link both Iu signalling connections together.

- Target RNC shall generate and send RELOCATION REQUEST ACKNOWLEDGE only after all expected RELOCATION REQUEST messages are received and analysed.

- Target RNC shall ensure that there is no conflicting information in *Target RNC to Source RNC Transparent Container* IE in RELOCATION REQUEST ACKNOWLEDGE messages transmitted via different Iu signalling connections and related to the same relocation of SRNS.

- The selection of signalling connection utilised for the *Target RNC to Source RNC Transparent Container* IE in RELOCATION REQUEST ACKNOWLEDGE message need not to be dependent on the signalling connection via which the *Source RNC to Target RNC Transparent Container* IE in RELOCATION REQUEST message was received.

8.22 Initial UE Message

8.22.1 General

The purpose of the Initial UE Message procedure is to establish an Iu signalling connection between a CN domain and the RNC. The procedure uses connection oriented signalling.

8.22.2 Successful Operation

Figure 3~~24~~: Initial UE Message procedure.

When RNC has received from Uu interface a NAS message to be forwarded to CN domain to which the Iu signalling connection for the UE does not exist, RNC shall initiate the Initial UE Message procedure and send the INITIAL UE MESSAGE to the CN.

In addition to the received NAS-PDU, RNC shall add following information to the INITIAL UE MESSAGE:

- CN domain indicator, indicating the CN domain towards which this message is sent.
- For CS domain, the same LAI which was the last LAI indicated to the UE by UTRAN.
- For PS domain, the same LAI+RAC which were the last LAI+RAC indicated to the UE by UTRAN.
- —Service Area corresponding to the cells from which the UE is consuming radio resources.
- Iu signalling connection identifier.

The Iu signalling connection identifier contains an Iu signalling connection ~~identity~~identifier which is allocated by the RNC, and which the CN is required to store and remember for the duration of the Iu connection.

8.YY Reset resource

8.YY.1 General

The purpose of the Reset resource release procedure is to initialise part of the UTRAN in the event of an abnormal failure in the CN or vice versa (e.g. Signalling Transport processor reset). The procedure uses connectionless signalling.

8.YY.1.1 Reset resource procedure initiated from the RNC

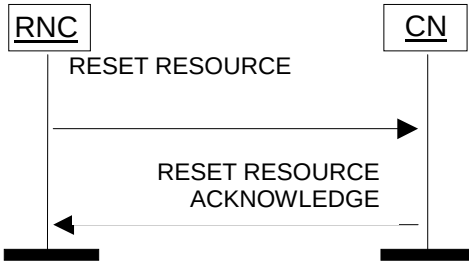

Figure X. RNC initiated Reset resource procedure

The RNC ~~intiates~~initiates this procedure by sending a RESET RESOURCE message to the CN.

On reception of this message the CN ~~should~~ shall release locally the resources and references (i.e. resources and Iu signalling connection identities) associated to the Iu signalling connection identities indicated in the received message. The CN ~~should~~ shall always return the RESET RESOURCE ACKNOWLEDGE~~MENT~~ message to the RNC.

8.YY.1.2 Reset resource ~~Iu signalling connection release~~ procedure initiated from the CN

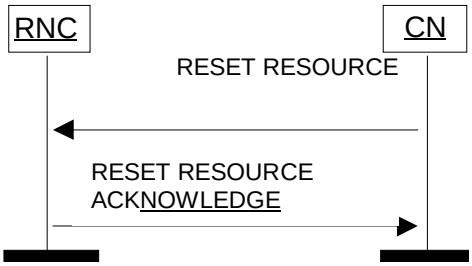

Figure X. CN initiated Reset resource procedure

The CN ~~intiates~~initiates this procedure by sending a RESET RESOURCE message to the RNC.

On reception of this message the RNC shall release locally the resources and references (i.e. radio resources and Iu signalling connection identities) associated to the Iu signalling connection identities indicated in the received message. The RNC shall always return the RESET RESOURCE ACKNOWLEDGE~~MENT~~ message to the CN.

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
RESET RESOURCE	9.1.40
RESET RESOURCE ACKNOWLEDGE	9.1.41

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.

9.1.8 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		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.
Iu signalling connection ~~identity~~identifier	M		9.2.1.XX	

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.

9.1.31 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	
Iu signalling connection ~~identity~~identifier	M		9.2.1.YY	

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

9.1.401 RESET RESOURCE

This message is sent by either CN or RNC. The sending entity informs the receiving entity that the sending requests the receiving entity to release resources and references associated to Iu signalling connection identities in the message.

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	
Cause	M		9.2.1.4	
Iu signalling connections to be released		0 to <maxnooofIuSigConIds		
>Iu signalling connection ~~identity~~identifier	M		9.2.1.YY	

Range bound	Explanation
Maxnoof~~I~~IuSigConIds	Maximum no. of Iu signalling connection identities. Value is 1000.

9.1.4~~1~~2 RESET RESOURCE ACKNOWLEDGE

This message is sent by either the CN or RNC inform the CN or RNC that the RESET RESOURCE has been received.

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	
Iu signalling connections ~~to be~~ released		0 to <maxnooofIuSigConIds		
>Iu signalling connection ~~identity~~identifier	M		9.2.1.YY	

Range bound	Explanation
Maxnoof~~I~~IuSigConIds	Maximum no. of Iu signalling connection identities. Value is 1000.

9.2.1.XX Iu signalling connection identifier

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Iu signalling connection identifier	M		INTEGER (1..16,000,000)	When allocated by the RNC the value is in the range 1..8,000,000. When allocated by the CN the value is in the range of 8,000,001.. 16,000,000.

9.3 Message and Information Element Abstract Syntax (with ASN.1)

9.3.1 Usage of protocol extension mechanism for non-standard use

The protocol extension mechanism for non-standard use may be used

- for special operator- (and/or vendor) specific features considered not to be part of the basic functionality, i.e. the functionality required for a complete and high-quality specification in order to guarantee multivendor interoperability.
- by vendors for research purposes, e.g. to implement and evaluate new algorithms/features before such features are proposed for standardisation

The extension mechanism shall not be used for basic functionality. Such functionality shall be standardised.

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,
    ResetResource,
    ResetResourceAcknowledge
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,
    id-ResetResource
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]
    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       |
    resetResource           ,
    ...
}

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
    CODE            id-Iu-Release
    CRITICALITY     ignore
}

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

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

relocationCancel RANAP-ELEMENTARY-PROCEDURE ::= {
```

```
    INITIATING MESSAGE  RelocationCancel
    SUCCESSFUL OUTCOME  RelocationCancelAcknowledge
    CODE            id-RelocationCancel
    CRITICALITY     ignore
}

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

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

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

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

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

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

iu-ReleaseRequest RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  Iu-ReleaseRequest
    CODE            id-Iu-ReleaseRequest
```

```
    CRITICALITY     ignore
}

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

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

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

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

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

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

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

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

directTransfer RANAP-ELEMENTARY-PROCEDURE ::= {
```

```
    INITIATING MESSAGE  DirectTransfer
    CODE            id-DirectTransfer
    CRITICALITY     ignore
}

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

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

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

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

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

privateProcedure RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  PrivateMessage
    OUTCOME         PrivateMessage
    CODE            id-Private
    CRITICALITY     ignore
}

resetResource RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  ResetResource
    SUCCESSFUL OUTCOME  ResetResourceAcknowledge
    CODE            id-ResetResource
    CRITICALITY     ignore
}

