Agenda Item: 8.2

Source: Nokia

Title: **UTRAN Signalling Procedure: RAB Establishment (DCH to DCH) – Unsynchronised**

**Document for:**

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1   Introduction

This contribution proposes an UTRAN signalling for the establishment of a RAB when the UE in DCH state. The setup is *unsynchronised*, i.e. without the need to synchronise the switch time in all the Node Bs, the UE and the SRNC. This is can be done when the new TFCs are added and the already existing one maintain their TFCI values. In such case the Node Bs can be informed about the new configuration before that it is used by MAC entities in UE and SRNC.

This paper has been already submitted in last SMG2-UMTS ARC EG meeting. In addition to the already existing text, it shall be noted that:

• Interlayer procedures for unsynchronised RAB setup/release and reconfiguration have been approved and included in Ref./2/. When they are used, the NBAP/RNSAP RADIO LINK RECONFIGURATION COMMAND is useless.
• Unsynchronised RL setup/release/reconfiguration does not require the SRNC to co-ordinate the change between branches of the connections by setting the switching. This less complex solution saves processing and interface signalling load, and sensibly reduces the delay of the operation.
• Use of synchronised or unsynchronised procedures affects only the UTRAN interfaces, and do not have impact on the air interface protocols.
• SRNC selects if to perform unsynchronised or synchronised switching. In the proposal this is indicated by one parameter in the RL_RECONFIGURATION_REQUEST message, but another solution is to change the messages types and names.

2   RAB Establishment (DCH to DCH) - Unsynchronised

This example shows an establishment of a radio access bearer on a dedicated channel (DCH) when the RRC connection already uses a dedicated channel (DCH). The UE communicates via two Nodes B. One Node B is controlled by SRNC, one Node B is controlled by DRNC. The reconfiguration time does not require to be synchronised among Node-Bs, SRNC and UE.
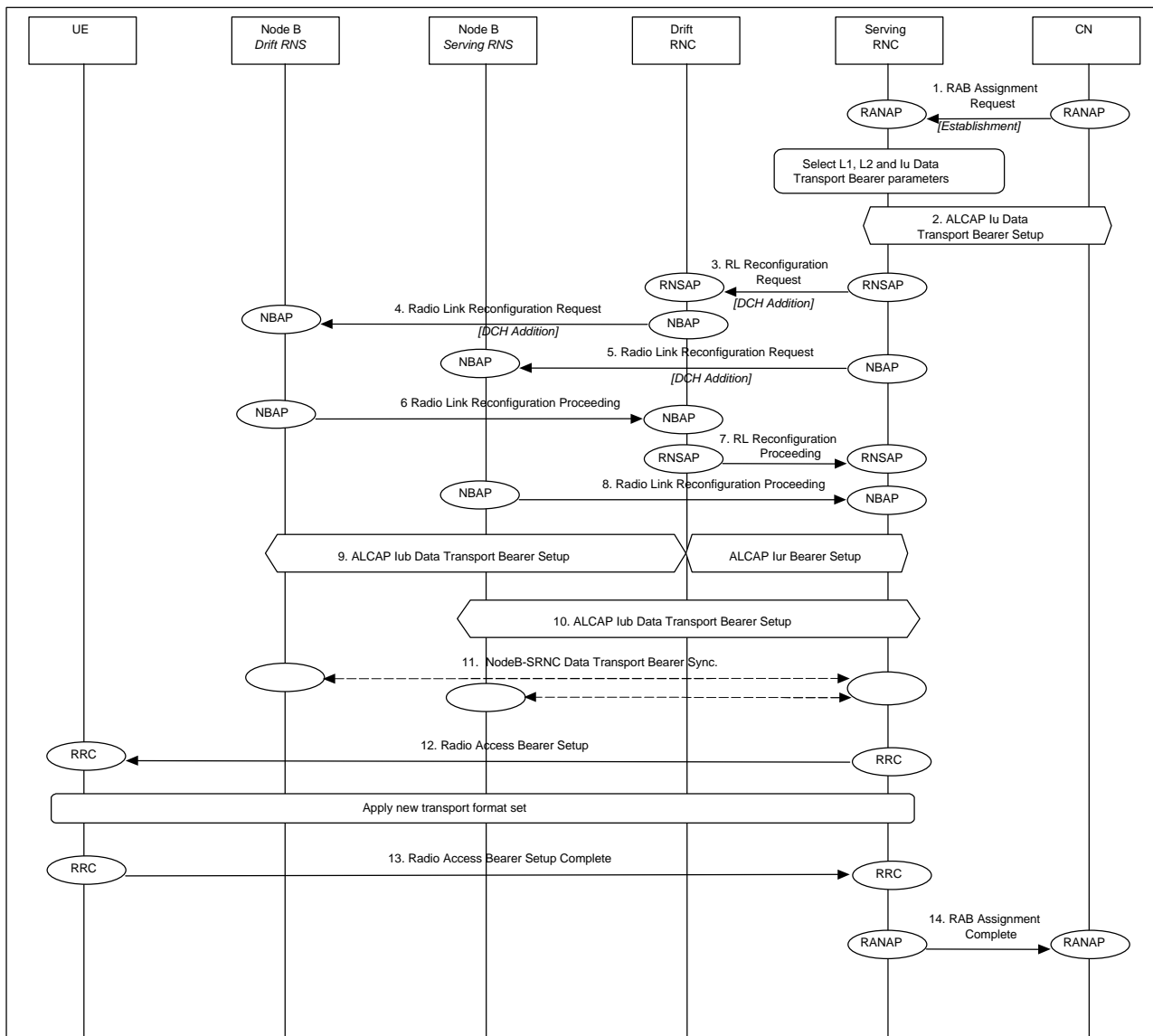
Figure 1: Radio Access Bearer Establishment - DCH - DCH Establishment - Unsynchronised

