TSG-RAN Working Group 3 meeting #4 ***TSGR3#4(99)503***

Warwick, UK, 1st – 4th June 1999

Agenda item: **10.4**

Source: Nokia

Title: **Message contents for the RANAP procedures**

Document for:

Note: The revision marks reflect the changes on the draft document RANAP_Param.doc, which was sent on the reflector 24th of May, 1999.

1 Introduction

This document proposes the message content for the RANAP procedures. The document is based on combining Tdocs R3-99327 through R3-99332 sourced by Nokia and contributed for RAN WG3 meeting #3 in Kawasaki, but not discussed due to the lack of time. Only Tdoc R3-99328 was discussed and the proposed parameters for Relocation procedure were accepted slightly modified and are included in [1]. The proposed parameters for remaining procedures are based on the current description of the procedures in [1], and on the message contents proposed by TTC, reported in [1] and marked as FFS.

Other parameters to be inserted in the messages are FFS.

2 Notation

Note: The notation as presented in this section has been agreed to be used in WG2 and WG3, and is shown here for information.

An information element can be of the following *types*:

M	The information element is mandatory, i.e. always present in the message
O	The information element is optional, i.e. may or may not be present in the message independently on the presence or value of other information elements in the same message
C#	The presence of the information element is conditional to the presence or to the value of another information element, as reported in the correspondent note below the message description.

In case of an information element group, the group is preceded by a name for the info group (in bold). It is also indicated whether the group is mandatory, optional or conditional. Each group may be also repeated within one message. The presence field of the information elements inside one group defines if the information element is mandatory, optional or conditional if the group is present.

Note 1: The proposed tables with the message contents do not include the length and direction columns proposed by TTC.

Note 2: The proposed message structure does not include the 'length' and 'compatibility information' parameters that are proposed by TTC, because they will be specified by the formal language.

3 Agreed Information Elements

3.1 Parameters for Relocation procedure

Parameters for the Relocation procedure were agreed in RAN WG3 meeting #3 in Kawasaki and are as follows (presented also in section 9.1.1.1 of [1]):

3.1.1 RELOCATION REQUIRED

Information element	**Reference**	**Type**
Message type		M
Target RNC identification		M (1)
Source RNC to target RNC transparent field		O (2)

(1) The usage and format of this information element is FFS.

(2) Required only via one CN entity.

3.1.2 RELOCATION REQUEST

Information element	**Reference**	**Type**
Message type		M
Source RNC to target RNC transparent field		O (1)
Bearers x n to be setup		M
Bearer ID		M
Bearer parameters		M
Transport address		M
Iu transport association		M
Priority level and pre-emption indication		O
Bearer linking		O

(1) Required only via one CN entity.

3.1.3 RELOCATION REQUEST ACKNOWLEDGE

Information element	Reference	Type
Message type		M
Target RNC to source RNC transparent field		O (1)
Bearers x n		O (2)
Bearer ID		M
Transport address		M (3)
Iu transport association		M (3)

(1) Required only via one CN entity.

(2) Always present for SGSN, and present for MSC if parameters have been modified by target RNC.

(3) Always present for SGSN.

3.1.4 RELOCATION COMMAND

Information element	Reference	Type
Message type		M
Target RNC to source RNC transparent field		O (1)

(1) Required only via one CN entity.

3.1.5 RELOCATION DETECT

Information element	Reference	Type
Message type		M

3.1.6 RELOCATION COMPLETE

Information element	Reference	Type
Message type		M

3.1.7 RELOCATION FAILURE

Information element	Reference	Type
Message type		M
Cause		M

4 Proposed Information Elements

4.1 Parameters for Relocation procedure

The existing parameters are as shown in section 3. It is proposed to add information element "Transaction ID" to all of the messages listed in section 3. Transaction ID should be used in procedures in which it is benefical to distinguish the different executions of the same procedure type running at least partly in parallel.

4.2 Parameters for Radio Access Bearer Assignment procedure (combined procedure)

Note: The messages listed in this section are not needed if separate assignment procedures are decided to use (Study item Iu/5).

