TSG-RAN Meeting #14
Kyoto, Japan, 11 - 14, December, 2001

TSGRP#14(01) 0868

Title: **Agreed CRs to TS 25.931**

Source: **TSG-RAN WG3**

Agenda item: **8.3.3/8.3.4/9.4.3**

RP Tdoc	R3 Tdoc	Spec	CR_Num	Rev	Release	CR_Subject	Cat	Cur_Ver	New_Ver	Workitem
RP-010868	R3-013492	25.931	012	1	Rel-4	Obsolete or Missing Messages	A	4.1.0	4.2.0	TEI
RP-010868	R3-013491	25.931	011	1	R99	Obsolete or Missing Messages	F	3.4.0	3.5.0	TEI

3GPP TSG-RAN3 #25 Meeting
Makuhari, Japan, November 26th – 30th 2001

Tdoc R3-013491

CR-Form-v3

CHANGE REQUEST

⌘ **25.931** **CR** **011** ⌘ rev **1** ⌘ Current version: **3.4.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☒ Core Network ☐

Title:	⌘	Obsolete or Missing Messages
Source:	⌘	R-WG3
Work item code:	⌘	TEI
Date:	⌘	November 2001
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
F *(essential correction)*
A *(corresponds to a correction in an earlier release)*
B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
REL-4 *(Release 4)*
REL-5 *(Release 5)*

Reason for change: ⌘ In the present version of 25.931 there are two obsolete RRC messages: **RRC Connection Re-establishment** and **RNTI Reallocation**.
Moreover, there are no examples with the NBAP/RNSAP message **Radio Link Restore Indication**.

Summary of change: ⌘
In 4.4: add Radio Link Restore Indication to the table.
In 4.5: add Radio Link Restore Indication to the table.
In 4.7: delete RRC Connection Re-establishment and RNTI Reallocation Complete messages; add UTRAN Mobility Information Confirm message.
In 7.3.1: add Radio Link Restore Indication (figure and text).
In 7.5: change text.
In 7.5.1.1 and 7.5.1.2: replace RRC Connection Re-establishment with Cell Update; add UTRAN Mobility Information Confirm (figure and text).
In 7.6.3: add Radio Link Restore Indication (figure and text).
In 7.8.2: typo.
In 7.10.1, 7.10.3, 7.11.1.2: add Radio Link Restore Indication (figure and text).
In 7.11.2.1, 7.11.2.2, 7.11.2.4, 7.12.1: add UTRAN Mobility Information Confirm (figure and text).
In 7.18.2: add Radio Link Restore Indication (figure and text).

Consequences if not approved: ⌘ Several non-essential omissions will remain in the specification.

Impact Analysis:

This CR has no impact on the previous version of the specification (same release) because 25.931 has purely informative character.

Clauses affected: ⌘ 4.4; 4.5; 4.7; 7.3.1; 7.5; 7.5.1.1; 7.5.1.2; 7.6.3; 7.8.2; 7.10.1; 7.10.3; 7.11.1.1;

		7.11.1.2; 7.11.2.1; 7.11.2.2; 7.11.2.4; 7.12.1; 7.18.2			
Other specs	⌘	**X**	Other core specifications	⌘	TS 25.931 v4.1.0 CR012
affected:			Test specifications		
			O&M Specifications		
Other comments:	⌘				

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

4.4 RNSAP Procedures & Messages

For a detailed description of RNSAP procedures and messages refer to [4]. Only Messages mentioned in the present document are shown. For each message is also given the list of example procedures where the message is used, as provided by this document.