1. CN initiates establishment of the radio access bearer with RANAP Radio Access Bearer Assignment Request message.
   Parameters: RAB QoS parameters
2. SRNC initiates set-up of Iu Data Transport bearer using ALCAP protocol. This request contains the AAL2 Binding Identity to bind the Iu Data Transport Bearer to the Radio Access Bearer.
3. SRNC decided that there are no need for a synchronous RL reconfiguration, and requests DRNC to setup a new DCH. It include in the message that the modification shall be done immediately without waiting for the command message.
   Parameters: Bearer ID, Mode= Unsynchronised, Transport Format Set, Transport Format Combination Set, Power control information
4. DRNC requests its Node B to establish of a new DCH in the existing Radio Link.
   Parameters: Bearer ID, Mode= Unsynchronised, Transport Format Set, Transport Format Combination Set, Power control information.
5. SRNC requests its Node B setup a new DCH in the existing Radio Link.
   Parameters: Bearer ID, Mode= Unsynchronised, Transport Format Set, Transport Format Combination Set, Power control information
6. Node B allocates resources and notifies DRNC that the setup is done.
   Parameters: Transport layer addressing information (AAL2 address, AAL2 Binding Id) for Iub Data Transport Bearer.

7. *DRNC notifies SRNC that the setup is done.*
   Parameters: Transport layer addressing information (AAL2 address, AAL2 Binding Id) for Iub Data Transport Bearer.
8. *Node B allocates resources and notifies SRNC that the setup is done.*
   Parameters: Transport layer addressing information (AAL2 address, AAL2 Binding Id) for Iub Data Transport Bearer.
9. SRNC initiates setup of Iur/Iub Data Transport Bearer using ALCAP protocol. This request contains the AAL2 Binding Identity to bind the Iur/Iub Data Transport Bearer to DCH. The setup of the Iub link in the drift RNC may occur before step 7 (and be the triggering cause of message 7) – FFS.
10. SRNC initiates setup of Iub Data Transport Bearer using ALCAP protocol. This request contains the AAL2 Binding Identity to bind the Iub Data Transport Bearer to DCH.
11. The Nodes B and SRNC establish frame synchronism for the Iub and Iur Data Transport Bearer.
12. *RRC message Radio Access Bearer Setup is sent by SRNC to UE.*
    Parameters: Transport Format Set, Transport Format Combination Set.
13. UE sends RRC message Radio Access Bearer Setup Complete to SRNC.
14. SRNC sends RANAP message Radio Access Bearer Assignment Complete to CN.
    Parameters: Binding ID

3   Proposal

It is proposed that chapter 2 is included in a new chapter *7.2.6.2 DCH – DCH Establishment – Unsynchronised*, in Ref. /1/

As consequence the word *'Synchronised'* shall be added in the heading of the chapter 7.2.6.1.

4   References

/1/ SMG2 UMTS-ARC *UMTS ZZ.02 - UTRAN Functions, Example on Signalling Procedures v.0.1.0*, from Editor (CSELT)
/2/ SMG2 UMTS-L23 *UMTS YY.03 - Description of UE states and procedures in connected mode v.0.3.0*