END
```

9.3.3 PDU Definitions

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

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

BEGIN

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

IMPORTS
    DataVolumeReference,
    AreaIdentity,
    CN-DomainIndicator,
    CategorisationParameters,
    Cause,
    CriticalityDiagnostics,
    ChosenEncryptionAlgorithm,
    ChosenIntegrityProtectionAlgorithm,
    ChosenUP-Version,
    ClassmarkInformation2,
    ClassmarkInformation3,
    DL-GTP-PDU-SequenceNumber,
    DL-N-PDU-SequenceNumber,
    DataVolumeReportingIndication,
    EncryptionInformation,
    IntegrityProtectionInformation,
    IuSignallingConnectionIdentifier,
    IuTransportAssociation,
    L3-Information,
    LAI,
    NAS-BindingInformation,
    NAS-BroadcastInformation,
    NAS-PDU,
    NonSearchingIndication,
    NumberOfSteps,
    OMC-ID,
    OldBSS-ToNewBSS-Information,
    PagingAreaID,
    PagingCause,
    PermanentNAS-UE-ID,
    RAB-ID,
```

```
    RAB-Parameters,
    RAC,
    RelocationType,
    RequestType,
    SAI,
    SAPI,
    SourceID,
    SourceRNC-ToTargetRNC-TransparentContainer,
    TargetID,
    TargetRNC-ToSourceRNC-TransparentContainer,
    TemporaryUE-ID,
    TraceReference,
    TraceType,
    UnsuccessfullyTransmittedDataVolume,
    TransportLayerAddress,
    TriggerID,
    UE-ID,
    UL-GTP-PDU-SequenceNumber,
    UL-N-PDU-SequenceNumber,
    UP-ModeVersions,
    UserPlaneMode
FROM RANAP-IEs

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

    maxNrOfErrors,
    maxNrOfPieces,
    maxNrOfRABs,
    maxNrOfVol,
    maxNrOfIuSigConIds,

    id-AreaIdentity,
    id-CN-BroadcastInformationPiece,
    id-CN-BroadcastInformationPieceList,
    id-CN-DomainIndicator,
    id-Cause,
    id-ChosenEncryptionAlgorithm,
    id-ChosenIntegrityProtectionAlgorithm,
    id-ClassmarkInformation2,
    id-ClassmarkInformation3,
    id-CriticalityDiagnostics,
    id-DL-GTP-PDU-SequenceNumber,
```

```
    id-EncryptionInformation,
    id-IntegrityProtectionInformation,
    id-IuSigConId,
    id-IuSigConIdItem,
    Id-IuSigConIdList,
    id-IuTransportAssociation,
    id-L3-Information,
    id-LAI,
    id-NAS-PDU,
    id-NonSearchingIndication,
    id-NumberOfSteps,
    id-OMC-ID,
    id-OldBSS-ToNewBSS-Information,
    id-PagingAreaID,
    id-PagingCause,
    id-PermanentNAS-UE-ID,
    id-RAB-ContextItem,
    id-RAB-ContextList,
    id-RAB-DataForwardingItem,
    id-RAB-DataForwardingItem-SRNS-CtxReq,
    id-RAB-DataForwardingList,
    id-RAB-DataForwardingList-SRNS-CtxReq,
    id-RAB-DataVolumeReportItem,
    id-RAB-DataVolumeReportList,
    id-RAB-DataVolumeReportRequestItem,
    id-RAB-DataVolumeReportRequestList,
    id-RAB-FailedItem,
    id-RAB-FailedList,
    id-RAB-ID,
    id-RAB-QueuedItem,
    id-RAB-QueuedList,
    id-RAB-ReleaseFailedList,
    id-RAB-ReleaseItem,
    id-RAB-ReleaseList,
    id-RAB-ReleasedItem,
    id-RAB-ReleasedList,
    id-RAB-ReleasedList-IuRelComp,
    id-RAB-RelocationReleaseItem,
    id-RAB-RelocationReleaseList,
    id-RAB-SetupItem-RelocReq,
    id-RAB-SetupItem-RelocReqAck,
    id-RAB-SetupList-RelocReq,
    id-RAB-SetupList-RelocReqAck,
    id-RAB-SetupOrModifiedItem,
    id-RAB-SetupOrModifiedList,
    id-RAB-SetupOrModifyItem,
    id-RAB-SetupOrModifyList,
    id-RAC,
    id-RelocationType,
    id-RequestType,
    id-SAI,
    id-SAPI,
```

```
    id-SourceID,
    id-SourceRNC-ToTargetRNC-TransparentContainer,
    id-TargetID,
    id-TargetRNC-ToSourceRNC-TransparentContainer,
    id-TemporaryUE-ID,
    id-TraceReference,
    id-TraceType,
    id-TransportLayerAddress,
    id-TriggerID,
    id-UE-ID,
    id-UL-GTP-PDU-SequenceNumber
FROM RANAP-Constants;

-- **************************************************************
--
-- Common Container Lists
--
-- **************************************************************

RAB-IE-ContainerList                 { RANAP-PROTOCOL-IES      : IEsSetParam } ::= ProtocolIE-ContainerList     { 1, maxNrOfRABs,   {IEsSetParam} }
RAB-IE-ContainerPairList             { RANAP-PROTOCOL-IES-PAIR : IEsSetParam } ::= ProtocolIE-ContainerPairList { 1, maxNrOfRABs,   {IEsSetParam} }
ProtocolError-IE-ContainerList       { RANAP-PROTOCOL-IES      : IEsSetParam } ::= ProtocolIE-ContainerList     { 1, maxNrOfRABs,   {IEsSetParam} }
CN-BroadcastInfPiece-IE-ContainerList { RANAP-PROTOCOL-IES      : IEsSetParam } ::= ProtocolIE-ContainerList     { 1, maxNrOfPieces, {IEsSetParam} }
IuSigConId-IE-ContainerList          { RANAP-PROTOCOL-IES      : IEsSetParam } ::= ProtocolIE-ContainerList     { 1, maxNrOfIuSigConIds,
{IEsSetParam} }

-- **************************************************************
--
-- Iu RELEASE ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Iu Release Command
--
-- **************************************************************

Iu-ReleaseCommand ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {Iu-ReleaseCommandIEs} },
    protocolExtensions      ProtocolExtensionContainer { {Iu-ReleaseCommandExtensions} }            OPTIONAL,
    ...
}

Iu-ReleaseCommandIEs RANAP-PROTOCOL-IES ::= {
    { ID id-Cause                   CRITICALITY ignore  TYPE Cause                  PRESENCE mandatory  },
    ...
}

Iu-ReleaseCommandExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
-- **************************************************************
--
-- Iu Release Complete
--
-- **************************************************************

Iu-ReleaseComplete ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {Iu-ReleaseCompleteIEs} },
    protocolExtensions      ProtocolExtensionContainer { {Iu-ReleaseCompleteExtensions} }           OPTIONAL,
    ...
}

Iu-ReleaseCompleteIEs RANAP-PROTOCOL-IES ::= {
    { ID id-RAB-DataVolumeReportList        CRITICALITY ignore  TYPE RAB-DataVolumeReportList       PRESENCE conditional
    -- This group is only present if data volume reporting for PS domain is required --                    } |
    { ID id-RAB-ReleasedList-IuRelComp      CRITICALITY ignore  TYPE RAB-ReleasedList-IuRelComp     PRESENCE conditional
    -- This group is only present for RABs towards the PS domain when the release was initiated by UTRAN --                 } |
    { ID id-CriticalityDiagnostics          CRITICALITY ignore  TYPE CriticalityDiagnostics         PRESENCE optional    },
    ...
}

RAB-DataVolumeReportList                ::= RAB-IE-ContainerList { {RAB-DataVolumeReportItemIEs} }

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

RAB-DataVolumeReportItem ::= SEQUENCE {
    rAB-ID                      RAB-ID,
    dl-UnsuccessfullyTransmittedDataVolume      DataVolumeList      OPTIONAL
    -- This IE is only present if data volume reporting for PS domain is required --,
    iE-Extensions                   ProtocolExtensionContainer { {RAB-DataVolumeReportItem-ExtIEs} }      OPTIONAL,
    ...
}

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

RAB-ReleasedList-IuRelComp              ::= RAB-IE-ContainerList { {RAB-ReleasedItem-IuRelComp-IEs} }

RAB-ReleasedItem-IuRelComp-IEs RANAP-PROTOCOL-IES ::= {
    { ID id-RAB-ID                  CRITICALITY ignore  TYPE RAB-ID                 PRESENCE mandatory  } |
    { ID id-DL-GTP-PDU-SequenceNumber       CRITICALITY ignore  TYPE DL-GTP-PDU-SequenceNumber      PRESENCE mandatory   } |
    { ID id-UL-GTP-PDU-SequenceNumber       CRITICALITY ignore  TYPE UL-GTP-PDU-SequenceNumber      PRESENCE mandatory   },
    ...
}

Iu-ReleaseCompleteExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
```

```
}

-- **************************************************************
--
-- RELOCATION PREPARATION ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Relocation Required
--
-- **************************************************************

RelocationRequired ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RelocationRequiredIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RelocationRequiredExtensions} }           OPTIONAL,
        ...
}

RelocationRequiredIEs RANAP-PROTOCOL-IES ::= {
    { ID id-RelocationType              CRITICALITY ignore  TYPE RelocationType                 PRESENCE mandatory  } |
    { ID id-Cause                   CRITICALITY ignore  TYPE Cause                  PRESENCE mandatory  } |
    { ID id-SourceID                CRITICALITY ignore  TYPE SourceID                   PRESENCE mandatory } |
    { ID id-TargetID                CRITICALITY reject  TYPE TargetID                   PRESENCE mandatory } |
    { ID id-ClassmarkInformation2           CRITICALITY ignore  TYPE ClassmarkInformation2       PRESENCE conditional
    -- This is only present when initiating an inter system handover towards GSM BSC --                    } |
    { ID id-ClassmarkInformation3           CRITICALITY ignore  TYPE ClassmarkInformation3       PRESENCE conditional
    -- This is only present when initiating an inter system handover towards GSM BSC --                    } |
    { ID id-SourceRNC-ToTargetRNC-TransparentContainer
                            CRITICALITY reject  TYPE SourceRNC-ToTargetRNC-TransparentContainer PRESENCE mandatory  } |
    { ID id-OldBSS-ToNewBSS-Information     CRITICALITY ignore  TYPE OldBSS-ToNewBSS-Information    PRESENCE conditional
    -- This is only present when initiating an inter system handover towards GSM BSC --                    } ,
    ...
}

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

-- **************************************************************
--
-- Relocation Command
--
-- **************************************************************

RelocationCommand ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RelocationCommandIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RelocationCommandExtensions} }            OPTIONAL,
    ...
}
```

```
RelocationCommandIEs RANAP-PROTOCOL-IES ::= {
    { ID id-TargetRNC-ToSourceRNC-TransparentContainer
                           CRITICALITY reject  TYPE TargetRNC-ToSourceRNC-TransparentContainer PRESENCE conditional
    -- Must be included if applicable and if not sent via other CN --                                  } |
    { ID id-L3-Information              CRITICALITY ignore  TYPE L3-Information             PRESENCE conditional
    -- This IE is only present when the source of an inter system handover is GSM BSS --                       } |
    { ID id-RAB-RelocationReleaseList       CRITICALITY ignore  TYPE RAB-RelocationReleaseList       PRESENCE optional } |
    { ID id-RAB-DataForwardingList          CRITICALITY ignore  TYPE RAB-DataForwardingList       PRESENCE conditional
    -- This group if applicable is only present for RABs towards the PS domain --                           } |
    { ID id-CriticalityDiagnostics          CRITICALITY ignore  TYPE CriticalityDiagnostics          PRESENCE optional },
    ...
}

RAB-RelocationReleaseList               ::= RAB-IE-ContainerList { {RAB-RelocationReleaseItemIEs} }

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

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

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

RAB-DataForwardingList                  ::= RAB-IE-ContainerList { {RAB-DataForwardingItemIEs} }

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

RAB-DataForwardingItem ::= SEQUENCE {
    rAB-ID                      RAB-ID,
    transportLayerAddress               TransportLayerAddress,
    iuTransportAssociation              IuTransportAssociation,
    iE-Extensions                   ProtocolExtensionContainer { {RAB-DataForwardingItem-ExtIEs} }        OPTIONAL,
    ...
}

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

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

