TSG RAN Meeting #17   **RP-020625**
Biarritz, France, 3 - 6 September, 2002

Title   **CRs (Rel-5 only) for UTRAN sharing in connected mode**
Source   **TSG RAN WG3**
Agenda Item   **7.3.5**

RAN3 Tdoc	Spec	curr. Vers.	new Vers.	REL	CR	Rev	Cat	Title	Work item
R3-022134	25.423	5.2.0	5.3.0	REL-5	702	1	B	Introduction of Shared Network Area information support	NETSHARE
R3-022121	25.401	5.3.0	5.4.0	REL-5	057	1	B	Introduction of the Access Control Function: SNA	NETSHARE
R3-022171	25.413	5.1.0	5.2.0	REL-5	504	2	B	Shared Networks in connected mode – Information Transfer	NETSHARE

CR-Form-v7

CHANGE REQUEST

⌘	**25.401** CR **057**	⌘ **rev**	**1**	⌘	Current version:	**5.3.0**	⌘

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

Proposed change affects: UICC apps⌘ ☐   ME ☐   Radio Access Network **X**   Core Network **X**

Title: ⌘	Introduction of the Access Control Function: SNA	
Source: ⌘	RAN WG3	
Work item code: ⌘	NETSHARE	**Date:** ⌘ 22/08/2002
Category: ⌘	**B**	**Release:** ⌘ REL-5

Use *one* of the following categories:
F (correction)
A (corresponds to a correction in an earlier release)
B (addition of feature),
C (functional modification of feature)
D (editorial modification)
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use *one* of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change: ⌘	It has been clarified (TR R3.012) that in order to support certain shared network scenarios, it is required to be able to differentiate LA access rights for different UEs. This contribution proposes to introduce the required mechanism in 25.401. Detailed consequences for the different protocols are described in the corresponding 25.413 and 25.423 CRs.
Summary of change: ⌘	- Introduction of Shared Network Area definition; - Description of Access Control Function;
Consequences if not approved: ⌘	

Clauses affected: ⌘	3.1, 3.2, 7.2.3.x (new)

	Y	N		
Other specs ⌘	Y		Other core specifications ⌘	TS 25.410 TS 25.413 CR 504r2 TS 25.423 CR 702r1 TS 23.003 TS 23.009 TS 29.002 TS 29.010
		N	Test specifications	
affected:	Y		O&M Specifications	

Other comments: ⌘	

How to create CRs using this form:

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1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

3   Definitions and abbreviations

3.1   Definitions

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

ALCAP: generic name for the transport signalling protocols used to set-up and tear-down transport bearers

Cell: Radio Network object that can be uniquely identified by a User Equipment from a (cell) identification that is broadcasted over a geographical area from one *UTRAN Access Point*
A Cell is either FDD or TDD mode.

Iu: interface between an RNC and an MSC, SGSN or CBC, providing an interconnection point between the RNS and the Core Network. It is also considered as a reference point

Iub: interface between the RNC and the Node B

Iur: logical interface between two RNCs
Whilst logically representing a point to point link between RNCs, the physical realisation need not be a point to point link.

Logical Model: Logical Model defines an abstract view of a network or network element by means of information objects representing network element, aggregations of network elements, the topological relationship between the elements, endpoints of connections (termination points), and transport entities (such as connections) that transport information between two or more termination points

The information objects defined in the Logical Model are used, among others, by connection management functions. In this way, a physical implementation independent management is achieved.

Node B: logical node in the RNS responsible for radio transmission / reception in one or more cells to/from the UE
The logical node terminates the Iub interface towards the RNC.

Radio Resources: resources that constitute the radio interface in UTRAN, e.g. frequencies, scrambling codes, spreading factors, power for common and dedicated channels

Node B Application Part: Radio Network Signalling over the Iub

Radio Network Controller: logical node in the RNS in charge of controlling the use and the integrity of the radio resources

Controlling RNC: role an RNC can take with respect to a specific set of Node B's
There is only one Controlling RNC for any Node B. The Controlling RNC has the overall control of the logical resources of its node B's.

Radio Network Subsystem: RNS can be either a full UTRAN or only a part of a UTRAN
An RNS offers the allocation and release of specific radio resources to establish means of connection in between an UE and the UTRAN. A Radio Network Subsystem contains one RNC and is responsible for the resources and transmission/reception in a set of cells.

Serving RNS: 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.

Drift RNS: role an RNS can take with respect to a specific connection between an UE and UTRAN
An RNS that supports the Serving RNS with radio resources when the connection between the UTRAN and the UE need to use cell(s) controlled by this RNS is referred to as Drift RNS.

Radio Access Network Application Part: Radio Network Signalling over the Iu

Radio Network Subsystem Application Part: Radio Network Signalling over the Iur

RRC Connection: point-to-point bi-directional connection between RRC peer entities on the UE and the UTRAN sides, respectively
An UE has either zero or one RRC connection.

Standalone A-GPS SMLC: logical node that interconnects to the RNC over the Iupc interface via the PCAP protocol
This node provides GPS related data to the RNC and may perform the position calculation function.

User Equipment: Mobile Equipment with one or several UMTS Subscriber Identity Module(s)
A device allowing a user access to network services via the Uu interface. The UE is defined in ref. [8].

Universal Terrestrial Radio Access Network: UTRAN is a conceptual term identifying that part of the network which consists of RNCs and Node Bs between Iu an Uu
The concept of UTRAN instantiation is currently undefined.

UTRAN Access Point: conceptual point within the UTRAN performing radio transmission and reception
A UTRAN access point is associated with one specific *cell*, i.e. there exists one UTRAN access point for each cell. It is the UTRAN-side end point of a *radio link*.

Radio Link: "radio link" is a logical association between a single User Equipment and a single UTRAN access point
Its physical realisation comprises one or more radio bearer transmissions.

Radio Link Set: set of one or more Radio Links that has a common generation of Transmit Power Control (TPC) commands in the DL

Uu: Radio interface between UTRAN and the User Equipment

RAB sub-flows: Radio Access Bearer can be realised by UTRAN through several sub-flows
These sub-flows correspond to the NAS service data streams that have QoS characteristics that differ in a predefined manner within a RAB e.g. different reliability classes.

RAB sub-flows have the following characteristics:

1) The sub-flows of a RAB are established and released at the RAB establishment and release, respectively.

2) The sub-flows of a RAB are submitted and delivered together at the RAB SAP.

3) The sub-flows of a RAB are carried over the same Iu transport bearer.

4) The sub-flows of a RAB are organised in a predefined manner at the SAP and over the Iu interface. The organisation is imposed by the NAS as part of its co-ordination responsibility.

Set of co-ordinated DCHs: set of co-ordinated DCHs is a set of dedicated transport channels that are always established and released in combination
Individual DCHs within a set of co-ordinated DCHs cannot be operated on individually e.g. if the establishment of one DCH fails, the establishment of all other DCHs in the set of co-ordinated DCHs shall be terminated unsuccessfully. A set of coordinated DCHs is transferred over one transport bearer. All DCHs in a set of co-ordinated DCHs shall have the same TTI.

Shared Network Area (SNA): Area consisting or one or more LA's to which access can be controlled.

3.2 Abbreviations

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

AAL	ATM Adaptation Layer
AAL2	ATM Adaptation Layer 2
ALCAP	Access Link Control Application Part
ATM	Asynchronous Transfer Mode
BM-IWF	Broadcast Multicast Interworking Function
BMC	Broadcast/Multicast Control
BSS	Base Station Subsystem
CBC	Cell Broadcast Centre
CBS	Cell Broadcast Service

CN	Core Network
CPCH	Common Packet Channel
CRNC	Controlling Radio Network Controller
DCH	Dedicated Channel
DL	Downlink
DRNS	Drift RNS
FACH	Forward Access Channel
FFS	For Further Study
GTP	GPRS Tunnelling Protocol
IPv4	Internet Protocol, version 4
IPv6	Internet Protocol, version 6
LA	Location Area
MAC	Medium Access Control
NAS	Non Access Stratum
NBAP	Node B Application Part
NNSF	NAS Node Selection Fuction
NSAP	Network Service Access Point
PCH	Paging Channel
QoS	Quality of Service
RAB	Radio Access Bearer
RACH	Random Access Channel
RANAP	Radio Access Network Application Part
RNC	Radio Network Controller
RNL	Radio Network Layer
RNS	Radio Network Subsystem
RNSAP	Radio Network Subsystem Application Part
RNTI	Radio Network Temporary Identity
SAB	Service Area Broadcast
SAS	Standalone A-GPS SMLC
SMLC	Serving Mobile Location Centre
SNA	Shared Network Area
SRNC	Serving Radio Network Controller
SRNS	Serving RNS
TEID	Tunnel Endpoint Identifier
TNL	Transport Network Layer
TTI	Transmission Time Interval
UDP	User Datagram Protocol
UE	User Equipment
UL	Uplink
UMTS	Universal Mobile Telecommunication System
USIM	UMTS Subscriber Identity Module
UTRAN	Universal Terrestrial Radio Access Network

7.2.3 Functions related to Mobility

7.2.3.1 Handover

This function manages the mobility of the radio interface. It is based on radio measurements and it is used to maintains the Quality of Service requested by the Core Network.

Handover may be directed to/from another system (e.g. UMTS to GSM handover).

The handover function may be either controlled by the network, or independently by the UE. Therefore, this function may be located in the SRNC, the UE, or both.

7.2.3.2 SRNS Relocation

The SRNS Relocation function coordinates the activities when the SRNS role is to be taken over by another RNS. The SRNS relocation function manages the Iu interface connection mobility from an RNS to another.
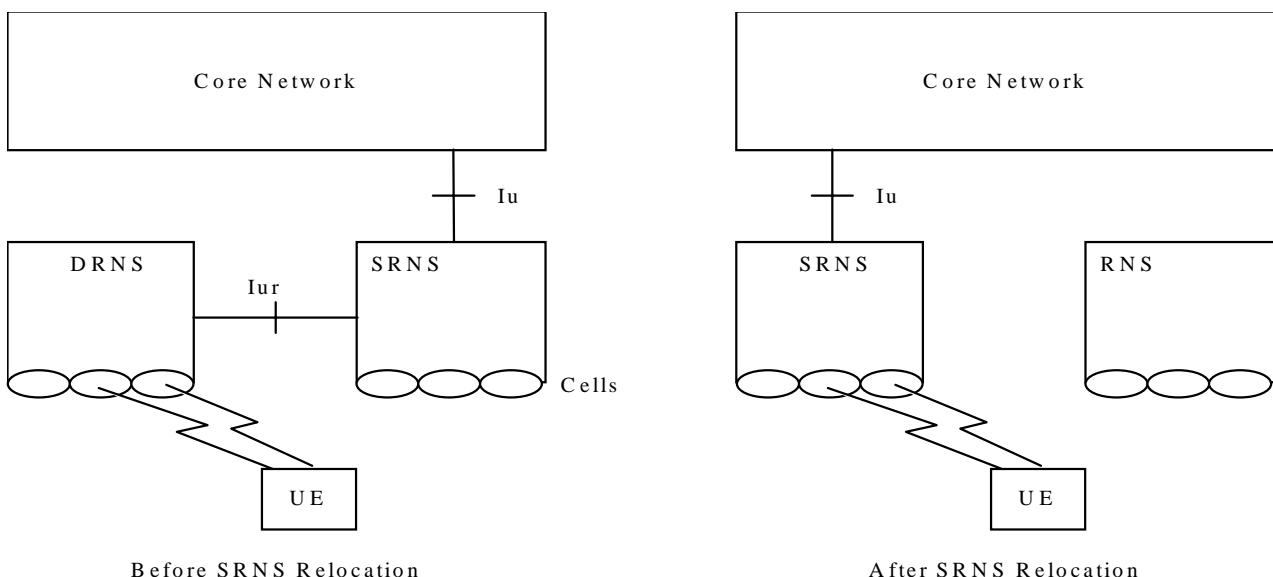
Figure 7: Serving RNS Relocation

The SRNS Relocation is initiated by the SRNC.

This function is located in the RNC and the CN.

7.2.3.3 Paging support

This function provides the capability to request a UE to contact the UTRAN when the UE is in Idle, CELL_PCH or URA PCH states [6]. This function also encompasses a coordination function between the different Core Network Domains onto a single RRC connection.

7.2.3.4 Positioning

This function provides the capability to determine the geographic position of a UE.

7.2.3.5 NAS Node Selection Function

The optional NAS Node Selection Function (NNSF) enables the RNC to initially assign CN resources to serve a UE and subsequently setup a signalling connection to the assigned CN resource.

The NNSF is described in detail in [20].

7.2.3.X SNA Access Control

The SNA access control function allows the CN to request the UTRAN to apply UE specific access control to LAs of the UTRAN and LAs of neighbouring networks.

The SNA access control function is based on Shared Network Areas (SNAs). An SNA is an area corresponding to one ore more LAs, to which UE access can be controlled.

In order to apply SNA access control for the UTRAN or for a neighbouring system, the UTRAN shall be aware of whether the concerned LA belongs to one (or several) SNA(s) or not.

If SNA access for a specific UE needs to be restricted, the CN shall provide SNA Access Information for that UE. The SNA Access Information indicates which SNAs the UE is allowed to access.

The UTRAN determines if access to a certain LA for a certain UE shall be allowed.

If access is not allowed, the UTRAN shall prevent the UE to obtain new resources in the concerned LA.

CR-Form-v7

CHANGE REQUEST

| ⌘ | **25.413 CR 504** | ⌘**rev** | **2** | ⌘ | Current version: | **5.1.0** | ⌘ |

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

Proposed change affects: UICC apps⌘ ☐   ME ☐ Radio Access Network **X** Core Network **X**

Title:	⌘	Shared Networks in connected mode – Information Transfer

Source:	⌘	RAN WG3

Work item code: ⌘	NETSHARE	*Date:* ⌘	13/08/2002

Category:	⌘	**B**		*Release:* ⌘	Rel-5

Use <u>one</u> of the following categories:
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A (corresponds to a correction in an earlier release)
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Use <u>one</u> of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

| *Reason for change:* ⌘ | This change request introduces a feature to support shared radio networks in connected mode.

Access Information for the UE is provided within the COMMON ID and the RELOCATION REQUEST messages by introducing the *SNA Access Information* IE to inform the RNC of the SNAs in which the UE is authorised to access.

Additionally an Information Transfer procedure is introduced to load configuration data from the CN to the RNC in order to provide the RNC with SNA configuration data, i.e the mapping of LA to SNA for the LAs known in the RNC.

<u>Impact Assessment:</u>
Impact assessment towards the previous version of the specification (same release):

This CR has no impact as the support of shared networks in connected mode is zn optional functionality. Furthermore nodes not implementing the function can interwork with nodes supporting shared networks in connected mode.

This CR has no impact under protocol and functional point of view. |
|---|---|

Summary of change: ⌘	The support of shared radio networks in connected mode is introduced.

Consequences if not approved:	⌘	

Clauses affected:	⌘	3.3, 7, 8.1, 8.7, 8.16, 8.x.1 (new), 9.1.10, 9.1.24, 9.1.x1 (new), 9.1.x2 (new),

		Y	N			
				9.1.x3 (new), 9.2.1.1, 9.2.1.x1 (new), 9.2.1.x2 (new), 9.2.3.x1 (new), 9.2.3.x2 (new), 9.2.3.x3 (new), 9.3 (ASN.1)		
Other specs	⌘	**X**		Other core specifications	⌘	TS 25.401 Rel-5 CR 057r1 TS 25.410 Rel-5 TS 25.423 Rel-5 CR 702r1 TS 23.003 Rel-5 CR 050 TS 23.009 Rel-5 CR 080 either {TS 29.002 Rel-5 CR 466 TS 29.010 Rel-5 CR 058} or {TS 48.008 Rel-5 TS 29.010 Rel-5 CR 075}
affected:			**X**	Test specifications		
		X		O&M Specifications		
Other comments:	⌘					

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3.3 Abbreviations

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

AAL2	ATM Adaptation Layer type 2
AS	Access Stratum
ASN.1	Abstract Syntax Notation One
ATM	Asynchronous Transfer Mode
CC	Call Control
CN	Core Network
CRNC	Controlling RNC
CS	Circuit Switched
DCH	Dedicated Channel
DL	Downlink
DRNC	Drift RNC
DRNS	Drift RNS
DSCH	Downlink Shared Channel
EP	Elementary Procedure
GPRS	General Packet Radio System
GTP	GPRS Tunnelling Protocol
IE	Information Element
IMEI	International Mobile Equipment Identity
IMSI	International Mobile Subscriber Identity
IPv4	Internet Protocol (version 4)
IPv6	Internet Protocol (version 6)
MM	Mobility Management
MSC	Mobile services Switching Center
NAS	Non Access Stratum
NNSF	NAS Node Selection Function
N-PDU	Network – Protocol Data Unit
OSP:IHOSS	Octet Stream Protocol: Internet-Hosted Octet Stream Service
P-TMSI	Packet TMSI
PDCP	Packet Data Convergence Protocol
PDP	Packet Data Protocol
PDU	Protocol Data Unit
PLMN	Publick Land Mobile Network
PPP	Point-to-Point Protocol
PS	Packet Switched
QoS	Quality of Service
RAB	Radio Access Bearer
RANAP	Radio Access Network Application Part
RNC	Radio Network Controller
RNS	Radio Network Subsystem
RRC	Radio Resource Control
SAI	Service Area Identifier
SAP	Service Access Point
SCCP	Signalling Connection Control Part
SDU	Service Data Unit
SGSN	Serving GPRS Support Node
SNA	Shared Network Area
SNAC	Shared Network Area Code
SRNC	Serving RNC
SRNS	Serving RNS
TEID	Tunnel Endpoint Identifier
TMSI	Temporary Mobile Subscriber Identity
UE	User Equipment
UEA	UMTS Encryption Algorithm
UIA	UMTS Integrity Algorithm
UL	Uplink
UMTS	Universal Mobile Telecommunications System
USCH	Uplink Shared Channel

UTRAN   UMTS Terrestrial Radio Access Network

7 Functions of RANAP

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 RNC has the capability to request the release of RAB.

