TSGW3#2(99)173

Agenda Item:

Source: **Nokia**

Title: **Updated proposed new presentation for Iu RANAP procedure "Inter RNS hard handover"**

Document for:

_____

Error! No bookmark name given.

Source: Nokia

Updated proposed new presentation for Iu RANAP procedure "Inter RNS hard handover"

1   Introduction

It has been agreed that in RANAP Specification 3GPP S3.13; /1/, the procedure 'Inter RNS hard handover' should be restructured to show the elementary procedures and should also be harmonized with the corresponding procedure in Signalling examples document 3GPP I3.01;/2/. This contribution proposes a new structure for the referred procedure. This is an updated version of Tdoc 99031, which was contributed to RAN WG3 meeting #1, but not discussed due to the lack of time. However, the "Inter RNS hard handover" procedure was updated in the merging process. This contribution refers to the updated procedure.

2   Proposed new presentation for Section 8.2 in 3GPP S3.13 3GPP S3.13; /1/

The proposed modified text for section 8.2 Inter RNS hard handover is as follows:

8.2   Inter RNS hard handover

Inter RNS hard handover is used to relocate the serving RNS functionality from one RNS to an other and to change the radio resources assigned for the corresponding UE by a hard change. This procedure can be used within one UTRAN if the Iur interface can not (or is not desired to) be used for active set management, between two UTRANs or at UTRAN side in handovers between two Radio Access systems (e.g. UMTS to GSM).

Inter RNS hard handover is carried over Iu interface, namely by the RANAP protocol. The required functionality is described below by introducing an example Iu interface RANAP procedure for the purpose.

All RANAP messages concerned with handover are sent using the connection oriented mode of the SCCP.

8.2.1   Hard handover required indication

Procedure is initiated by the Serving RNC by sending a HARD HANDOVER REQUIRED message to active CN nodes. HARD HANDOVER REQUIRED message allows a RNC to request that a handover is to be carried out for a particular UE, having signalling connection via the serving RNC. If the CN node can not realise the hard handover a HARD HANDOVER FAILURE message is returned.

Chapter 9.2.3.1.23 gives the parameters included in the above message (FFS).

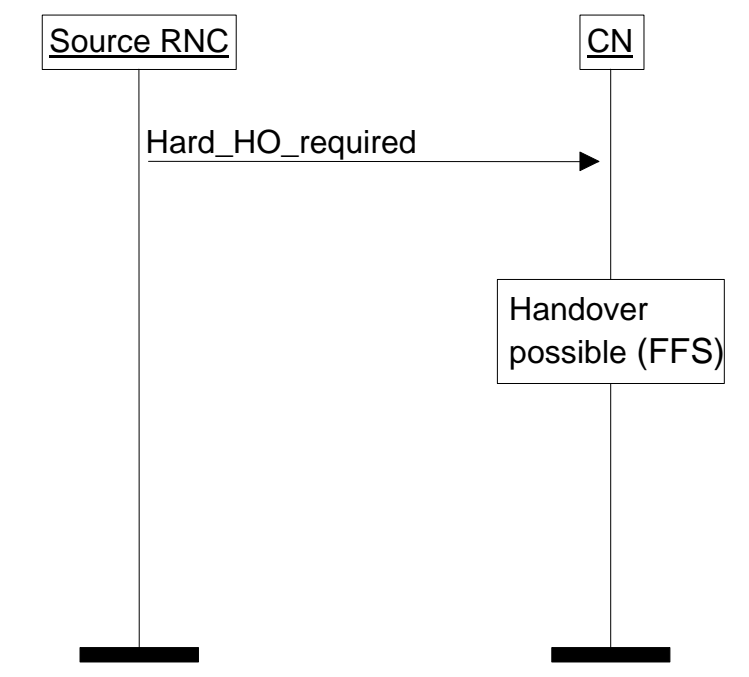The signalling flow for hard handover required indication is shown in Fig. 6.

Figure 6. Hard handover required indication.