```
-- **************************************************************
--
-- Relocation Preparation Failure
--
-- **************************************************************

RelocationPreparationFailure ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RelocationPreparationFailureIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RelocationPreparationFailureExtensions} }       OPTIONAL,
        ...
}

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

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

-- **************************************************************
--
-- 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 mandatory   } |
    { 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 mandatory   } |
    { 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 ::= {
    ...
}

-- **************************************************************
--
-- RELOCATION CANCEL ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Relocation Cancel
--
-- **************************************************************

RelocationCancel ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RelocationCancelIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RelocationCancelExtensions} }          OPTIONAL,
    ...
}

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

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

```
    ...
}

-- **************************************************************
--
-- Relocation Cancel Acknowledge
--
-- **************************************************************

RelocationCancelAcknowledge ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RelocationCancelAcknowledgeIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RelocationCancelAcknowledgeExtensions} }        OPTIONAL,
    ...
}

RelocationCancelAcknowledgeIEs RANAP-PROTOCOL-IES ::= {
    { ID id-CriticalityDiagnostics          CRITICALITY ignore  TYPE CriticalityDiagnostics       PRESENCE optional },
    ...
}

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

-- **************************************************************
--
-- SRNS CONTEXT TRANSFER OPEARATION
--
-- **************************************************************

-- **************************************************************
--
-- SRNS Context Request
--
-- **************************************************************

SRNS-ContextRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {SRNS-ContextRequestIEs} },
    protocolExtensions      ProtocolExtensionContainer { {SRNS-ContextRequestExtensions} }          OPTIONAL,
    ...
}

SRNS-ContextRequestIEs RANAP-PROTOCOL-IES ::= {
    { ID id-RAB-DataForwardingList-SRNS-CtxReq  CRITICALITY ignore  TYPE RAB-DataForwardingList-SRNS-CtxReq     PRESENCE mandatory   },
    ...
}

RAB-DataForwardingList-SRNS-CtxReq          ::= RAB-IE-ContainerList { {RAB-DataForwardingItem-SRNS-CtxReq-IEs} }

RAB-DataForwardingItem-SRNS-CtxReq-IEs RANAP-PROTOCOL-IES ::= {
    { ID id-RAB-DataForwardingItem-SRNS-CtxReq  CRITICALITY ignore  TYPE RAB-DataForwardingItem-SRNS-CtxReq     PRESENCE mandatory   },
    ...
```

```
}

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

RAB-DataForwardingItem-SRNS-CtxReq-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

SRNS-ContextRequestExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- SRNS Context Response
--
-- **************************************************************

SRNS-ContextResponse ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {SRNS-ContextResponseIEs} },
    protocolExtensions      ProtocolExtensionContainer { {SRNS-ContextResponseExtensions} }         OPTIONAL,
    ...
}

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

RAB-ContextList                     ::= RAB-IE-ContainerList { {RAB-ContextItemIEs} }

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

RAB-ContextItem ::= SEQUENCE {
    rAB-ID                      RAB-ID,
    dl-GTP-PDU-SequenceNumber           DL-GTP-PDU-SequenceNumber,
    ul-GTP-PDU-SequenceNumber           UL-GTP-PDU-SequenceNumber,
    dl-N-PDU-SequenceNumber             DL-N-PDU-SequenceNumber,
    ul-N-PDU-SequenceNumber             UL-N-PDU-SequenceNumber,
    iE-Extensions                   ProtocolExtensionContainer { {RAB-ContextItem-ExtIEs} }       OPTIONAL,
    ...
}
```

```
RAB-ContextItem-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

SRNS-ContextResponseExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- 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 },
    ...
}

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 ::= {
    ...
}

-- **************************************************************
--
-- DATA VOLUME REPORT ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Data Volume Report Request
--
-- **************************************************************

DataVolumeReportRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {DataVolumeReportRequestIEs} },
    protocolExtensions      ProtocolExtensionContainer { {DataVolumeReportRequestExtensions} }      OPTIONAL,
    ...
}

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

```
RAB-DataVolumeReportRequestList             ::= RAB-IE-ContainerList { {RAB-DataVolumeReportRequestItemIEs} }

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

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

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

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

-- **************************************************************
--
-- Data Volume Report
--
-- **************************************************************

DataVolumeReport ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {DataVolumeReportIEs} },
    protocolExtensions      ProtocolExtensionContainer { {DataVolumeReportExtensions} }          OPTIONAL,
    ...
}

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

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

-- **************************************************************
--
-- CN INFORMATION BROADCAST
--
-- **************************************************************

-- **************************************************************
--
-- CN Information Broadcast Request
```

```
--
-- **********************************************************

CN-InformationBroadcastRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {CN-InformationBroadcastRequestIEs} },
    protocolExtensions      ProtocolExtensionContainer { {CN-InformationBroadcastRequestExtensions} }      OPTIONAL,
    ...
}

CN-InformationBroadcastRequestIEs RANAP-PROTOCOL-IES ::= {
    { ID id-CN-DomainIndicator          CRITICALITY ignore  TYPE CN-DomainIndicator             PRESENCE mandatory } |
    { ID id-CN-BroadcastInformationPieceList    CRITICALITY ignore  TYPE CN-BroadcastInformationPieceList    PRESENCE mandatory   },
    ...
}

CN-BroadcastInformationPieceList            ::= CN-BroadcastInfPiece-IE-ContainerList { {CN-BroadcastInformationPieceIEs} }

CN-BroadcastInformationPieceIEs RANAP-PROTOCOL-IES ::= {
    { ID id-CN-BroadcastInformationPiece        CRITICALITY ignore  TYPE CN-BroadcastInformationPiece     PRESENCE mandatory   },
    ...
}

CN-BroadcastInformationPiece ::= SEQUENCE {
    nAS-BroadcastInformation            NAS-BroadcastInformation,
    areaIdentity                    AreaIdentity,
    categorisationParameters            CategorisationParameters,
    iE-Extensions                   ProtocolExtensionContainer { {CN-BroadcastInformationPiece-ExtIEs} }        OPTIONAL,
    ...
}

CN-BroadcastInformationPiece-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

CN-InformationBroadcastRequestExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **********************************************************
--
-- CN Information Broadcast Confirm
--
-- **********************************************************

CN-InformationBroadcastConfirm ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {CN-InformationBroadcastConfirmIEs} },
    protocolExtensions      ProtocolExtensionContainer { {CN-InformationBroadcastConfirmExtensions} }      OPTIONAL,
    ...
}

CN-InformationBroadcastConfirmIEs RANAP-PROTOCOL-IES ::= {
    { ID id-CN-DomainIndicator          CRITICALITY ignore  TYPE CN-DomainIndicator             PRESENCE mandatory } |
```

```
    { ID id-CriticalityDiagnostics          CRITICALITY ignore  TYPE CriticalityDiagnostics       PRESENCE optional },
    ...
}

CN-InformationBroadcastConfirmExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- CN Information Broadcast Reject
--
-- **************************************************************

CN-InformationBroadcastReject ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {CN-InformationBroadcastRejectIEs} },
    protocolExtensions      ProtocolExtensionContainer { {CN-InformationBroadcastRejectExtensions} }    OPTIONAL,
    ...
}