- Release of all Iu connection resources. This function is used to explicitly release all resources related to one Iu connection.

- Requesting the release of all Iu connection resources. While the Iu release is managed from the CN, the RNC has the capability to request the release of all Iu connection 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 change 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 (see [8]). This function has two 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. It also includes a specific service to handle signalling messages differently.

- Controlling the security mode in the UTRAN. This function is used to send the security keys (ciphering and integrity protection) to the UTRAN, and setting the operation mode for security functions.

- Controlling location reporting. This function allows the CN to operate 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.

- Location related data. This function allows the CN to either retrieve from the RNC deciphering keys (to be forwarded to the UE) for the broadcasted assistance data, or request the RNC to deliver dedicated assistance data to the UE.

- Information Transfer. This function allows the CN to transfer information to the RNC.

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

8   RANAP Procedures

8.1   Elementary Procedures

In the following tables, all EPs are divided into Class 1, Class 2 and Class 3 EPs (see subclause 3.1 for explanation of the different classes):

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	
Reset	RESET	RESET ACKNOWLEDGE	
Reset Resource	RESET RESOURCE	RESET RESOURCE ACKNOWLEDGE	
Location related Data	LOCATION RELATED DATA REQUEST	LOCATION RELATED DATA RESPONSE	LOCATION RELATED DATA FAILURE
Information Transfer	INFORMATION TRANSFER INDICATION	INFORMATION TRANSFER CONFIRMATION	INFORMATION TRANSFER FAILURE

Table 2: Class 2

Elementary Procedure	Message
RAB Modification Request	RAB MODIFY REQUEST
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 Context 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	Response Message
RAB Assignment	RAB ASSIGNMENT REQUEST	RAB ASSIGNMENT RESPONSE x N (N>=1)

The following applies concerning interference between Elementary Procedures:

- The Reset procedure takes precedence over all other EPs.

- The Reset Resource procedure takes precedence over all other EPs except the Reset procedure.

- The Iu Release procedure takes precedence over all other EPs except the Reset procedure and the Reset Resource 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
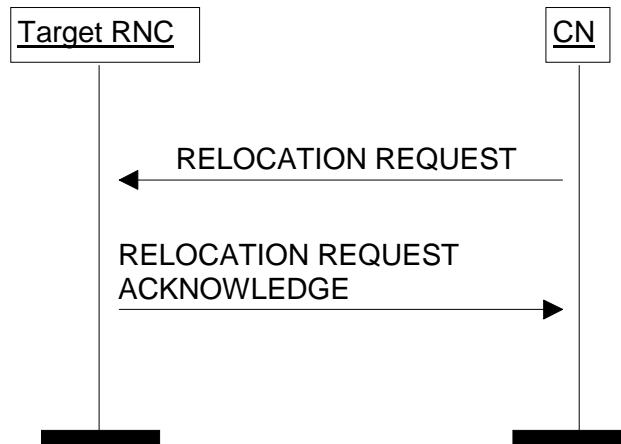
Figure 7: Relocation Resource Allocation procedure. Successful operation.

The CN shall initiate the procedure by generating RELOCATION REQUEST message. In a UTRAN to UTRAN relocation, this message shall contain the information (if any) required by the UTRAN to build the same RAB configuration as existing for the UE before the relocation. The CN may indicate that RAB QoS negotiation is allowed for certain RAB parameters and in some cases also which alternative values to be used in the negotiation.

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

When a RELOCATION REQUEST message is sent from a CN node towards an RNC for which the sending CN node is not the default CN node, the *Global CN-ID* IE shall be included.

Upon reception of the RELOCATION REQUEST message, the target RNC shall initiate allocation of requested resources.

The RELOCATION REQUEST message shall contain following IEs

- *Permanent NAS UE Identity* IE (if available)

- *Cause*

- *CN Domain Indicator*

- *Source RNC To Target RNC Transparent Container*

- *Iu Signalling Connection Identifier*

- *Integrity Protection Information* IE (if available)

- *SNA Access Information* IE (if available)

For each RAB requested to relocate (or to be created e.g. in the case of inter-system handover), the message shall contain following IEs:

- *RAB-ID*

- *NAS Synchronisation Indicator* IE (if the relevant NAS information is provided by the CN)

- *RAB parameters*

- *User Plane Information*

- *Transport Layer Address*

- *Iu Transport Association*

- *Data Volume Reporting Indication* (only for PS)

- *PDP Type Information* (only for PS)

The RELOCATION REQUEST message may include following IEs:

- *Encryption Information* (shall not be included if the *Integrity Protection Information* IE is not included)

For each RAB requested to relocate the message may include following IEs:

- *Service Handover.*

- *Alternative RAB Parameter Values.*

The following information elements received in RELOCATION REQUEST message require the same special actions in the RNC as specified for the same IEs in the RAB Assignment procedure:

- *RAB-ID*

- *User plane Information*(i.e. required User Plane Mode and required User Plane Versions)

- *Priority level, queuing and pre-emption indication*

- *Service Handover*

The *SDU Format Information Parameter* IE in the *RAB Parameters* IE shall be present only if the *User Plane Mode* IE is set to "support mode for pre-defined SDU sizes" and the *Traffic Class* IE is set to either "Conversational" or "Streaming".

If the RELOCATION REQUEST message includes the *PDP Type Information* IE, the UTRAN may use this IE to configure any compression algorithms.

The *Cause* IE shall contain the same value as the one received in the related RELOCATION REQUIRED message.

The *Iu Signalling Connection Identifier* IE contains an Iu signalling connection identifier which is allocated by the CN, and which the RNC is required to store and remember for the duration of the Iu connection.

The algorithms within the *Integrity Protection Information* IE and the *Encryption Information* IE shall be ordered in preferred order with the most preferred first in the list.

The *Permitted Encryption Algorithms* IE within the *Encryption Information IE* may contain "no encryption" within an element of its list in order to allow the RNC not to cipher the respective connection. This can be done either by not starting ciphering or by using the UEA0 algorithm. In the absence of the *Encryption Information* IE, the RNC shall not start ciphering.

The *Global CN-ID* IE contains the identity of the CN node that sent the RELOCATION REQUEST message, and it shall, if included, be stored together with the Iu signalling connection identifier. If the *Global CN-ID* IE is not included, the RELOCATION REQUEST message shall be considered as coming from the default CN node for the indicated CN domain.

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

If the *Relocation Type* IE is set to "UE involved in relocation of SRNS":

- The target RNC may accept a requested RAB only if the RAB can be supported by the target RNC.

- 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".

- The target RNC shall include information adapted to the resulting RAB configuration in the target to source RNC transparent container to be included in the RELOCATION REQUEST ACKNOWLEDGE message sent to the CN. If the target RNC supports triggering of the Relocation Detect procedure via the Iur interface, the RNC shall assign a d-RNTI for the context of the relocation and include it in the container. If two CNs are involved in the relocation of SRNS, the target RNC may, however, decide to send the container to only one CN.

- If any alternative RAB parameter values have been used when allocating the resources, these RAB parameter values shall be included in the RELOCATION REQUEST ACKNOWLEDGE message within the *Assigned RAB Parameter Values* IE.

If the *Relocation Type* IE is set to "UE not involved in relocation of SRNS":

- The target RNC may accept a RAB only if the radio bearer(s) for the RAB either exist(s) already, and can be used for the RAB by the target RNC, or does not exist before the relocation but can be established in order to support the RAB in the target RNC.

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

- If any alternative RAB parameter values have been used when allocating the resources, these RAB parameter values shall be included in the RELOCATION REQUEST ACKNOWLEDGE message within the *Assigned RAB Parameter Values* IE. It should be noted that the usage of alternative RAB parameter values is not applicable to the UTRAN initiated relocation of type "UE not involved in relocation of SRNS".

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

For each RAB successfully setup the RNC shall include following IEs:

- *RAB ID*

- *Transport Layer Address* (when no ALCAP has been used)

- *Iu Transport Association* (when no ALCAP has been used)

Two pairs of *Transport Layer Address* IE and *Iu Transport Association* IE may be included for RABs established towards the PS domain.

For each RAB the RNC is not able to setup during Relocation Resource Allocation the RNC shall include the *RAB ID* IE and the *Cause* IE within the *RABs Failed To Setup* IE. The resources associated with the RABs indicated as failed to set up shall not be released in the CN until the relocation is completed. This is in order to make a return to the old configuration possible in case of a failed or cancelled relocation.

The RELOCATION REQUEST ACKNOWLEDGE message sent to the CN shall, if applicable and if not sent via the other CN domain, include the *Target RNC To Source RNC Transparent Container* IE .This container shall be transferred by CN to the source RNC or the external relocation source while completing the Relocation Preparation procedure.

If the target RNC supports cell load-based inter-system handover, then in the case of inter-system handover, the *New BSS to Old BSS Information* IE may be included in the RELOCATION REQUEST ACKNOWLEDGE message.

If the *Integrity Protection Information* IE was included in the RELOCATION REQUEST message, the RNC shall include the *Chosen Integrity Protection Algorithm* IE within the RELOCATION REQUEST ACKNOWLEDGE message, if the *Encryption Information* IE was included, the RNC shall include the *Chosen Encryption Algorithm* IE.

If one or more of the RABs that the target RNC has decided to support can not be supported by the CN, then these failed RABs shall not be released towards the target RNC until the relocation is completed.

If the *NAS Synchronisation Indicator* IE is contained in the RELOCATION REQUEST message, the target RNC shall pass it to the source RNC within the *RRC Container* IE contained in the *Target RNC to Source RNC Transparent Container* IE.

If the *SNA Access Information* IE is contained in the RELOCATION REQUEST message, the target RNC shall store this information and use it to determine whether the UE has access to radio resources in the UTRAN. The target RNC shall consider that the UE is authorised to access only the PLMNs identified by the *PLMN Id* IE in the *SNA Access Information* IE. If the *Authorised SNAs* IE is included for a given PLMN (identified by the *PLMN Id* IE), then the target RNC shall consider that the access to radio resources for the concerned UE is restricted to the LAs contained in the SNAs identified by the *SNAC* IEs.

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

Before reporting the successful outcome of the Relocation Resource allocation procedure, the RNC shall have executed the initialisation of the user plane mode as requested by the CN in the *User Plane Mode* IE. If the RNC can not initialise the requested user plane mode for any of the user plane mode versions in the *UP Mode Versions* IE according to the rules for initialisation of the respective user plane mode versions, as described in [6], the RAB Relocation shall fail with the cause value "RNC unable to establish all RFCs".

8.7.3   Unsuccessful Operation
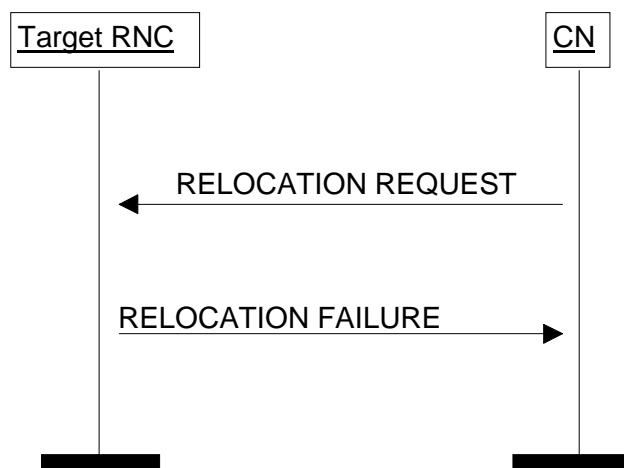
Figure 8: Relocation Resource Allocation procedure: Unsuccessful operation.

If the 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 the CN.

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

When CN has received RELOCATION FAILURE message from target RNC, CN shall stop timer $T_{RELOCalloc}$ and shall assume possibly allocated resources within target RNC completely released.

In the case of inter-system handover, and if the target RNC supports cell load-based inter-system handover, then

- the *NewBSS to Old BSS Information* IE may be included in the RELOCATION FAILURE message.

- the RELOCATION FAILURE message may contain the appropriate value in the *Cause* IE, e.g. "No Radio Resources Available in Target Cell".

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 the target RNC shall discard the latter message and the original Relocation Resource Allocation procedure shall continue normally.

Interactions with Iu Release procedure:

If the CN decides to not continue the Relocation Resource Allocation procedure (e.g. due to $T_{RELOCalloc}$ expiry) before the Relocation Resource Allocation procedure is completed, the CN shall stop timer $T_{RELOCalloc}$ (if timer $T_{RELOCalloc}$ has not already expired) and the CN shall, if the Iu signalling connection has been established or later becomes established, initiate the Iu Release procedure towards the target RNC with an appropriate value for the *Cause* IE, e.g. "Relocation Cancelled".

NOTE: In case two CN domains are involved in the SRNS Relocation Resource Allocation procedure, the Target RNC may check whether the content of the two *Source RNC to Target RNC Transparent Container* IEs or the two *SNA Access Information* IEs is the same. In case the Target RNC receives two different *Source RNC to Target RNC Transparent Container* IEs or two different *SNA Access Information* IEs, the RNC behaviour is left implementation specific.

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 the target RNC when the *Number of Iu Instances* IE received in the *Source RNC to Target RNC Transparent Container* IE in the RELOCATION REQUEST message indicates that two CN domains are involved in relocation of SRNS.

If two CN domains are involved, the following actions shall be taken by the target RNC:

- The target RNC shall utilise the *Permanent NAS UE Identity* IE, received explicitly by each CN domain within RELOCATION REQUEST message, to co-ordinate both Iu signalling connections.

- The target RNC shall generate and send RELOCATION REQUEST ACKNOWLEDGE message only after all expected RELOCATION REQUEST messages are received and analysed.

- If the target RNC decides to send the *Target RNC to Source RNC Transparent Container* IE via the two CN domains, the target RNC shall ensure that the same *Target RNC to Source RNC Transparent Container* IE is included in RELOCATION REQUEST ACKNOWLEDGE messages transmitted via the two CN domains and related to the same relocation of SRNS.

8.16   Common ID

8.16.1   General

The purpose of the Common ID procedure is to 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 17: Common ID procedure. Successful operation.

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 and optionally the *SNA Access Information* IE to the RNC. The RNC shall associate the permanent identity to the RRC Connection of that user and shall save it for the duration of the RRC connection.

If the *SNA Access Information* IE is contained in the COMMON ID message, the RNC shall store this information and use it to determine whether the UE has access to radio resources in the UTRAN. The RNC shall consider that the UE is authorised to access only the PLMNs identified by the *PLMN Id* IEs in the *SNA Access Information* IE. If the *Authorised SNAs* IE is included for a given PLMN (identified by the *PLMN Id* IE), then the RNC shall consider that the access to radio resources for the concerned UE is restricted to the LAs contained in the SNAs identified by the *SNAC* IEs.

8.16.3   Abnormal Conditions

Not applicable.

8.x1　Information Transfer

8.x1.1　General

The purpose of the Information Transfer procedure is to transfer information from the CN to the RNC.

This procedure uses connectionless signalling.

8.x1.2　Successful Operation
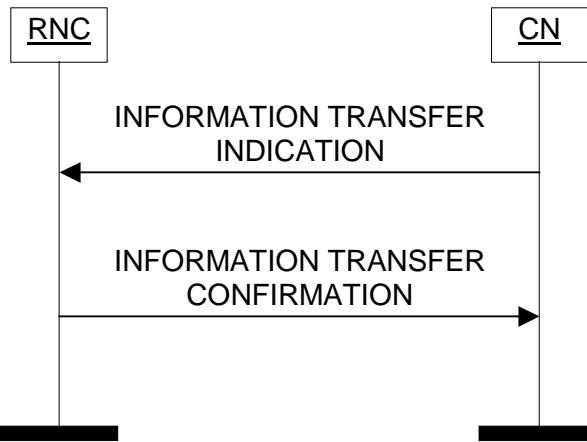
Figure x1: Information Transfer procedure. Successful operation.

