TSG-RAN Meeting #10
Bangkok, Thailand, 6 - 8 December 2000

TSGRP#10(00)0633

Title: **Agreed CRs to TS 25.931**

Source: **TSG-RAN WG3**

Agenda item: **5.3.3**

Tdoc_Num	Specification	CR_Num	Revision_Nu	CR_Subject	CR_Categor	WG_Status	Cur_Ver_Nu	New_Ver_Nu
R3-002494	25.931	004		Editorial correction to 25.931	D	agreed	3.1.0	3.4.0

3GPP TSG-RAN-WG3 meeting #16
Windsor, UK, 16th-20th October, 2000

Document R3-002494
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.931	CR	004	Current Version:	3.1.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	RAN#10	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [ ] UTRAN / Radio [X] Core Network [ ]

Source: R-WG3 **Date:** 2000-10-09

Subject: Corrections to some editorial mistakes present in the spec

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	
A	Corresponds to a correction in an earlier release	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	X

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

Reason for change:

Minor Editorial mistakes found in

- Q.AAL2 (Q.2361.1) at step 10 of section 7.8.1 must be rewritten as Q.AAL2 (Q.2630.1)
- Section numbers 7.14.1 are duplicated at the corresponding section titles and in table of contents. Updated to 7.14.1 and 7.14.2.
- Caption number inserted on picture in 7.17
- In Section 7.18.2 and section 7.18.3, the figures do not have a figure title, then a caption has been inserted
- Rapporteur information updated

Clauses affected: Table of Contents, 7.8.1, 7.14.1, 7.14.2, 7.17, 7.18.2, 7.18.3, Annex A

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3GPP TR 25.931 V3.1.0 (2000-09)

Technical Report

3rd Generation Partnership Project;
Technical Specification Group RAN;
UTRAN Functions, Examples on Signalling Procedures
(Release 1999)

Keywords

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Contents

7.8 Radio Access Bearer Modification

The following examples show modification of a radio access bearer established either on a dedicated channel (DCH) or on a common transport channel (RACH/FACH).The procedure starts from a radio access bearer assignment because does not exist a special message to modify a radio access bearer, instead an “assignment” message is used.

7.8.1 DCCH on DCH - Synchronised

This example shows modification of a radio access bearer established on a dedicated channel (DCH) with UE in macrodiversity between two RNCs. A NSAP synchronised procedure is used and a successful case is shown. For an unsuccessful case it’s important to note that a failure message can be sent in any point of the Message Sequence Chart (MSC); in particular could be in RRC reconfiguration response (# 16).