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

CN-InformationBroadcastRejectExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- RESET ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Reset
--
-- **************************************************************

Reset ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {ResetIEs} },
    protocolExtensions      ProtocolExtensionContainer { {ResetExtensions} }                    OPTIONAL,
    ...
}

ResetIEs RANAP-PROTOCOL-IES ::= {
    { ID id-Cause                   CRITICALITY ignore  TYPE Cause                  PRESENCE mandatory  } |
    { ID id-CN-DomainIndicator          CRITICALITY ignore  TYPE CN-DomainIndicator             PRESENCE mandatory  },
```

```
    ...
}

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

-- **************************************************************
--
-- Reset Acknowledge
--
-- **************************************************************

ResetAcknowledge ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {ResetAcknowledgeIEs} },
    protocolExtensions      ProtocolExtensionContainer { {ResetAcknowledgeExtensions} }          OPTIONAL,
    ...
}

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

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

-- **************************************************************
--
-- Reset Resource
--
-- **************************************************************

ResetResource ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {ResetResourceIEs} },
    protocolExtensions      ProtocolExtensionContainer { {ResetResourceExtensions} }                OPTIONAL,
    ...
}

ResetResourceIEs RANAP-PROTOCOL-IES ::= {
    { ID id-Cause                   CRITICALITY ignore  TYPE Cause                  PRESENCE mandatory } |
    { ID id-IuSigConIdList      CRITICALITY ignore  TYPE ~~IuSignallingConnectionIdentifier~~ResetResourceList PRESENCE mandatory   },
    ...
}

ResetResourceList   ::= IuSigConId-IE-ContainerList{ {ResetResourceItemIEs} }

ResetResourceItemIEs RANAP-PROTOCOL-IES ::= {
    { ID id-IuSigConIdItem              CRITICALITY ignore  TYPE    ResetResourceItem           PRESENCE mandatory },
    ...
```

```
}

ResetResourceItem ::= SEQUENCE {
    iuSigConId                  IuSignallingConnectionIdentifier,
    iE-Extensions               ProtocolExtensionContainer { { ResetResourceItem-ExtIEs} }        OPTIONAL,
    ...
}

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

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

-- **************************************************************
--
-- Reset Resource Acknowledge
--
-- **************************************************************

ResetResourceAcknowledge ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {ResetResourceAcknowledgeIEs} },
    protocolExtensions      ProtocolExtensionContainer { {ResetResourceAcknowledgeExtensions} }         OPTIONAL,
    ...
}

ResetResourceAcknowledgeIEs RANAP-PROTOCOL-IES ::= {
    { ID id-IuSigConIdList      CRITICALITY ignore  TYPE ~~IuSignallingConnectionIdentifier~~ResetResourceAckList PRESENCE mandatory   },
    ...
}

ResetResourceAckList    ::= IuSigConId-IE-ContainerList{ {ResetResourceAckItemIEs} }

ResetResourceAckItemIEs RANAP-PROTOCOL-IES ::= {
    { ID id-IuSigConIdItem              CRITICALITY ignore  TYPE    ResetResourceAckItem          PRESENCE mandatory   },
    ...
}

ResetResourceAckItem ::= SEQUENCE {
    iuSigConId                  IuSignallingConnectionIdentifier,
    iE-Extensions               ProtocolExtensionContainer { { ResetResourceAckItem-ExtIEs} }        OPTIONAL,
    ...
}

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

ResetResourceAcknowledgeExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
```

```
}

-- **************************************************************
--
-- RAB RELEASE REQUEST ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- RAB Release Request
--
-- **************************************************************

RAB-ReleaseRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RAB-ReleaseRequestIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RAB-ReleaseRequestExtensions} }           OPTIONAL,
    ...
}

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

RAB-ReleaseList                     ::= RAB-IE-ContainerList { {RAB-ReleaseItemIEs} }

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

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

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

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

-- **************************************************************
--
-- Iu RELEASE REQUEST ELEMENTARY PROCEDURE
--
-- **************************************************************
```

```
-- **************************************************************
--
-- Iu Release Request
--
-- **************************************************************

Iu-ReleaseRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {Iu-ReleaseRequestIEs} },
    protocolExtensions      ProtocolExtensionContainer { {Iu-ReleaseRequestExtensions} }            OPTIONAL,
    ...
}

Iu-ReleaseRequestIEs RANAP-PROTOCOL-IES ::= {
    { ID id-Cause                   CRITICALITY ignore  TYPE Cause                  PRESENCE mandatory  },
    ...
}

Iu-ReleaseRequestExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- RELOCATION DETECT ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Relocation Detect
--
-- **************************************************************

RelocationDetect ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RelocationDetectIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RelocationDetectExtensions} }          OPTIONAL,
    ...
}

RelocationDetectIEs RANAP-PROTOCOL-IES ::= {
    ...
}

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

-- **************************************************************
--
-- RELOCATION COMPLETE ELEMENTARY PROCEDURE
--
```

```
-- **************************************************************

-- **************************************************************
--
-- Relocation Complete
--
-- **************************************************************

RelocationComplete ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RelocationCompleteIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RelocationCompleteExtensions} }           OPTIONAL,
    ...
}

RelocationCompleteIEs RANAP-PROTOCOL-IES ::= {
    ...
}

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

-- **************************************************************
--
-- PAGING ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Paging
--
-- **************************************************************

Paging ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {PagingIEs} },
    protocolExtensions      ProtocolExtensionContainer { {PagingExtensions} }                   OPTIONAL,
    ...
}

PagingIEs RANAP-PROTOCOL-IES ::= {
    { ID id-CN-DomainIndicator          CRITICALITY ignore  TYPE CN-DomainIndicator             PRESENCE mandatory } |
    { ID id-PermanentNAS-UE-ID          CRITICALITY ignore  TYPE PermanentNAS-UE-ID             PRESENCE mandatory } |
    { ID id-TemporaryUE-ID              CRITICALITY ignore  TYPE TemporaryUE-ID             PRESENCE optional } |
    { ID id-PagingAreaID                CRITICALITY ignore  TYPE PagingAreaID               PRESENCE optional } |
    { ID id-PagingCause             CRITICALITY ignore  TYPE PagingCause                PRESENCE optional } |
    { ID id-NonSearchingIndication          CRITICALITY ignore  TYPE NonSearchingIndication       PRESENCE optional },
    ...
}

PagingExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
```

```
}

-- **************************************************************
--
-- COMMON ID ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Common ID
--
-- **************************************************************

CommonID ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {CommonID-IEs} },
    protocolExtensions      ProtocolExtensionContainer { {CommonIDExtensions} }                 OPTIONAL,
    ...
}

CommonID-IEs RANAP-PROTOCOL-IES ::= {
    { ID id-PermanentNAS-UE-ID          CRITICALITY ignore  TYPE PermanentNAS-UE-ID             PRESENCE mandatory },
    ...
}

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

-- **************************************************************
--
-- CN INVOKE TRACE ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- CN Invoke Trace
--
-- **************************************************************

CN-InvokeTrace ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {CN-InvokeTraceIEs} },
    protocolExtensions      ProtocolExtensionContainer { {CN-InvokeTraceExtensions} }            OPTIONAL,
    ...
}

CN-InvokeTraceIEs RANAP-PROTOCOL-IES ::= {
    { ID id-TraceType               CRITICALITY ignore  TYPE TraceType                  PRESENCE mandatory } |
    { ID id-TraceReference              CRITICALITY ignore  TYPE TraceReference             PRESENCE mandatory   } |
    { ID id-TriggerID               CRITICALITY ignore  TYPE TriggerID                  PRESENCE optional  } |
    { ID id-UE-ID                   CRITICALITY ignore  TYPE UE-ID                  PRESENCE optional   } |
```

```
    { ID id-OMC-ID                  CRITICALITY ignore  TYPE OMC-ID                 PRESENCE optional   },
    ...
}

CN-InvokeTraceExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

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

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

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

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

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

-- **************************************************************
--
-- LOCATION REPORT ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Location Report
--
-- **************************************************************

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

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

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

-- **************************************************************
--
-- INITIAL UE MESSAGE ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Initial UE Message
--
-- **************************************************************

InitialUE-Message ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {InitialUE-MessageIEs} },
    protocolExtensions      ProtocolExtensionContainer { {InitialUE-MessageExtensions} }            OPTIONAL,
    ...
}

InitialUE-MessageIEs RANAP-PROTOCOL-IES ::= {
    { ID id-CN-DomainIndicator          CRITICALITY ignore  TYPE CN-DomainIndicator             PRESENCE mandatory } |
    { ID id-LAI                CRITICALITY ignore  TYPE LAI                   PRESENCE mandatory   } |
    { ID id-RAC                CRITICALITY ignore  TYPE RAC                   PRESENCE conditional
    -- This IE is only present for RABs towards the PS domain --                                      } |
    { ID id-SAI                CRITICALITY ignore  TYPE SAI                   PRESENCE mandatory   } |
    { ID id-NAS-PDU                CRITICALITY ignore  TYPE NAS-PDU                   PRESENCE mandatory },
    ...
}