The procedure is initiated with an INFORMATION TRANSFER INDICATION message sent from the CN to the RNC.

> NOTE:　The CN should at least initiate the Information Transfer procedure after the CN or the RNC has performed the Reset procedure or whenever the respective information has changed in the CN.

Upon reception, the RNC shall store the received information and use it according to its purpose.

The INFORMATION TRANSFER INDICATION message shall contain following IEs:

- *Information Transfer Id*

- *Provided Data*

- *CN Domain Indicator.*

When a CN node sends this message towards an RNC for which it is not the default CN node, the *Global CN-ID* IE shall be included.

If the RNC is able to process the information contained in the *Provided Data* IE, it shall respond with the INFORMATION TRANSFER CONFIRMATION message provided with the same *Information Transfer Id* IE as the one received in the INFORMATION TRANSFER INDICATION message.

The RNC shall include the *Global RNC-ID* IE and the *CN Domain Indicator* IE in the INFORMATION TRANSFER CONFIRMATION message.

If the *Provided Data* IE contains the *Shared Network Information* IE, the RNC shall replace existing Shared Network Information provided in a previous Information Transfer procedure by the newly provided Shared Network Information.

8.x1.3   Unsuccessful Operation
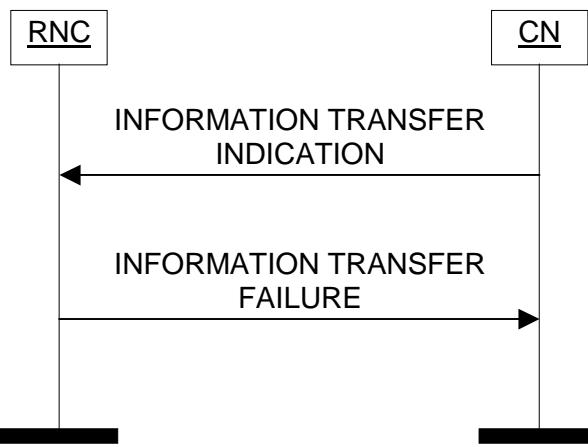
Figure x1bis: Information Transfer procedure. Unsuccessful operation.

If the RNC is not able to process the information contained in the *Provided Data* IE the RNC shall regard the Information Transfer procedure as failed and send the INFORMATION TRANSFER FAILURE message to the CN. The message shall include the same content in the *Information Transfer ID* IE as received in the INFORMATION TRANSFER INDICATION message and set the *Cause* IE to an appropriate value.

The RNC shall include the *Global RNC-ID* IE and the *CN Domain* Indicator IE in the INFORMATION TRANSFER FAILURE message.

8.x1.4   Abnormal Conditions

None.

9.1.10   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	Criticality	Assigned Criticality
Message Type	M		9.2.1.1		YES	reject
Permanent NAS UE Identity	O		9.2.3.1		YES	ignore
Cause	M		9.2.1.4		YES	ignore
CN Domain Indicator	M		9.2.1.5		YES	reject
Source RNC To Target RNC Transparent Container	M		9.2.1.28		YES	reject
RABs To Be Setup List	O				YES	reject
>RABs To Be Setup Item IEs		1 to <maxnoofRABs>			EACH	reject
>>RAB ID	M		9.2.1.2		-	
>>NAS Synchronisation Indicator	O		9.2.3.18		-	
>>RAB Parameters	M		9.2.1.3		-	
>>Data Volume Reporting Indication	C – ifPS		9.2.1.17		-	
>> PDP Type Information	C – ifPS		9.2.1.40		-	
>>User Plane Information	M				-	
>>>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		-	
>>Service Handover	O		9.2.1.41		-	
>> Alternative RAB Parameter Values	O		9.2.1.43		YES	Ignore
Integrity Protection Information	O		9.2.1.11	Integrity Protection Information includes key and permitted algorithms.	YES	ignore
Encryption Information	O		9.2.1.12	Encryption Information includes key and permitted algorithms.	YES	ignore
Iu Signalling Connection Identifier	M		9.2.1.38		YES	ignore
Global CN-ID	O		9.2.1.46		YES	reject
SNA Access Information	O		9.2.3.x2		YES	ignore

Condition	Explanation
IfPS	This IE shall be present if the *CN domain indicator* IE is set to "PS domain".

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

9.1.24 COMMON ID

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

Direction: CN → RNC.

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.1.1		YES	ignore
Permanent NAS UE Identity	M		9.2.3.1		YES	ignore
SNA Access Information	O		9.2.3.x2		YES	ignore

9.1.x1   INFORMATION TRANSFER INDICATION

This message is sent by the CN to transfer information to an RNC.

Direction: CN → RNC.

Signalling bearer mode: Connectionless.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.1.1		YES	reject
Information Transfer Id	M		9.2.1.x1		YES	reject
Provided Data	M		9.2.1.x2		YES	reject
CN Domain Indicator	M		9.2.1.5		YES	reject
Global CN-ID	O		9.2.1.46		YES	ignore

9.1.x2   INFORMATION TRANSFER CONFIRMATION

This message is sent by the RNC to report the successful outcome of the request from the INFORMATION TRANSFER INDICATION message.

Direction: RNC → CN.

Signalling bearer mode: Connectionless.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.1.1		YES	reject
Information Transfer Id	M		9.2.1.x1		YES	ignore
CN Domain Indicator	M		9.2.1.5		YES	ignore
Criticality Diagnostics	O		9.2.1.35		YES	ignore
Global RNC-ID	M		9.2.1.39		YES	ignore

9.1.x3   INFORMATION TRANSFER FAILURE

This message is sent by the RNC if the Information Transfer failed.

Direction: RNC → CN.

Signalling bearer mode: Connectionless.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.1.1		YES	reject
Information Transfer Id	M		9.2.1.x1		YES	ignore
CN Domain Indicator	M		9.2.1.5		YES	ignore
Cause	M		9.2.1.4		YES	ignore
Criticality Diagnostics	O		9.2.1.35		YES	ignore
Global RNC-ID	M		9.2.1.39		YES	ignore

9.2.1.1   Message Type

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

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

9.2.1.x1 Information Transfer Id

Indicates the identity of an information transfer.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Information Transfer Id	M		INTEGER (0..2^20-1)	

9.2.1.x2 Provided Data

Provides the data that is transferred in an information transfer.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Choice **Provided Data**				
>Shared Network Information	O		9.2.3.x1	

9.2.3.x1   Shared Network Information

For each LA contained in this IE, it provides the SNA(s) the LA belongs to.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Shared Network Information				
>PLMNs In Shared Network		1 to <maxPLMNsSN>		
>>PLMN Id	M		OCTET STRING (SIZE (3))	- digits 0 to 9, two digits per octet, - each digit encoded 0000 to 1001, - 1111 used as filler - bit 4 to 1 of octet n encoding digit 2n-1 - bit 8 to 5 of octet n encoding digit 2n -The PLMN identity consists of 3 digits from MCC followed by either -a filler plus 2 digits from MNC (in case of 2 digit MNC) or -3 digits from MNC (in case of a 3 digit MNC).
>>LA List		1 to <maxLAs>		
>>>LAC	M		OCTET STRING (2)	0000 and FFFE not allowed.
>>>List Of SNAs Containing LA		1 to <maxSNAs>		
>>>>SNAC	M	9.2.3.x3		

Range bound	Explanation
maxPLMNsSN	Maximum no. of PLMNs involved in a Shared Network agreement. The value for maxPLMNsSN is 32.
maxLAs	Maximum no. of LAs in a PLMN. The value for maxLAs is 65536.
maxSNAs	Maximum no. of SNAs in a PLMN. The value for maxSNAs is 65536.

9.2.3.x2   SNA Access Information

Provides information on the area(s) in the PLMN(s) the UE is authorised to access.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
SNA Access Information				
>Authorised PLMNs		1 to <maxPLMNsSN>		
>>PLMN Id	M		OCTET STRING (SIZE (3))	- digits 0 to 9, two digits per octet, - each digit encoded 0000 to 1001, - 1111 used as filler - bit 4 to 1 of octet n encoding digit 2n-1 - bit 8 to 5 of octet n encoding digit 2n -The PLMN identity consists of 3 digits from MCC followed by either -a filler plus 2 digits from MNC (in case of 2 digit MNC) or -3 digits from MNC (in case of a 3 digit MNC).
>>>Authorised SNAs List	O			
>>>>Authorised SNAs		1 to <maxSNAs>		
>>>>>SNAC	M	9.2.3.x3		

Range bound	Explanation
maxPLMNsSN	Maximum no. of PLMNs involved in a Shared Network agreement. The value for maxPLMNsSN is 32.
maxSNAs	Maximum no. of SNAs in a PLMN. The value for maxSNAs is 65536.

9.2.3.x3   SNAC

Indicates the Identity of an SNA according to [19].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
SNAC	M		INTEGER (0..65535)	

9.3.2   Elementary Procedure Definitions

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

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

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,
    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,
        RAB-ModifyRequest,
        PrivateMessage,
        ResetResource,
        ResetResourceAcknowledge,
        RANAP-RelocationInformation,
        LocationRelatedDataRequest,
        LocationRelatedDataResponse,
        LocationRelatedDataFailure,
        InformationTransferIndication,
        InformationTransferConfirmation,
        InformationTransferFailure
FROM RANAP-PDU-Contents

        id-LocationRelatedData,
        id-CN-DeactivateTrace,
        id-CN-InvokeTrace,
        id-CommonID,
        id-DataVolumeReport,
        id-DirectTransfer,
        id-ErrorIndication,
        id-ForwardSRNS-Context,
        id-InformationTransfer,
        id-InitialUE-Message,
        id-Iu-Release,
        id-Iu-ReleaseRequest,
        id-LocationReport,
        id-LocationReportingControl,
        id-OverloadControl,
        id-Paging,
        id-privateMessage,
        id-RAB-Assignment,
        id-RAB-ReleaseRequest,
        id-RAB-ModifyRequest,
        id-RANAP-Relocation,
        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]
    PROCEDURE CODE              &procedureCode
    [CRITICALITY        &criticality]
}

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

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

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

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

```
}

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

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

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

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


RANAP-ELEMENTARY-PROCEDURES-CLASS-1 RANAP-ELEMENTARY-PROCEDURE ::= {
    iu-Release          |
    relocationPreparation       |
    relocationResourceAllocation    |
    relocationCancel        |
    sRNS-ContextTransfer        |
    securityModeControl     |
    dataVolumeReport        |
    reset       |
    resetResource           ,
    ... ,
    locationRelatedData     |
    informationTransfer

}

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         |
    privateMessage        |
    rANAP-Relocation    ,
    ... ,
    rAB-ModifyRequest
}

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

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

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

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

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

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

```
}

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

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

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


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

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

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

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

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

```
    CRITICALITY    ignore
}

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

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

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

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

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

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

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

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

overloadControl RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  Overload
```

```
      PROCEDURE CODE       id-OverloadControl
      CRITICALITY     ignore
}

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

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

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

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

privateMessage RANAP-ELEMENTARY-PROCEDURE ::= {
      INITIATING MESSAGE  PrivateMessage

      PROCEDURE CODE  id-privateMessage
      CRITICALITY     ignore
}

resetResource RANAP-ELEMENTARY-PROCEDURE ::= {
      INITIATING MESSAGE  ResetResource
      SUCCESSFUL OUTCOME  ResetResourceAcknowledge
      PROCEDURE CODE          id-ResetResource
      CRITICALITY     reject
}

rANAP-Relocation RANAP-ELEMENTARY-PROCEDURE ::= {
      INITIATING MESSAGE  RANAP-RelocationInformation
      PROCEDURE CODE          id-RANAP-Relocation
      CRITICALITY     ignore
}

rAB-ModifyRequest RANAP-ELEMENTARY-PROCEDURE ::= {
      INITIATING MESSAGE  RAB-ModifyRequest
      PROCEDURE CODE       id-RAB-ModifyRequest
      CRITICALITY     ignore
```

```
}

locationRelatedData RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE       LocationRelatedDataRequest
    SUCCESSFUL OUTCOME       LocationRelatedDataResponse
    UNSUCCESSFUL OUTCOME     LocationRelatedDataFailure
    PROCEDURE CODE           id-LocationRelatedData
    CRITICALITY              reject
}

informationTransfer RANAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE       InformationTransferIndication
    SUCCESSFUL OUTCOME       InformationTransferConfirmation
    UNSUCCESSFUL OUTCOME     InformationTransferFailure
    PROCEDURE CODE           id-InformationTransfer
    CRITICALITY              reject
}

END
```

9.3.3   PDU Definitions

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

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

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

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

IMPORTS
    BroadcastAssistanceDataDecipheringKeys,
    LocationRelatedDataRequestType,
    DataVolumeReference,
    CellLoadInformation,
    AreaIdentity,
    CN-DomainIndicator,
    Cause,
    CriticalityDiagnostics,
```