4.2.1 RADIO ACCESS BEARER ASSIGNMENT REQUEST

Information element	**Reference**	**Type**
Message type		M
Transaction ID		M
Bearers x n to be setup or modified		**O**
Bearer ID		M
Bearer parameters		M (1)
Transport Address		M
Iu transport association		M
Priority level and pre-emption indication		O
Bearer linking		O
Bearers x n to be kept		**O**
Bearer ID		M
Bearer parameters		M (1)
Priority level and pre-emption indication		O
Bearers x n to be released		**O**
Bearer ID		M
Cause		M

(1) This includes all the necessary parameters for bearers (both for MSC and SGSN) including QoS.

4.2.2 RADIO ACCESS BEARER ASSIGNMENT COMPLETE

Information element	**Reference**	**Type**
Message type		M
Transaction ID		M
Location Identifier		O
Bearers x n established or modified		**O**
Bearer ID		M

Bearer parameters		O (1)
Transport address		M (2)
Iu transport association		M (2)
Bearers x n released		**O**
Bearer ID		M
Cause		M

(1) Bearer parameters are needed only if something has changed.

(2) Always present for SGSN.

4.2.3 RADIO ACCESS BEARER ASSIGNMENT FAILURE

Information element	**Reference**	**Type**
Message type		M
Transaction ID		M
Location Identifier		O
Bearers x n successfully setup or modified		**O**
Bearer ID		M
Bearer parameters		O (1)
Transport address		M (2)
Iu transport association		M (2)
Bearers x n failed to setup		**O**
Bearer ID		M
Cause		M
Bearers x n released		**O**
Bearer ID		M
Cause		M

(1) Bearer parameters are needed only if something has changed.

(2) Always present for SGSN.

4.3 Parameters for separated RAB setup, reconfiguration and release procedures

Note: The messages listed in this section are not needed if the combined RAB Assignment procedure is decided to use (Study item Iu/5).

4.3.1 RADIO ACCESS BEARER SETUP (FFS)

The message is sent from the CN to the RNC, on dedicated SCCP connection, in order to request the RNC to assign radio resources, the attributes of which are defined within the message.

Information element	Reference	Type
Message type		M
Transaction ID		M
Bearers x n to be setup		M~~O~~
Bearer ID		M
Bearer parameters		M (1)
Transport Address		M
Iu transport association		M
Priority level and pre-emption indication		O
Bearer linking		O

(1) This includes all the necessary parameters for bearers (both for MSC and SGSN) including QoS.

4.3.2 RADIO ACCESS BEARER SETUP RESPONSE (FFS)

Information element	Reference	Type
Message type		M
Transaction ID		M
Location Identifier		O
Bearers x n established		**M**
Bearer ID		M
Bearer parameters		O (1)
Transport address		M (2)
Iu transport association		M (2)

(1) Bearer parameters are needed only if something has changed.

(2) Always present for SGSN.

4.3.3 RADIO ACCESS BEARER SETUP FAILURE (FFS)

Information element	Reference	Type
Message type		M
Transaction ID		M
Location Identifier		O
Bearers x n failed to establish		**M**
Bearer ID		M
Cause		M

4.3.4 RADIO ACCESS BEARER RECONFIGURATION (FFS)

Information element	Reference	Type
Message type		M
Transaction ID		M
Bearers x n to be reconfigured		**M**
Bearer ID		M
Bearer parameters		M (1)
Transport Address		M
Iu transport association		M
Priority level and pre-emption indication		O
Bearer linking		O

(1) This includes all the necessary parameters for bearers (both for MSC and SGSN) including QoS.

4.3.5 RADIO ACCESS BEARER RECONFIGURATION RESPONSE (FFS)

Information element	Reference	Type
Message type		M
Transaction ID		M
Location Identifier		O
Bearers x n reconfigured		**M**
Bearer ID		M
Bearer parameters		O (1)
RNC IP address		M (2)
GTP Flow label		M (2)

(1) Bearer parameters are needed only if something has changed.

(2) Always present for SGSN.