InitialUE-MessageExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- DIRECT TRANSFER ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Direct Transfer
```

```
--
-- **************************************************************

DirectTransfer ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {DirectTransferIEs} },
    protocolExtensions      ProtocolExtensionContainer { {DirectTransferExtensions} }            OPTIONAL,
    ...
}

DirectTransferIEs RANAP-PROTOCOL-IES ::= {
    { ID id-NAS-PDU                 CRITICALITY ignore  TYPE NAS-PDU                  PRESENCE mandatory } |
    { ID id-LAI                 CRITICALITY ignore  TYPE LAI                    PRESENCE conditional
    -- This IE is only present if the message is directed to the PS domain --                              } |
    { ID id-RAC                 CRITICALITY ignore  TYPE RAC                    PRESENCE conditional
    -- This IE is only present if the message is directed to the PS domain --                              } |
    { ID id-SAPI                    CRITICALITY ignore  TYPE SAPI                   PRESENCE conditional
    -- This IE is always used in downlink direction--                                                      },
    ...
}

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

-- **************************************************************
--
-- OVERLOAD CONTROL ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Overload
--
-- **************************************************************

Overload ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {OverloadIEs} },
    protocolExtensions      ProtocolExtensionContainer { {OverloadExtensions} }                OPTIONAL,
    ...
}

OverloadIEs RANAP-PROTOCOL-IES ::= {
    { ID id-NumberOfSteps               CRITICALITY ignore  TYPE NumberOfSteps              PRESENCE optional },
    ...
}

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

-- **************************************************************
```

```
--
-- ERROR INDICATION ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Error Indication
--
-- **************************************************************

ErrorIndication ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {ErrorIndicationIEs} },
    protocolExtensions      ProtocolExtensionContainer { {ErrorIndicationExtensions} }           OPTIONAL,
    ...
}

ErrorIndicationIEs RANAP-PROTOCOL-IES ::= {
    { ID id-Cause                   CRITICALITY ignore  TYPE Cause                  PRESENCE conditional
    -- At least either of Cause IE or Criticality IE shall be present --                                  } |
    { ID id-CriticalityDiagnostics          CRITICALITY ignore  TYPE CriticalityDiagnostics      PRESENCE conditional
    -- At least either of Cause IE or Criticality IE shall be present --                                  } |
    { ID id-CN-DomainIndicator          CRITICALITY ignore  TYPE CN-DomainIndicator            PRESENCE optional   } |
    { ID id-IuTransportAssociation          CRITICALITY ignore  TYPE IuTransportAssociation      PRESENCE optional } |
    { ID id-TransportLayerAddress           CRITICALITY ignore  TYPE TransportLayerAddress       PRESENCE optional },
    ...
}

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

-- **************************************************************
--
-- SRNS DATA FORWARD ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- SRNS Data Forward Command
--
-- **************************************************************

SRNS-DataForwardCommand ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {SRNS-DataForwardCommandIEs} },
    protocolExtensions      ProtocolExtensionContainer { {SRNS-DataForwardCommandExtensions} }       OPTIONAL,
    ...
}

SRNS-DataForwardCommandIEs RANAP-PROTOCOL-IES ::= {
    { ID id-RAB-DataForwardingList          CRITICALITY ignore  TYPE RAB-DataForwardingList      PRESENCE conditional
```

```
    -- This group is only present for RABs towards the PS domain --                                    },
    ...
}

SRNS-DataForwardCommandExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- FORWARD SRNS CONTEXT ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Forward SRNS Context
--
-- **************************************************************

ForwardSRNS-Context ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {ForwardSRNS-ContextIEs} },
    protocolExtensions      ProtocolExtensionContainer { {ForwardSRNS-ContextExtensions} }          OPTIONAL,
    ...
}

ForwardSRNS-ContextIEs RANAP-PROTOCOL-IES ::= {
    { ID id-RAB-ContextList             CRITICALITY ignore  TYPE RAB-ContextList                PRESENCE mandatory },
    ...
}

ForwardSRNS-ContextExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- RAB ASSIGNMENT ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- RAB Assignment Request
--
-- **************************************************************

RAB-AssignmentRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RAB-AssignmentRequestIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RAB-AssignmentRequestExtensions} }        OPTIONAL,
    ...
}
```

```
RAB-AssignmentRequestIEs RANAP-PROTOCOL-IES ::= {
    { ID id-RAB-SetupOrModifyList           CRITICALITY ignore  TYPE RAB-SetupOrModifyList        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-ReleaseList             CRITICALITY ignore  TYPE RAB-ReleaseList                PRESENCE conditional
    -- This group must be present at least when no other group is present, ie. at least one group must be present --           },
    ...
}

RAB-SetupOrModifyList                   ::= RAB-IE-ContainerPairList { {RAB-SetupOrModifyItem-IEs} }

RAB-SetupOrModifyItem-IEs RANAP-PROTOCOL-IES-PAIR ::= {
    { ID id-RAB-SetupOrModifyItem           FIRST CRITICALITY  reject   FIRST TYPE  RAB-SetupOrModifyItemFirst
                            SECOND CRITICALITY ignore   SECOND TYPE RAB-SetupOrModifyItemSecond
                                                            PRESENCE mandatory  },
    ...
}

RAB-SetupOrModifyItemFirst ::= SEQUENCE {
    rAB-ID                      RAB-ID,
    rAB-Parameters                  RAB-Parameters,
    userPlaneInformation                UserPlaneInformation,
    transportLayerAddress               TransportLayerAddress,
    iuTransportAssociation              IuTransportAssociation,
    iE-Extensions                   ProtocolExtensionContainer { {RAB-SetupOrModifyItemFirst-ExtIEs} }       OPTIONAL,
    ...
}

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

RAB-SetupOrModifyItemSecond ::= SEQUENCE {
    nAS-BindingInformation              NAS-BindingInformation,
    dataVolumeReportingIndication           DataVolumeReportingIndication   OPTIONAL
    -- This IE, if applicable, is only present for RABs towards the PS domain --,
    dl-GTP-PDU-SequenceNumber           DL-GTP-PDU-SequenceNumber   OPTIONAL
    -- This IE, if applicable, is only present for RABs towards the PS domain --,
    ul-GTP-PDU-SequenceNumber           UL-GTP-PDU-SequenceNumber   OPTIONAL
    -- This IE, if applicable, is only present for RABs towards the PS domain --,
    dl-N-PDU-SequenceNumber             DL-N-PDU-SequenceNumber     OPTIONAL
    -- This IE, if applicable, is only present for RABs towards the PS domain --,
    ul-N-PDU-SequenceNumber             UL-N-PDU-SequenceNumber     OPTIONAL
    -- This IE, if applicable, is only present for RABs towards the PS domain --,
    iE-Extensions                   ProtocolExtensionContainer { {RAB-SetupOrModifyItemSecond-ExtIEs} }      OPTIONAL,
    ...
}

RAB-SetupOrModifyItemSecond-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
RAB-AssignmentRequestExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- 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 --,
    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
```

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),
    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)


CriticalityDiagnostics ::= SEQUENCE {
    procedureCode           ProcedureCode           OPTIONAL,
    triggeringMessage       TriggeringMessage       OPTIONAL,
    criticalityResponse     Criticality         OPTIONAL,
    iEsCriticalityResponses     CriticalityDiagnostics-IE-List  OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { {CriticalityDiagnostics-ExtIEs} } OPTIONAL,
    ...
}
```

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

CriticalityDiagnostics-IE-List ::= SEQUENCE (SIZE (1..maxNrOfErrors)) OF
    SEQUENCE {
        criticalityResponse     Criticality,
        iE-ID               ProtocolIE-ID,
        iE-Extensions           ProtocolExtensionContainer { {CriticalityDiagnostics-IE-List-ExtIEs} } OPTIONAL,
        ...
    }

CriticalityDiagnostics-IE-List-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

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

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

ChosenEncryptionAlgorithm       ::= PermittedEncryptionAlgorithms

ChosenIntegrityProtectionAlgorithm  ::= PermittedIntegrityProtectionAlgorithms

ChosenUP-Version ::= ENUMERATED {
    version1,
    version2,
    ...
}

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

ClassmarkInformation2           ::= OCTET STRING

ClassmarkInformation3           ::= OCTET STRING

CN-DomainIndicator ::= ENUMERATED {
    cs-domain,
    ps-domain
}

-- D

DataVolumeReference         ::= INTEGER (0..255)
```

```
DataVolumeReportingIndication ::= ENUMERATED {
    do-report,
    do-not-report
}

DeliveryOfErroneousSDU ::= ENUMERATED {
    yes,
    no,
    no-error-detection-consideration
}

DeliveryOrder::= ENUMERATED {
    delivery-order-requested,
    delivery-order-not-requested
}