Table 3

Message Name	UTRAN Procedure	Direction
Common Transport Channel Resources Release	Cell Update	SRNC ⇒ DRNC
Common Transport Channel Resources Initialisation Request	Cell Update	SRNC ⇒ DRNC
Common Transport Channel Resources Initialisation Response	Cell Update	DRNC ⇒ SRNC
DL Power Control Request	Downlink Power Control	SRNC ⇒ DRNC
Downlink Signalling Transfer Request	RRC Connection Re-establishment URA Update	SRNC ⇒ DRNC SRNC ⇒ DRNC
Radio Link Addition Request	RRC Connection Release Soft Handover Hard Handover	SRNC ⇒ DRNC SRNC ⇒ DRNC SRNC ⇒ DRNC
Radio Link Addition Response	RRC Connection Release Soft Handover Hard Handover	DRNC ⇒ SRNC DRNC ⇒ SRNC DRNC ⇒ SRNC
Radio Link Deletion Request	RRC Connection Re-establishment Soft Handover Hard Handover	SRNC ⇒ DRNC SRNC ⇒ DRNC SRNC ⇒ DRNC
Radio Link Deletion Response	RRC Connection Re-establishment Soft Handover Hard Handover	DRNC ⇒ SRNC DRNC ⇒ SRNC DRNC ⇒ SRNC
Radio Link Failure Indication	Hard Handover	DRNC ⇒ SRNC
Radio Link Reconfiguration Request	Radio Access Bearer Establishment Radio Access Bearer Release Physical Channel Reconfiguration Transport Channel Reconfiguration	SRNC ⇒ DRNC SRNC ⇒ DRNC SRNC ⇒ DRNC SRNC ⇒ DRNC
Radio Link Reconfiguration Commit	Radio Access Bearer Establishment Radio Access Bearer Release Physical Channel Reconfiguration Transport Channel Reconfiguration Radio Access Bearer Modification	SRNC ⇒ DRNC SRNC ⇒ DRNC SRNC ⇒ DRNC SRNC ⇒ DRNC SRNC ⇒ DRNC
Radio Link Reconfiguration Prepare	Radio Access Bearer Establishment Radio Access Bearer Release Physical Channel Reconfiguration Transport Channel Reconfiguration Radio Access Bearer Modification	SRNC ⇒ DRNC SRNC ⇒ DRNC SRNC ⇒ DRNC SRNC ⇒ DRNC SRNC ⇒ DRNC
Radio Link Reconfiguration Ready	Radio Access Bearer Establishment Radio Access Bearer Release Physical Channel Reconfiguration Transport Channel Reconfiguration Radio Access Bearer Modification	DRNC ⇒ SRNC DRNC ⇒ SRNC DRNC ⇒ SRNC DRNC ⇒ SRNC DRNC ⇒ SRNC
Radio Link Reconfiguration Response	Radio Access Bearer Establishment Radio Access Bearer Release Physical Channel Reconfiguration Transport Channel Reconfiguration	DRNC ⇒ SRNC DRNC ⇒ SRNC DRNC ⇒ SRNC DRNC ⇒ SRNC
Radio Link Restore Indication	Soft Handover Hard Handover Channel and Mobile State Switching on Iur	DRNC ⇒ SRNC DRNC ⇒ SRNC DRNC ⇒ SRNC
Radio Link Setup Request	RRC Connection Re-establishment Hard Handover USCH/DSCH Configuration and Capacity Allocation [TDD]	SRNC ⇒ DRNC SRNC ⇒ DRNC SRNC ⇒ DRNC
Radio Link Setup Response	RRC Connection Re-establishment Hard Handover USCH/DSCH Configuration and Capacity Allocation [TDD]	DRNC ⇒ SRNC DRNC ⇒ SRNC DRNC ⇒ SRNC
Relocation Commit	SRNS Relocation URA Update	Source RNC ⇒ Target RNC
Uplink Signalling Transfer Indication	RRC Connection Re-establishment URA Update	DRNC ⇒ SRNC DRNC ⇒ SRNC

4.5 NBAP Procedures & Messages

For a detailed description of NBAP procedures and messages refer to [5]. Only Messages mentioned in the present document are shown. For each message is also given the list of example procedures where the message is used, as provided by this document.

Table 4

Message Name	UTRAN Procedure	Direction
DL Power Control Request	Downlink Power Control	RNC ⇒ Node B
Paging	Paging	RNC ⇒ Node B
Physical Shared Channel Reconfiguration Request	USCH/DSCH Configuration and Capacity Allocation [TDD]	RNC ⇒ Node B
Physical Shared Channel Reconfiguration Request	USCH/DSCH Configuration and Capacity Allocation [TDD]	Node B ⇒ RNC
Radio Link Addition Request	Hard Handover Soft Handover	RNC ⇒ Node B RNC ⇒ Node B
Radio Link Addition Response	Hard Handover Soft Handover	RNC ⇒ Node B RNC ⇒ Node B
Radio Link Deletion	RRC Connection Release RRC Connection Re-establishment Hard Handover Soft Handover	RNC ⇒ Node B RNC ⇒ Node B RNC ⇒ Node B RNC ⇒ Node B
Radio Link Deletion Response	RRC Connection Release RRC Connection Re-establishment Hard Handover Soft Handover	Node B ⇒ RNC Node B ⇒ RNC Node B ⇒ RNC Node B ⇒ RNC
Radio Link Failure Indication	Hard Handover	Node B ⇒ RNC
Radio Link Reconfiguration Commit	Radio Access Bearer Establishment Radio Access Bearer Release Physical Channel Reconfiguration Transport Channel Reconfiguration Radio Access Bearer Modification	RNC ⇒ Node B RNC ⇒ Node B RNC ⇒ Node B RNC ⇒ Node B RNC ⇒ Node B
Radio Link Reconfiguration Prepare	Radio Access Bearer Establishment Radio Access Bearer Release Physical Channel Reconfiguration Transport Channel Reconfiguration Radio Access Bearer Modification	RNC ⇒ Node B RNC ⇒ Node B RNC ⇒ Node B RNC ⇒ Node B RNC ⇒ Node B
Radio Link Reconfiguration Ready	Radio Access Bearer Establishment Radio Access Bearer Release Physical Channel Reconfiguration Transport Channel Reconfiguration Radio Access Bearer Modification	Node B ⇒ RNC Node B ⇒ RNC Node B ⇒ RNC Node B ⇒ RNC Node B ⇒ RNC
Radio Link Reconfiguration Request	Radio Access Bearer Establishment Radio Access Bearer Release Physical Channel Reconfiguration Transport Channel Reconfiguration	RNC ⇒ Node B RNC ⇒ Node B RNC ⇒ Node B RNC ⇒ Node B
Radio Link Reconfiguration Response	Radio Access Bearer Establishment Radio Access Bearer Release Physical Channel Reconfiguration Transport Channel Reconfiguration	Node B ⇒ RNC Node B ⇒ RNC Node B ⇒ RNC Node B ⇒ RNC
Radio Link Restore Indication	RRC Connection Establishment RRC Connection Re-establishment Soft Handover Hard Handover Channel and Mobile State Switching on Iur	Node B ⇒ RNC Node B ⇒ RNC Node B ⇒ RNC Node B ⇒ RNC Node B ⇒ RNC
Radio Link Setup Request	RRC Connection Establishment RRC Connection Re-establishment Hard Handover Soft Handover USCH/DSCH Configuration and Capacity Allocation [TDD]	RNC ⇒ Node B RNC ⇒ Node B RNC ⇒ Node B RNC ⇒ Node B RNC ⇒ Node B
Radio Link Setup Response	RRC Connection Establishment RRC Connection Re-establishment Hard Handover Soft Handover USCH/DSCH Configuration and Capacity Allocation [TDD]	Node B ⇒ RNC Node B ⇒ RNC Node B ⇒ RNC Node B ⇒ RNC Node B ⇒ RNC
System Information Broadcast Request	System Information Broadcasting Service Area Broadcast	RNC ⇒ Node B RNC ⇒ Node B
System Information Broadcast Response	System Information Broadcasting Service Area Broadcast	Node B ⇒ RNC Node B ⇒ RNC