```
        ChosenEncryptionAlgorithm,
        ChosenIntegrityProtectionAlgorithm,
        ClassmarkInformation2,
        ClassmarkInformation3,
        DL-GTP-PDU-SequenceNumber,
        DL-N-PDU-SequenceNumber,
        DataVolumeReportingIndication,
        DRX-CycleLengthCoefficient,
        EncryptionInformation,
        GlobalCN-ID,
        GlobalRNC-ID,
        InformationTransferId,
        IntegrityProtectionInformation,
        InterSystemInformation-TransparentContainer,
        IuSignallingConnectionIdentifier,
        IuTransportAssociation,
        KeyStatus,
        L3-Information,
        LAI,
        LastKnownServiceArea,
        NAS-PDU,
        NAS-SynchronisationIndicator,
        NewBSS-To-OldBSS-Information,
        NonSearchingIndication,
        NumberOfSteps,
        OMC-ID,
        OldBSS-ToNewBSS-Information,
        PagingAreaID,
        PagingCause,
        PDP-TypeInformation,
        PermanentNAS-UE-ID,
        ProvidedData,
        RAB-ID,
        RAB-Parameters,
        RAC,
        RelocationType,
        RequestType,
        Requested-RAB-Parameter-Values,
        SAI,
        SAPI,
        Service-Handover,
        SNA-Access-Information,
        SourceID,
        SourceRNC-ToTargetRNC-TransparentContainer,
        SourceRNC-PDCP-context-info,
        TargetID,
        TargetRNC-ToSourceRNC-TransparentContainer,
        TemporaryUE-ID,
        TraceReference,
        TraceType,
        UnsuccessfullyTransmittedDataVolume,
        TransportLayerAddress,
        TriggerID,
```

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


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

    maxNrOfDTs,
    maxNrOfErrors,
    maxNrOfIuSigConIds,
    maxNrOfRABs,
    maxNrOfVol,

    id-AreaIdentity,
    id-Alt-RAB-Parameters,
    id-Ass-RAB-Parameters,
    id-BroadcastAssistanceDataDecipheringKeys,
    id-LocationRelatedDataRequestType,
    id-CN-DomainIndicator,
    id-Cause,
    id-ChosenEncryptionAlgorithm,
    id-ChosenIntegrityProtectionAlgorithm,
    id-ClassmarkInformation2,
    id-ClassmarkInformation3,
    id-CriticalityDiagnostics,
    id-DRX-CycleLengthCoefficient,
    id-DirectTransferInformationItem-RANAP-RelocInf,
    id-DirectTransferInformationList-RANAP-RelocInf,
    id-DL-GTP-PDU-SequenceNumber,
    id-EncryptionInformation,
    id-GlobalCN-ID,
    id-GlobalRNC-ID,
    id-InformationTransferId,
    id-IntegrityProtectionInformation,
    id-InterSystemInformation-TransparentContainer,
    id-IuSigConId,
    id-IuSigConIdItem,
    id-IuSigConIdList,
```

```
        id-IuTransportAssociation,
        id-KeyStatus,
        id-L3-Information,
        id-LAI,
        id-LastKnownServiceArea,
        id-NAS-PDU,
        id-NewBSS-To-OldBSS-Information,
        id-NonSearchingIndication,
        id-NumberOfSteps,
        id-OMC-ID,
        id-OldBSS-ToNewBSS-Information,
        id-PagingAreaID,
        id-PagingCause,
        id-PermanentNAS-UE-ID,
        id-ProvidedData,
        id-RAB-ContextItem,
        id-RAB-ContextList,
        id-RAB-ContextFailedtoTransferItem,
        id-RAB-ContextFailedtoTransferList,
        id-RAB-ContextItem-RANAP-RelocInf,
        id-RAB-ContextList-RANAP-RelocInf,
        id-RAB-DataForwardingItem,
        id-RAB-DataForwardingItem-SRNS-CtxReq,
        id-RAB-DataForwardingList,
        id-RAB-DataForwardingList-SRNS-CtxReq,
        id-RAB-DataVolumeReportItem,
        id-RAB-DataVolumeReportList,
        id-RAB-DataVolumeReportRequestItem,
        id-RAB-DataVolumeReportRequestList,
        id-RAB-FailedItem,
        id-RAB-FailedList,
        id-RAB-FailedtoReportItem,
        id-RAB-FailedtoReportList,
        id-RAB-ID,
        id-RAB-ModifyList,
        id-RAB-ModifyItem,
        id-RAB-QueuedItem,
        id-RAB-QueuedList,
        id-RAB-ReleaseFailedList,
        id-RAB-ReleaseItem,
        id-RAB-ReleasedItem-IuRelComp,
        id-RAB-ReleaseList,
        id-RAB-ReleasedItem,
        id-RAB-ReleasedList,
        id-RAB-ReleasedList-IuRelComp,
        id-RAB-RelocationReleaseItem,
        id-RAB-RelocationReleaseList,
        id-RAB-SetupItem-RelocReq,
        id-RAB-SetupItem-RelocReqAck,
        id-RAB-SetupList-RelocReq,
        id-RAB-SetupList-RelocReqAck,
        id-RAB-SetupOrModifiedItem,
        id-RAB-SetupOrModifiedList,
```

```
    id-RAB-SetupOrModifyItem,
    id-RAB-SetupOrModifyList,
    id-RAC,
    id-RelocationType,
    id-RequestType,
    id-SAI,
    id-SAPI,
    id-SNA-Access-Information,
    id-SourceID,
    id-SourceRNC-ToTargetRNC-TransparentContainer,
    id-SourceRNC-PDCP-context-info,
    id-TargetID,
    id-TargetRNC-ToSourceRNC-TransparentContainer,
    id-TemporaryUE-ID,
    id-TraceReference,
    id-TraceType,
    id-TransportLayerAddress,
    id-TriggerID,
    id-UE-ID,
    id-UL-GTP-PDU-SequenceNumber
FROM RANAP-Constants;
```

```
                  unaffected ASN.1 code omitted
```

```
-- ****************************************************************
--
-- 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 optional  } |
    { ID id-Cause                       CRITICALITY ignore  TYPE Cause                       PRESENCE mandatory } |
    { ID id-CN-DomainIndicator          CRITICALITY reject  TYPE CN-DomainIndicator          PRESENCE mandatory } |
    { ID id-SourceRNC-ToTargetRNC-TransparentContainer
                              CRITICALITY reject  TYPE SourceRNC-ToTargetRNC-TransparentContainer PRESENCE mandatory } |
    { ID id-RAB-SetupList-RelocReq      CRITICALITY reject  TYPE RAB-SetupList-RelocReq      PRESENCE optional } |
    { ID id-IntegrityProtectionInformation     CRITICALITY ignore  TYPE IntegrityProtectionInformation     PRESENCE optional } |
    { ID id-EncryptionInformation          CRITICALITY ignore  TYPE EncryptionInformation         PRESENCE optional } |
```

```
    { ID id-IuSigConId  CRITICALITY ignore TYPE IuSignallingConnectionIdentifier  PRESENCE mandatory },
    ...
}

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-SynchronisationIndicator  NAS-SynchronisationIndicator   OPTIONAL,
    rAB-Parameters                RAB-Parameters,
    dataVolumeReportingIndication          DataVolumeReportingIndication   OPTIONAL
    -- This IE shall be present if the CN domain indicator IE is set to "PS domain" --,
    pDP-TypeInformation           PDP-TypeInformation    OPTIONAL
    -- This IE shall be present if the CN domain indicator IE is set to "PS domain" --,
    userPlaneInformation          UserPlaneInformation,
    transportLayerAddress         TransportLayerAddress,
    iuTransportAssociation        IuTransportAssociation,
    service-Handover              Service-Handover       OPTIONAL,
    iE-Extensions                 ProtocolExtensionContainer { {RAB-SetupItem-RelocReq-ExtIEs} }       OPTIONAL,
    ...
}

RAB-SetupItem-RelocReq-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
-- Extension for Release 4 to enable RAB Quality of Service negotiation over Iu --
    {ID id-Alt-RAB-Parameters   CRITICALITY ignore     EXTENSION Alt-RAB-Parameters        PRESENCE optional},
    ...
}

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

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

RelocationRequestExtensions RANAP-PROTOCOL-EXTENSION ::= {
-- Extension for Release 4 --
    { ID id-GlobalCN-ID           CRITICALITY reject     EXTENSION GlobalCN-ID                PRESENCE optional} |
-- Extension for Release 5 to enable shared networks in connected mode --
    { ID id-SNA-Access-Information CRITICALITY ignore     EXTENSION SNA-Access-Information    PRESENCE optional},

    ...
}
```

```
                  unaffected ASN.1 code omitted
```

```
-- ***************************************************************
--
-- 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 ::= {
-- Extension for Release 5 to enable shared networks in connected mode --
    { ID id-SNA-Access-Information       CRITICALITY ignore  EXTENSION   SNA-Access-Information      PRESENCE optional    },
    ...
}
```

```
                  unaffected ASN.1 code omitted
```

```
-- ***************************************************************
--
-- INFORMATION TRANSFER ELEMENTARY PROCEDURE
--
-- ***************************************************************

-- ***************************************************************
--
-- Information Transfer Indication
--
-- ***************************************************************

InformationTransferIndication ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container        { { InformationTransferIndicationIEs} },
    protocolExtensions     ProtocolExtensionContainer { { InformationTransferIndicationExtensions} }          OPTIONAL,
    ...
```

```
}

InformationTransferIndicationIEs RANAP-PROTOCOL-IES ::= {
    { ID id-InformationTransferId      CRITICALITY reject  TYPE InformationTransferId      PRESENCE mandatory  } |
    { ID id-ProvidedData               CRITICALITY reject  TYPE ProvidedData               PRESENCE mandatory  } |
    { ID id-CN-DomainIndicator         CRITICALITY reject  TYPE CN-DomainIndicator         PRESENCE mandatory  } |
    { ID id-GlobalCN-ID                CRITICALITY ignore  TYPE GlobalCN-ID                PRESENCE optional},
    ...
}


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


-- *************************************************************
--
-- Information Transfer Confirmation
--
-- *************************************************************

InformationTransferConfirmation ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container         { { InformationTransferConfirmationIEs} },
    protocolExtensions      ProtocolExtensionContainer { { InformationTransferConfirmationExtensions} }          OPTIONAL,
    ...
}

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


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

-- *************************************************************
--
-- Information Transfer Failure
--
-- *************************************************************

InformationTransferFailure ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container         { { InformationTransferFailureIEs} },
    protocolExtensions      ProtocolExtensionContainer { { InformationTransferFailureExtensions} }          OPTIONAL,
    ...
}

InformationTransferFailureIEs RANAP-PROTOCOL-IES ::= {
    { ID id-InformationTransferId      CRITICALITY ignore  TYPE InformationTransferId      PRESENCE mandatory  } |
    { 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    } |
    { ID id-GlobalRNC-ID               CRITICALITY ignore  TYPE GlobalRNC-ID               PRESENCE mandatory   },
    ...
}

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

END
```

9.3.4   Information Element Definitions

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

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

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

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

    id-MessageStructure,
    id-TypeOfError,

    id-DownlinkCellLoadInformation,
    id-UplinkCellLoadInformation
FROM RANAP-Constants

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

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

-- A

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 ::= {
    ...
}

Alt-RAB-Parameters ::= SEQUENCE {
    altMaxBitrateInf             Alt-RAB-Parameter-MaxBitrateInf                        OPTIONAL,
    altGuaranteedBitRateInf      Alt-RAB-Parameter-GuaranteedBitrateInf                 OPTIONAL,
    iE-Extensions                ProtocolExtensionContainer { {Alt-RAB-Parameters-ExtIEs} }  OPTIONAL,
    ...
}

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

Alt-RAB-Parameter-GuaranteedBitrateInf ::= SEQUENCE {
    altGuaranteedBitrateType         Alt-RAB-Parameter-GuaranteedBitrateType,
    altGuaranteedBitrates            Alt-RAB-Parameter-GuaranteedBitrates           OPTIONAL
    -- This IE shall be present if  the Type of Guaranteed Bit Rates Information IE is set to "Value range" or "Discrete values" --,
    ...
}

Alt-RAB-Parameter-GuaranteedBitrateType ::= ENUMERATED{
    unspecified,
    value-range,
    discrete-values,
    ...
}

Alt-RAB-Parameter-GuaranteedBitrates ::= SEQUENCE (SIZE (1..maxNrOfAltValues)) OF
    Alt-RAB-Parameter-GuaranteedBitrateList


Alt-RAB-Parameter-GuaranteedBitrateList ::= SEQUENCE (SIZE (1..maxNrOfSeparateTrafficDirections)) OF GuaranteedBitrate


Alt-RAB-Parameter-MaxBitrateInf ::= SEQUENCE {
    altMaxBitrateType         Alt-RAB-Parameter-MaxBitrateType,
    altMaxBitrates            Alt-RAB-Parameter-MaxBitrates          OPTIONAL
    -- This IE shall be present if  the Type of Alternative Maximun Bit Rates Information IE is set to "Value range" or "Discrete values" --,
    ...
}

Alt-RAB-Parameter-MaxBitrateType ::= ENUMERATED{
    unspecified,
    value-range,
```

```
    discrete-values,
    ...
}

Alt-RAB-Parameter-MaxBitrates ::= SEQUENCE (SIZE (1..maxNrOfAltValues)) OF
    Alt-RAB-Parameter-MaxBitrateList


Alt-RAB-Parameter-MaxBitrateList ::= SEQUENCE (SIZE (1..maxNrOfSeparateTrafficDirections)) OF MaxBitrate


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

Ass-RAB-Parameters ::= SEQUENCE {
    assMaxBitrateInf          Ass-RAB-Parameter-MaxBitrateList                      OPTIONAL,
    assGuaranteedBitRateInf    Ass-RAB-Parameter-GuaranteedBitrateList              OPTIONAL,
    iE-Extensions          ProtocolExtensionContainer { {Ass-RAB-Parameters-ExtIEs} }  OPTIONAL,
    ...
}

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


Ass-RAB-Parameter-GuaranteedBitrateList ::= SEQUENCE (SIZE (1..maxNrOfSeparateTrafficDirections)) OF GuaranteedBitrate


Ass-RAB-Parameter-MaxBitrateList ::= SEQUENCE (SIZE (1..maxNrOfSeparateTrafficDirections)) OF MaxBitrate

AuthorisedPLMNs ::= SEQUENCE (SIZE (1..maxNrOfPLMNsSN)) OF
    SEQUENCE {
        pLMNidentity          PLMNidentity,
        authorisedSNAsList      AuthorisedSNAs      OPTIONAL,
        iE-Extensions          ProtocolExtensionContainer { {AuthorisedPLMNs-ExtIEs} } OPTIONAL,
        ...
    }

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

AuthorisedSNAs  ::= SEQUENCE (SIZE (1..maxNrOfSNAs)) OF  SNAC
```

unaffected ASN.1 code omitted

```
-- I
```

```
IMEI                    ::= OCTET STRING (SIZE (8))
-- Reference: 23.003

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

InformationTransferId   ::= INTEGER (0.. 1048575)

IntegrityProtectionAlgorithm        ::= INTEGER {
    standard-UMTS-integrity-algorithm-UIA1 (0),
    no-value (15)
} (0..15)

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

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

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

InterSystemInformation-TransparentContainer ::= SEQUENCE {
    downlinkCellLoadInformation         CellLoadInformation    OPTIONAL,
    uplinkCellLoadInformation           CellLoadInformation    OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { { InterSystemInformation-TransparentContainer-ExtIEs} } OPTIONAL,
    ...
}

InterSystemInformation-TransparentContainer-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
...
}

IuSignallingConnectionIdentifier    ::= BIT STRING (SIZE (24))

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

unaffected ASN.1 code omitted

```
-- L

LA-LIST  ::= SEQUENCE (SIZE (1..maxNrOfLAs)) OF
```

```
    SEQUENCE {
        lAC                    LAC,
        listOF-SNAs            ListOF-SNAs,
        iE-Extensions          ProtocolExtensionContainer { { LA-LIST-ExtIEs} } OPTIONAL,
        ...
    }

LA-LIST-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

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

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

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

LastKnownServiceArea    ::= SEQUENCE {
    sAI        SAI,
    ageOfSAI   INTEGER (0..32767),
    iE-Extensions   ProtocolExtensionContainer { {LastKnownServiceArea-ExtIEs} } OPTIONAL,
    ...
}

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

ListOF-SNAs ::= SEQUENCE (SIZE (1..maxNrOfSNAs)) OF   SNAC

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

L3-Information          ::= OCTET STRING
```

```
                unaffected ASN.1 code omitted
```

```
-- P

PagingAreaID ::= CHOICE {
    lAI           LAI,
```

```
    rAI              RAI,
    ...
}

PagingCause ::= ENUMERATED {
    terminating-conversational-call,
    terminating-streaming-call,
    terminating-interactive-call,
    terminating-background-call,
    terminating-low-priority-signalling,
    ...,
    terminating-high-priority-signalling
}

PDP-TypeInformation ::= SEQUENCE (SIZE (1..maxNrOfPDPDirections)) OF
    PDP-Type

PDP-Type ::= ENUMERATED {
    empty,
    ppp,
    osp-ihoss  -- this value shall not be used -- ,
    ipv4,
    ipv6,
    ...
}

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

PermittedEncryptionAlgorithms ::= SEQUENCE (SIZE (1..16)) OF
    EncryptionAlgorithm

PermittedIntegrityProtectionAlgorithms ::= SEQUENCE (SIZE (1..16)) OF
    IntegrityProtectionAlgorithm

PLMNidentity                 ::= TBCD-STRING (SIZE (3))

PLMNs-in-shared-network ::= SEQUENCE (SIZE (1..maxNrOfPLMNsSN)) OF
    SEQUENCE {
        pLMNidentity          PLMNidentity,
        lA-LIST               LA-LIST,
        iE-Extensions         ProtocolExtensionContainer { { PLMNs-in-shared-network-ExtIEs} } OPTIONAL,
        ...
    }

PLMNs-in-shared-network-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

PositioningPriority ::= ENUMERATED {
    high-Priority,
```

```
    normal-Priority,
...
}

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

Pre-emptionVulnerability ::= ENUMERATED {
    not-pre-emptable,
    pre-emptable
}

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

ProvidedData ::= CHOICE {
    shared-network-information           Shared-Network-Information,
    ...
}

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

```
                    unaffected ASN.1 code omitted
```

```
-- S

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

SAI ::= SEQUENCE {
    pLMNidentity            PLMNidentity,
    lAC             LAC,
    sAC             SAC,
    iE-Extensions           ProtocolExtensionContainer { {SAI-ExtIEs} } OPTIONAL
}

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

SAPI ::= ENUMERATED {
    sapi-0,
    sapi-3,
    ...
}

Shared-Network-Information ::= SEQUENCE {
        pLMNs-in-shared-network         PLMNs-in-shared-network,
        iE-Extensions           ProtocolExtensionContainer { {Shared-Network-Information-ExtIEs} } OPTIONAL,
        ...
    }
```

```
Shared-Network-Information-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

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

SDU-ErrorRatio-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}
SDU-FormatInformationParameters ::= SEQUENCE (SIZE (1..maxRAB-SubflowCombination)) OF
    SEQUENCE {
        subflowSDU-Size         SubflowSDU-Size     OPTIONAL,
        rAB-SubflowCombinationBitRate   RAB-SubflowCombinationBitRate   OPTIONAL,
        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 shall be present if the Delivery Of Erroneous SDU IE is set to "Yes" or "No" --,
        residualBitErrorRatio       ResidualBitErrorRatio,
        deliveryOfErroneousSDU      DeliveryOfErroneousSDU,
        sDU-FormatInformationParameters SDU-FormatInformationParameters OPTIONAL,
        iE-Extensions           ProtocolExtensionContainer { {SDU-Parameters-ExtIEs} } OPTIONAL,
        ...
    }

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

SNA-Access-Information ::= SEQUENCE {
    authorisedPLMNs     AuthorisedPLMNs,
    iE-Extensions       ProtocolExtensionContainer { {SNA-Access-Information-ExtIEs} } OPTIONAL,
    ...
    }

SNA-Access-Information-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

SNAC            ::= INTEGER (0..65535)
```

```
Service-Handover ::= ENUMERATED {
    handover-to-GSM-should-be-performed,
    handover-to-GSM-should-not-be-performed,
    handover-to-GSM-shall-not-be-performed,
    ...
}