DL-GTP-PDU-SequenceNumber       ::= INTEGER (0..65535)
-- Reference: xx.xxx

DL-N-PDU-SequenceNumber         ::= INTEGER (0..4095)
-- Reference: xx.xxx

D-RNTI                  ::= OCTET STRING (SIZE (20))

-- 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-area,
    ...
}

-- F
-- G

GeographicalArea ::= CHOICE {
```

```
    point               GA-Point,
    pointWithUnCertainty        GA-PointWithUnCertainty,
    polygon             GA-Polygon,
    ...
}

GeographicalCoordinates ::= SEQUENCE {
    latitudeSign            ENUMERATED { north, south },
    latitude            INTEGER (0..8388607),
    longitude           INTEGER (-8388608..8388607),
    iE-Extensions           ProtocolExtensionContainer { {GeographicalCoordinates-ExtIEs} } OPTIONAL,
    ...
}

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

GA-Point ::= SEQUENCE {
    geographicalCoordinates     GeographicalCoordinates,
    iE-Extensions           ProtocolExtensionContainer { {GA-Point-ExtIEs} } OPTIONAL,
    ...
}

GA-Point-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

GA-PointWithUnCertainty ::=SEQUENCE {
    geographicalCoordinates     GeographicalCoordinates,
    iE-Extensions           ProtocolExtensionContainer { {GA-PointWithUnCertainty-ExtIEs} } OPTIONAL,
    uncertaintyCode         INTEGER (0..127)
}

GA-PointWithUnCertainty-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

GA-Polygon ::= SEQUENCE (SIZE (1..maxNrOfPoints)) OF
    SEQUENCE {
        geographicalCoordinates     GeographicalCoordinates,
        iE-Extensions           ProtocolExtensionContainer { {GA-Polygon-ExtIEs} } OPTIONAL,
        ...
    }

GA-Polygon-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

GlobalRNC-ID ::= SEQUENCE {
    pLMN-ID             PLMN-ID,
    rNC-ID              RNC-ID,
```

```
    iE-Extensions           ProtocolExtensionContainer { {GlobalRNC-ID-ExtIEs} } OPTIONAL
}

GlobalRNC-ID-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

GTP-TEI                 ::= OCTET STRING (SIZE (4))
-- Reference: xx.xxx

GuaranteedBitrate           ::= INTEGER (0..16000000)
-- Unit is bits per sec

-- H

-- I

IMEI                    ::= TBCD-STRING (SIZE (8))
-- Reference: 23.003

IMSI                    ::= TBCD-STRING (SIZE (3..8))
-- Reference: 23.003

IntegrityProtectionAlgorithm        ::= INTEGER { standard-UMTS-integrity-algorithm-UIA1 (0) } (0..15)

IntegrityProtectionInformation ::= SEQUENCE {
    permittedAlgorithms     PermittedIntegrityProtectionAlgorithms,
    key             IntegrityProtectionKey,
    iE-Extensions           ProtocolExtensionContainer { {IntegrityProtectionInformation-ExtIEs} } OPTIONAL
}

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

IntegrityProtectionKey          ::= BIT STRING (SIZE (128))

IuSignallingConnectionIdentifier    ::= INTEGER(10..16000000)

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

-- J
-- K
-- 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 ::= {
    ...
}

L3-Information              ::= OCTET STRING

-- M

MaxBitrate              ::= INTEGER (0..16000000)
-- Unit is bits per sec

MaxSDU-Size             ::= INTEGER
-- MaxSDU-Size              ::= INTEGER (0..32768)
-- Unit is bit

MCC                 ::= TBCD-STRING (SIZE (2))
-- Reference: 24.008

MNC                 ::= TBCD-STRING (SIZE (2))
-- Reference: 24.008

-- N

NAS-BindingInformation          ::= OCTET STRING (SIZE (2))

NAS-BroadcastInformation        ::= OCTET STRING

NAS-PDU                 ::= OCTET STRING

NonSearchingIndication ::= ENUMERATED {
    non-searching,
    searching
}

NumberOfIuInstances         ::= INTEGER (1..2)

NumberOfSteps               ::= INTEGER (1..16)

-- O

OldBSS-ToNewBSS-Information     ::= OCTET STRING

OMC-ID                  ::= OCTET STRING (SIZE (3..22))
-- Reference: GSM TS 12.20

-- 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..15)) OF
    EncryptionAlgorithm

PermittedIntegrityProtectionAlgorithms ::= SEQUENCE (SIZE (0..15)) 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))

-- Q

QueuingAllowed ::= ENUMERATED {
    queueing-not-allowed,
    queueing-allowed
}

-- R

RAB-ID                  ::= INTEGER (1..maxNrOfRABs)
```

```
RAB-Parameters ::= SEQUENCE {
    trafficClass            TrafficClass,
    maxBitrate          MaxBitrate,
    guaranteedBitRate       GuaranteedBitrate,
    deliveryOrder           DeliveryOrder,
    maxSDU-Size         MaxSDU-Size,
    sDU-Parameters          SDU-Parameters,
    transferDelay           TransferDelay,
    trafficHandlingPriority     TrafficHandlingPriority,
    allocationOrRetentionPriority   AllocationOrRetentionPriority,
    sourceStatisticsDescriptor  SourceStatisticsDescriptor,
    iE-Extensions           ProtocolExtensionContainer { {RAB-Parameters-ExtIEs} } OPTIONAL,
    ...
}

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

RAC                 ::= OCTET STRING (SIZE (1))

RAI ::= SEQUENCE {
    lAI             LAI,
    rAC             RAC,
    iE-Extensions           ProtocolExtensionContainer { {RAI-ExtIEs} } OPTIONAL,
    ...
}

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

RateControlAllowed ::= ENUMERATED {
    not-allowed,
    allowed
}

RelocationType ::= ENUMERATED {
    ue-not-involved,
    ue-involved,
    ...
}

ReportArea ::= ENUMERATED {
    service-area,
    geographical-coordinates,
    ...
}

RequestType ::= SEQUENCE {
    event               Event,
    reportArea          ReportArea,
```

```
    ...
}

ResidualBitErrorRatio ::= CHOICE {
    notApplicable           NULL,
    value               ResidualBitErrorRatioIE
}

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

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

RNC-ID                  ::= INTEGER (0..4095)
-- RNC-ID                   ::= BIT STRING (SIZE (12))
-- Harmonized with RNSAP and NBAP definitions

RRC-Container               ::= OCTET STRING

-- S

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

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

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

SAPI ::= ENUMERATED {
    normal-priority,
    low-priority,
    ...
}

SDU-ErrorRatio ::= CHOICE {
    notApplicable           NULL,
    value               SDU-ErrorRatioIE
}

SDU-ErrorRatioIE ::= SEQUENCE {
```

```
    mantissa            INTEGER (1..9),
    exponent            INTEGER (1..6),
    iE-Extensions           ProtocolExtensionContainer { {SDU-ErrorRatioIE-ExtIEs} } OPTIONAL
}
-- ErrorRatio = mantissa * 10^-exponent

SDU-ErrorRatioIE-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

SDU-Parameters ::= SEQUENCE (SIZE (1..maxRAB-Subflows)) OF
    SEQUENCE {
        sDU-ErrorRatio          SDU-ErrorRatio,
        residualBitErrorRatio       ResidualBitErrorRatio,
        deliveryOfErroneousSDU      DeliveryOfErroneousSDU,
        subflowSDU-SizeParameters   SubflowSDU-SizeParameters,
        iE-Extensions           ProtocolExtensionContainer { {SDU-Parameters-ExtIEs} } OPTIONAL,
        ...
    }
    -- SDU-ErrorRatio is set to notApplicable when DeliveryOfErroneousSDU is
    -- set to no-error-detection-consideration.