4.7 RRC Procedures & Messages

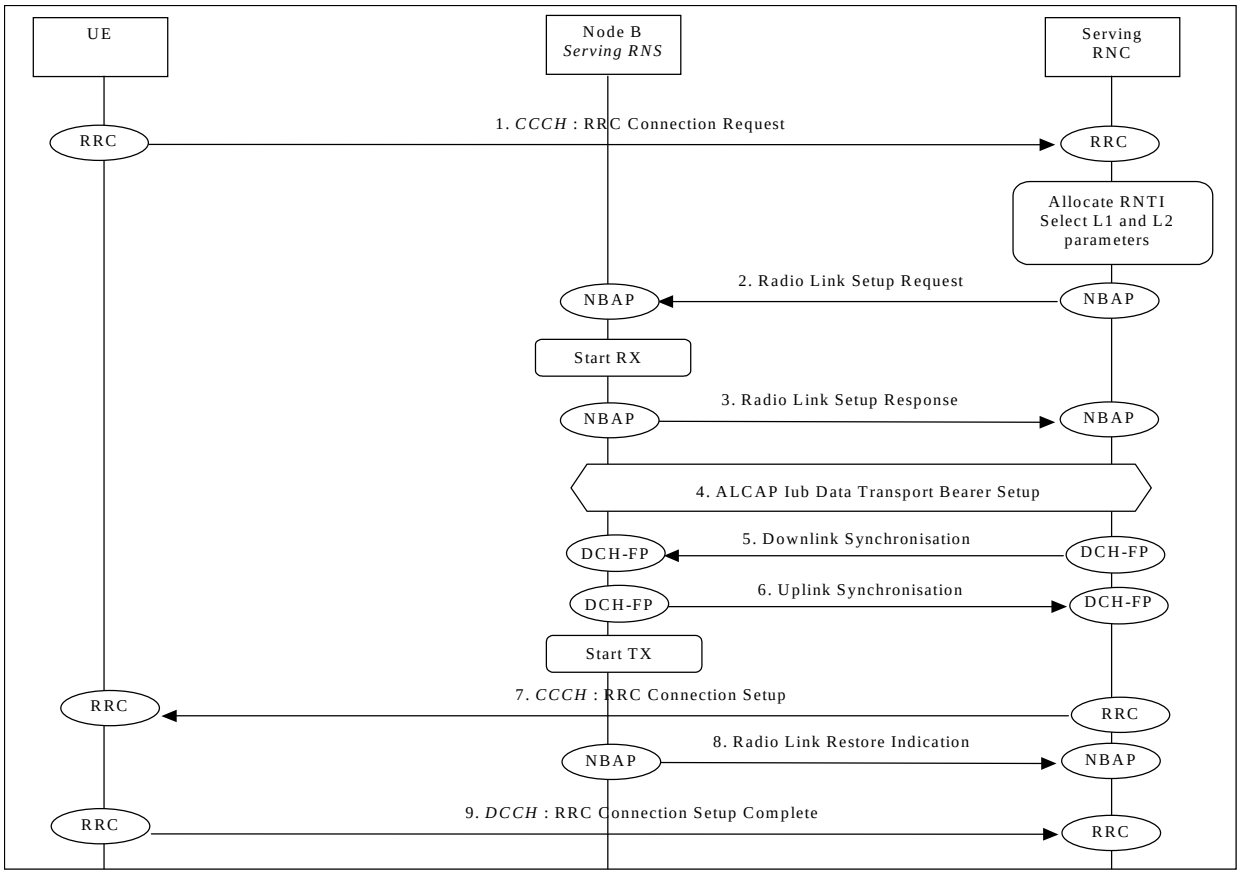
For a detailed description of RRC procedures and messages refer to [8]. Only Messages mentioned in the present document are shown. For each message is also given the list of example procedures where the message is used, as provided by this document.

