

**Title:** Inter RNS Hard Handover with switching in the CN  
**Source:** InterDigital  
**Agenda Item:** 7.1 (UTRAN functions, 25.931)  
**Document for:** Approval; change of 25.931

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The inter-RNS Hard handover section in 25.931 needs some clarifications for the following reasons

1. The text is not completely in line with the diagrams (editors note in 9.13.2.2.1).
2. The initial statement in section 9.13.2.2 states that two examples of inter RNS hard handover is shown, however only 1 is shown. We believe the case shown with two CN connections is a superset of the case with a single CN node so it is unclear whether it is necessary to show 2 cases.

It is proposed to make the following changes, which we believe either clarify or are editorial, in section 9.13.2.2:

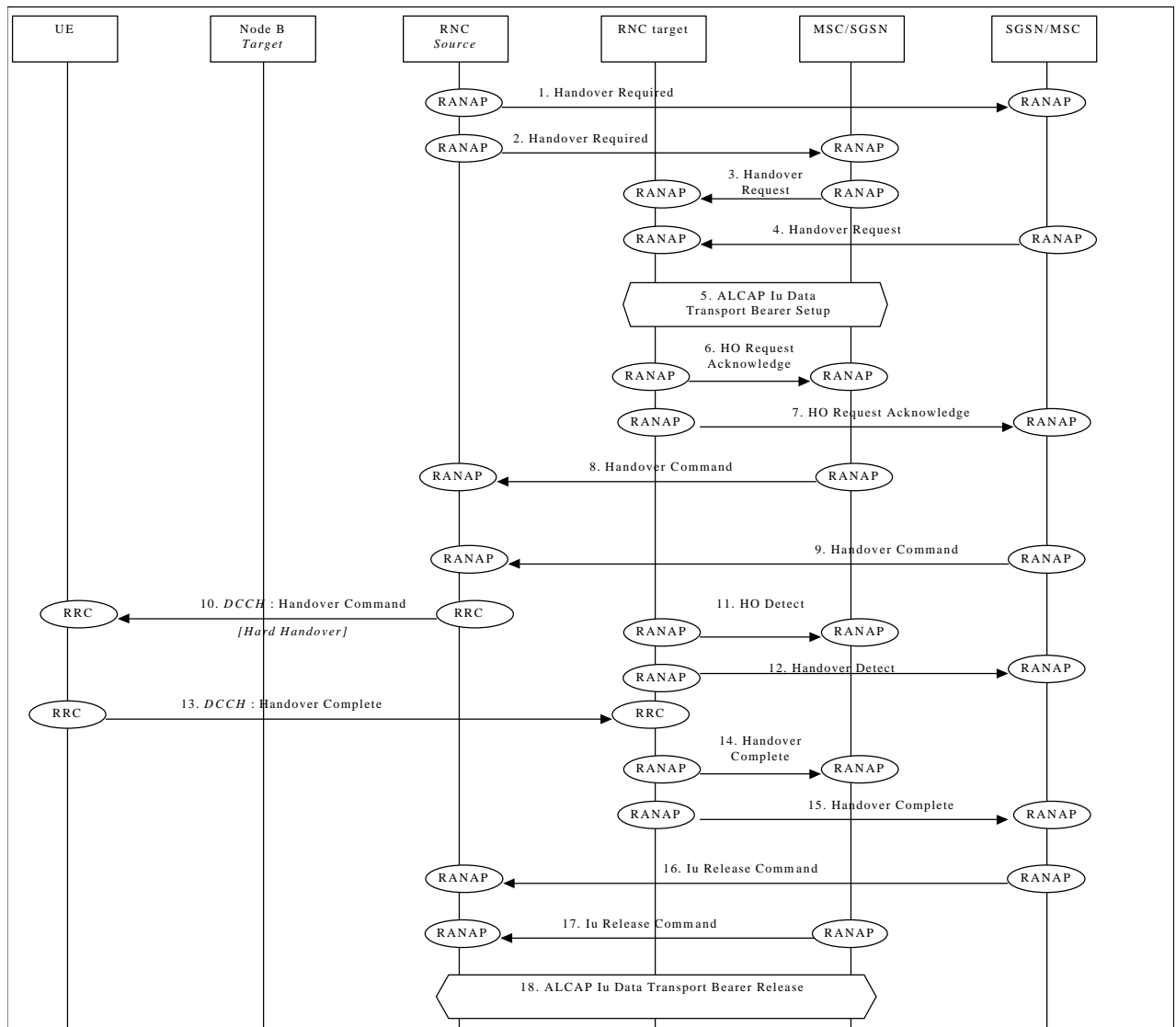
#### 9.13.2.2 Inter-RNS Hard Handover with switching in the CN