The HARD HANDOVER REQUIRED message shall be updated and repeated by the RNC with a periodicity of Txx until:

- A HARD HANDOVER COMMAND message is received or;

- A RESET message is received, or;

- The reason for the original HARD HANDOVER REQUIRED message disappears e.g. the UE transmission improves, or;

- All communication is lost with the UE, and the transaction is abandoned, or;

- The transaction ends, i.e. signalling connection to the CN node is released.

8.2.2   Hard handover resource allocation

TThe CN node sends a HARD HANDOVER REQUEST message to the target RNC (selected by the source RNC and indicated in the HARD HANDOVER REQUIRED message) from which it requires radio resources. This message contains details of the resource(s) required.

Chapter 9.2.3.1.24 gives the parameters included in the above message (FFS).

On receipt of this message the target RNC shall check availability of radio and terrestrial resources.

If a radio resource is available then this will be reflected back to the CN node in a HARD HANDOVER PROCEEDING1REQUEST ACKNOWLEDGE message. This message contains essentially the Binding ID for each Iu leg that were already setup before the HARD HANDOVER REQUEST was received (in the case when RNC has selected to use such Iu connection). This message is transmitted to the CN node, when the target RNC has received and processed HARD HANDOVER REQUEST messages from all active CN nodes.

Chapter 9.2.3.1.25 gives the parameters included in the above message (FFS).

The HARD HANDOVER PROCEEDING1~~REQUEST ACKNOWLEDGE~~ message sent by the target RNC shall contain the radio interface message HANDOVER COMMAND within its "Layer 3 Radio Information" Information Element. This "Layer 3 Radio Information" (which is in fact the RRC-Layer HANDOVER COMMAND) is transferred by the CN node to the source RNC using the RANAP message HARD HANDOVER COMMAND.

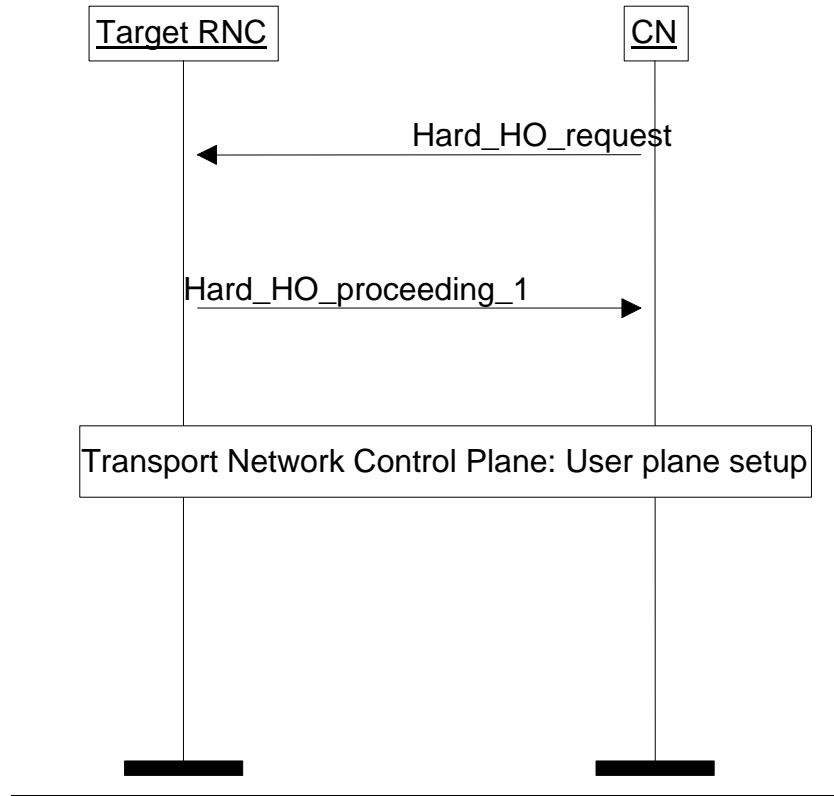Fig. 7 shows the signalling flow for hard handover resource allocation.