SDU-Parameters-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

SourceID ::= CHOICE {
    sourceRNC-ID            SourceRNC-ID, -- If UMTS target
    sAI             SAI,          -- if GSM target
    ...
}

SourceRNC-ID                ::= GlobalRNC-ID

SourceRNC-ToTargetRNC-TransparentContainer ::= SEQUENCE {
    rRC-Container           RRC-Container,
    numberOfIuInstances     NumberOfIuInstances,
    relocationType          RelocationType,
    chosenIntegrityProtectionAlgorithm ChosenIntegrityProtectionAlgorithm   OPTIONAL
    -- Must be present for intra UMTS Handovers --,
    integrityProtectionKey      IntegrityProtectionKey          OPTIONAL
    -- Must be present for intra UMTS Handovers --,
    chosenEncryptionAlgorithmForSignalling 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 --,
    chosenEncryptionAlgorithmForCS   ChosenEncryptionAlgorithm       OPTIONAL
    -- Must be present for intra UMTS Handovers if ciphering is active --,
    chosenEncryptionAlgorithmForPS   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,
```

```
    ...
}

SourceRNC-ToTargetRNC-TransparentContainer-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

SourceStatisticsDescriptor ::= ENUMERATED {
    na,
    speech,
    unknown,
    ...
}

SubflowSDU-Size             ::= INTEGER (0..4095)
-- Unit is bit

SubflowSDU-SizeParameters ::= SEQUENCE (SIZE (1..maxRAB-SubflowCombination)) OF
    SEQUENCE {
        rateControlAllowed      RateControlAllowed,
        subflowSDU-Size         SubflowSDU-Size     OPTIONAL
        -- This IE is only present for RABs that have predefined SDU size(s) --,
        iE-Extensions           ProtocolExtensionContainer { {SubflowSDU-SizeParameters-ExtIEs} } OPTIONAL,
        ...
    }

SubflowSDU-SizeParameters-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- T

TargetID ::= CHOICE {
    targetRNC-ID            TargetRNC-ID, -- If UMTS target
    cGI             CGI,          -- If GSM target
    ...
}

TargetRNC-ID                ::= GlobalRNC-ID

TargetRNC-ToSourceRNC-TransparentContainer ::= SEQUENCE {
    rRC-Container           RRC-Container,
    iE-Extensions           ProtocolExtensionContainer { {TargetRNC-ToSourceRNC-TransparentContainer-ExtIEs} } OPTIONAL,
    ...
}

TargetRNC-ToSourceRNC-TransparentContainer-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

TBCD-STRING                 ::= OCTET STRING
```

```
TemporaryUE-ID ::= CHOICE {
    tMSI                TMSI,
    p-TMSI              P-TMSI,
    ...
}

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

TraceReference              ::= OCTET STRING (SIZE (2..3))

TraceType               ::= OCTET STRING (SIZE (1))
-- Reference: GSM TS 12.08

TrafficClass ::= ENUMERATED {
    conversational,
    streaming,
    interactive,
    background,
    ...
}

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

TransferDelay               ::= INTEGER (0..65535)
-- Unit is millisecond

UnsuccessfullyTransmittedDataVolume ::= INTEGER (0..4294967295)

TransportLayerAddress           ::= OCTET STRING (SIZE (20))

TriggerID               ::= OCTET STRING (SIZE (3..22))

-- U

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

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

UL-N-PDU-SequenceNumber         ::= INTEGER (0..4095)

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

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

```
END
```

9.3.5 Common Definitions

```
-- **************************************************************
--
-- Common definitions
--
-- **************************************************************

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

BEGIN

Criticality     ::= ENUMERATED { reject, ignore, notify }

Presence        ::= ENUMERATED { optional, conditional, mandatory }

PrivateExtensionID  ::= CHOICE {
    local               INTEGER (0..65535),
    global              OBJECT IDENTIFIER
}

ProcedureCode       ::= INTEGER (0..255)

ProtocolExtensionID ::= INTEGER (0..65535)

ProtocolIE-ID       ::= INTEGER (0..65535)

TriggeringMessage   ::= ENUMERATED { initiating-message, successful-outcome, unsuccessfull-outcome, outcome }

END
```

9.3.6 Constant Definitions

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

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

BEGIN

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

```
-- **************************************************************

id-RAB-Assignment           INTEGER ::= 0
id-Iu-Release               INTEGER ::= 1
id-RelocationPreparation        INTEGER ::= 2
id-RelocationResourceAllocation     INTEGER ::= 3
id-RelocationCancel         INTEGER ::= 4
id-SRNS-ContextTransfer         INTEGER ::= 5
id-SecurityModeControl          INTEGER ::= 6
id-DataVolumeReport         INTEGER ::= 7
id-CN-InformationBroadcast      INTEGER ::= 8
id-Reset                INTEGER ::= 9
id-RAB-ReleaseRequest           INTEGER ::= 10
id-Iu-ReleaseRequest            INTEGER ::= 11
id-RelocationDetect         INTEGER ::= 12
id-RelocationComplete           INTEGER ::= 13
id-Paging               INTEGER ::= 14
id-CommonID             INTEGER ::= 15
id-CN-InvokeTrace           INTEGER ::= 16
id-LocationReportingControl     INTEGER ::= 17
id-LocationReport           INTEGER ::= 18
id-InitialUE-Message            INTEGER ::= 19
id-DirectTransfer           INTEGER ::= 20
id-OverloadControl          INTEGER ::= 21
id-ErrorIndication          INTEGER ::= 22
id-SRNS-DataForward         INTEGER ::= 23
id-ForwardSRNS-Context          INTEGER ::= 24
id-Private              INTEGER ::= 25
id-ResetResource            INTEGER ::= 276

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

maxPrivateExtensions            INTEGER ::= 65535
maxProtocolExtensions           INTEGER ::= 65535
maxProtocolIEs              INTEGER ::= 65535

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

maxNrOfErrors               INTEGER ::= 256
maxNrOfPieces               INTEGER ::= 16
maxNrOfRABs             INTEGER ::= 256
maxNrOfVol              INTEGER ::= 2
maxNrOfPoints               INTEGER ::= 15
maxNrOfIuSigConIds          INTEGER ::= 1000
```

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

-- **************************************************************
--
-- 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-IuSigConIdList                       INTEGER ::= 7177
id-IuSigConIdItem                       INTEGER ::= 7278
id-IuSigConId                           INTEGER ::= 7379

END
```

9.3.7 Container Definitions

```
-- **************************************************************
--
-- Container definitions
--
-- **************************************************************

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

BEGIN

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

```
-- **************************************************************

IMPORTS
    Criticality,
    Presence,
    PrivateExtensionID,
    ProtocolExtensionID,
    ProtocolIE-ID
FROM RANAP-CommonDataTypes

    maxPrivateExtensions,
    maxProtocolExtensions,
    maxProtocolIEs
FROM RANAP-Constants;

-- **************************************************************
--
-- Class Definition for Protocol IEs
--
-- **************************************************************

RANAP-PROTOCOL-IES ::= CLASS {
    &id             ProtocolIE-ID                   UNIQUE,
    &criticality            Criticality,
    &Value,
    &presence           Presence
}
WITH SYNTAX {
    ID              &id
    CRITICALITY         &criticality
    TYPE                &Value
    PRESENCE            &presence
}

-- **************************************************************
--
-- Class Definition for Protocol IEs
--
-- **************************************************************

RANAP-PROTOCOL-IES-PAIR ::= CLASS {
    &id             ProtocolIE-ID                   UNIQUE,
    &firstCriticality       Criticality,
    &FirstValue,
    &secondCriticality      Criticality,
    &SecondValue,
    &presence           Presence
}
WITH SYNTAX {
    ID              &id
    FIRST CRITICALITY       &firstCriticality
    FIRST TYPE          &FirstValue
```

```
    SECOND CRITICALITY      &secondCriticality
    SECOND TYPE         &SecondValue
    PRESENCE            &presence
}

-- **************************************************************
--
-- Class Definition for Protocol Extensions
--
-- **************************************************************

RANAP-PROTOCOL-EXTENSION ::= CLASS {
    &id             ProtocolExtensionID                 UNIQUE,
    &criticality            Criticality,
    &Extension
}
WITH SYNTAX {
    ID              &id
    CRITICALITY         &criticality
    EXTENSION           &Extension
}

-- **************************************************************
--
-- Class Definition for Private Extensions
--
-- **************************************************************

RANAP-PRIVATE-EXTENSION ::= CLASS {
    &id             PrivateExtensionID,
    &criticality            Criticality,
    &Extension
}
WITH SYNTAX {
    ID              &id
    CRITICALITY         &criticality
    EXTENSION           &Extension
}

-- **************************************************************
--
-- Container for Protocol IEs
--
-- **************************************************************

ProtocolIE-Container {RANAP-PROTOCOL-IES : IEsSetParam} ::=
    SEQUENCE (SIZE (0..maxProtocolIEs)) OF
    ProtocolIE-Field {{IEsSetParam}}

ProtocolIE-Field {RANAP-PROTOCOL-IES : IEsSetParam} ::= SEQUENCE {
    id              RANAP-PROTOCOL-IES.&id              ({IEsSetParam}),
    criticality         RANAP-PROTOCOL-IES.&criticality         ({IEsSetParam}{@id}),
```

```
    value               RANAP-PROTOCOL-IES.&Value               ({IEsSetParam}{@id})
}

-- **************************************************************
--
-- Container for Protocol IE Pairs
--
-- **************************************************************

ProtocolIE-ContainerPair {RANAP-PROTOCOL-IES-PAIR : IEsSetParam} ::=
    SEQUENCE (SIZE (0..maxProtocolIEs)) OF
    ProtocolIE-FieldPair {{IEsSetParam}}

ProtocolIE-FieldPair {RANAP-PROTOCOL-IES-PAIR : IEsSetParam} ::= SEQUENCE {
    id              RANAP-PROTOCOL-IES-PAIR.&id         ({IEsSetParam}),
    firstCriticality        RANAP-PROTOCOL-IES-PAIR.&firstCriticality   ({IEsSetParam}{@id}),
    firstValue          RANAP-PROTOCOL-IES-PAIR.&FirstValue         ({IEsSetParam}{@id}),
    secondCriticality       RANAP-PROTOCOL-IES-PAIR.&secondCriticality  ({IEsSetParam}{@id}),
    secondValue         RANAP-PROTOCOL-IES-PAIR.&SecondValue            ({IEsSetParam}{@id})
}

-- **************************************************************
--
-- Container Lists for Protocol IE Containers
--
-- **************************************************************

ProtocolIE-ContainerList {INTEGER : lowerBound, INTEGER : upperBound, RANAP-PROTOCOL-IES : IEsSetParam} ::=
    SEQUENCE (SIZE (lowerBound..upperBound)) OF
    ProtocolIE-Container {{IEsSetParam}}

ProtocolIE-ContainerPairList {INTEGER : lowerBound, INTEGER : upperBound, RANAP-PROTOCOL-IES-PAIR : IEsSetParam} ::=
    SEQUENCE (SIZE (lowerBound..upperBound)) OF
    ProtocolIE-ContainerPair {{IEsSetParam}}

-- **************************************************************
--
-- Container for Protocol Extensions
--
-- **************************************************************

ProtocolExtensionContainer {RANAP-PROTOCOL-EXTENSION : ExtensionSetParam} ::=
    SEQUENCE (SIZE (1..maxProtocolExtensions)) OF
    ProtocolExtensionField {{ExtensionSetParam}}

ProtocolExtensionField {RANAP-PROTOCOL-EXTENSION : ExtensionSetParam} ::= SEQUENCE {
    id              RANAP-PROTOCOL-EXTENSION.&id            ({ExtensionSetParam}),
    criticality         RANAP-PROTOCOL-EXTENSION.&criticality       ({ExtensionSetParam}{@id}),
    extensionValue          RANAP-PROTOCOL-EXTENSION.&Extension     ({ExtensionSetParam}{@id})
}

-- **************************************************************
```

```
--
-- Container for Private Extensions
--
-- ************************************************************

PrivateExtensionContainer {RANAP-PRIVATE-EXTENSION : ExtensionSetParam} ::=
    SEQUENCE (SIZE (1..maxPrivateExtensions)) OF
    PrivateExtensionField {{ExtensionSetParam}}

PrivateExtensionField {RANAP-PRIVATE-EXTENSION : ExtensionSetParam} ::= SEQUENCE {
    id              RANAP-PRIVATE-EXTENSION.&id         ({ExtensionSetParam}),
    criticality         RANAP-PRIVATE-EXTENSION.&criticality        ({ExtensionSetParam}{@id}),
    extensionValue          RANAP-PRIVATE-EXTENSION.&Extension      ({ExtensionSetParam}{@id})
}

END
```