Table 5

Message Name	UTRAN Procedure	Direction
Active Set Update	Soft Handover	RNC ⇒ UE
Active Set Update Complete	Soft Handover	UE ⇒ RNC
Cell Update	RRC Connection Re-establishment Cell Update	UE ⇒ RNC UE ⇒ RNC
Cell Update Confirm	RRC Connection Re-establishment Cell Update	RNC ⇒ UE RNC ⇒ UE
Direct Transfer	NAS Signalling Conn. Establishment	UE ⇔ RNC
Downlink Direct Transfer	Downlink Direct Transfer	RNC ⇒ UE
Initial Direct Transfer	NAS Signalling Connection Establishment	UE ⇒ RNC
Measurement Control	Downlink Power Control	RNC ⇒ UE
Measurement Report	Downlink Power Control	UE ⇒ RNC
Paging Type 1	Paging for a UE in RRC Idle Mode and RRC connected mode (CELL_PCH and URA_PCH states)Paging for a UE in RRC Connected Mode	RNC ⇒ UE
Paging Type 2	Paging for a UE in RRC Connected Mode (CELL_DCH and CELL_FACH states)	RNC ⇒ UE
Physical Channel Reconfiguration	Physical Channel Reconfiguration Hard Handover	RNC ⇒ UE RNC ⇒ UE
Physical Channel Reconfiguration Allocation	USCH/DSCH Configuration and Capacity Allocation [TDD]	RNC ⇒ UE
Physical Channel Reconfiguration Complete	Physical Channel Reconfiguration Hard Handover	UE ⇒ RNC UE ⇒ RNC
PUSCH Capacity Request	USCH/DSCH Configuration and Capacity Allocation [TDD]	UE ⇒ RNC
RB Reconfiguration	USCH/DSCH Configuration and Capacity Allocation [TDD]	RNC ⇒ UE
RB Reconfiguration Complete	USCH/DSCH Configuration and Capacity Allocation [TDD]	UE ⇒ RNC
RB Release	Radio Access Bearer Release	RNC ⇒ UE
RB Release Complete	Radio Access Bearer Release	UE ⇒ RNC
RB Setup	Radio Access Bearer Establishment	RNC ⇒ UE
RB Setup Complete	Radio Access Bearer Establishment	UE ⇒ RNC
~~RNTI Reallocation Complete~~	~~Cell Update~~ ~~URA Update~~	~~UE ⇒ RNC~~ ~~UE ⇒ RNC~~
~~RRC Connection Re-establishment~~	~~RRC Connection Re-establishment~~	~~RNC ⇒ UE~~
~~RRC Connection Re-establishment Complete~~	~~RRC Connection Re-establishment~~	~~UE ⇒ RNC~~
~~RRC Connection Re-establishment Request~~	~~RRC Connection Re-stablishment~~	~~UE ⇒ RNC~~
RRC Connection Release	RRC Connection Release	RNC ⇒ UE
RRC Connection Release Complete	RRC Connection Release	UE ⇒ RNC
RRC Connection Request	RRC Connection Establishment.	UE ⇒ RNC
RRC Connection Setup	RRC Connection Establishment	RNC ⇒ UE
RRC Connection Setup Complete	RRC Connection Establishment	UE ⇒ RNC
System Information	System Information Broadcasting	Node B ⇒ UE
Transport Channel Reconfiguration	Physical Channel Reconfiguration	RNC ⇒ UE
Transport Channel Reconfiguration Complete	Physical Channel Reconfiguration	UE ⇒ RNC
UE Capability Information	NAS Signalling Conn. Establishment.	UE ⇒ RNC
Uplink Direct Transfer	Uplink Direct Transfer	UE ⇒ RNC
URA Update	Cell Update	UE ⇒ RNC
URA Update Confirm	Cell Update	RNC ⇒ UE
UTRAN Mobility Information Confirm	RRC Connection Re-establishment Cell Update URA Update	UE ⇒ RNC UE ⇒ RNC UE ⇒ RNC

7.3.1 DCH Establishment

This example shows establishment of an RRC connection in dedicated transport channel (DCH) state.