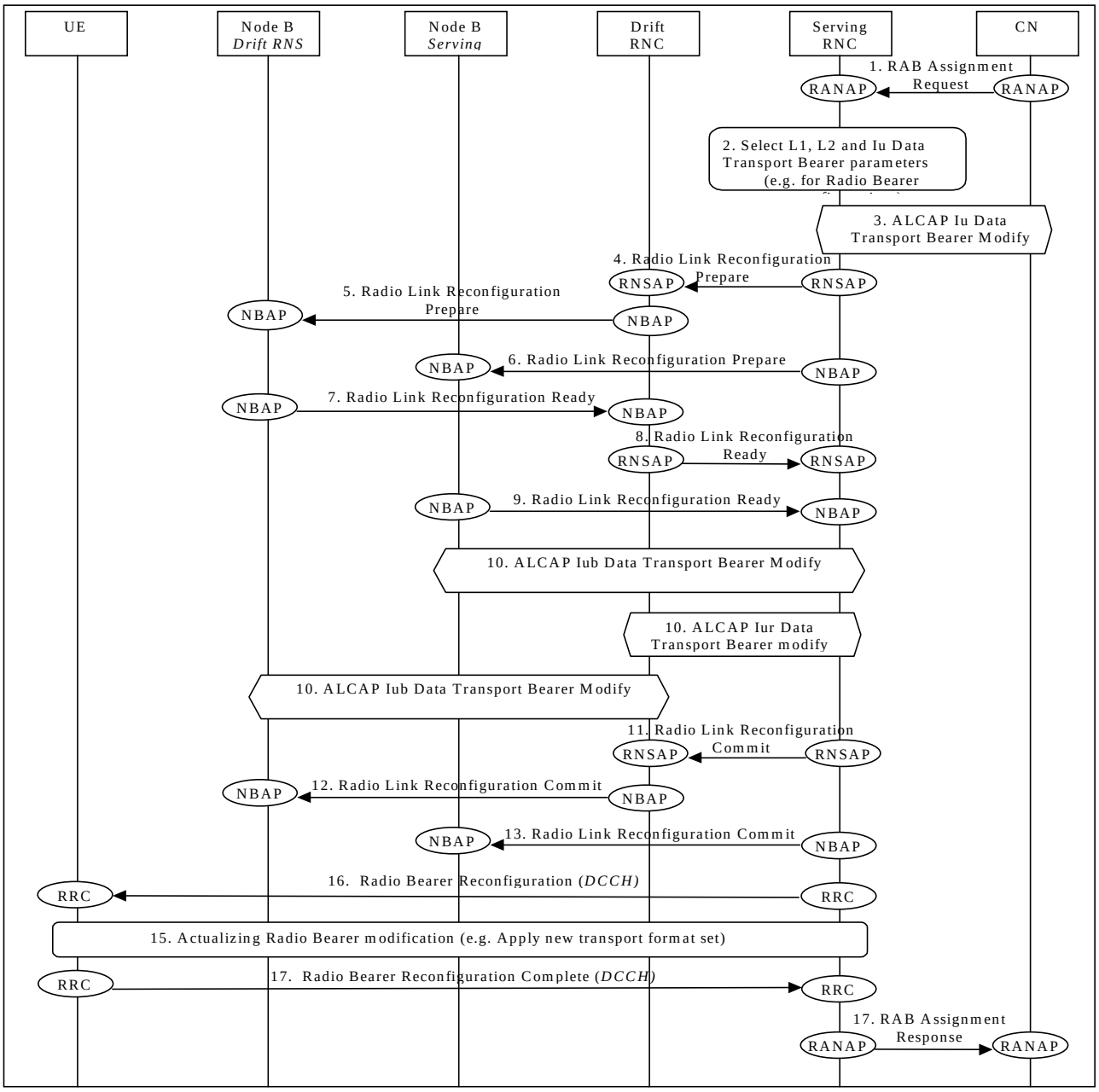

Figure 20: Radio Access Bearer Modification - DCH Modification - Synchronised

1. CN initiates modification of the radio access bearer with RANAP message **Radio Access Bearer Assignment Request.**
   Parameters: parameters to be modified at lower level e.g. Maximum Bit Rate.
2. Interworking functions. SRNC chooses which parameters (lower level) ought to be modified and what kind of procedure has to start up (i.e Radio Bearer Reconfiguration for RRC).
3. SRNC starts an Iu Data Transport Bearer Modification between the CN and the SRNC using the ALCAP protocol with AAL2 bindings carried by radio access bearer assignment message (this step is not required towards PS domain). This has to be done before Radio Reconfiguration itself because the transport channel must be ready when the radio channel will be ready.
4. SRNC requests DRNC to prepare modification of DCH carrying the radio access bearer (**Radio Link Reconfiguration Prepare**).
   Parameters: Transport Format Combination Set, UL scrambling code, etc.
5. DRNC requests its Node B to prepare modification of DCH related to the radio access bearer (**Radio Link Reconfiguration Prepare**).
6. SRNC requests its Node B to prepare modification of DCH carrying the radio access bearer (**Radio Link Reconfiguration Prepare**).
   Parameters: Transport Format Combination Set, UL scrambling code (FDD only), Time Slots (TDD only), User Codes (TDD only).
7. Node B (drift) notifies DRNC that modification preparation is ready (**Radio Link Reconfiguration Ready**).
8. DRNC notifies SRNC that modification preparation is ready (**Radio Link Reconfiguration ready**).
9. Node B (serving) notifies SRNC that modification preparation is ready (**Radio Link Reconfiguration Ready**).
   Note: here a **Radio Link Reconfiguration Failure** could occur.
10. SRNC initiates modify of Iub (Serving RNS) Data Transport bearer. The same does DRNC with its own Iub. SRNC initiates modify of Iur (Serving RNS) Data Transport bearer. In the case that ALCAP is implemented by Q.AAL2 (Q.2360~~1~~.1) it implies the release of the existing bearer and the establishment of a new one.
11. RNSAP message **Radio Link Reconfiguration Commit** is sent from SRNC to DRNC.
12. NBAP message **Radio Link Reconfiguration Commit** is sent from DRNC to Node B (drift).
13. NBAP message **Radio Link Reconfiguration Commit** is sent from SRNC to Node B (serving).
14. RRC message **Radio Bearer Reconfiguration** is sent by controlling RNC (here SRNC) to UE.
15. Both UE and Nodes B actualise modification of DCH (i.e. applying a new transport format).
16. UE sends RRC message **Radio Bearer Reconfiguration Complete** to SRNC.
17. SRNC acknowledges the modification of radio access bearer (**Radio Access Bearer Assignment Response**) towards CN.

A radio access bearer modification procedure (via radio access bearer assignment message) is shown with mapping to Radio Bearer reconfiguration. Note that this is not possible if we want to change what transport channel or logical channel you use, because RB reconfiguration does not permit a change in type of channel (see [8]).

7.14 Transport Channel Reconfiguration(DCH to DCH)

7.14.1 Synchronised Transport Channel Reconfiguration

The procedure can be applied when the reconfiguration time requires being synchronised among Node-Bs, SRNC and UE.