4.3.6 RADIO ACCESS BEARER RECONFIGURATION FAILURE (FFS)

Information element	Reference	Type
Message type		M
Transaction ID		M
Location Identifier		O
Bearers x n failed to reconfigure		**M**
Bearer ID		M
Cause		M

4.3.7 RADIO ACCESS BEARER RELEASE (FFS)

Information element	Reference	Type
Message type		M
Transaction ID		M
Bearers x n to be released		**M**
Bearer ID		M
Cause		M

4.3.8 RADIO ACCESS BEARER RELEASE RESPONSE (FFS)

Information element	Reference	Type
Message type		M
Transaction ID		M
Bearers x n to be released		**M**
Bearer ID		M
Cause		M

4.4 Parameters for RAB Release request

4.4.1 RADIO ACCESS BEARER RELEASE REQUEST

Note: This message is needed whether a combined assignment procedure or separate ones are used.

Information element	Reference	Type
Message type		M
Transaction ID		M
Bearers x n to be released		**M**
Bearer ID		M
Cause		M

4.5 Parameters for Iu Release procedure

4.5.1 IU RELEASE COMMAND

Information element	Reference	Type
Message type		M
Cause		M

4.5.2 IU RELEASE COMPLETE

Information element	Reference	Type
Message type		M

4.5.3 IU RELEASE REQUEST

Information element	Reference	Type
Message type		M
Cause		M

4.6 Parameters for Overload procedure

4.6.1 OVERLOAD

Information element	Reference	Type
Message type		M
Cause		M
Location Identifier		O

4.7 Parameters for Reset procedure

4.7.1 RESET

Information element	Reference	Type
Message type		M
Cause		M

4.7.2 RESET ACKNOWLEDGE

Information element	Reference	Type
Message type		M

4.8 Parameters for Common ID procedure

4.8.1 COMMON ID

Information element	Reference	Type
Message type		M
Common ID (e.g. IMSI)		M

4.9 Parameters for Paging procedure

4.9.1 PAGING

Information element	Reference	Type
Message type		M
IMSI		M
TMSI		O
~~UE Location~~Location Identifier		M
Paging Cause		O
EMLPP Priority, FFS		O

4.10 Parameters for CN Invoke Trace procedure

4.10.1 CN INVOKE TRACE

Information element	Reference	Type
Message type		M
Bearer ID		M
Trace Type		M
Trigger ID		O
Trace Reference		M
UE Identity		O
OMC ID		O

4.11 Parameters for Cipher Mode Control procedure

4.11.1 CIPHER MODE COMMAND

Information element	Reference	Type
Message type		M
Transaction ID		M
Encryption Information		M (1)
Cipher Response Mode		O (2)

(1) Encryption information includes key(s) and permitted algorithms.

(2) The element used by the CN to indicate whether the IMEI is to be included in the RRC CIPHER MODE COMPLETE message to be sent by the UE. The necessity of this parameter is FFS.

4.11.2 CIPHER MODE COMPLETE

Information element	Reference	Type
Message type		M
Transaction ID		M
Chosen Encryption Algorithm		O

4.11.3 CIPHER MODE REJECT

Information element	Reference	Type
Message type		M
Transaction ID		M
Cause		M

4.12 Parameters for CN Information Broadcast procedure

4.12.1 CN INFORMATION BROADCAST REQUEST

Information element	Reference	Type
Message type		M
Transaction ID		M
CN System Information bit strings		M
Broadcast area		M
Categorisation parameters		M

4.12.2 CN INFORMATION BROADCAST CONFIRM

Information element	Reference	Type
Message type		M
Transaction ID		M

4.12.3 CN INFORMATION BROADCAST REJECT

Information element	Reference	Type
Message type		M
Transaction ID		M
Cause		M

4.13 Parameters for Direct Transfer procedure

4.13.1 DIRECT TRANSFER

Information element	Reference	Type
Message type		M
Direct Transfer PDU		M

4.14 Parameters for Initial UE Message procedure

4.14.1 INITIAL UE MESSAGE

Information element	Reference	Type
Message type		M
Location Information		M
Layer 3 Information		M
Chosen Channel, FFS		O (1)

(1) This element is optionally sent by the RNC to give the CN a description of the channel rate/type on which the initial layer 3 message was received.