SourceID ::= CHOICE {
    sourceRNC-ID            SourceRNC-ID,
    sAI            SAI,
    ...
}
```

unaffected ASN.1 code omitted

9.3.6   Constant Definitions

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

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

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

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

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

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


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

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


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

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


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


-- ***************************************************************
--
-- IEs
--
-- ***************************************************************

id-AreaIdentity                        INTEGER ::= 0
id-CN-DomainIndicator                  INTEGER ::= 3
id-Cause                               INTEGER ::= 4
id-ChosenEncryptionAlgorithm           INTEGER ::= 5
id-ChosenIntegrityProtectionAlgorithm  INTEGER ::= 6
id-ClassmarkInformation2               INTEGER ::= 7
id-ClassmarkInformation3               INTEGER ::= 8
id-CriticalityDiagnostics              INTEGER ::= 9
id-DL-GTP-PDU-SequenceNumber           INTEGER ::= 10
id-EncryptionInformation               INTEGER ::= 11
```

```
id-IntegrityProtectionInformation              INTEGER ::= 12
id-IuTransportAssociation                       INTEGER ::= 13
id-L3-Information                               INTEGER ::= 14
id-LAI                                          INTEGER ::= 15
id-NAS-PDU                                      INTEGER ::= 16
id-NonSearchingIndication                       INTEGER ::= 17
id-NumberOfSteps                                INTEGER ::= 18
id-OMC-ID                                       INTEGER ::= 19
id-OldBSS-ToNewBSS-Information                  INTEGER ::= 20
id-PagingAreaID                                 INTEGER ::= 21
id-PagingCause                                  INTEGER ::= 22
id-PermanentNAS-UE-ID                           INTEGER ::= 23
id-RAB-ContextItem                              INTEGER ::= 24
id-RAB-ContextList                              INTEGER ::= 25
id-RAB-DataForwardingItem                       INTEGER ::= 26
id-RAB-DataForwardingItem-SRNS-CtxReq           INTEGER ::= 27
id-RAB-DataForwardingList                       INTEGER ::= 28
id-RAB-DataForwardingList-SRNS-CtxReq           INTEGER ::= 29
id-RAB-DataVolumeReportItem                     INTEGER ::= 30
id-RAB-DataVolumeReportList                     INTEGER ::= 31
id-RAB-DataVolumeReportRequestItem              INTEGER ::= 32
id-RAB-DataVolumeReportRequestList              INTEGER ::= 33
id-RAB-FailedItem                               INTEGER ::= 34
id-RAB-FailedList                               INTEGER ::= 35
id-RAB-ID                                       INTEGER ::= 36
id-RAB-QueuedItem                               INTEGER ::= 37
id-RAB-QueuedList                               INTEGER ::= 38
id-RAB-ReleaseFailedList                        INTEGER ::= 39
id-RAB-ReleaseItem                              INTEGER ::= 40
id-RAB-ReleaseList                              INTEGER ::= 41
id-RAB-ReleasedItem                             INTEGER ::= 42
id-RAB-ReleasedList                             INTEGER ::= 43
id-RAB-ReleasedList-IuRelComp                   INTEGER ::= 44
id-RAB-RelocationReleaseItem                    INTEGER ::= 45
id-RAB-RelocationReleaseList                    INTEGER ::= 46
id-RAB-SetupItem-RelocReq                       INTEGER ::= 47
id-RAB-SetupItem-RelocReqAck                    INTEGER ::= 48
id-RAB-SetupList-RelocReq                       INTEGER ::= 49
id-RAB-SetupList-RelocReqAck                    INTEGER ::= 50
id-RAB-SetupOrModifiedItem                      INTEGER ::= 51
id-RAB-SetupOrModifiedList                      INTEGER ::= 52
id-RAB-SetupOrModifyItem                        INTEGER ::= 53
id-RAB-SetupOrModifyList                        INTEGER ::= 54
id-RAC                                          INTEGER ::= 55
id-RelocationType                               INTEGER ::= 56
id-RequestType                                  INTEGER ::= 57
id-SAI                                          INTEGER ::= 58
id-SAPI                                         INTEGER ::= 59
id-SourceID                                     INTEGER ::= 60
id-SourceRNC-ToTargetRNC-TransparentContainer   INTEGER ::= 61
id-TargetID                                     INTEGER ::= 62
id-TargetRNC-ToSourceRNC-TransparentContainer   INTEGER ::= 63
id-TemporaryUE-ID                               INTEGER ::= 64
```

```
id-TraceReference                                    INTEGER ::= 65
id-TraceType                                         INTEGER ::= 66
id-TransportLayerAddress                             INTEGER ::= 67
id-TriggerID                                         INTEGER ::= 68
id-UE-ID                                             INTEGER ::= 69
id-UL-GTP-PDU-SequenceNumber                         INTEGER ::= 70
id-RAB-FailedtoReportItem                            INTEGER ::= 71
id-RAB-FailedtoReportList                            INTEGER ::= 72
id-KeyStatus                                         INTEGER ::= 75
id-DRX-CycleLengthCoefficient                        INTEGER ::= 76
id-IuSigConIdList                                    INTEGER ::= 77
id-IuSigConIdItem                                    INTEGER ::= 78
id-IuSigConId                                        INTEGER ::= 79
id-DirectTransferInformationItem-RANAP-RelocInf      INTEGER ::= 80
id-DirectTransferInformationList-RANAP-RelocInf      INTEGER ::= 81
id-RAB-ContextItem-RANAP-RelocInf                    INTEGER ::= 82
id-RAB-ContextList-RANAP-RelocInf                    INTEGER ::= 83
id-RAB-ContextFailedtoTransferItem                   INTEGER ::= 84
id-RAB-ContextFailedtoTransferList                   INTEGER ::= 85
id-GlobalRNC-ID                                      INTEGER ::= 86
id-RAB-ReleasedItem-IuRelComp                        INTEGER ::= 87
id-MessageStructure                                  INTEGER ::= 88
id-Alt-RAB-Parameters                                INTEGER ::= 89
id-Ass-RAB-Parameters                                INTEGER ::= 90
id-RAB-ModifyList                                    INTEGER ::= 91
id-RAB-ModifyItem                                    INTEGER ::= 92
id-TypeOfError                                       INTEGER ::= 93
id-BroadcastAssistanceDataDecipheringKeys            INTEGER ::= 94
id-LocationRelatedDataRequestType                    INTEGER ::= 95
id-GlobalCN-ID                                       INTEGER ::= 96
id-LastKnownServiceArea                              INTEGER ::= 97
id-InterSystemInformation-TransparentContainer       INTEGER ::= 98
id-NewBSS-To-OldBSS-Information                       INTEGER ::= 99
id-DownlinkCellLoadInformation                       INTEGER ::= 100
id-UplinkCellLoadInformation                         INTEGER ::= 101
id-SourceRNC-PDCP-context-info                       INTEGER ::= 102
id-InformationTransferId                             INTEGER ::= 103
id-SNA-Access-Information                            INTEGER ::= 104
id-ProvidedData                                      INTEGER ::= 105

END
```

CR-Form-v7

CHANGE REQUEST

⌘ **25.423 CR 702** ⌘**rev 1** ⌘ Current version: **5.2.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐   ME ☐ Radio Access Network **X** Core Network **X**

Title: ⌘	Introduction of Shared Network Area information support	
Source: ⌘	RAN WG3	
Work item code:⌘	NETSHARE	***Date:*** ⌘ 15/07/2002
Category: ⌘ **B**		***Release:*** ⌘ Rel-5

Use <u>one</u> of the following categories:
F (correction)
A (corresponds to a correction in an earlier release)
B (addition of feature),
C (functional modification of feature)
D (editorial modification)
Detailed explanations of the above categories can be found in 3GPP <u>TR 21.900</u>.

Use <u>one</u> of the following releases:
2   (GSM Phase 2)
R96   (Release 1996)
R97   (Release 1997)
R98   (Release 1998)
R99   (Release 1999)
Rel-4   (Release 4)
Rel-5   (Release 5)
Rel-6   (Release 6)

Reason for change: ⌘	R1: - *SNA Information IE* is provided if available. - *PLMN Identity* IE is added to the *SNA Information* IE - maxNrOfSNAs is increased to 65535 R0: Currently, from a UTRAN point of view all UEs have the same access rights to all cells of the UTRAN and of any neighbouring network. It has been clarified (TR R3.012) that in order to support certain shared network scenarios, it is required to be able to differentiate cell access rights for different UEs.
Summary of change: ⌘	The required mechanism is introduced by means of the SNA (Shared Network Area) Information that indicates areas where network sharing based access restrictions shall be applied. The overall description of this mechanism is contained in CR 057 on 25.401.
Consequences if not approved: ⌘	If this CRs is not approved it won't be possible to prevent a UE handing over to a cell where it is not allowed because of network sharing agreements, i.e. it will not be possible to support certain shared network scenarios (e.g. geographical split network) as described in TR R3.012. Impact Analysis: Impact assessment towards the previous version of the specification (same release):

		This CR has no impact to the previous version of the specification as it performs a correction according to the extensibility principles.
		Impact assessment towards the previous release of the specification:
		No impact as this functionality is added in Rel-5.

Clauses affected:	⌘	2, 3.3, 8.2.1, 8.3.1, 8.3.2, 9.1.24, 9.2.1.41B, 9.2.1.41C, 9.2.1.41D, 9.2.1.72, 9.3.3, 9.3.4, 9.3.6, 9.2.1.X (new)		

		Y	**N**			
Other specs	⌘	X		Other core specifications	⌘	TS 25.401 Rel-5 CR 057r1, TS 25.413 Rel-5 CR 504r2,
						TS 23.003 Rel-5 CR 050
						TS 23.009 Rel-5 CR 080
						either
						{TS 29.002 Rel-5 CR 466
						TS 29.010 Rel-5 CR 058}
						or
						{TS 48.008 Rel-5
						TS 29.010 Rel-5 CR 075}
affected:			X	Test specifications		
			X	O&M Specifications		

Other comments:	⌘	This CR was previously presented as CR566

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

2 References

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

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1]   3GPP TS 23.003: "Numbering, addressing and identification".

[2]   3GPP TS 25.413: "UTRAN Iu Interface RANAP Signalling".

[3]   3GPP TS 25.426: "UTRAN Iur and Iub Interface Data Transport & Transport Layer Signalling for DCH Data Streams".

[4]   3GPP TS 25.427: "UTRAN Iur and Iub Interface User Plane Protocols for DCH Data Streams".

[5]   3GPP TS 25.435: "UTRAN Iub interface User Plane Protocols for Common Transport Channel Data Streams".

[6]   3GPP TS 25.104: "UTRA (BS) FDD; Radio transmission and Reception".

[7]   3GPP TS 25.105: "UTRA (BS) TDD; Radio Transmission and Reception".

[8]   3GPP TS 25.211: "Physical Channels and Mapping of Transport Channels onto Physical Channels (FDD)".

[9]   3GPP TS 25.212: "Multiplexing and Channel Coding (FDD)".

[10]   3GPP TS 25.214: "Physical Layer Procedures (FDD)".

[11]   3GPP TS 25.215: "Physical Layer – Measurements (FDD)".

[12]   3GPP TS 25.221: "Physical Channels and Mapping of Transport Channels onto Physical Channels (TDD)".

[13]   3GPP TS 25.223: "Spreading and Modulation (TDD)".

[14]   3GPP TS 25.225: "Physical Layer – Measurements (TDD)".

[15]   3GPP TS 25.304: "UE Procedures in Idle Mode"

[16]   3GPP TS 25.331: "RRC Protocol Specification".

[17]   3GPP TS 25.402: "Synchronisation in UTRAN, Stage 2".

[18]   ITU-T Recommendation X.680 (12/97): "Information technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation".

[19]   ITU-T Recommendation X.681 (12/97): "Information technology - Abstract Syntax Notation One (ASN.1): Information object specification".

[20]   ITU-T Recommendation X.691 (12/97): "Information technology - ASN.1 encoding rules - Specification of Packed Encoding Rules (PER)".

[21]   3GPP TS 25.213: "Spreading and modulation (FDD)".

[22]   3GPP TS 25.224: "Physical Layer Procedures (TDD)".

[23]   3GPP TS 25.133 (V3.3): "Requirements for support of Radio Resource management (FDD)".

[24]   3GPP TS 25.123 (V3.5): "Requirements for support of Radio Resource management (TDD)".

[25]   3GPP TS 23.032: "Universal Graphical Area Description (GAD)".

[26]   3GPP TS 25.302: "Services Provided by the Physical Layer".

[27]   3GPP TS 25.213: "Spreading and modulation (FDD)".

[28]   3GPP TR 25.921: "Guidelines and Principles for Protocol Description and Error Handling".

[29]   GSM TS 05.05: "Digital cellular telecommunications system (Phase 2+); Radio transmission and reception".

[30]   ICD-GPS-200: "Navstar GPS Space Segment/Navigation User Interface".

[31]   RTCM-SC104: "RTCM Recommended Standards for Differential GNSS Service (v.2.2)".

[32]   3GPP TS 25.425: "UTRAN Iur and Iub Interface User Plane Protocols for Common Transport Channel data streams ".

[33]   IETF RFC 2460 "Internet Protocol, Version 6 (IPv6) Specification".

[34]   IETF RFC 768 "User Datagram Protocol", (8/1980)

[35]   3GPP TS 25.424: " UTRAN Iur Interface Data Transport & Transport Signalling for Common Transport Channel Data Streams ".

[36]   3GPP TS 44.118: "Mobile radio interface layer 3 specification; Radio Resource Control (RRC) Protocol Iu mode".

[37]   3GPP TR 43.930: "Iur-g interface; Stage 2".

[xx]   3GPP TS 25.401: "UTRAN Overall Description"

3.3   Abbreviations

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

A-GPS   Assisted-GPS
ALCAP   Access Link Control Application Part
ASN.1   Abstract Syntax Notation One
BLER   Block Error Rate
BSS   Base Station Subsystem
CBSS   Controlling BSS
CCCH   Common Control Channel
CCPCH   Common Control Physical Channel
CCTrCH   Coded Composite Transport Channel
CFN   Connection Frame Number
CM   Compressed Mode
CN   Core Network
CPCH   Common Packet Channel
CPICH   Common Pilot Channel
CRNC   Controlling RNC
DBSS   Drift BSS
DCH   Dedicated Channel
DGPS   Differential GPS
DL   Downlink
DPCCH   Dedicated Physical Control Channel
DPCH   Dedicated Physical Channel
DRNC   Drift RNC
DRNS   Drift RNS
D-RNTI   Drift Radio Network Temporary Identifier
DRX   Discontinuous Reception
DSCH   Downlink Shared Channel
EP   Elementary Procedure
FACH   Forward Access Channel
FDD   Frequency Division Duplex
FP   Frame Protocol
GERAN   GSM EDGE Radio Access Network
GPS   Global Positioning System
GRA   GERAN Registration Area
IE   Information Element
IMSI   International Mobile Subscriber Identity
IP   Internet Protocol
IPDL   Idle Period DownLink
ISCP   Interference Signal Code Power
LCS   Location Services
MAC   Medium Access Control
MS   Mobile Station
NAS   Non Access Stratum
O&M   Operation and Maintenance
P-CCPCH   Primary CCPCH
PCH   Paging Channel
P-CIPCH   Primary CIPCH
PCPCH   Physical Common Packet Channel
PDU   Protocol Data Unit
PICH   Paging Indication Channel
PRACH   Physical Random Access Channel
RACH   Random Access Channel
RL   Radio Link
RLC   Radio Link Control
RLS   Radio Link Set
RNS   Radio Network Subsystem
RNSAP   Radio Network Subsystem Application Part
RNTI   Radio Network Temporary Identifier

RRC	Radio Resource Control
RSCP	Received Signal Code Power
SBSS	Serving BSS
S-CCPCH	Secondary CCPCH
SCH	Synchronisation Channel
SCTD	Space Code Transmit Diversity
SDU	Service Data Unit
SFN	System Frame Number
SIR	Signal-to-Interference Ratio
SNA	Shared Network Area
SRB2	Signalling radio bearer 2
SRNC	Serving RNC
SRNS	Serving RNS
SSDT	Site Selection Diversity Transmission
STTD	Space Time Transmit Diversity
TDD	Time Division Duplex
TFCI	Transport Format Combination Indicator
TFCS	Transport Format Combination Set
TFS	Transport Format Set
ToAWS	Time of Arrival Window Endpoint
TPC	Transmit Power Control
TrCh	Transport Channel
TSTD	Time Switched Transmit Diversity
UARFCN	UTRA Absolute Radio Frequency Channel Number
UDP	User Datagram Protocol
UE	User Equipment
UL	Uplink
URA	UTRAN Registration Area
USCH	Uplink Shared Channel
UTRA	Universal Terrestrial Radio Access
UTRAN	Universal Terrestrial Radio Access Network

8.2.1 Uplink Signalling Transfer

8.2.1.1 General

The procedure is used by the DRNC to forward a Uu message received on the CCCH to the SRNC.

This procedure shall use the connectionless mode of the signalling bearer.

### 8.2.1.2 Successful Operation
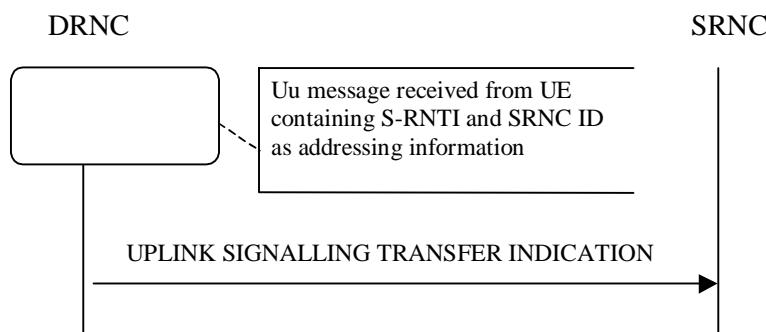
Figure 1: Uplink Signalling Transfer procedure, Successful Operation

When the DRNC receives an Uu message on the CCCH where the UE addressing information is U-RNTI, i.e. S-RNTI and SRNC-ID, DRNC shall send the UPLINK SIGNALLING TRANSFER INDICATION message to the SRNC identified by the SRNC-ID received from the UE.