Figure 41: Synchronised Transport Channel Reconfiguration

1. SRNC decided that there is a need for a synchronous Transport Channel Reconfiguration and requests DRNC to prepare reconfiguration of DCH **Radio Link Reconfiguration Prepare**).
   Parameters: Transport Format Set, Transport Format Combination Set, Power control information, Time Slots (TDD only), User Codes (TDD only).
2. DRNC requests its Node B to prepare reconfiguration of DCH to carry the radio access bearer (**Radio Link Reconfiguration Prepare**).
   Parameters: Transport Format Set, Transport Format Combination Set, Power control information Time Slots (TDD only), User Codes (TDD only).
3. SRNC requests its Node B to prepare reconfiguration of DCH (**Radio Link Reconfiguration Prepare**).
   Parameters: Transport Format Set, Transport Format Combination Set, Power control information, Time Slots (TDD only), User Codes (TDD only).
4. Node B allocates resources and notifies DRNC that the reconfiguration is ready (**Radio Link Reconfiguration Ready**).
   Parameters: Transport layer addressing information (AAL2 address, AAL2 Binding Id) for Iub Data Transport Bearer.
5. DRNC notifies SRNC that the reconfiguration is ready (**Radio Link Reconfiguration Ready**).
   Parameters: Transport layer addressing information (AAL2 address, AAL2 Binding Id) for Iur Data Transport Bearer.

6. Node B allocates resources and notifies SRNC that the reconfiguration is ready (**Radio Link Reconfiguration Ready**).
   Parameters: Transport layer addressing information (AAL2 address, AAL2 Binding Id) for Iub Data Transport Bearer.
7. SRNC initiates (if needed) establishment of new Iur/Iub Data Transport Bearers using ALCAP protocol. This request contains the AAL2 Binding Identity to bind the Iur/Iub Data Transport Bearer to DCH.
8. SRNC initiates (if needed) establishment of new Iub Data Transport Bearers using ALCAP protocol. This request contains the AAL2 Binding Identity to bind the Iub Data Transport Bearer to DCH.
9. RNSAP message **Radio Link Reconfiguration Commit** is sent from SRNC to DRNC.

Parameters: CFN.

10. NBAP message **Radio Link Reconfiguration Commit** is sent from DRNC to Node B.

Parameters: CFN.

11. NBAP message **Radio Link Reconfiguration Commit** is sent from SRNC to Node B.

Parameters: CFN.

12. RRC message **Transport Channel Reconfiguration** is sent by SRNC to UE.
13. UE sends RRC message **Transport Channel Reconfiguration Complete** to SRNC.
14. Not used resources in DRNC and Node B (Drift RNS) are released. DRNC initiates release of Iur and Iub (Drift RNS) Data Transport bearer using ALCAP protocol.
15. Not used resources in SRNC and Node B (Serving RNS) are released. SRNC initiates release of Iub (Serving RNS) Data Transport bearer using ALCAP protocol.

7.14.21 Unsynchronised Transport Channel Reconfiguration

The procedure can be applied when the reconfiguration time does not require being synchronised among Node-Bs, SRNC and UE.