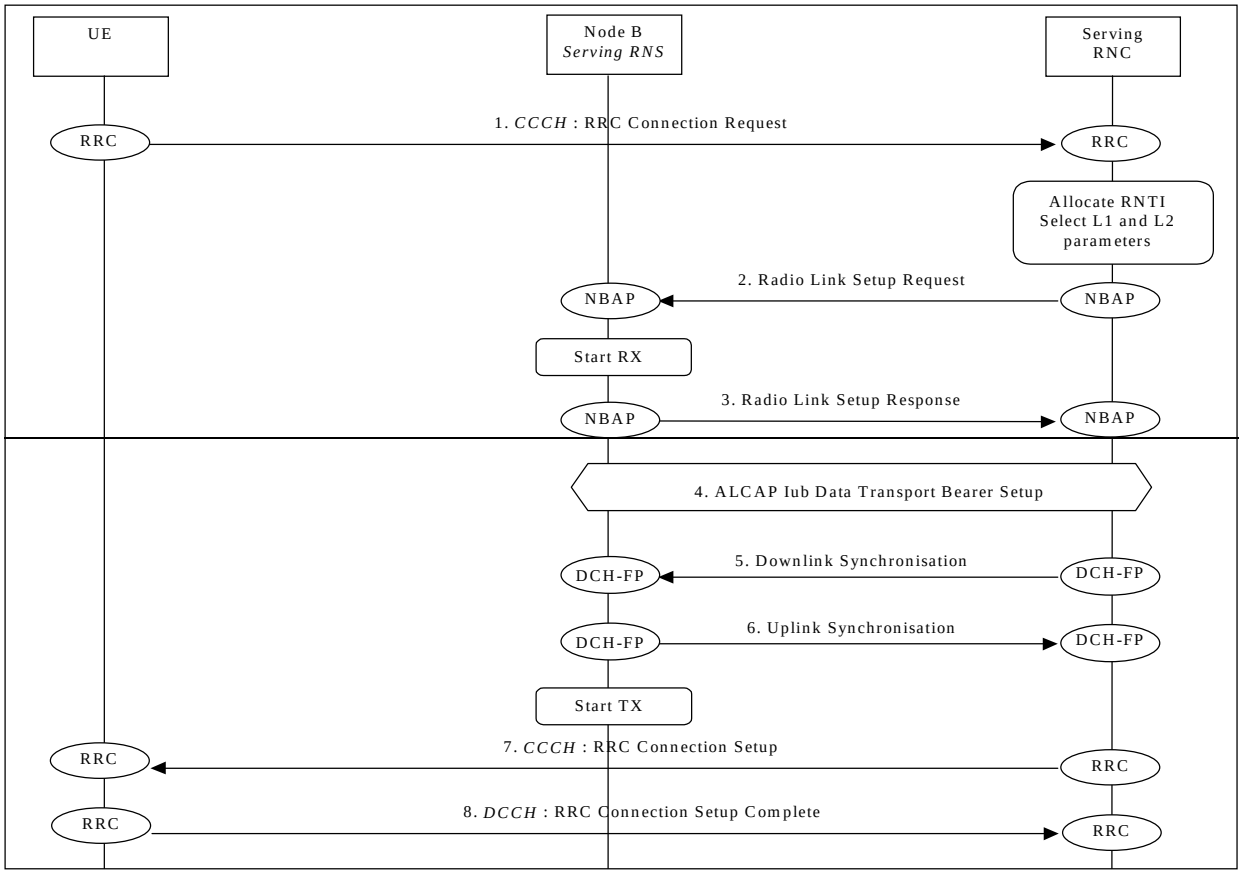


Figure 8: RRC Connection Establishment - DCH Establishment

1. The UE initiates set-up of an RRC connection by sending RRC message **Connection Request** on CCCH. Parameters: Initial UE Identity, Establishment cause, Initial UE Capability.
2. The SRNC decides to use a DCH for this RRC connection, allocates RNTI and radio resources for the RRC connection. When a DCH is to be set-up, NBAP message **Radio Link Setup Request** is sent to Node B.
   Parameters: Cell id, Transport Format Set, Transport Format Combination Set, frequency, UL scrambling code (FDD only), Time Slots (TDD only), User Codes (TDD only), Power control information.
3. Node B allocates resources, starts PHY reception, and respond~~se~~s with NBAP message **Radio Link Setup Response**.
   Parameters: Signalling link termination, Transport layer addressing information (AAL2 address, AAL2 Binding Identity) for the Iub Data Transport Bearer.
4. SRNC initiates set-up of Iub Data Transport bearer using ALCAP protocol. This request contains the AAL2 Binding Identity to bind the Iub Data Transport Bearer to the DCH. The request for set-up of Iub Data Transport bearer is acknowledged by Node B.

5./6. The Node B and SRNC establish synchronism for the Iub and Iur Data Transport Bearer by means of exchange of the appropriate DCH Frame Protocol frames **Downlink Synchronisation** and **Uplink Synchronisation**. Then Node B starts DL transmission.

7. Message **RRC Connection Setup** is sent on CCCH from SRNC to UE.
   Parameters: Initial UE Identity, RNTI, Capability update Requirement, Transport Format Set, Transport Format Combination Set, frequency, DL scrambling code (FDD only), Time Slots (TDD only), User Codes (TDD only), Power control information.
8. Node B achieves uplink sync and notifies SRNC with NBAP message **Radio Link Restore Indication**.
9~~8~~. Message **RRC Connection Setup Complete** is sent on DCCH from UE to SRNC.
   Parameters: Integrity information, ciphering information.