If at least one URA Identity is being broadcast in the cell where the Uu message was received (the accessed cell), the DRNC shall include a URA Identity for this cell in the *URA ID* IE, the *Multiple URAs Indicator* IE indicating whether or not multiple URA Identities are being broadcast in the accessed cell, and the RNC Identity of all other RNCs that are having at least one cell within the URA where the Uu message was received in the *URA Information* IE in the UPLINK SIGNALLING TRANSFER INDICATION message.

The DRNC shall include in the message the C-RNTI that it allocates to identify the UE in the radio interface in the accessed cell. If there is no valid C-RNTI for the UE in the accessed cell , the DRNS shall allocate a new C-RNTI for the UE. If the DRNS allocates a new C-RNTI it shall also release any C-RNTI previously allocated for the UE.

If the DRNS has any RACH, [FDD - CPCH], and/or FACH resources allocated for the UE identified by the U-RNTI in another cell than the accessed cell in which the Mac SDU sizes, flow control settings (including credits) and/or transport bearer are different from those in the old cell, then the DRNS shall not include the *Common Transport Channel Resources Initialisation not Required* IE in the UPLINK SIGNALLING TRANSFER INDICATION message. In addition the DRNS shall release these RACH, [FDD - CPCH,] and/or FACH resources in old cell.

If the DRNS has any RACH, [FDD - CPCH], and/or FACH resources allocated for the UE identified by the U-RNTI in another cell than the accessed cell in which the Mac SDU sizes, flow control settings (including credits) and transport bearer are the same as in the old cell, there is no need for Common Transport Channel Resources Initialisation to be initiated. In that case, DRNC may include the *Common Transport Channel Resources Initialisation not Required* IE in the UPLINK SIGNALLING TRANSFER INDICATION message. In addition, the DRNS shall move these RACH, [FDD - CPCH,] and/or FACH resources to the new cell. If no Common Transfer Channel Resources Initialisation procedure is executed, the currently applicable Mac SDU sizes, flow control settings (including credits) and transport bearer shall continue to be used while the UE is in the new cell.

If no context exists for this UE in the DRNC, the DRNC shall create a UE Context for this UE, allocate a D-RNTI for the UE Context, and include the *D-RNTI* IE and the identifiers for the CN CS Domain and CN PS Domain that the DRNC is connected to in the UPLINK SIGNALLING TRANSFER INDICATION message. These CN Domain Identifiers shall be based on the LAC and RAC respectively of the cell where the message was received from the UE.

Depending on local configuration in the DRNS, it may include the geographical co-ordinates of the cell, represented either by the *Cell GAI* IE or by the *Cell GA Additional Shapes* IE, where the Uu message was received in the UPLINK SIGNALLING TRANSFER INDICATION message.

[FDD - The DRNC shall include the *DPC Mode Change Support Indicator* IE in the UPLINK SIGNALLING TRANSFER INDICATION message if the accessed cell supports DPC mode change.]

[FDD- The DRNC shall include the *Flexible Hard Split Support Indicator* IE in the UPLINK SIGNALLING TRANSFER INDICATION message if the accessed cell supports TFCI flexible hard split mode.]

The DRNC shall include [FDD - the *Cell Capability Container FDD* IE], [3.84Mcps TDD - the *Cell Capability Container TDD* IE] and/or [1.28Mcps TDD - the *Cell Capability Container TDD LCR* IE] in the UPLINK SIGNALLING TRANSFER INDICATION message if the accessed cell supports any functionalities listed in [FDD - 9.2.2.D], [3.84Mcps TDD - 9.2.3.1a] and [1.28 Mcps - TDD 9.2.3.1b].

If available, the DRNC shall include the *SNA Information* IE for the concerned cell.

When receiving the *SNA Information* IE, the SRNC should use it to restrict cell access based on SNA information. See also [xx] for a broader description of the SNA access control.

8.2.1.3 Abnormal Conditions

8.3.1   Radio Link Setup

8.3.1.1   General

This procedure is used for establishing the necessary resources in the DRNS for one or more radio links.

The connection-oriented service of the signalling bearer shall be established in conjunction with this procedure.

### 8.3.1.2   Successful Operation
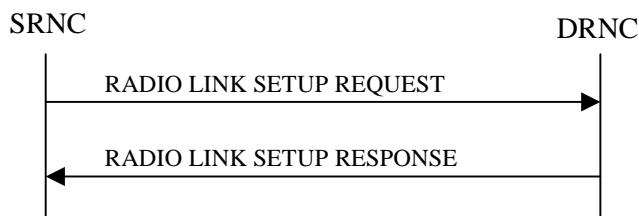
Figure 5: Radio Link Setup procedure: Successful Operation

When the SRNC makes an algorithmic decision to add the first cell or set of cells from a DRNS to the active set of a specific UE-UTRAN connection, the RADIO LINK SETUP REQUEST message is sent to the corresponding DRNC to request establishment of the radio link(s).

The DRNS shall prioritise resource allocation for the RL(s) to be established according to Annex A.

If the RADIO LINK SETUP REQUEST message includes the *Allowed Queuing Time* IE the DRNS may queue the request the time corresponding to the value of the *Allowed Queuing Time* IE before starting to execute the request.

If no *D-RNTI* IE was included in the RADIO LINK SETUP REQUEST message, the DRNC shall assign a new D-RNTI for this UE.

*****UNAFFECTED PARTS ARE OMITTED*****

Neighbouring Cell Handling:

If there are UMTS neighbouring cell(s) to the cell in which a Radio Link was established then:

- The DRNC shall include the *Neighbouring FDD Cell Information* IE and/or *Neighbouring TDD Cell Information* IE in the *Neighbouring UMTS Cell Information* IE for each neighbouring FDD cell and/or TDD cell respectively. In addition, if the information is available, the DRNC shall include the *Frame Offset* IE, *Primary CPICH Power* IE, *Cell Individual Offset* IE, *STTD Support Indicator* IE, *Closed Loop Mode1 Support Indicator* IE, *Closed Loop Mode2 Support Indicator* IE, *Coverage Indicator* IE, *Antenna Co-location Indicator* IE and *HCS Prio* IE in the *Neighbouring FDD Cell Information* IE, and the *Frame Offset* IE, *Cell Individual Offset* IE, *DPCH Constant Value* IE, the *PCCPCH Power* IE, *Coverage Indicator* IE, *Antenna Co-location Indicator* IE and *HCS Prio* IE in the *Neighbouring TDD Cell Information* IE.

- If a UMTS neighbouring cell is not controlled by the same DRNC, the DRNC shall also include the *CN PS Domain Identifier* IE and/or *CN CS Domain Identifier* IE which are the identifiers of the CN nodes connected to the RNC controlling the UMTS neighbouring cell.

- [FDD - The DRNC shall include the *DPC Mode Change Support Indicator* IE if the DRNC is aware that the neighbouring cell supports DPC mode change.]

- [FDD- The DRNC shall include the *Flexible Hard Split Support Indicator* IE if the DRNC is aware that the neighbouring cell supports *Flexible Hard Split* mode.]

- The DRNC shall include the *Cell Capability Container FDD* IE, the *Cell Capability Container TDD* IE and/or the *Cell Capability Container TDD LCR* IE if the DRNC is aware that the neighbouring cell supports any functionalities listed in 9.2.2.D, 9.2.3.1a and 9.2.3.1b.

- For the UMTS neighbouring cells which are controlled by the DRNC, the DRNC shall report in the RADIO LINK SETUP RESPONSE message the restriction state of those cells, otherwise *Restriction state indicator* IE may be absent. The DRNC shall include the *Restriction state indicator* IE for the neighbouring cells which are controlled by the DRNC in the *Neighbouring FDD Cell Information* IE, the *Neighbouring TDD Cell Information* IE and the *Neighbouring TDD Cell Information LCR* IE.

- If available, the DRNC shall include the *SNA Information* IE for the concerned neighbouring cells in the *Neighbouring FDD Cell Information* IE, the *Neighbouring TDD Cell Information* IE and the *Neighbouring TDD Cell Information LCR* IE.

If there are GSM neighbouring cells to the cell(s) where a radio link is established, the DRNC shall include the *Neighbouring GSM Cell Information* IE in the RADIO LINK SETUP RESPONSE message for each of the GSM neighbouring cells. If available the DRNC shall include the *Cell Individual Offset* IE, *Coverage Indicator* IE, *Antenna Co-location Indicator* IE and *HCS Prio* IE in the *Neighbouring GSM Cell Information* IE. If available, the DRNC shall also include the *SNA Information* IE for the concerned neighbouring cells in the *Neighbouring GSM Cell Information* IE.

When receiving the *SNA Information* IE in the RADIO LINK SETUP RESPONSE message, the SRNC should use it to restrict cell access based on SNA information. See also [xx] for a broader description of the SNA access control.

*****UNAFFECTED PARTS ARE OMITTED*****

8.3.2 Radio Link Addition

8.3.2.1 General

This procedure is used for establishing the necessary resources in the DRNS for one or more additional RLs towards a UE when there is already at least one RL established to the concerned UE via this DRNS.

This procedure shall use the signalling bearer connection for the relevant UE Context.

The Radio Link Addition procedure shall not be initiated if a Prepared Reconfiguration exists, as defined in subclause 3.1.

[FDD – The Radio Link Addition procedure serves to establish one or more new Radio Links which do not contain the DSCH. If the DSCH shall be moved into a new Radio Link, the Radio Link reconfiguration procedure shall be applied.]

[TDD – The Radio Link Addition procedure serves to establish a new Radio Link with the DSCH and USCH included, if they existed before.]

8.3.2.2 Successful Operation
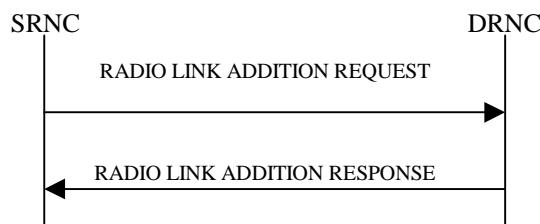
Figure 7: Radio Link Addition procedure: Successful Operation

The procedure is initiated with a RADIO LINK ADDITION REQUEST message sent from the SRNC to the DRNC.

Upon reception, the DRNS shall reserve the necessary resources and configure the new RL(s) according to the parameters given in the message. Unless specified below, the meaning of parameters is specified in other specifications.

The DRNS shall prioritise resource allocation for the RL(s) to be established according to Annex A.

*****UNAFFECTED PARTS ARE OMITTED*****

Neighbouring Cell Handling:

If there are UMTS neighbouring cell(s) to the cell in which a Radio Link was established then:

- The DRNC shall include the *Neighbouring FDD Cell Information* IE and/or *Neighbouring TDD Cell Information* IE in the *Neighbouring UMTS Cell Information* IE for each neighbouring FDD cell and/or TDD cell respectively. In addition, if the information is available, the DRNC shall include the *Frame Offset* IE, *Primary CPICH Power* IE, *Cell Individual Offset* IE, *STTD Support Indicator* IE, *Closed Loop Mode1 Support Indicator* IE, *Closed Loop Mode2 Support Indicator* IE, *Coverage Indicator* IE, *Antenna Co-location Indicator* IE and *HCS Prio* IE in the *Neighbouring FDD Cell Information* IE, and the *Frame Offset* IE, *Cell Individual Offset* IE, *DPCH Constant Value* IE and the *PCCPCH Power* IE, *Coverage Indicator* IE, *Antenna Co-location Indicator* IE and *HCS Prio* IE in the *Neighbouring TDD Cell Information* IE..

- If a UMTS neighbouring cell is not controlled by the same DRNC, the DRNC shall also include the *CN PS Domain Identifier* IE and/or *CN CS Domain Identifier* IE which are the identifiers of the CN nodes connected to the RNC controlling the UMTS neighbouring cell.

- [FDD - The DRNC shall include the *DPC Mode Change Support Indicator* IE if the DRNC is aware that the neighbouring cell supports DPC mode change.]

- [FDD - The DRNC shall include the *Flexible Hard Split Support Indicator* IE if the DRNC is aware that the neighbouring cell supports *Flexible Hard Split* mode.]

- The DRNC shall include the *Cell Capability Container FDD* IE, the *Cell Capability Container TDD* IE and/or the *Cell Capability Container TDD LCR* IE if the DRNC is aware that the neighbouring cell supports any functionalities listed in 9.2.2.D, 9.2.3.1a and 9.2.3.1b.

- For the UMTS neighbouring cells which are controlled by the DRNC, the DRNC shall report in the RADIO LINK SETUP RESPONSE message the restriction state of those cells, otherwise *Restriction state indicator* IE may be absent. The DRNC shall include the *Restriction state indicator* IE for the neighbouring cells which are controlled by the DRNC in the *Neighbouring FDD Cell Information* IE, the *Neighbouring TDD Cell Information* IE and the *Neighbouring TDD Cell Information LCR* IE.

- If -available, the DRNC shall include the *SNA Information* IE for the concerned neighbouring cells in the *Neighbouring FDD Cell Information* IE, the *Neighbouring TDD Cell Information* IE and the *Neighbouring TDD Cell Information LCR* IE

If there are GSM neighbouring cells to the cell(s) where a radio link is established, the DRNC shall include the *Neighbouring GSM Cell Information* IE in the RADIO LINK ADDITION RESPONSE message for each of the GSM neighbouring cells. If available the DRNC shall include the *Cell Individual Offset* IE, *Coverage Indicator* IE, *Antenna Co-location Indicator* IE and *HCS Prio* IE in the *Neighbouring GSM Cell Information* IE. If available, the DRNC shall also include the *SNA Information* IE for the concerned neighbouring cells in the *Neighbouring GSM Cell Information* IE.

When receiving the *SNA Information* IE in the RADIO LINK ADDITION RESPONSE message, the SRNC should use it to restrict cell access based on SNA information. See also [xx] for a broader description of the SNA access control.

*****UNAFFECTED PARTS ARE OMITTED*****

9.1.24 UPLINK SIGNALLING TRANSFER INDICATION

9.1.24.1 FDD Message

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Message Type	M		9.2.1.40		YES	ignore
Transaction ID	M		9.2.1.59		–	
UC-Id	M		9.2.1.71		YES	ignore
SAI	M		9.2.1.52		YES	ignore
Cell GAI	O		9.2.1.5A		YES	ignore
C-RNTI	M		9.2.1.14		YES	ignore
S-RNTI	M		9.2.1.54		YES	ignore
D-RNTI	O		9.2.1.24		YES	ignore
Propagation Delay	M		9.2.2.33		YES	ignore
STTD Support Indicator	M		9.2.2.45		YES	ignore
Closed Loop Mode1 Support Indicator	M		9.2.2.2		YES	ignore
Closed Loop Mode2 Support Indicator	M		9.2.2.3		YES	ignore
L3 Information	M		9.2.1.32		YES	ignore
CN PS Domain Identifier	O		9.2.1.12		YES	ignore
CN CS Domain Identifier	O		9.2.1.11		YES	ignore
URA Information	O		9.2.1.70B		YES	ignore
Cell GA Additional Shapes	O		9.2.1.5B		YES	ignore
DPC Mode Change Support Indicator	O		9.2.2.56		YES	ignore
Common Transport Channel Resources Initialisation not required	O		9.2.1.12F		YES	Ignore
Cell Capability Container FDD	O		9.2.2.D		YES	ignore
Cell Capability Container TDD	O		9.2.3.1a		YES	ignore
Cell Capability Container TDD LCR	O		9.2.3.1b		YES	ignore
SNA Information	O		9.2.1.x		YES	ignore

9.1.24.2 TDD Message

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Message Type	M		9.2.1.40		YES	ignore
Transaction ID	M		9.2.1.59		–	
UC-Id	M		9.2.1.71		YES	ignore
SAI	M		9.2.1.52		YES	ignore
Cell GAI	O		9.2.1.5A		YES	Ignore
C-RNTI	M		9.2.1.14		YES	ignore
S-RNTI	M		9.2.1.54		YES	ignore
D-RNTI	O		9.2.1.24		YES	ignore
Rx Timing Deviation	M		9.2.3.7A		YES	ignore
L3 Information	M		9.2.1.32		YES	ignore
CN PS Domain Identifier	O		9.2.1.12		YES	ignore
CN CS Domain Identifier	O		9.2.1.11		YES	ignore
URA Information	O		9.2.1.70B		YES	ignore
Cell GA Additional Shapes	O		9.2.1.5B		YES	ignore
Common Transport Channel Resources Initialisation not required	O		9.2.1.12F		YES	ignore
Cell Capability Container FDD	O		9.2.2.D		YES	ignore
Cell Capability Container TDD	O		9.2.3.1a		YES	ignore
Cell Capability Container TDD LCR	O		9.2.3.1b		YES	ignore
SNA Information	O		9.2.1.x		YES	ignore

9.2.1.41B   Neighbouring FDD Cell Information

The *Neighbouring FDD Cell Information* IE provides information for FDD cells that are a neighbouring cells to a cell in the DRNC.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Neighbouring FDD Cell Information		*1..<max noofFDD neighbou rs>*			–	
>C-Id	M		9.2.1.6		–	
>UL UARFCN	M		UARFCN 9.2.1.66	Corresponds to Nu in ref. [6]	–	
>DL UARFCN	M		UARFCN 9.2.1.66	Corresponds to Nd in ref. [6]	–	
>Frame Offset	O		9.2.1.30		–	
>Primary Scrambling Code	M		9.2.1.45		–	
>Primary CPICH Power	O		9.2.1.44		–	
>Cell Individual Offset	O		9.2.1.7		–	
>Tx Diversity Indicator	M		9.2.2.50			
>STTD Support Indicator	O		9.2.2.45		–	
>Closed Loop Mode1 Support Indicator	O		9.2.2.2		–	
>Closed Loop Mode2 Support Indicator	O		9.2.2.3		–	
>Restriction State Indicator	O		9.2.1.48C		YES	ignore
>DPC Mode Change Support Indicator	O		9.2.2.56		YES	ignore
>Coverage Indicator	O		9.2.1.12G		YES	ignore
>Antenna Co-location Indicator	O		9.2.1.2C		YES	ignore
>HCS Prio	O		9.2.1.30N		YES	ignore
>Cell Capability Container FDD	O		9.2.2.D		YES	ignore
> SNA Information	O		9.2.1.x		YES	ignore

Range bound	Explanation
maxnoofFDDneighbours	Maximum number of neighbouring FDD cell for one cell.