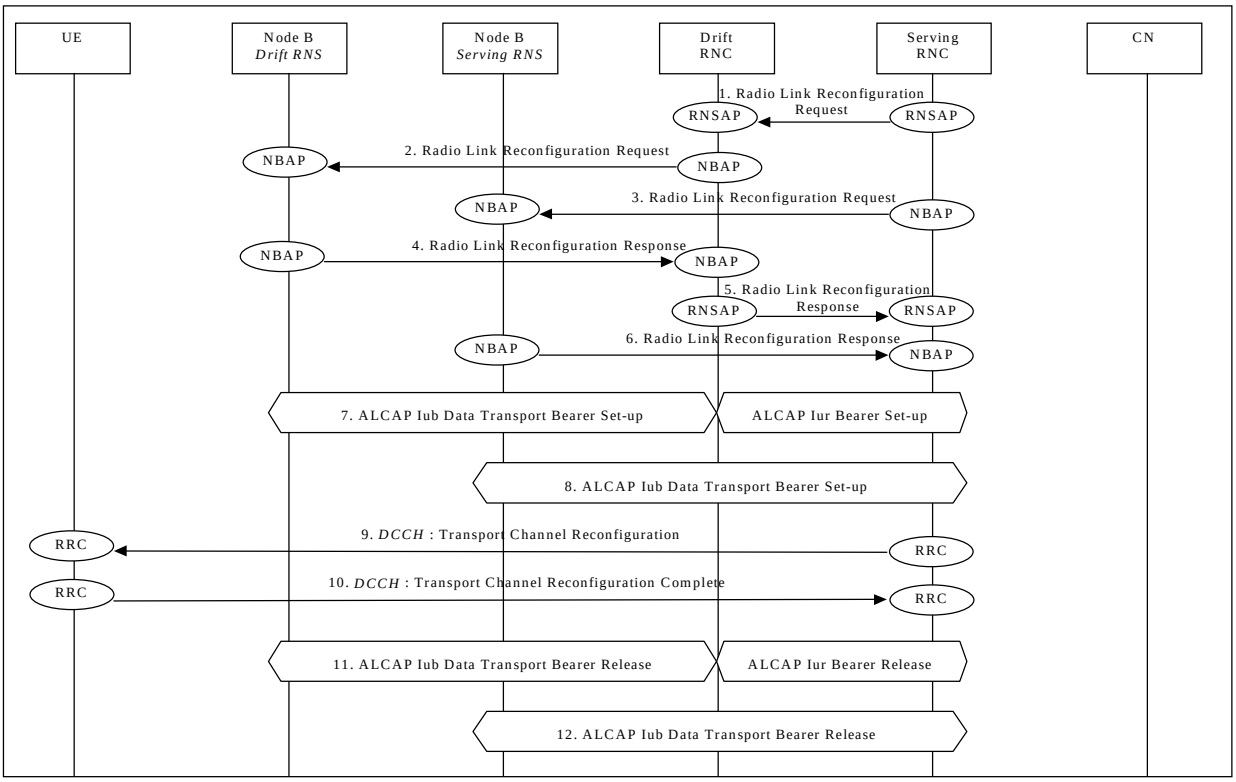

Figure 42: Unsynchronised Transport Channel Reconfiguration

1. SRNC decided that there are no need for a synchronised Transport Channel Reconfiguration, and requests DRNC to reconfigure the DCH. It includes in the message **Radio Link Reconfiguration Request** that the modification shall be done immediately without waiting for the commit message.
   Parameters: Transport Format Set, Transport Format Combination Set, Power control information, Time Slots (TDD only), User Codes (TDD only).

2. DRNC requests its Node B to reconfigure the DCH in the existing Radio Link (**Radio Link Reconfiguration Request**).
   Parameters: Transport Format Set, Transport Format Combination Set, Power control information, Time Slots (TDD only), User Codes (TDD only).
3. SRNC requests its Node B to reconfigure the DCH in the existing Radio Link (**Radio Link Reconfiguration Request**).
   Parameters: Transport Format Set, Transport Format Combination Set, Power control information, Time Slots (TDD only), User Codes (TDD only).
4. Node B of the DRNC allocates resources and notifies DRNC that the reconfiguration is done (**Radio Link Reconfiguration Response**).
   Parameters: Transport layer addressing information (AAL2 address, AAL2 Binding Id) for Iub Data Transport Bearer.
5. DRNC notifies SRNC that the reconfiguration is done (**Radio Link Reconfiguration Response**).
   Parameters: Transport layer addressing information (AAL2 address, AAL2 Binding Id) for Iur Data Transport Bearer.
6. Node B of the SRNC allocates resources and notifies DRNC that the reconfiguration is done (**Radio Link Reconfiguration Response**).
   Parameters: Transport layer addressing information (AAL2 address, AAL2 Binding Id) for Iub Data Transport Bearer.
7. SRNC initiates (if needed) establishment of new Iur/Iub Data Transport Bearers using ALCAP protocol. This request contains the AAL2 Binding Identity to bind the Iur/Iub Data Transport Bearer to DCH.
8. SRNC initiates (if needed) establishment of new Iub Data Transport Bearers using ALCAP protocol. This request contains the AAL2 Binding Identity to bind the Iub Data Transport Bearer to DCH.
9. RRC message **Transport Channel Reconfiguration** is sent by SRNC to UE.
10. UE sends RRC message **Transport Channel Reconfiguration Complete** to SRNC.
11. Not used resources in DRNC and Node B (Drift RNS) are released. DRNC initiates release of Iur and Iub (Drift RNS) Data Transport bearer using ALCAP protocol
12. Not used resources in SRNC and Node B (Serving RNS) are released. SRNC initiates release of Iub (Serving RNS) Data Transport bearer using ALCAP protocol.

7.17 USCH/DSCH Configuration and Capacity Allocation [TDD]

This subclause shows an example of USCH/DSCH configuration and capacity allocation.

It is assumed that no RL has been already established for the considered RRC connection on the serving cell (i.e. the UE is in cell_FACH state without USCH/DSCH) and that only standalone USCH/DSCH are going to be configured. In case the UE is in cell_DCH state or in cell_FACH state with USCH/DSCH, the Radio Link Reconfiguration procedure is used in steps 1-4-5-6 instead of the Radio Link Setup procedure.