4.15 Parameters for Location Request and Location Report procedures

4.15.1 LOCATION REQUEST

Information element	Reference	Type
Message type		M

4.15.2 LOCATION REPORT

Information element	Reference	Type
Message type		M
Location Identifier		M

5 Description of Information Elements

5.1 Message type

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

5.2 Transaction ID

Transaction ID is a unique identifier among all the messages having the same message type and which are sent using the same SCCP connection (SCCP connection oriented service). The identifier must be unique among those messages that are in pending state, i.e. messages that can still be references to in a forthcoming message. Transaction Id for complete-, proceeding-, acknowledge- and confirm-type of messages is the same transaction ID that was used in the message for which the above mentioned type message is related to.

5.3 Bearer ID

This element is used to identify particular bearer for MSC.

5.4 NSAPI

This element is used to identify particular bearer for SGSN.

5.5 Bearer parameters

The purpose of the bearer parameter information element is to indicate all bearer parameters for both directions, e.g. Quality of service (QoS) classes.

5.6 AAL 2 address

To be used for the user plane transport for MSC.

5.7 IP address

To be used for the user plane transport for SGSN.

5.8 Binding ID

This element is used for MSC to associate the bearer ID and the corresponding user plane connection.

5.9 GTP flow label

This element is used for SGSN to associate the NSAPI and the corresponding user plane flow.

5.10 Cause

The cause element is used to indicate the reason for a particular event to have occurred according to the cause code list.

5.11 Priority level and pre-emption indication

Indicates the priority of the request.

5.12 Bearer linking

A group of bearers which must be either all established, or all rejected.

5.13 Location Identifier

Indicates location of the UE.

5.14 Common ID

This ID is common for mobile terminal and is used by the RNC to check if SRB is already existing (from other NE) to the UE when new radio access bearer is in establishment phase.

5.15 IMSI

International Mobile Subscriber Identity, identifies a subscriber.

5.16 TMSI

Temporary Mobile Subscriber Identity, used for security reasons to hide the identity of a subscriber.

~~**1.17UE Location**~~

~~Indicates location of the UE.~~

~~1.18~~5.17 Paging Cause

Tells the cause of paging to the UE.

~~1.19~~5.18 EMLPP Priority

This information element contains the eMLPP priority of the call.

~~1.20~~5.19 Trace Type

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

~~1.21~~5.20 Trigger ID

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

~~1.22~~5.21 Trace Reference

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

~~1.23~~5.22 UE Identity

Indicates the identity of the UE.

~~1.24~~5.23 OMC ID

A variable length element indicating the destination OMC to which trace information is to be sent.

~~1.25~~5.24 Encryption Information

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

~~1.26~~5.25 Cipher Response Mode

This information element is used by the CN to indicate whether the IMEI is to be included in the RRC CIPHERING MODE COMPLETE message to be sent by the UE.

~~1.27~~5.26 Chosen Encryption Algorithm

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

~~1.28~~5.27 CN System Information Bit Strings

The information peaces to be broadcast. The internal structure of these bit strings is not known or analysed by the RNC, and is specified as part of the CN - UE protocols.

~~1.29~~5.28 Broadcast Area

With each bit string, a geographical area where to broadcast it.

~~1.30~~5.29 Categorisation parameters

With each bit string, to be used by the RNC to determine how to schedule the repetition cycle.

~~1.31~~5.30 Direct Transfer PDU

This information element contains the CN – UE or UE – CN message that is transferred without interpretation in the RNC. Typically it contains call control and mobility management messages.

~~1.32~~5.31 Location Information

This information element indicates location of the UE. It is FFS what kind of information the RNC can give and what the CN needs. The location information could be used e.g. for billing or routing purposes.

~~1.33~~5.32 Layer 3 Information

This is a variable length element used to pass radio interface messages from one network entity to another.

~~1.34~~5.33 Chosen Channel (FFS)

This information element contains a description of the channel allocated to the UE.

6 Proposals

It is proposed to remove existing message contents description in section 9.1.1 of [1], except sections 9.1.1.21 through 9.1.1.27 (those sections should be modified just by adding Transaction ID), and replace them with message contents described in section 5 of this document.

It is also proposed to remove all existing descriptions of information elements in section 9.2.2 and replace them with description in section 6 of this document.

7 Reference

[1] 3GPP UMTS 25.413, *UTRAN Iu Interface RANAP Signalling*, v.1.0.1, Source: Editor