TSG-RAN Working Group 3 (Architecture)
Nynäshamn 15th to 19th March 1999

TSGR3#2(99)201

Agenda Item : 6.2

Source : NTT DoCoMo

Title : RRC Message Transfer on Iur

Document for : Decision

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1. Abstract
This paper contributes to introduce “RRC Message Transfer” on RNSAP. “RRC Message Transfer” message is used to transfer the RRC messages, which are sent/received between Target RNC and UE, on Iur.

2. Discussion
In case of Cell Update, UE will access to target RNC. The target RNC can be the different RNC from SRNC. In case of the target RNC is different from SRNC, the target RNC should inform SRNC that there was an access from UE which message indicates UE request for Cell Update. There are other cases that UE access other RNC than SRNC on RACH such as URA Update and RRC Connection Re-establishment. (It is FFS in TSG RAN WG2 whether RAB Release (DCH→CCH), RAB Reconfiguration (DCH→CCH), Transport CH Reconfiguration (DCH→CCH) and Physical CH Reconfiguration (DCH→CCH) are sent on RACH or not.)

On assumption that there may be a case that CCH user plane exists on Iur, it is natural to assume that SRNC always decides whether SRNC Relocation is needed or not. Therefore Target RNC should not decide whether SRNC Relocation is needed or not. That implies that the message on Iur should not be “SRNC Relocation Required”. It should be only the transfer of the RRC messages. Therefore “RRC Message Transfer” on RNSAP (from target RNC to SRNC) is introduced.

If the RRC message is transferred from UE to RNC on RACH, the response message on FACH should use same MAC header value (FFS: SRNTI+SRNC ID or CN identity or Random Number) on the accessed cell, since RACH/FACH use same MAC header value. There may be a case in RRC Connection Re-establishment that the cell, which the dedicated CH is allocated, is different from the accessed cell. This occurs when UE is near the border of RNS serving areas and requests several candidate cells and there was no radio resource for accessed cell (Figure1). Therefore the response message should be transferred on Iur with “RRC Message Transfer” (from SRNC to target RNC).(arrow(7))

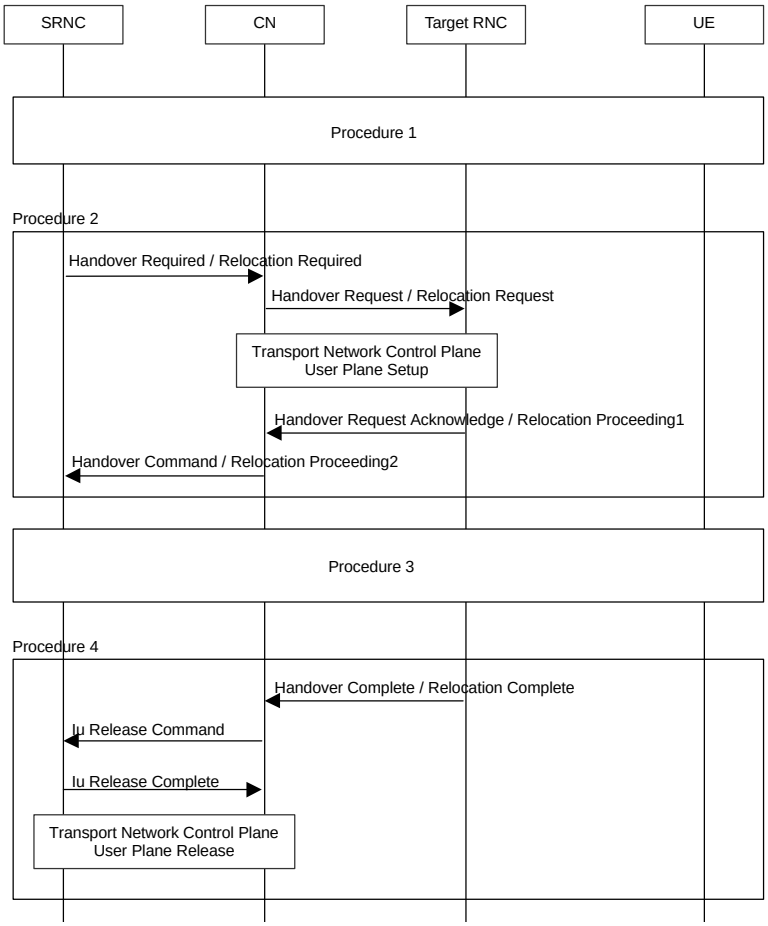


Figure 1

Figure 2

Figure2 shows the case in RRC Connection Re-establishment that the cell, which the dedicated CH is allocated, is same as the accessed cell. NTT DoCoMo proposes to use also “RRC Message Transfer” for arrow (7). The reason for this is based on the assumption that the signalling message between SRNC and UE should be directly transferred

through CRNC.