9.2.1.41C   Neighbouring GSM Cell Information

The *Neighbouring GSM Cell Information* IE provides information for all GSM Cells that are a neighbouring cell to a cell in the DRNC.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Neighbouring GSM Cell Information		1..<*max noofGSMneighbours*>			GLOBAL	ignore
>CGI		1		Cell Global Identity as defined in ref. [1].	–	
>>LAI		1			–	
>>>PLMN Identity	M		OCTET STRING (3)	- digits 0 to 9, two digits per octet, - each digit encoded 0000 to 1001, - 1111 used as filler - bit 4 to 1 of octet n encoding digit 2n-1 - bit 8 to 5 of octet n encoding digit 2n -The PLMN Identity consists of 3 digits from MCC followed by either -a filler plus 2 digits from MNC (in case of 2 digit MNC) or -3 digits from MNC (in case of a 3 digit MNC).	–	
>>>LAC	M		OCTET STRING (2)	0000 and FFFE not allowed	–	
>>CI	M		OCTET STRING (2)		–	
>Cell Individual Offset	O		9.2.1.7	The Cell Individual Offset to be used for UEs using DCHs.	–	
>BSIC		1		Base Station Identity Code as defined in ref. [1].	–	
>>NCC	M		BIT STRING(3)	Network Colour Code.	–	
>>BCC	M		BIT STRING(3)	Base Station Colour Code.	–	
>Band Indicator	M		ENUMERATED(DCS 1800 band, PCS 1900 band, …)	Indicates whether or not the BCCH ARFCN belongs to the 1800 band or 1900 band of GSM frequencies.	–	
>BCCH ARFCN	M		INTEGER(0..1023)	BCCH Frequency as defined in ref. [29].	–	
>Coverage Indicator	O		9.2.1.12G		YES	ignore
>Antenna Co-location Indicator	O		9.2.1.2C		YES	ignore
>HCS Prio	O		9.2.1.30N		YES	ignore
> SNA Information	O		9.2.1.x		YES	ignore

Range bound	Explanation
maxnoofGSMneighbours	Maximum number of neighbouring GSM cells for one cell.

9.2.1.41D   Neighbouring TDD Cell Information

The *Neighbouring TDD Cell Information* IE provides information for 3.84Mcps TDD cells that are a neighbouring cells to a cell in the DRNC.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Neighbouring TDD Cell Information		*1..<maxnoofTDDneighbours>*			–	
>C-Id	M		9.2.1.6		–	
>UARFCN	M		9.2.1.66	Corresponds to Nt in ref. [7]	–	
>Frame Offset	O		9.2.1.30		–	
>Cell Parameter ID	M		9.2.1.8		–	
>Sync Case	M		9.2.1.54		–	
>Time Slot	C-Case1		9.2.1.56		–	
>SCH Time Slot	C-Case2		9.2.1.51		–	
>SCTD Indicator	M		9.2.1.78		–	
>Cell Individual Offset	O		9.2.1.7		–	
>DPCH Constant Value	O		9.2.1.23		–	
>PCCPCH Power	O		9.2.1.43		–	
>Restriction State Indicator	O		9.2.1.48C		YES	ignore
>Coverage Indicator	O		9.2.1.12G		YES	ignore
>Antenna Co-location Indicator	O		9.2.1.2C		YES	ignore
>HCS Prio	O		9.2.1.30N		YES	ignore
>Cell Capability Container TDD	O		9.2.3.1a		YES	ignore
> SNA Information	O		9.2.1.x		YES	ignore

Condition	Explanation
Case1	The IE shall be present if the *Sync Case* IE is set to "Case1".
Case2	The IE shall be present if the *Sync Case* IE is set to "Case2".

Range bound	Explanation
maxnoofTDDneighbours	Maximum number of neighbouring 3.84Mcps TDD cell for one cell.

9.2.1.72   Neighbouring TDD Cell Information LCR

The *Neighbouring TDD Cell Information LCR* IE provides information for 1.28Mcps TDD cells that are a neighbouring cells to a cell in the DRNC.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Neighbouring TDD Cell Information LCR		1..<maxno ofLCRTDD neighbour s>			–	
>C-Id	M		9.2.1.6		–	
>UARFCN	M		9.2.1.66	Corresponds to Nt in ref. [7]	–	
>Frame Offset	O		9.2.1.30		–	
>Cell Parameter ID	M		9.2.1.8		–	
>SCTD Indicator	M		9.2.1.78		–	
>Cell Individual Offset	O		9.2.1.7		–	
>DPCH Constant Value	O		9.2.1.23		–	
>PCCPCH Power	O		9.2.1.43		–	
>Restriction State Indicator	O		9.2.1.48C		–	
>Cell Capability Container TDD LCR	O		9.2.3.1b		YES	ignore
> SNA Information	O		9.2.1.x		YES	ignore

Range bound	Explanation
maxnoofLCRTDDneighbours	Maximum number of neighbouring 1.28Mcps TDD cell for one cell.

9.2.1.x   Shared Network Area (SNA) Information

This information element contains a list of Shared Network Areas, identified by the Shared Network Area Code (SNAC, see [1]) which a certain cell belongs to. For a broader description of the SNA access control see [xx].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
PLMN Identity	M		OCTET STRING (3)	- digits 0 to 9, two digits per octet, - each digit encoded 0000 to 1001, - 1111 used as filler - bit 4 to 1 of octet n encoding digit 2n-1 - bit 8 to 5 of octet n encoding digit 2n -The PLMN Identity consists of 3 digits from MCC followed by either -a filler plus 2 digits from MNC (in case of 2 digit MNC) or -3 digits from MNC (in case of a 3 digit MNC).
List of SNAs		0..<maxnoofSNAs>, …		
> SNAC	M		INTEGER (0.. 65535)	

Range bound	Explanation
maxnoofSNAs	Maximum number of SNAs one cell can be part of.

9.3.3 PDU Definitions

```
-- ****************************************************************
--
-- PDU definitions for RNSAP.
--
-- ****************************************************************

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

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

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

IMPORTS
    Active-Pattern-Sequence-Information,
    AllocationRetentionPriority,
    AllowedQueuingTime,
    Allowed-Rate-Information,
    AlphaValue,
    AntennaColocationIndicator,
    BLER,
    SCTD-Indicator,
    BindingID,
```

UNCHANGED PARTS WERE OMITTED

```
    SNA-Information,
```

UNCHANGED PARTS WERE OMITTED

```
    TSTD-Indicator,
    TSTD-Support-Indicator,
    UARFCN,
    UC-ID,
    UL-DPCCH-SlotFormat,
    UL-SIR,
    UL-FP-Mode,
    UL-PhysCH-SF-Variation,
    UL-ScramblingCode,
    UL-Timeslot-Information,
    UL-TimeslotLCR-Information,
```

```
    UL-TimeSlot-ISCP-Info,
    UL-TimeSlot-ISCP-LCR-Info,
    URA-ID,
    URA-Information,
    USCH-ID,
    USCH-Information
FROM RNSAP-IEs


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

    maxNoOfDSCHs,
    maxNoOfUSCHs,
    maxNrOfCCTrCHs,
    maxNrOfDCHs,
    maxNrOfTS,
    maxNrOfDPCHs,
    maxNrOfRLs,
    maxNrOfRLSets,
    maxNrOfRLs-1,
    maxNrOfRLs-2,
    maxNrOfULTs,
    maxNrOfDLTs,
    maxResetContext,
    maxNoOfDSCHsLCR,
    maxNoOfUSCHsLCR,
    maxNrOfCCTrCHsLCR,
    maxNrOfTsLCR,
    maxNrOfDLTsLCR,
    maxNrOfULTsLCR,
    maxNrOfDPCHsLCR,
    maxNrOfLCRTDDNeighboursPerRNC,
    maxNrOfMeasNCell,
    maxNrOfMACdFlows,

    id-Active-Pattern-Sequence-Information,
    id-AdjustmentRatio,
    id-AllowedQueuingTime,
    id-AntennaColocationIndicator,
    id-BindingID,
    id-C-ID,
    id-C-RNTI,
```

```
    id-CFN,
    id-CFNReportingIndicator,
```

```
    id-Reporing-Object-RL-RestoreInd,
    id-RNC-ID,
    id-RxTimingDeviationForTA,
    id-S-RNTI,
    id-SAI,
    id-SFN,
    id-SFNReportingIndicator,
    id-SNA-Information,
    id-SRNC-ID,
    id-SSDT-CellIDforEDSCHPC,
    id-STTD-SupportIndicator,
    id-SuccessfulRL-InformationResponse-RL-AdditionFailureFDD,
    id-SuccessfulRL-InformationResponse-RL-SetupFailureFDD,
    id-TFCI-PC-SupportIndicator,
    id-timeSlot-ISCP,
    id-TimeSlot-RL-SetupRspTDD,
```

```
-- ************************************************************
--
-- UPLINK SIGNALLING TRANSFER INDICATION FDD
--
-- ************************************************************

UplinkSignallingTransferIndicationFDD ::= SEQUENCE {
    protocolIEs                 ProtocolIE-Container      {{UplinkSignallingTransferIndicationFDD-IEs}},
    protocolExtensions          ProtocolExtensionContainer {{UplinkSignallingTransferIndicationFDD-Extensions}}        OPTIONAL,
    ...
}

UplinkSignallingTransferIndicationFDD-IEs RNSAP-PROTOCOL-IES ::= {
    { ID id-UC-ID                   CRITICALITY ignore  TYPE UC-ID                  PRESENCE mandatory } |
    { ID id-SAI                     CRITICALITY ignore  TYPE SAI                    PRESENCE mandatory } |
    { ID id-GA-Cell                 CRITICALITY ignore  TYPE GA-Cell                PRESENCE optional } |
    { ID id-C-RNTI                  CRITICALITY ignore  TYPE C-RNTI                 PRESENCE mandatory } |
    { ID id-S-RNTI                  CRITICALITY ignore  TYPE S-RNTI                 PRESENCE mandatory } |
    { ID id-D-RNTI                  CRITICALITY ignore  TYPE D-RNTI                 PRESENCE optional   } |
    { ID id-PropagationDelay        CRITICALITY ignore  TYPE PropagationDelay       PRESENCE mandatory } |
    { ID id-STTD-SupportIndicator           CRITICALITY ignore  TYPE STTD-SupportIndicator  PRESENCE mandatory } |
    { ID id-ClosedLoopMode1-SupportIndicator    CRITICALITY ignore  TYPE ClosedLoopMode1-SupportIndicator PRESENCE mandatory } |
    { ID id-ClosedLoopMode2-SupportIndicator    CRITICALITY ignore  TYPE ClosedLoopMode2-SupportIndicator PRESENCE mandatory } |
    { ID id-L3-Information          CRITICALITY ignore  TYPE L3-Information              PRESENCE mandatory } |
    { ID id-CN-PS-DomainIdentifier          CRITICALITY ignore  TYPE CN-PS-DomainIdentifier     PRESENCE optional } |
    { ID id-CN-CS-DomainIdentifier          CRITICALITY ignore  TYPE CN-CS-DomainIdentifier     PRESENCE optional } |
```

```
    { ID id-URA-Information                    CRITICALITY ignore  TYPE URA-Information                    PRESENCE optional },
    ...
}


UplinkSignallingTransferIndicationFDD-Extensions RNSAP-PROTOCOL-EXTENSION ::= {
    { ID id-GA-CellAdditionalShapes           CRITICALITY ignore  EXTENSION  GA-CellAdditionalShapes     PRESENCE optional }|
    { ID id-DPC-Mode-Change-SupportIndicator    CRITICALITY ignore  EXTENSION      DPC-Mode-Change-SupportIndicator    PRESENCE optional }|
    { ID id-CommonTransportChannelResourcesInitialisationNotRequired    CRITICALITY ignore  EXTENSION
CommonTransportChannelResourcesInitialisationNotRequired        PRESENCE optional    }|
    { ID id-CellCapabilityContainer-FDD     CRITICALITY ignore  EXTENSION  CellCapabilityContainer-FDD   PRESENCE optional }|
    { ID id-CellCapabilityContainer-TDD     CRITICALITY ignore  EXTENSION  CellCapabilityContainer-TDD   PRESENCE optional }|
    { ID id-CellCapabilityContainer-TDD-LCR CRITICALITY ignore  EXTENSION  CellCapabilityContainer-TDD-LCR     PRESENCE optional }|
    { ID id-SNA-Information                    CRITICALITY ignore            EXTENSION SNA-Information       PRESENCE optional },
    ...
}




-- ****************************************************************
--
-- UPLINK SIGNALLING TRANSFER INDICATION TDD
--
-- ****************************************************************

UplinkSignallingTransferIndicationTDD ::= SEQUENCE {
    protocolIEs                 ProtocolIE-Container       {{UplinkSignallingTransferIndicationTDD-IEs}},
    protocolExtensions          ProtocolExtensionContainer {{UplinkSignallingTransferIndicationTDD-Extensions}}            OPTIONAL,
    ...
}

UplinkSignallingTransferIndicationTDD-IEs RNSAP-PROTOCOL-IES ::= {
    { ID id-UC-ID                     CRITICALITY ignore  TYPE UC-ID                      PRESENCE mandatory } |
    { ID id-SAI                   CRITICALITY ignore  TYPE SAI                        PRESENCE mandatory   } |
    { ID id-GA-Cell               CRITICALITY ignore  TYPE GA-Cell                PRESENCE optional } |
    { ID id-C-RNTI                    CRITICALITY ignore  TYPE C-RNTI                     PRESENCE mandatory } |
    { ID id-S-RNTI                    CRITICALITY ignore  TYPE S-RNTI                     PRESENCE mandatory } |
    { ID id-D-RNTI                    CRITICALITY ignore  TYPE D-RNTI                     PRESENCE optional   } |
    { ID id-RxTimingDeviationForTA        CRITICALITY ignore  TYPE RxTimingDeviationForTA PRESENCE mandatory } |
    { ID id-L3-Information            CRITICALITY ignore  TYPE L3-Information             PRESENCE mandatory   } |
    { ID id-CN-PS-DomainIdentifier        CRITICALITY ignore  TYPE CN-PS-DomainIdentifier      PRESENCE optional } |
    { ID id-CN-CS-DomainIdentifier        CRITICALITY ignore  TYPE CN-CS-DomainIdentifier      PRESENCE optional } |
    { ID id-URA-Information               CRITICALITY ignore  TYPE URA-Information                    PRESENCE optional },
    ...
}

UplinkSignallingTransferIndicationTDD-Extensions RNSAP-PROTOCOL-EXTENSION ::= {
    { ID id-GA-CellAdditionalShapes           CRITICALITY ignore  EXTENSION  GA-CellAdditionalShapes     PRESENCE optional }|
    { ID id-CommonTransportChannelResourcesInitialisationNotRequired    CRITICALITY ignore  EXTENSION
CommonTransportChannelResourcesInitialisationNotRequired        PRESENCE optional    }|
    { ID id-CellCapabilityContainer-FDD     CRITICALITY ignore  EXTENSION  CellCapabilityContainer-FDD   PRESENCE optional }|
    { ID id-CellCapabilityContainer-TDD     CRITICALITY ignore  EXTENSION  CellCapabilityContainer-TDD   PRESENCE optional }|
    { ID id-CellCapabilityContainer-TDD-LCR CRITICALITY ignore  EXTENSION  CellCapabilityContainer-TDD-LCR     PRESENCE optional }|
```

```
    { ID id-SNA-Information          CRITICALITY ignore        EXTENSION SNA-Information      PRESENCE optional },
    ...
}
```