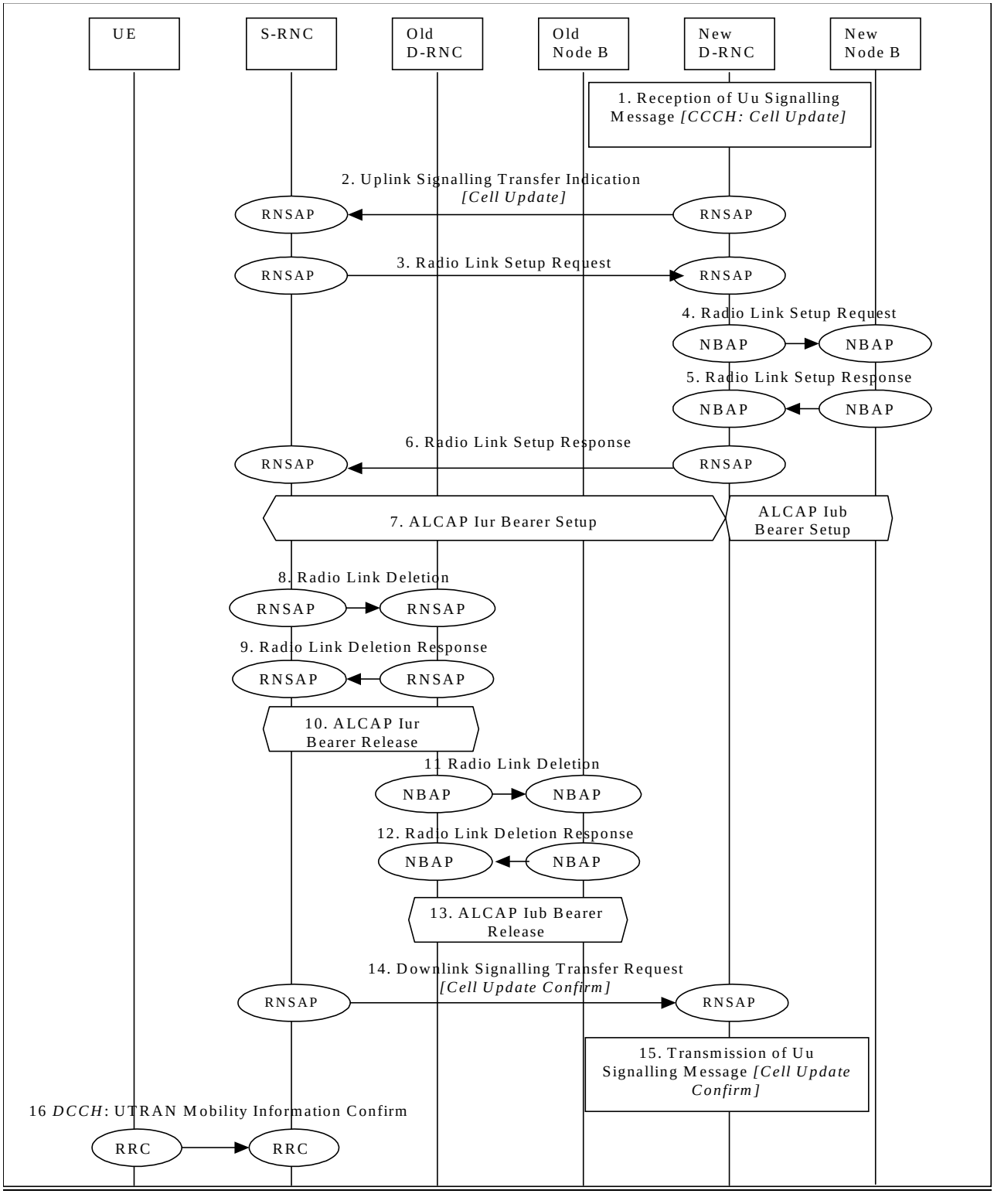
7.5 RRC Connection Re-establishment

The following examples show re-establishment of a RRC connection ~~either~~ on a dedicated channel (DCH) ~~or on a common transport channel~~. Examples of RRC Connection Re-establishment on a common channel (RACH/FACH) are found in the "Cell Update" section of this document.

7.5.1 DCH Re-establishment

7.5.1.1 RRC connection Re-establishment (Anchor approach) – DCH Re-establishment

This example shows re-establishment of a RRC connection in dedicated transport channel (DCH) state.


UE
S-RNC
Old D-RNC
Old Node B
New D-RNC
New Node B
1. Reception of Uu Signalling Message [CCCH: Cell Update]
2. Uplink Signalling Transfer Indication [Cell Update]
RNSAP
RNSAP
3. Radio Link Setup Request
RNSAP
RNSAP
4. Radio Link Setup Request
NBAP
NBAP
5. Radio Link Setup Response
NBAP
NBAP
6. Radio Link Setup Response
RNSAP
RNSAP
7. ALCAP Iur Bearer Setup
ALCAP Iub Bearer Setup
8. Radio Link Deletion
RNSAP
RNSAP
9. Radio Link Deletion Response
RNSAP
RNSAP
10. ALCAP Iur Bearer Release
11 Radio Link Deletion
NBAP
NBAP
12. Radio Link Deletion Response
NBAP
NBAP
13. ALCAP Iub Bearer Release
14. Downlink Signalling Transfer Request [Cell Update Confirm]
RNSAP
RNSAP
15. Transmission of Uu Signalling Message [Cell Update Confirm]
16 DCCH: UTRAN Mobility Information Confirm
RRC
RRC