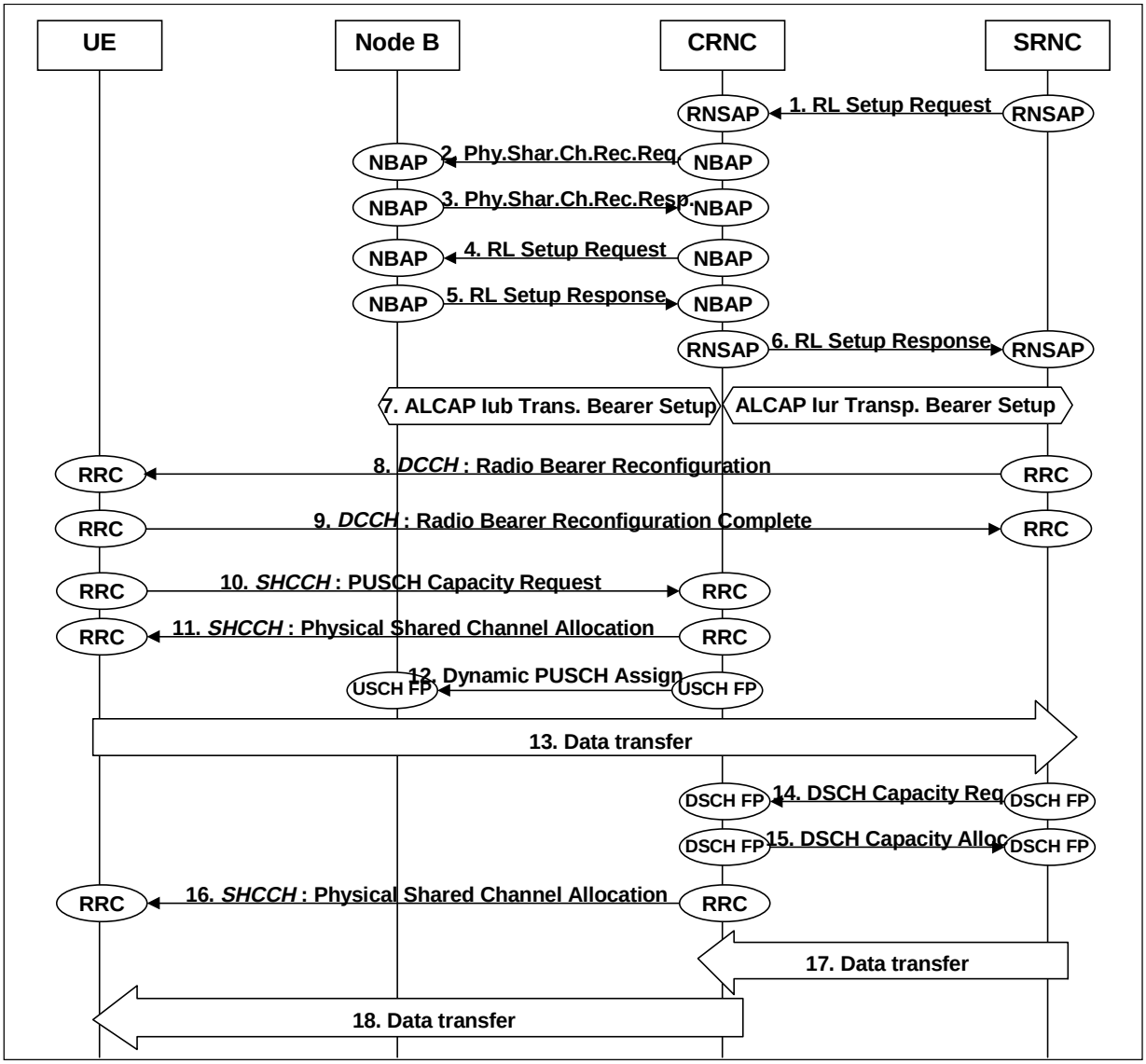

Figure 45A USCH/DSCH Configuration and Capacity Allocation

1. In case no RL has already been established on the RNC controlling the serving cell, the SRNC sends a Radio Link Setup Request message to the target RNC.
   Parameters: target RNC identifier, s-RNTI, Cell id, Transport Format Set (for DSCHs and USCHs), Transport Format Combination Set.
2. If necessary, the CRNC sends to the Node B a Physical Shared Channel Reconfiguration Request message in order to add, modify or delete any PDSCH Sets and PUSCH Sets in the Common Transport Channel data base.
   Parameters: PDSCH Info (to add, modify or delete), PUSCH Info (to add, modify or delete).
3. The Node B updates the PDSCH and PUSCH Sets in the Common Transport Channel data base and makes them available to all the current and future DSCH and USCH transport channels. Then it responds with Physical Shared Channel Reconfiguration Response message.