UNCHANGED PARTS WERE OMITTED

9.3.4   Information Element Definitions

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

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

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS
    maxCodeNumComp-1,
    maxNrOfFACHs,
    maxFACHCountPlus1,
    maxIBSEG,
    maxNoOfDSCHs,
    maxNoOfDSCHs-1,
    maxNoOfUSCHs,
    maxNoTFCIGroups,
    maxNoCodeGroups,
    maxNrOfDCHs,
    maxNrOfDL-Codes,
    maxNrOfDLTs,
    maxNrOfDLTsLCR,
    maxNrOfDPCHs,
    maxNrOfDPCHsLCR,
    maxNrOfErrors,
    maxNrOfFDDNeighboursPerRNC,
    maxNrOfMACcshSDU-Length,
    maxNrOfNeighbouringRNCs,
    maxNrOfTDDNeighboursPerRNC,
    maxNrOfLCRTDDNeighboursPerRNC,
    maxNrOfTS,
    maxNrOfULTs,
    maxNrOfULTsLCR,
    maxNrOfGSMNeighboursPerRNC,
    maxRateMatching,
    maxNrOfPoints,
    maxNoOfRB,
    maxNrOfRLs,
    maxNrOfTFCs,
    maxNrOfTFs,
```

```
    maxCTFC,
    maxRNCinURA-1,
    maxNrOfSCCPCHs,
    maxTFCI1Combs,
    maxTFCI2Combs,
    maxTFCI2Combs-1,
    maxTGPS,
    maxTTI-Count,
    maxNoGPSTypes,
    maxNoSat,
    maxNrOfSNAs,
    maxNrOfHARQProc,
    maxNrOfHSSCCHCodes,
    maxNrOfMACdFlows,
    maxNrOfMACdFlows-1,
    maxNrOfPDUIndexes,
    maxNrOfPDUIndexes-1,
    maxNrOfPrioQueues,
    maxNrOfPrioQueues-1,
```

*****UNAFFECTED PARTS ARE OMITTED*****

```
    id-Allowed-Rate-Information,
    id-AntennaColocationIndicator,
    id-BindingID,
    id-Cell-Capacity-Class-Value,
    id-Cell-Capacity-Class-Value-ThresholdInformation,
    id-CellCapabilityContainer-FDD,
    id-CellCapabilityContainer-TDD,
    id-CellCapabilityContainer-TDD-LCR,
    id-CoverageIndicator,
    id-DPC-Mode-Change-SupportIndicator,
    id-DSCH-Specific-FDD-Additional-List,
    id-Guaranteed-Rate-Information,
    id-HCS-Prio,
    id-Load-Value,
    id-Load-Value-IncrDecrThres,
    id-Neighbouring-GSM-CellInformation,
    id-Neighbouring-UMTS-CellInformationItem,
    id-neighbouring-LCR-TDD-CellInformation,
    id-NRT-Load-Information-Value,
    id-NRT-Load-Information-Value-IncrDecrThres,
    id-OnModification,
    id-Received-Total-Wideband-Power-Value,
    id-Received-Total-Wideband-Power-Value-IncrDecrThres,
    id-RT-Load-Value,
    id-RT-Load-Value-IncrDecrThres,
    id-SFNSFNMeasurementThresholdInformation,
    id-SNA-Information,
    id-TrafficClass,
    id-Transmitted-Carrier-Power-Value,
    id-Transmitted-Carrier-Power-Value-IncrDecrThres,
```

```
        id-TUTRANGPSMeasurementThresholdInformation,
        id-UL-Timeslot-ISCP-Value,
        id-UL-Timeslot-ISCP-Value-IncrDecrThres,
        maxNrOfLevels,
        maxNrOfMeasNCell,
        maxNrOfMeasNCell-1,
        id-MessageStructure,
        id-EnhancedDSCHPC,
        id-RestrictionStateIndicator,
        id-Rx-Timing-Deviation-Value-LCR,
        id-TransportLayerAddress,
        id-TypeOfError,
        id-Angle-Of-Arrival-Value-LCR,
        id-IPDL-TDD-ParametersLCR,
        id-NRT-Load-information-Value
FROM RNSAP-Constants
```

*****UNAFFECTED PARTS ARE OMITTED*****

```
-- N
```

*****UNAFFECTED PARTS ARE OMITTED*****

```
Neighbouring-FDD-CellInformationItem ::= SEQUENCE {
    c-ID                                C-ID,
    uARFCNforNu                         UARFCN,
    uARFCNforNd                         UARFCN,
    frameOffset                         FrameOffset        OPTIONAL,
    primaryScramblingCode               PrimaryScramblingCode,
    primaryCPICH-Power                  PrimaryCPICH-Power      OPTIONAL,
    cellIndividualOffset                CellIndividualOffset    OPTIONAL,
    txDiversityIndicator                TxDiversityIndicator,
    sTTD-SupportIndicator               STTD-SupportIndicator   OPTIONAL,
    closedLoopMode1-SupportIndicator    ClosedLoopMode1-SupportIndicator    OPTIONAL,
    closedLoopMode2-SupportIndicator    ClosedLoopMode2-SupportIndicator    OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { Neighbouring-FDD-CellInformationItem-ExtIEs} } OPTIONAL,
    ...
}

Neighbouring-FDD-CellInformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    { ID id-RestrictionStateIndicator           CRITICALITY ignore          EXTENSION RestrictionStateIndicator    PRESENCE optional }|
    { ID id-DPC-Mode-Change-SupportIndicator    CRITICALITY ignore      EXTENSION  DPC-Mode-Change-SupportIndicator     PRESENCE optional }|
    { ID id-CoverageIndicator                   CRITICALITY ignore          EXTENSION CoverageIndicator              PRESENCE optional }|
    { ID id-AntennaColocationIndicator          CRITICALITY ignore          EXTENSION AntennaColocationIndicator     PRESENCE optional }|
    { ID id-HCS-Prio                            CRITICALITY ignore          EXTENSION HCS-Prio                       PRESENCE optional }|
    { ID id-CellCapabilityContainer-FDD         CRITICALITY ignore          EXTENSION  CellCapabilityContainer-FDD    PRESENCE optional }|
    { ID id-SNA-Information                      CRITICALITY ignore          EXTENSION SNA-Information       PRESENCE optional },
```

```
    ...
}
```

```
Neighbouring-GSM-CellInformation ::= ProtocolIE-Single-Container {{ Neighbouring-GSM-CellInformationIE }}

Neighbouring-GSM-CellInformationIE RNSAP-PROTOCOL-IES ::= {
    { ID id-Neighbouring-GSM-CellInformation    CRITICALITY ignore  TYPE    Neighbouring-GSM-CellInformationIEs PRESENCE mandatory }
}

Neighbouring-GSM-CellInformationIEs ::= SEQUENCE ( SIZE (1..maxNrOfGSMNeighboursPerRNC,...)) OF Neighbouring-GSM-CellInformationItem

Neighbouring-GSM-CellInformationItem ::= SEQUENCE {
    cGI                              CGI,
    cellIndividualOffset             CellIndividualOffset    OPTIONAL,
    bSIC                             BSIC,
    band-Indicator                   Band-Indicator,
    bCCH-ARFCN                       BCCH-ARFCN,
    iE-Extensions                    ProtocolExtensionContainer { { Neighbouring-GSM-CellInformationItem-ExtIEs} } OPTIONAL,
    ...
}

Neighbouring-GSM-CellInformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    { ID id-CoverageIndicator            CRITICALITY ignore         EXTENSION CoverageIndicator           PRESENCE optional } |
    { ID id-AntennaColocationIndicator   CRITICALITY ignore         EXTENSION AntennaColocationIndicator  PRESENCE optional } |
    { ID id-HCS-Prio                     CRITICALITY ignore         EXTENSION HCS-Prio                     PRESENCE optional } |
    { ID id-SNA-Information               CRITICALITY ignore         EXTENSION SNA-Information     PRESENCE optional   },
    ...
}
```

```
Neighbouring-TDD-CellInformation ::= SEQUENCE ( SIZE (1..maxNrOfTDDNeighboursPerRNC,...)) OF Neighbouring-TDD-CellInformationItem

Neighbouring-TDD-CellInformationItem ::= SEQUENCE {
    c-ID                      C-ID,
    uARFCNforNt               UARFCN,
    frameOffset               FrameOffset         OPTIONAL,
    cellParameterID           CellParameterID,
    syncCase                  SyncCase,
    timeSlot                  TimeSlot            OPTIONAL
    -- This IE shall be present if Sync Case = Case1 -- ,
    sCH-TimeSlot              SCH-TimeSlot            OPTIONAL
    -- This IE shall be present if Sync Case = Case2 -- ,
    sCTD-Indicator            SCTD-Indicator,
    cellIndividualOffset      CellIndividualOffset   OPTIONAL,
    dPCHConstantValue         DPCHConstantValue   OPTIONAL,
```

```
    pCCPCH-Power                     PCCPCH-Power           OPTIONAL,
    iE-Extensions                    ProtocolExtensionContainer { { Neighbouring-TDD-CellInformationItem-ExtIEs} } OPTIONAL,
    ...
}

Neighbouring-TDD-CellInformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    { ID id-RestrictionStateIndicator           CRITICALITY ignore        EXTENSION RestrictionStateIndicator    PRESENCE optional }|
    { ID id-CoverageIndicator                   CRITICALITY ignore        EXTENSION CoverageIndicator            PRESENCE optional }|
    { ID id-AntennaColocationIndicator          CRITICALITY ignore        EXTENSION AntennaColocationIndicator   PRESENCE optional }|
    { ID id-HCS-Prio                            CRITICALITY ignore        EXTENSION HCS-Prio                     PRESENCE optional }|
    { ID id-CellCapabilityContainer-TDD         CRITICALITY ignore  EXTENSION  CellCapabilityContainer-TDD       PRESENCE optional }|
    { ID id-SNA-Information                      CRITICALITY ignore        EXTENSION SNA-Information      PRESENCE optional },
    ...
}
```

```
Neighbouring-LCR-TDD-CellInformation ::= SEQUENCE (SIZE (1.. maxNrOfLCRTDDNeighboursPerRNC,...)) OF Neighbouring-LCR-TDD-CellInformationItem

Neighbouring-LCR-TDD-CellInformationItem ::= SEQUENCE {
    c-ID                       C-ID,
    uARFCNforNt                UARFCN,
    frameOffset                FrameOffset         OPTIONAL,
    cellParameterID            CellParameterID,
    sCTD-Indicator             SCTD-Indicator,
    cellIndividualOffset       CellIndividualOffset    OPTIONAL,
    dPCHConstantValue          DPCHConstantValue    OPTIONAL,
    pCCPCH-Power               PCCPCH-Power           OPTIONAL,
    restrictionStateIndicator  RestrictionStateIndicator      OPTIONAL,
    iE-Extensions              ProtocolExtensionContainer { { Neighbouring-LCR-TDD-CellInformationItem-ExtIEs} } OPTIONAL,
    ...
}

Neighbouring-LCR-TDD-CellInformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    { ID id-CellCapabilityContainer-TDD-LCR CRITICALITY ignore  EXTENSION  CellCapabilityContainer-TDD-LCR      PRESENCE optional }|
    { ID id-SNA-Information                  CRITICALITY ignore        EXTENSION SNA-Information       PRESENCE optional   },
    ...
}
```

```
-- S
```

```
SNA-Information ::= SEQUENCE {
    pLMN-Identity    PLMN-Identity,
    listOfSNAs       ListOfSNAs                              OPTIONAL,
    iE-Extensions    ProtocolExtensionContainer { { SNA-Information-ExtIEs} } OPTIONAL,
```

```
    ...
}

SNA-Information-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

ListOfSNAs ::= SEQUENCE (SIZE (1.. maxNrOfSNAs, ...)) OF SNACode

SNACode ::= INTEGER (0..65535)
```

*****UNAFFECTED PARTS ARE OMITTED*****

9.3.6 Constant Definitions

```
-- ****************************************************************
--
-- Lists
--
-- ****************************************************************

maxCodeNumComp-1                       INTEGER ::= 255
maxRateMatching                        INTEGER ::= 256
maxNoCodeGroups                        INTEGER ::= 256
maxNoOfDSCHs                           INTEGER ::= 10
maxNoOfDSCHsLCR                        INTEGER ::= 10
maxNoOfRB                              INTEGER ::= 32
maxNoOfUSCHs                           INTEGER ::= 10
maxNoOfUSCHsLCR                        INTEGER ::= 10
maxNoTFCIGroups                        INTEGER ::= 256
maxNrOfTFCs                            INTEGER ::= 1024
maxNrOfTFs                             INTEGER ::= 32
maxNrOfCCTrCHs                         INTEGER ::= 16
maxNrOfCCTrCHsLCR                      INTEGER ::= 16
maxNrOfDCHs                            INTEGER ::= 128
maxNrOfDL-Codes                        INTEGER ::= 8
maxNrOfDPCHs                           INTEGER ::= 240
maxNrOfDPCHsLCR                        INTEGER ::= 240
maxNrOfErrors                          INTEGER ::= 256
maxNrOfMACcshSDU-Length                INTEGER ::= 16
maxNrOfPoints                          INTEGER ::= 15
maxNrOfRLs                             INTEGER ::= 16
maxNrOfRLSets                          INTEGER ::= maxNrOfRLs
maxNrOfRLs-1                           INTEGER ::= 15   -- maxNrOfRLs - 1
maxNrOfRLs-2                           INTEGER ::= 14   -- maxNrOfRLs - 2
maxNrOfULTs                            INTEGER ::= 15
maxNrOfULTsLCR                         INTEGER ::= 6
maxNrOfDLTs                            INTEGER ::= 15
maxNrOfDLTsLCR                         INTEGER ::= 6
maxRNCinURA-1                          INTEGER ::= 15
maxTTI-Count                           INTEGER ::= 4
maxCTFC                                INTEGER ::= 16777215
maxNrOfNeighbouringRNCs                INTEGER ::= 10
maxNrOfFDDNeighboursPerRNC             INTEGER ::= 256
maxNrOfGSMNeighboursPerRNC             INTEGER ::= 256
maxNrOfTDDNeighboursPerRNC             INTEGER ::= 256
maxNrOfFACHs                           INTEGER ::= 8
maxNrOfLCRTDDNeighboursPerRNC          INTEGER ::= 256
maxFACHCountPlus1                      INTEGER ::= 10
maxIBSEG                               INTEGER ::= 16
maxNrOfSCCPCHs                         INTEGER ::= 8
maxTFCI1Combs                          INTEGER ::= 512
maxTFCI2Combs                          INTEGER ::= 1024
maxTFCI2Combs-1                        INTEGER ::= 1023
```

```
maxTGPS                         INTEGER ::= 6
maxNrOfTS                       INTEGER ::= 15
maxNrOfLevels                   INTEGER ::= 256
maxNoOfDSCHs-1                  INTEGER ::= 9
maxNrOfTsLCR                    INTEGER ::= 6
maxNoSat                        INTEGER ::= 16
maxNoGPSTypes                   INTEGER ::= 8
maxNrOfMeasNCell                INTEGER ::= 96
maxNrOfMeasNCell-1              INTEGER ::= 95  -- maxNrOfMeasNCell - 1
maxResetContext                 INTEGER ::= 250
maxNrOfHARQProc                 INTEGER ::= 8
maxNrOfHSSCCHCodes              INTEGER ::= 128
maxNrOfMACdFlows                INTEGER ::= 8
maxNrOfMACdFlows-1              INTEGER ::= 7   -- maxNrOfMACdFlows - 1
maxNrOfPDUIndexes               INTEGER ::= 8
maxNrOfPDUIndexes-1             INTEGER ::= 7    -- maxNrOfPDUIndexes - 1
maxNrOfPrioQueues               INTEGER ::= 8
maxNrOfPrioQueues-1             INTEGER ::= 7   -- maxNrOfPrioQueues - 1
maxNrOfSNAs                      INTEGER ::= 65535
```

`*****UNAFFECTED PARTS ARE OMITTED*****`

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

id-AllowedQueuingTime                               ProtocolIE-ID ::= 4
id-Allowed-Rate-Information                          ProtocolIE-ID ::= 42
```

`*****UNAFFECTED PARTS ARE OMITTED*****`

```
id-Qth-Parameter                                    ProtocolIE-ID ::= 253
id-NRT-Load-information-Value                        ProtocolIE-ID ::= 322
id-PDSCH-RL-ID                                      ProtocolIE-ID ::= 323
id-TimeSlot-RL-SetupRspTDD                          ProtocolIE-ID ::= 325
id-SNA-Information                                  ProtocolIE-ID ::= 479

END
```