Figure 7. Resource allocation for hard handover.

8.2.3   Hard handover execution

At source RNC: The source RNC ~~then~~ sends to the UE over the radio interface the RRC-Layer HANDOVER COMMAND message. Information about the appropriate radio resources and a handover reference number chosen by the target RNC are contained in the HARD HANDOVER COMMAND.

Chapter 9.2.3.1.26 gives the parameters included in the above message (FFS).

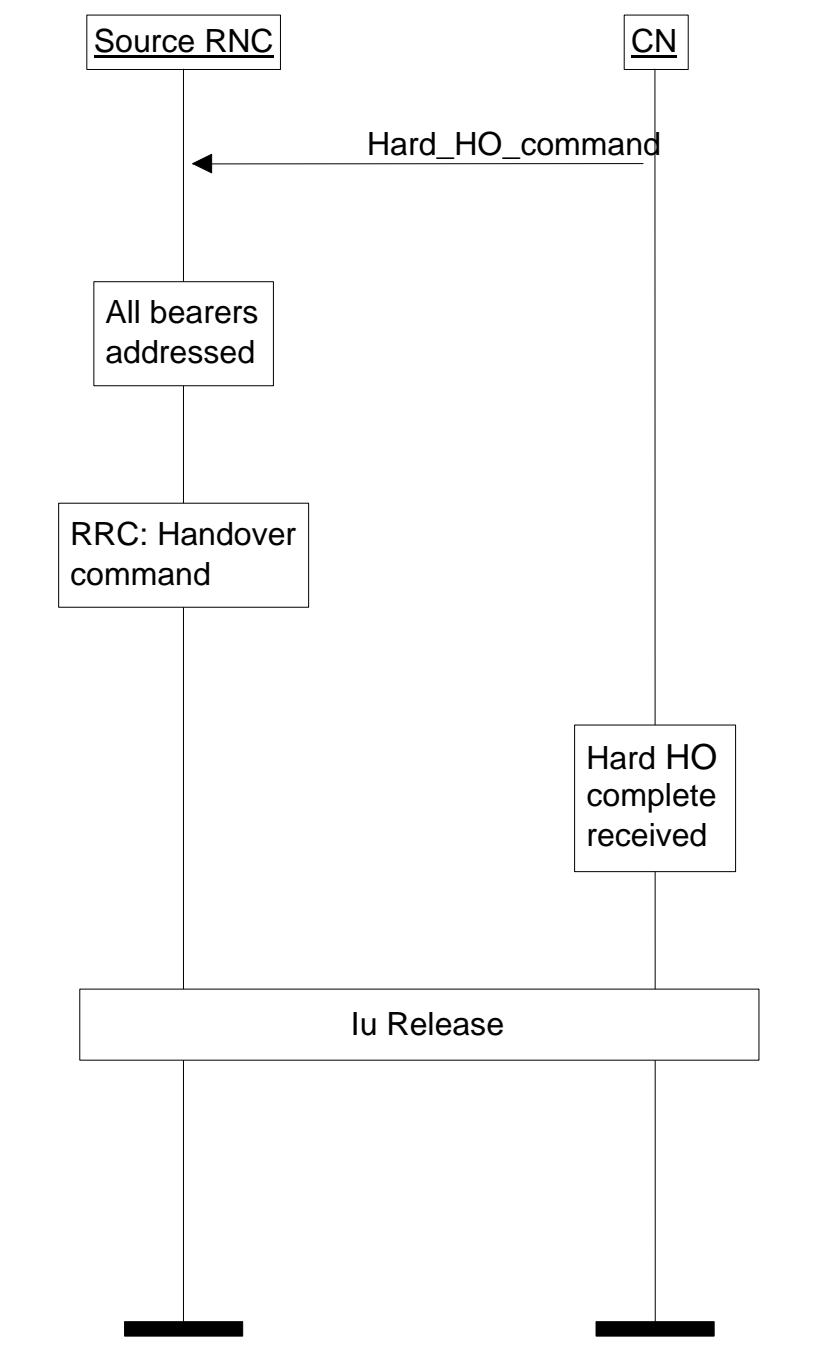The signalling flow between the source RNC and the CN is shown in Fig. 8.