4. The RNC sends the NBAP message Radio Link Setup Request to the target Node-B.
   Parameters: Cell id, Transport Format Set (for DSCHs and USCHs), Transport Format Combination Set, Power control information, etc.
5. Node B configures resources for USCHs and DSCHs and responds with NBAP message Radio Link Setup Response.
   Parameters: Signaling link termination, Transport layer addressing information for the Iub Data Transport Bearer.
6. When the Target RNC has completed preparation phase, Radio Link Setup Response is sent to the SRNC.
7. Target RNC initiates set-up of Iub Data Transport bearer using ALCAP protocol while the SRNC initiates set-up of Iur Data Transport bearer. These requests contain the AAL2 Binding Identity to bind the Iub/Iur Data Transport Bearers to the DSCHs/USCHs. The request for set-up of Iub Data Transport bearer is acknowledged by Node B, while the request for set-up of Iur Data Transport bearer is acknowledged by Target RNC.
8. The SRNC sends a Radio Bearer Reconfiguration message to establish the requested USCHs and DSCHs.
   Parameters: Radio Bearer information.
9. The UE replies with a Radio Bearer Reconfiguration Complete message.
10. As soon as the RRC in the UE detects the necessity to sends UL data on one USCH, it sends a PUSCH Capacity Request message to obtain allocation of PUSCH resources from the CRNC.
    Parameters: C-RNTI, Radio Bearer ID, RLC buffer info.
11. The CRNC determines which PUSCH Set to allocate to the USCH and sends a Physical Shared Channel Allocation message to the UE.
    Parameters: C-RNTI, Allocation Period info (Activation CFN, Duration), PUSCH info.
12. The CRNC signals the allocation of PUSCH resources for a given UE to the Node B by means of a Dynamic PUSCH Assignment control frame.
    Parameters: PUSCH Set Id, Activation CFN, Duration.
13. At the scheduled CFN the UE may start transmitting UL data on the USCH for the assigned allocation period. UL data are forwarded by the CRNC to the SRNC.
14. As soon as the SRNC detects the necessity to sends DL data on one DSCH, it sends a DSCH Capacity Request control frame to the CRNC.
    Parameters: Common Transport Channel Priority Indicator, User buffer size.
15. The CRNC determines the amount of data (credits) that can be transmitted on the DSCH and reports this information back to the SRNC by means of DSCH Capacity Allocation message.
    Parameters: Common Transport Channel Priority Indicator, Max MACc-sh SDU Length, Credits, Interval, Repetition Period.
16. The CRNC determines which PDSCH Set to allocate to the DSCH and sends a Physical Shared Channel Allocation message to the UE.
    Parameters: C-RNTI, Allocation Period info (Activation CFN, Duration), PDSCH info.
17. The SRNC starts sending DL data to the CRNC.
18. The CRNC schedules the DL transmission of DL data on DSCH according to the allocation of PDSCH resources.

7.18 Channel and Mobile State Switching on Iur

7.18.1 General Description

This subclause shows an example of switching of a mobile protocol state to another, which Iur is used, thus involving RNSAP procedure.

7.18.2 Switching from Cell_FACH to Cell_DCH State

The following examples show switching of protocol state from Cell_FACH to Cell_DCH providing UE with information on RACH/FACH flows and involving DRNC and Iur.

The resulting sequence is the following:

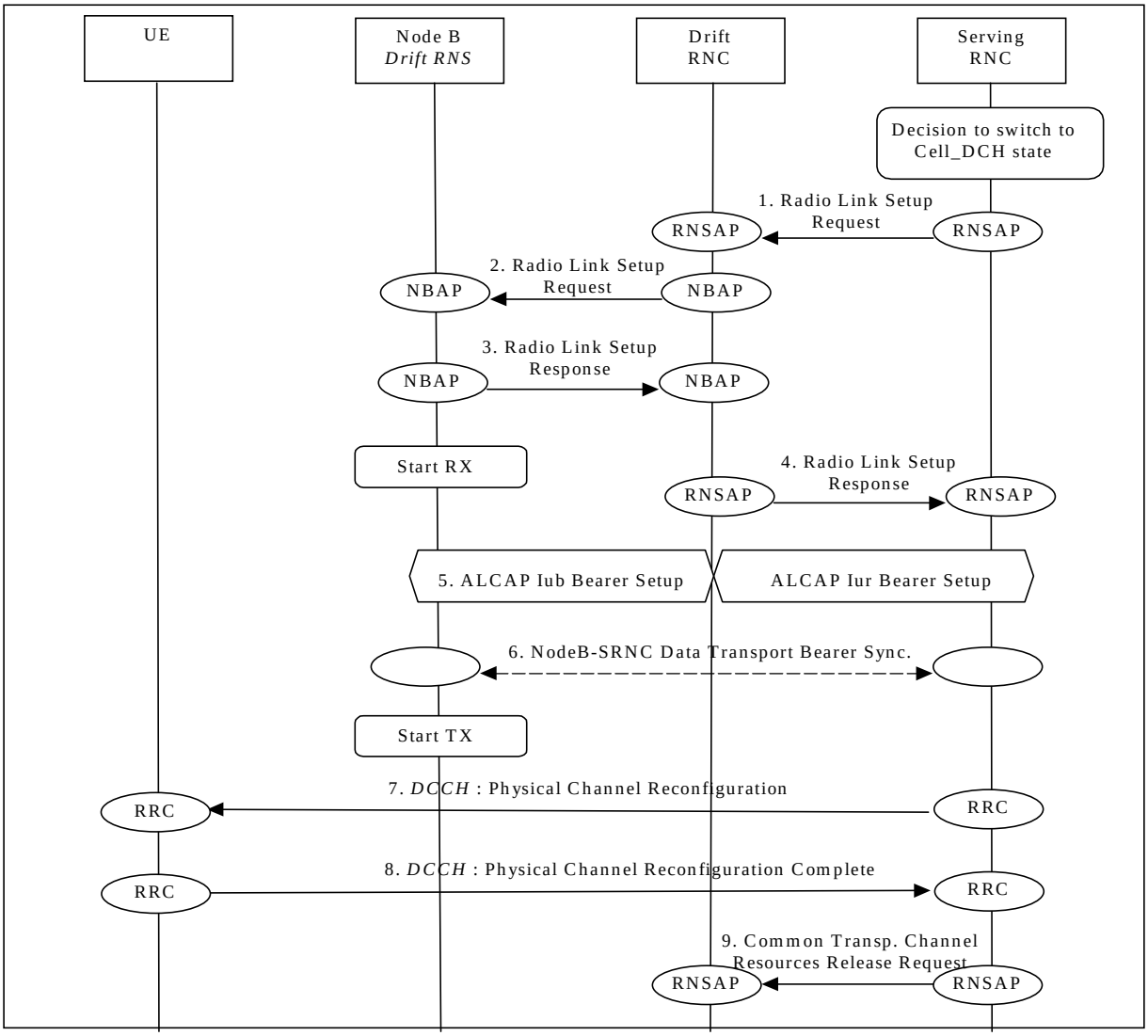

Figure 45B Switching from Cell_FACH to Cell_DCH State via Iur

1. SRNC decides to switch to CELL_DCH state, setting up a new radio link via a new cell controlled by DRNC.

   SRNC requests DRNC for radio resources by sending RNSAP message **Radio Link Setup Request**. If this is the first radio link via the DRNC for this UE, a new Iur signalling connection is established. This Iur signalling connection will be used for all RNSAP signalling related to this UE.
   Parameters: Cell id, Transport Format Set per DCH, Transport Format Combination Set, frequency, UL scrambling code.

2. DRNC sends NBAP message **Radio Link Setup Request** to Node B.
   Parameters: Cell id, Transport Format Set per DCH, Transport Format Combination Set, frequency, UL scrambling code.
3. Successful outcome is reported in NBAP message **Radio Link Setup Response**.
   Parameters: Signalling link termination, Transport layer addressing information (AAL2 address, AAL2 Binding Identitie(s)) for Data Transport Bearer(s).

   Then Node B starts the UL reception.

4. DRNC sends RNSAP message **Radio Link Setup Response** to SRNC.
   Parameters: Transport layer addressing information (AAL2 address, AAL2 Binding Identity) for Data Transport Bearer(s), Neighbouring cell information.
5. SRNC initiates setup of Iur, while DRNC is in charge to setup Iub, Data Transport Bearer using ALCAP protocol. This request contains the AAL2 Binding Identity to bind the Iub Data Transport Bearer to DCH.
   Note: there is not a time relation between set up of Iur and Iub. Both must be carried out before next step.

6. Node B and SRNC establish synchronism for the Data Transport Bearer by means of exchange of the appropriate DCH Frame Protocol frames via **Downlink Synchronisation** and **Uplink Synchronisation**, relative to already existing radio link(s).

   Then Node B starts DL transmission.

7. SRNC sends RRC message **Physical Channel Reconfiguration** to UE on DCCH.
   Parameters: Update type, Cell id, DL scrambling code, Power control information, Ncell information.
8. After the reconfiguration, the UE sends RRC message **Physical Channel Reconfiguration Complete** to SRNC.
9. The SRNC releases the UE context for CELL_FACH state in the source DRNC by sending a **Common Transport Channel Resources Release** message.

7.18.3 Switching from Cell_DCH to Cell_FACH State

In the this scenario the SRNC needs to get the C-RNTI from DRNC to be able to indicate to the UE a new C-RNTI and which cell it is valid in (given by the Primary Scrambling Code).

The SRNC also needs to get either:

1. information in the RACH and/or FACH to be used (if the DRNC selects RACH and/or FACH in a different way than the UE would do based on broadcast information) including User Plane flow control information for the Iur FACH FP.
2. User Plane flow control information for the FACH (Secondary CCPCH) that the UE selects if no Secondary CCPCH information is provide to the UE in the RRC Physical Channel Reconfiguration message

If receiving the C-ID the DRNC shall allocate a C-RNTI and provide it together with the Primary CPICH information to the SRNC. Further more, if the DRNC would like to select another RACH and/or FACH than the UE would select based on the broadcast information the DRNC also provides information on the DRNC Selected RACH and/or FACH (alternative 1). If the DRNC does not select any FACH the DRNC shall provide the user plane flow control information (alternative 2).

The above solution would result in the following sequence:

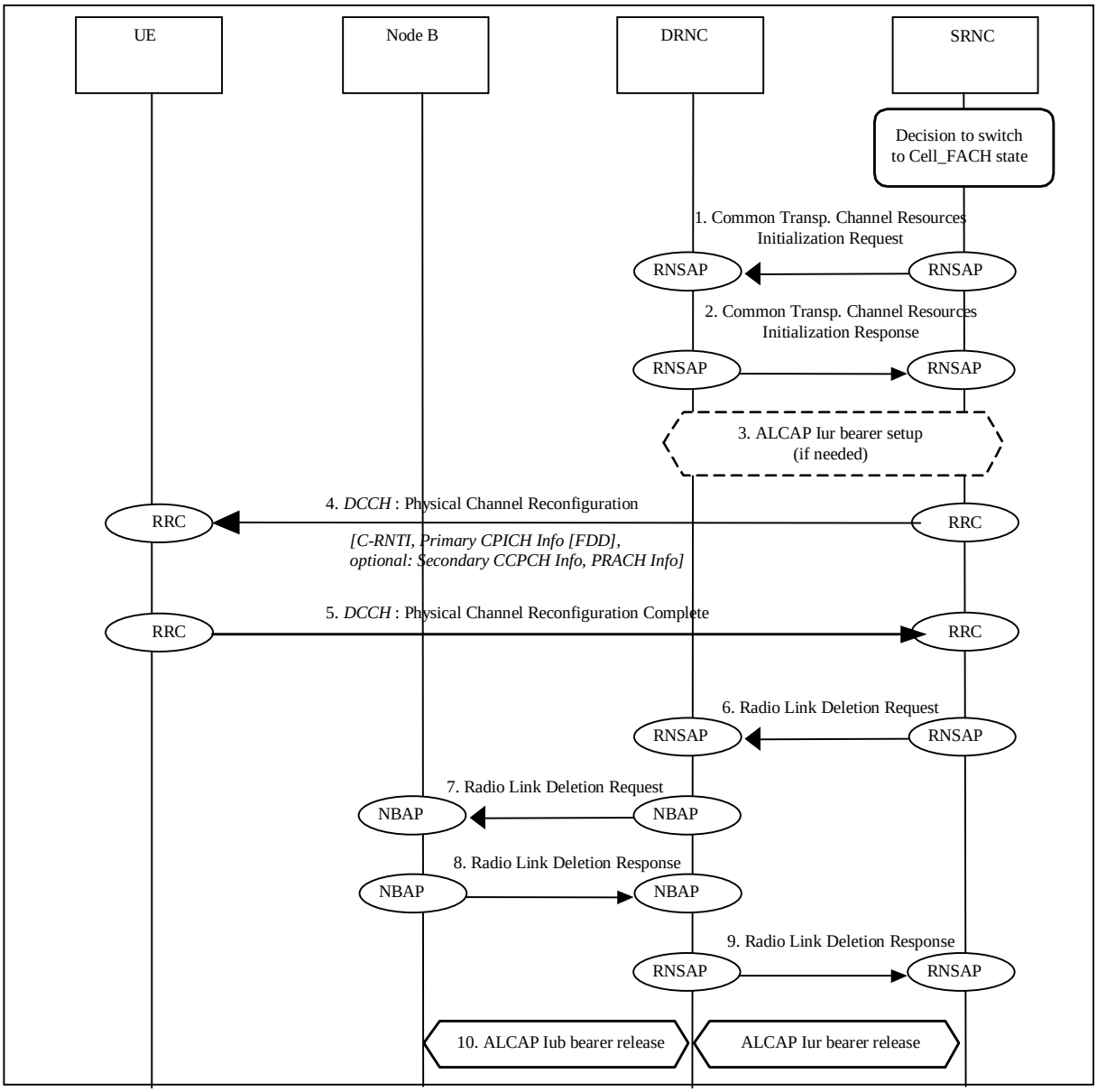

Figure 45C Switching from Cell_DCH to Cell_FACH State via Iur

1. SRNC decides to switch to CELL_FACH state, releasing its present radio link via a the cell controlled by DRNC.

   The SRNC decides to setup a common channel for the UE via DRNC, informing DRNC with C-ID IE of the UE in order to obtain C-RNTI (allocated in the next step by DRNC) needed for RRC messages. This setup is done with the RNSAP **Common Transport Channel Resources Initialisation Request** message.
2. The target DRNC sends the transport layer address, binding identity and C-RNTI to the SRNC with the RNSAP **Common Transport Channel Resources Initialisation Response** message
3. SRNC initiates setup of Iur/Iub Data Transport Bearer (if needed) using ALCAP protocol. This request contains the AAL2 Binding Identity to bind the Iub Data Transport Bearer.
4. SRNC sends RRC message **Physical Channel Reconfiguration** to UE on DCCH, with new C-RNTI and identification of the cell where it is valid.
5. After the reconfiguration, the UE sends RRC message **Physical Channel Reconfiguration Complete** to SRNC.
   Parameters: Update type, Cell id, DL scrambling code, Power control information, Ncell information.
6. SRNC releases DRNC for radio resources allocated for DCH by sending RNSAP message **Radio Link Deletion Request**
   Parameters: Cell id, Transport Format Set per DCH, Transport Format Combination Set, frequency, UL scrambling code.
7. DRNC sends NBAP message **Radio Link Deletion Request** to Node B.

8. Successful outcome is reported in NBAP message **Radio Link Deletion Response**.
   DRNC sends RNSAP message **Radio Link Deletion Response** to SRNC.
9. .Not used resources in-DRNC and Node B (Drift RNS) are released. DRNC initiates release of Iub and SRNC of Iur Data Transport bearer using ALCAP protocol.
   Note: there is not a time relation between set up of Iur and Iub. Both must be carried out before next step.

Annex A (informative): Change History

Change history					
TSG RAN#	Version	CR	Tdoc RAN	New Version	Subject/Comment
RAN_08	-	-	RP-000256	3.0.0	Approved at TSG RAN #8 and placed under Change Control
RAN_09	3.0.0	001 002 003		3.1.0	Approved at TSG RAN #9

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