If there is no CCH control plane exists on Iur, " RRC Message Transfer " should be transferred via CN.

3. Conclusion

This paper contributes to introduce “RRC Message Transfer” on RNSAP. “RRC Message Transfer” message is used to transfer the RRC messages, which are used on RACH/FACH between UE and Target RNC, on Iur. Based on the discussion, NTT DoCoMo will prepare for the changes in the specification.

ANNEX1 (for discussion)

This annex is to clarify the procedure used in SRNC Relocation and Inter-RNS HHO. This annex is written on assumption that on the Iur interface, CCH user plane is accepted as an option. And also it is written on an assumption that Relocation Proceeding1 and 2 are needed.(Both are study items and they depend on the result of discussion in WG3).

A.1 Comparison of Flows

There are several procedures which uses SRNC Relocation / Inter-RNS HHO.
There are cases as shown below.
(1) SRNC Relocation / Inter-RNS HHO with no access to UE.
(2) SRNC Relocation / Inter-RNS HHO with trigger from UE.

Case (1) is executed by SRNC and the timing is decided by SRNC. SRNC can execute this procedure at anytime. Case (2) is executed by SRNC with a triggering from UE. SRNC immediately execute this procedure. In both cases, Iu procedure is same (parameters may differ) as shown in Figure1.

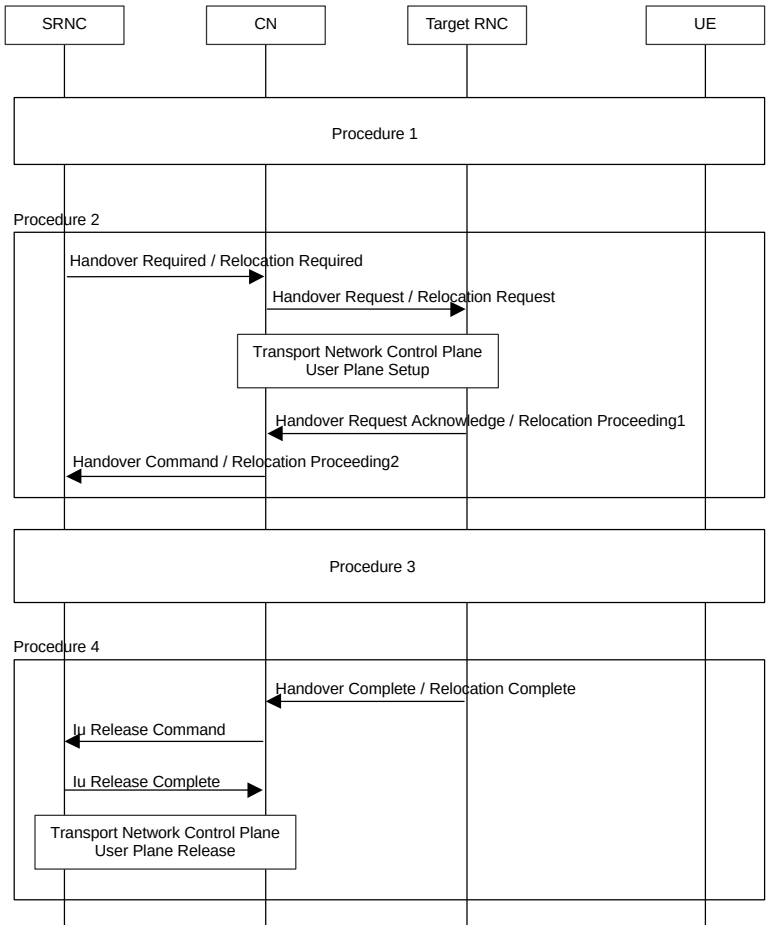
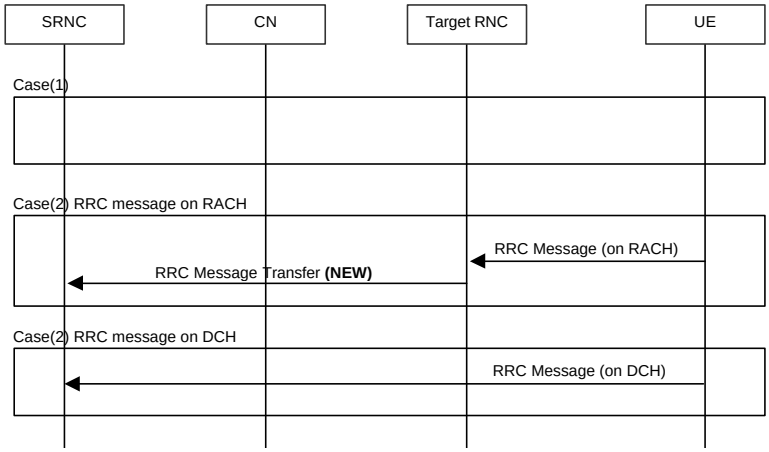