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Document R3-000847
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	54r1	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 Febuary 2000

Subject: CR to 25.413: Editorial correction of Cause 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: In the ASN.1 a cause "ciphering-and-or-integrity-protection-already-active (13), is not correct. It is changed to "change-of-ciphering-and-or-integrity-protection-is-not supported(13)"

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 (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),
    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),
    change-of-ciphering-and-or-integrity-protection-is-not-supported (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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***Document* R3-000842**
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CHANGE REQUEST

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25.413	CR	053r2	Current Version:	V3.0.0

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: RAN WG3 **Date:**

Subject: Addition of Paging related parameter

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:

TS25.304 indicates:
The UE may use Discontinuous Reception (DRX) in idle mode in order to reduce power consumption. When DRX is used the UE needs only to monitor one Page Indicator, PI in one Paging Occasion per DRX cycle.
The DRX cycle length shall be 2^k *PBP frames, where k is the DRX cycle length coefficient and PBP is the Paging Block Periodicity. PBP is only applicable for TDD. For FDD, PBP=1.

It is necessary to calculate the DRX cycle length which is used in paging (ie. Idle mode). This value is optional in paging message of RANAP and it is only applicable to the case that each UE has the associated DRX cycle length.

Clauses affected: 9.1.21, 9.2.1, 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.

9.1.21 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	
DRX Cycle Length Coefficient	O		9.2.1.x	

9.2.1.x DRX Cycle Length Coefficient

This IE indicates the DRX cycle length coefficient(k) as defined in TS25.331.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
DRX Cycle Length Coefficient	M		INTEGER (2...12)	

9.3.3 PDU Definitions

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

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

BEGIN

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

IMPORTS
    DataVolumeReference,
    AreaIdentity,
    CN-DomainIndicator,
    CategorisationParameters,
    Cause,
    CriticalityDiagnostics,
    ChosenEncryptionAlgorithm,
    ChosenIntegrityProtectionAlgorithm,
    ChosenUP-Version,
    ClassmarkInformation2,
    ClassmarkInformation3,
    DL-GTP-PDU-SequenceNumber,
    DL-N-PDU-SequenceNumber,
    DataVolumeReportingIndication,
    DRX-CycleLengthCoefficient,
    EncryptionInformation,
    IntegrityProtectionInformation,
    IuTransportAssociation,
    L3-Information,
    LAI,
    NAS-BindingInformation,
    NAS-BroadcastInformation,
    NAS-PDU,
    NonSearchingIndication,
    NumberOfSteps,
    OMC-ID,
    OldBSS-ToNewBSS-Information,
    PagingAreaID,
    PagingCause,
    PermanentNAS-UE-ID,
```

```
    RAB-ID,
    RAB-Parameters,
    RAC,
    RelocationType,
    RequestType,
    SAI,
    SAPI,
    SourceID,
    SourceRNC-ToTargetRNC-TransparentContainer,
    TargetID,
    TargetRNC-ToSourceRNC-TransparentContainer,
    TemporaryUE-ID,
    TraceReference,
    TraceType,
    UnsuccessfullyTransmittedDataVolume,
    TransportLayerAddress,
    TriggerID,
    UE-ID,
    UL-GTP-PDU-SequenceNumber,
    UL-N-PDU-SequenceNumber,
    UP-ModeVersions,
    UserPlaneMode
FROM RANAP-IEs
```

```
-- **************************************************************
--
-- Paging
--
-- **************************************************************

Paging ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {PagingIEs} },
    protocolExtensions      ProtocolExtensionContainer { {PagingExtensions} }                   OPTIONAL,
    ...
}

PagingIEs RANAP-PROTOCOL-IES ::= {
    { ID id-CN-DomainIndicator          CRITICALITY ignore  TYPE CN-DomainIndicator             PRESENCE mandatory } |
    { ID id-PermanentNAS-UE-ID          CRITICALITY ignore  TYPE PermanentNAS-UE-ID             PRESENCE mandatory } |
    { ID id-TemporaryUE-ID              CRITICALITY ignore  TYPE TemporaryUE-ID             PRESENCE optional } |
    { ID id-PagingAreaID                CRITICALITY ignore  TYPE PagingAreaID               PRESENCE optional } |
    { ID id-PagingCause             CRITICALITY ignore  TYPE PagingCause                PRESENCE optional  } |
    { ID id-NonSearchingIndication          CRITICALITY ignore  TYPE NonSearchingIndication       PRESENCE optional } |
    { ID id-DRX-CycleLengthCoefficient              CRITICALITY ignore  TYPE DRX-CycleLengthCoefficient          PRESENCE optional } ,
    ...
}

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

9.3.4 Information Element Definitions

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

-- DRX-CycleLengthCoefficient

DRX-CycleLengthCoefficient          ::= INTEGER (2...12)
```

9.3.6 Constant Definitions

```
-- **************************************************************
--
-- 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-DRX-CycleLengthCoefficient               INTEGER ::= 76

END
```

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TSGR3#11
Document (00)0844
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CHANGE REQUEST

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25.413	**CR**	**55r1**	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 *list expected approval meeting # here ↑*

for approval [X] for information [ ]

strategic [ ] non-strategic [ ] *(for SMG use only)*

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: R-WG3 **Date:** 23.02.2000

Subject: CR to 25.413: Clarifying the usage of transparent containers in Relocation

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: 'Source RNC to Target RNC Transparent Container' IE should be used in every case when the target is UMTS RNC.
Similarly the usage of 'Target RNC to Source RNC Transparent Container' is limited to cases when the target is UMTS RNC.

Clauses affected: 9.2.1.28, 9.2.1.30

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.

9.2.1.28 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

****** Next Modified Section ******

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]

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***Document* R3-000846**
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CHANGE REQUEST

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25.413	CR	58r1	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: R-WG3 **Date:** 23.02.2000

Subject: CR to 25.413: Clarification of CN actions for Iu Release Request

Work item:

Category: *(only one category shall be marked with an X)*				**Release:**	
	F	Correction		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:
The position of the CN is clarified when responding to the IU Release Request message. A statement is added in the IU Release Request procedure that the CN decides how to react.

Also the cause value handling is aligned with previously agreed changes to RAB Release Request procedure.

Clauses affected: 8.4.2

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.

8.4 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 1: 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. It is up to the CN to decide how to react to the request.

Interactions with Iu Release:

~~The CN shall analyse the cause for sending the IU RELEASE REQUEST message, and i~~If the CN decides to release the Iu connection~~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