This section shows ~~an two~~ examples of Inter-RNS Hard Handover with switch in CN. In ~~the first case it is assumed that the UE is connected to a single CN node, while in the second this~~ case it is assumed that the UE is connected to two CN nodes simultaneously. ~~The case with a single node is a subset of this procedure.~~  
Note that CN scenarios are still under discussion ~~in SMG12~~ within groups outside of RAN.

##### 9.13.2.2.1 Inter-RNS Hard Handover with switching in the CN (UE connected to two CN nodes)

This example shows Inter-RNS Hard Handover with switch in CN, in a situation in which the UE is connected to two CN nodes simultaneously node and will be using one node B directly under the target RNC after the hard handover.

*Editor note: the text needs to be aligned with the current content of the figure.*



**Inter-RNS Hard Handover with switching in the CN (UE connected to two CN nodes)**

Serving RNC makes the decision to perform the Hard Handover via CN. Serving RNC also decides into which RNC (Target RNC) the Serving RNC functionality is to be relocated.

- 1./2. SRNC sends **Handover Required** messages to both CN nodes.  
Parameters: target RNC identifier, Information field transparent to the CN node and to be transmitted to the target RNC.  
Upon reception of **Handover Required** message CN element prepares itself for the switch and may also suspend data traffic between UE and itself for some bearers.
- 3/4. When preparation is completed CN node conveys a **Handover Request** message to the target RNC.  
Parameters: bearer ID's requested to be rerouted towards the CN node, from which the Handover Request originated.  
CN indicates in the message whether it prefers point to multipoint type of connections within CN or hard switch in CN. In this example the latter is assumed.

Target RNC allocates necessary resources within the UTRAN to support the radio links to be used after completion of the Hard Handover procedure. This includes, for example, NBAP radio link setup request, radio link setup response, and ALCAP procedures for the Iub.

- 5./6/7.- Target RNC and CN node establish the new Iu transport bearers for each Radio Access Bearer related to the CN node. When RNC has completed preparation phase, **Handover Request Acknowledge** is sent to

the CN element.

Parameters: transparent field to the CN which is to be transmitted to the Source RNC.

~~7~~/~~8~~/~~9~~. When CN is ready for the change of SRNC, CN node sends a **Handover Command** to the source RNC. Message contains the transparent field provided by Target RNC.  
Parameters: information provided in the Information field from the target RNC.

~~10~~9. SRNC (in sSource RNC) sends a RRC message **Handover Command** (Hard Handover) to the UE.  
Parameters: Handover type.

~~10~~/~~11~~/~~12~~. When target RNC has detected the UE, **Handover Detect** message is sent to the CN nodes. Target RNC switches also the connection towards the new Iu, when UE is detected. After the switch UL traffic from node-B's is routed via the newly established MDC to the new MAC/RLC entities and finally to the correct Iu transport bearer.  
DL data arriving from the new Iu link is routed to newly established RLC entities, to the MAC and to the MD-splitter and Nodes B. This procedure moves the SRNC from the source RNC to the target RNC.

~~13~~2. When the RRC connection is established with the target RNC and necessary radio resources have been allocated the UE sends RRC message **Handover complete** to the new SRNC (target RNC).

~~13~~/~~14~~/~~15~~ After a successful switch and resource allocation at target RNC, RNC sends **Handover Complete** messages to the involved CN nodes.

At any phase, before the **Handover Complete** message is sent, the old communication link between the CN and UE is all the time existing and working and the procedure execution can be stopped and original configuration easily restored. If any such unexpected thing occurs a **Handover Failure** message may be sent instead of any message numbered 3-10 and 13-14 described in this above.

~~15~~/~~16~~/~~17~~/~~18~~. The CN nodes initiates the release of the Iu connections to the source RNC by sending RANAP message **Iu Release Command**.

Upon reception of the release requests from the CN nodes the old SRNC executes all necessary procedures to release all visible UTRAN resources that were related to the RRC connection in question. This includes, for example, NBAP radio link deletion request, radio link deletion response, and ALCAP procedures for the Iub.