Figure 8. Hard handover execution between source RNC and CN.

At target RNC: The target RNC shall then take all necessary action to allow the UE to access the radio resource(s) that the target RNC has chosen.

When the UE accesses the radio resource(s) of the target RNC, the target RNC shall send a HARD HANDOVER DETECT message to the active CN nodes and start to act as an SRNC.

When the UE is successfully in communication with the target RNC, i.e. the RRC message HANDOVER COMPLETE has been received from the UE, then the target RNC will immediately send a RANAP message HARD HANDOVER COMPLETE to the CN nodes and terminate the procedure.

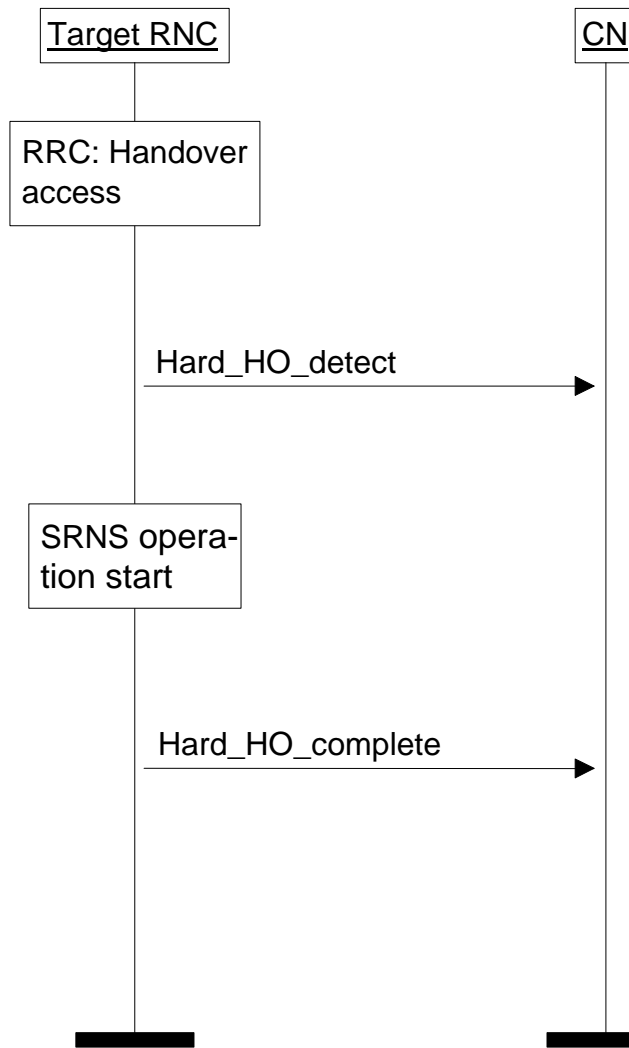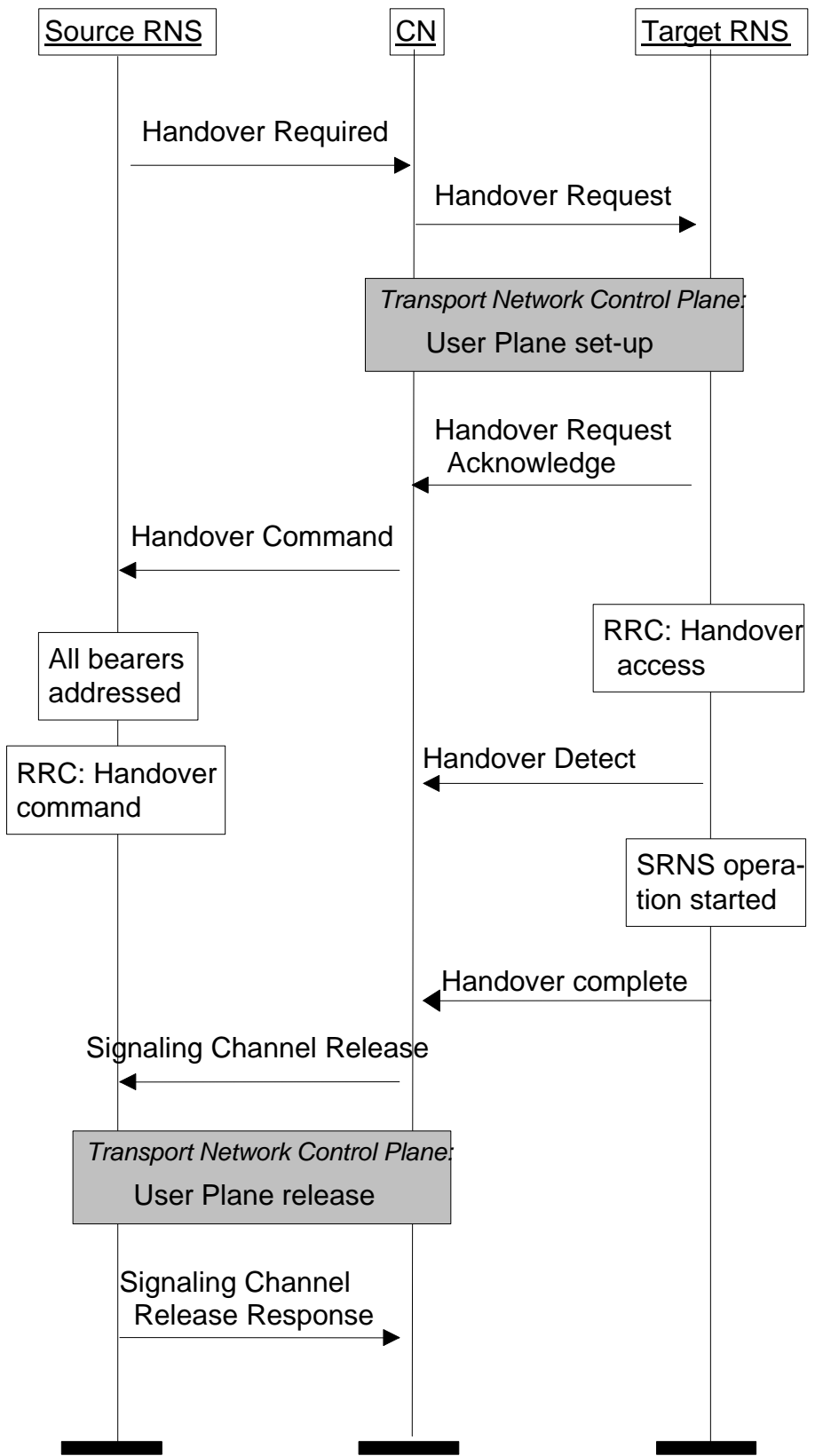The signalling flow between the target RNC and the CN is illustrated in Fig. 9.

Figure 9. Hard handover execution between target RNC and CN.

CN will then release all bearers (Fig. 8) as described in section 8.4 towards the old serving RNS.

~~An example of a corresponding message flow at Iu interface in a successful situation is presented in Figure 2.~~

Figure 2. An example RANAP protocol message flow at Iu interface related to Inter RNS Hard Handover. A successful case.

3   Proposal

It is proposed to replace the existing text in Ref 3GPP S3.13; /1/, Section 8.2 with the text shown in section 2 of this contribution.

4   References

/1/ 3GPP S3.13; RANAP Specification, V 0.0.2

/2/ 3GPP I3.01; RAN Functions, Examples on Signalling Procedures, V 0.0.2