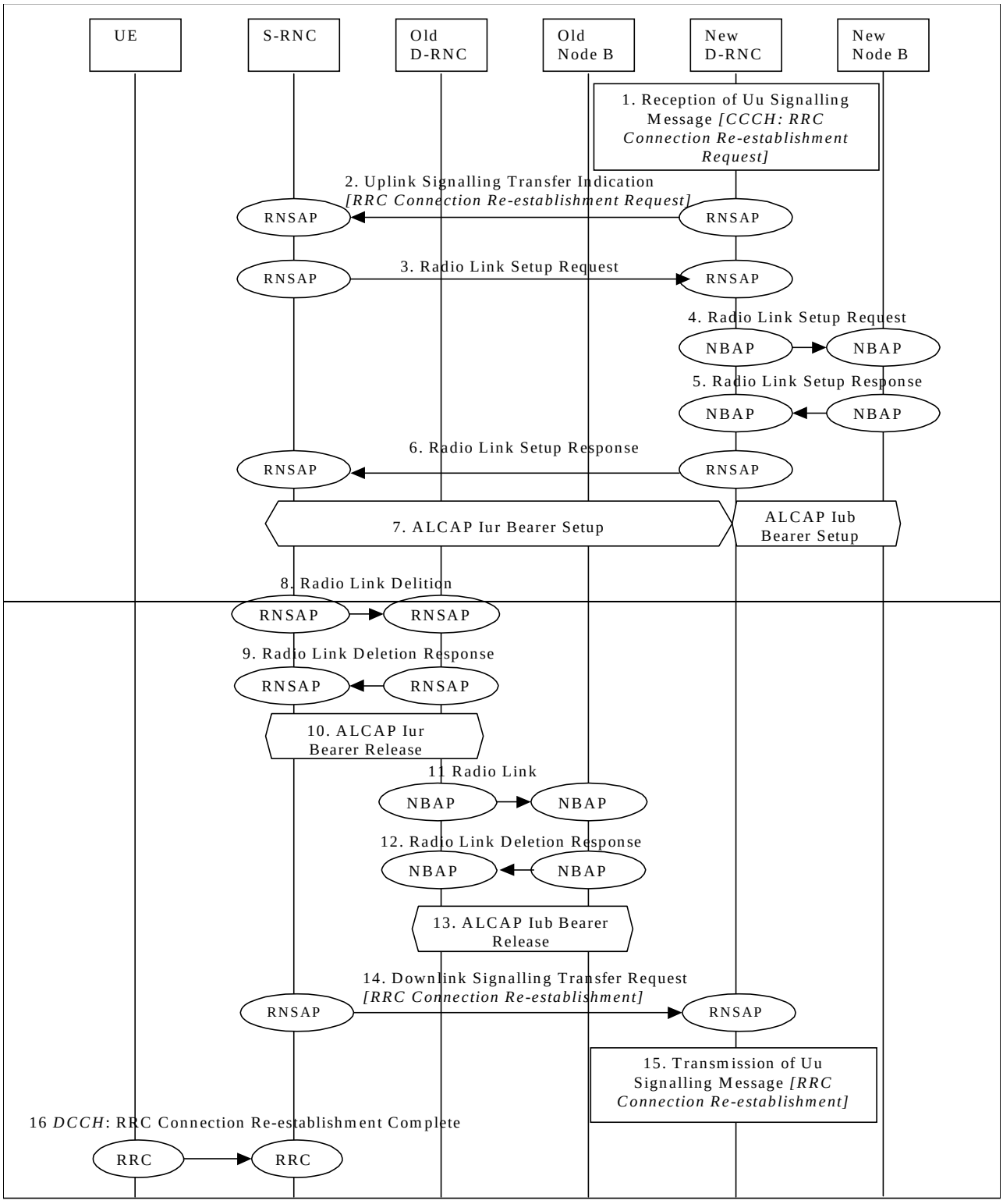


Figure 11: RRC connection Re-establishment (Anchor approach) – DCH Re-establishment

1. The UE initiates the re-establishment of the RRC connection with the new cell by sending ~~**RRC Connection Re-establishment Request**~~ **Cell Update** message on CCCH.
2. The new RNC delivers this message transparently as **Uplink Signalling Transfer Indication** message to the serving RNC, the RNSAP delivers it to the RRC.
3. The serving RNC allocates radio resources for the RRC connection on Iur, and sends the RNSAP message **Radio Link Setup Request** to the target RNC.
4. The target RNC sends the NBAP message **Radio Link Setup Request** to the target Node B.