Figure 1 Common Procedure Between SRNC Relocation / Inter-RNS HHO

In Procedure 1, the difference between case (1) and case (2) is shown below.



In **case (1)**, there is no RRC message.

In **case (2) with RRC message on RACH**, the RRC message can be;
- Cell Update
- URA Update
- RRC Connection Re-Establishment Request

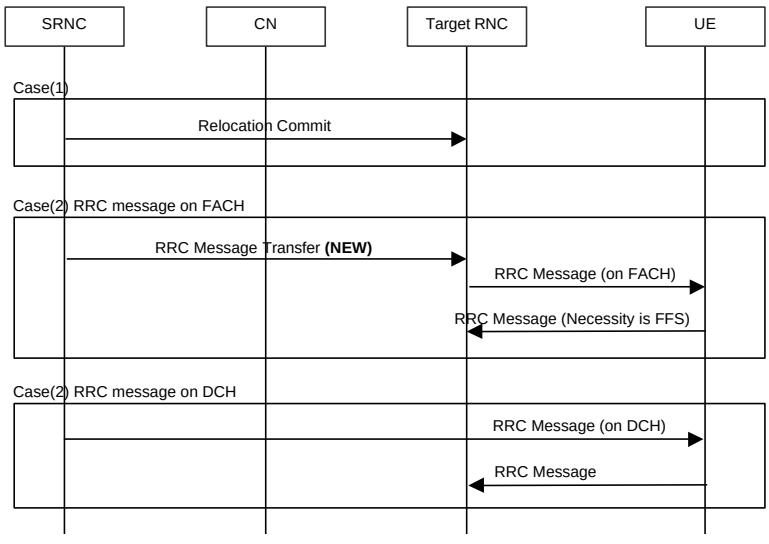
(Message shown below is FFS in WG2.)
- Radio Access Bearer Release Complete (DCH → CCH)
- Radio Access Bearer Reconfiguration Complete (DCH → CCH)
- Transport CH Reconfiguration Complete (DCH → CCH)
- Physical CH Reconfiguration Complete (DCH → CCH)

If there is no Iur CCH control plane, this RRC message should be transferred via CN, which directly transfers to SRNC.**(Needs to be discussed!)**

SRNC receives “RRC message Transfer” RNSAP message as if it is an RRC message. If SRNC decides to execute SRNC relocation, Procedure 2,3,4 are needed. If SRNC decides not to execute in case of CCH user plane exists on Iur interface, only procedure 3(shown later) is needed.

In **case (2) with RRC message on DCH**, the RRC message can be inter-RNS or inter-system HHO request (MEHO) or measurement report (NEHO). SRNC immediately decides to execute SRNC relocation and procedure 2,3,4 are needed.

In Procedure 3, the difference between case (1) and case (2) is shown below.



In **case (1)**, there is no RRC message. Only RNSAP message “Relocation Commit” is needed.

In **case (2) with RRC message on FACH**, the RRC message can be;
- Cell Update Confirm (allocation of new RNC ID and RNTI)
- URA Update Confirm (allocation of new RNC ID and RNTI)
- RRC Connection Re-Establishment (FFS)

If there is no Iur CCH control plane, this RRC message should be transferred via CN, which directly transfers to Target RNC.**(Needs to be discussed!)**
Target RNC receives “RRC Message Transfer” RNSAP message and directly transfers to UE.
UE responds with RRC messages (necessity is FFS in WG2) using new RNTI on MAC header.

In **case (2) with RRC message on DCH**, the RRC message can be;
- Handover Command (Inter-RNS HHO, Inter-system HHO or etc)

UE responds with RRC message (Handover Complete) on DCH using new physical radio resources (e.g. channelization codes).

A.2 In case of CCH User plane exists on Iur Interface

If CCH user plane exists on Iur Interface, the procedure for **case (2) with RRC message on RACH/FACH** will be the flow with combination of procedure 1 and 3 which shown below.