

Agenda Item: 10.3
Source: Nokia
Title: **Interaction of Relocation Related and Other RANAP Procedures**
Document for: Decision

1 Introduction

Relocation related procedures are used to transfer the SRNC functionality from one RNC to another. I.e. to change the Lu termination point in UTRAN. Due to this exceptional functionality, some interactions with these and other RANAP procedures have to be defined. In some cases the Source RNC, even still being the Serving RNC, is not able to execute procedures initiated by CN due to ongoing relocation.

This paper introduces mechanisms that are required to be specified to guarantee proper functioning of an multivendor Lu interface in case when continuation of SRNS Relocation and execution other RANAP procedures conflict with each other.

Basic approach in the proposal is, that the RNC shall case by case decide whether a relocation is to be canceled due to initiation of an other RANAP procedure or whether a RANAP procedure is to be rejected due to ongoing relocation. Naturally also CN may suspend non urgent RANAP procedures in case it detects that relocation is ongoing.

2 Additions to RANAP Specifications

2.1 Relocation Preparation procedure

When Relocation Preparation has been initiated by SRNC some procedures triggered by CN or SRNC itself are not allowed to be executed without canceling the relocation. It is here proposed that the source RNC should have the final decision whether the Relocation is to be canceled or the CN initiated procedure would be rejected. This decision could be done e.g. based on the importance of the Relocation procedure.

Following revisioned paragraphs are proposed to be inserted to the Relocation Preparation Procedure:

... Procedure is initiated by the Serving RNC by sending a RELOCATION REQUIRED message to active CN nodes. Timer T(RELOCATION COMMAND) is started, upon transmitting the message. RELOCATION REQUIRED message allows a RNC to request that a relocation is to be carried out for a particular UE, having signalling connection via the serving RNC.

When RELOCATION REQUIRED message is sent, source RNC is not, without canceling the Relocation Preparation, allowed to make any changes or initiate any procedures which would cause the sent information in RELOCATION REQUIRED to become inconsistent to the actual situation in UTRAN.

If a change, that would cause the information sent in RELOCATION REQUIRED to be inconsistent to the actual situation in UTRAN is decided to be done, source RNC has to cancel initiated Relocation Preparation procedure by initiating Relocation Cancel procedure.

Whether the relocation is to be canceled or request from CN is to be rejected is decided by source RNC. In case of rejecting CN originated class 1 type of RANAP procedure (e.g. RAB Assignment

Request) the cause value of unsuccessful response message should be set to "Relocation ongoing". In case of Class 2 type of RANAP procedure the Error Indication procedure should be initialised by RNC.

As a response to the RELOCATION REQUIRED message the CN sends RELOCATION COMMAND to the source RNC. ...

2.2 Error Indication procedure

It is proposed that the usage of Error Indication procedure is expanded also to cover the rejection of Class 2 type of RANAP procedures, which can not be completed due to ongoing Relocation. Typical examples of Class 2 type of procedures are e.g. Location Reporting Control, Trace Invocation and Common ID which would have an affect to the RELOCATION REQUIRED message or DIRECT TRANSFER (DL) which can not always be completed due to urgent need for handover in air interface.

Following additions and modifications to the RANAP Error Indication procedure are proposed:

2.3 Error Indication

4.1.12.3.1 General

The Error Indication procedure is used to carry error messages over the lu Interface. Depending on the case thisThe procedure uses either the connectionless or connection oriented mode of the signalling connection.

2.3.2 CN originated Error Indication

On the PS side, the SGSN may send an Error Indication to the RNC if it receives a G-PDU with an unknown Flow Label. The Cause Value to be used is:

- 'Unknown Flow Label'

For the Cause Value 'Unknown Flow Label', both Binding Identity and Network Layer Address is mandatory.

The Binding Identity, i.e. the Flow Label, and the Network Layer Address used in the Error Indication message shall be fetched from the G-PDU that triggered the procedure.

The signalling flow for the CN originated Error Indication procedure is shown in Figure 1.

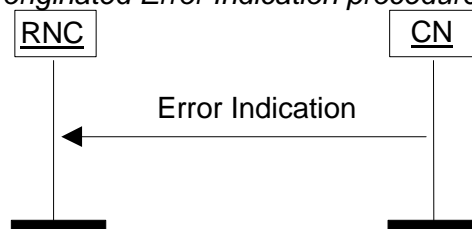


Figure 1. Error Indication, CN originated.

2.3.3 RNC originated Error Indication

The signalling flow for the UTRAN originated Error Indication procedure is shown in .



Figure 2. Error Indication, RNC originated.

Cause value 'Unknown Flow Label'

On the PS side, the RNC may send an Error Indication to the SGSN if it receives a G-PDU with an unknown Flow Label. The Cause Value to be used is:

- 'Unknown Flow Label'

For the Cause Value 'Unknown Flow Label', both Binding Identity and Network Layer Address is mandatory and the message shall be transmitted by utilising connectionless mode of the signalling bearer.-

The Binding Identity, i.e. the Flow Label, and the Network Layer Address used in the Error Indication message shall be fetched from the G-PDU that triggered the procedure.

The signalling flow for the UTRAN originated Error Indication procedure is shown in Figure 32.

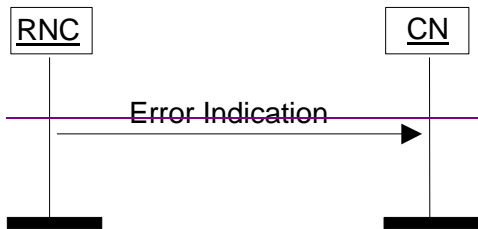


Figure 32. Error Indication, RNC originated.

Cause value 'Relocation Ongoing'

Error Indication shall be initiated by RNC in case RNC is unable to complete a CN initiated Class 2 type RANAP procedure. In this case the RNC shall send ERROR INDICATION message to CN, indicating cause value 'Relocation Ongoing'

For the cause value 'Relocation Ongoing' the type of the failed message and the failed message itself are echoed back to CN in the ERROR INDICATION message. The message is transmitted utilising connection oriented mode of the signalling bearer.

Error Indication procedure shall be initiated by RNC if, after having issued RELOCATION REQUIRED, RNC receives a message belonging to a Class 2 procedure from CN which would have had an influence to the sent RELOCATION REQUIRED message and when RNC does not decide to cancel the Relocation Preparation.

Error Indication shall also be used by RNC in case the Uu interface transmission of NAS information given to UTRAN from CN by Direct Transfer RANAP procedure is for some reason unsuccessful, e.g. due to execution of SRNS Relocation.

3 Proposal

It is proposed that the additions and modifications described in chapter 2 are included into the TS 25.413.