5. Node B allocates resources, and respond~~s~~es with NBAP message **Radio Link Setup Response**.
6. Target RNC respond~~s~~es with RNSAP message **Radio Link Setup Response**.
7. Serving RNC initiates set-up 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 the DCH. The request for set-up of Iur / Iub Data Transport bearer is acknowledged by target RNC / Node B.

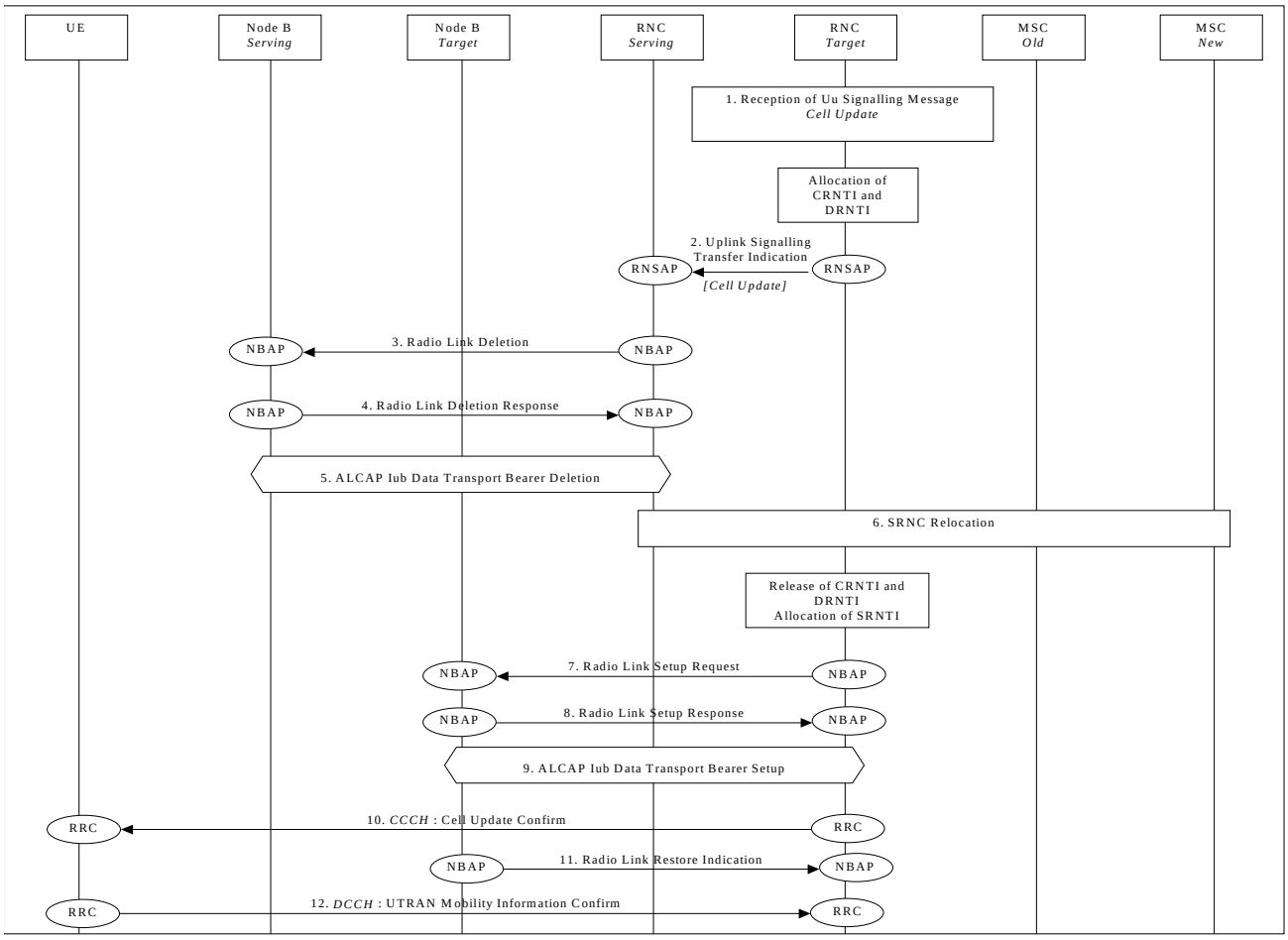
8./9./10./11./12./13. The SRNC initiates release of Iur/Iub Data Transport bearer using ALCAP protocol and also release of Iur/Iub Radio resource using RNSAP / NBAP protocols.

14. The RRC in the serving RNC prepare a RRC Connection Re-establishment message and the RNSAP sends it in the transparent message **Downlink Signalling Transfer Request** to the new CRNC.
15. The New CRNC delivers the ~~**RRC Connection Re-establishment message**~~ **Cell Update Confirm** message on CCCH.
16. Message ~~**RRC Connection Re-establishment Complete**~~**UTRAN Mobility Information Confirm** is sent on the new DCCH from the UE to the serving RNC.

7.5.1.2 RRC Connection Re-establishment with SRNC Relocation - DCH Re-establishment

This subclause shows an example for the RRC Connection Re-establishment procedure, in dedicated transport channel (DCH) state.

It is assumed that a signalling link is available on the Iur, but no DCH is established on this interface.



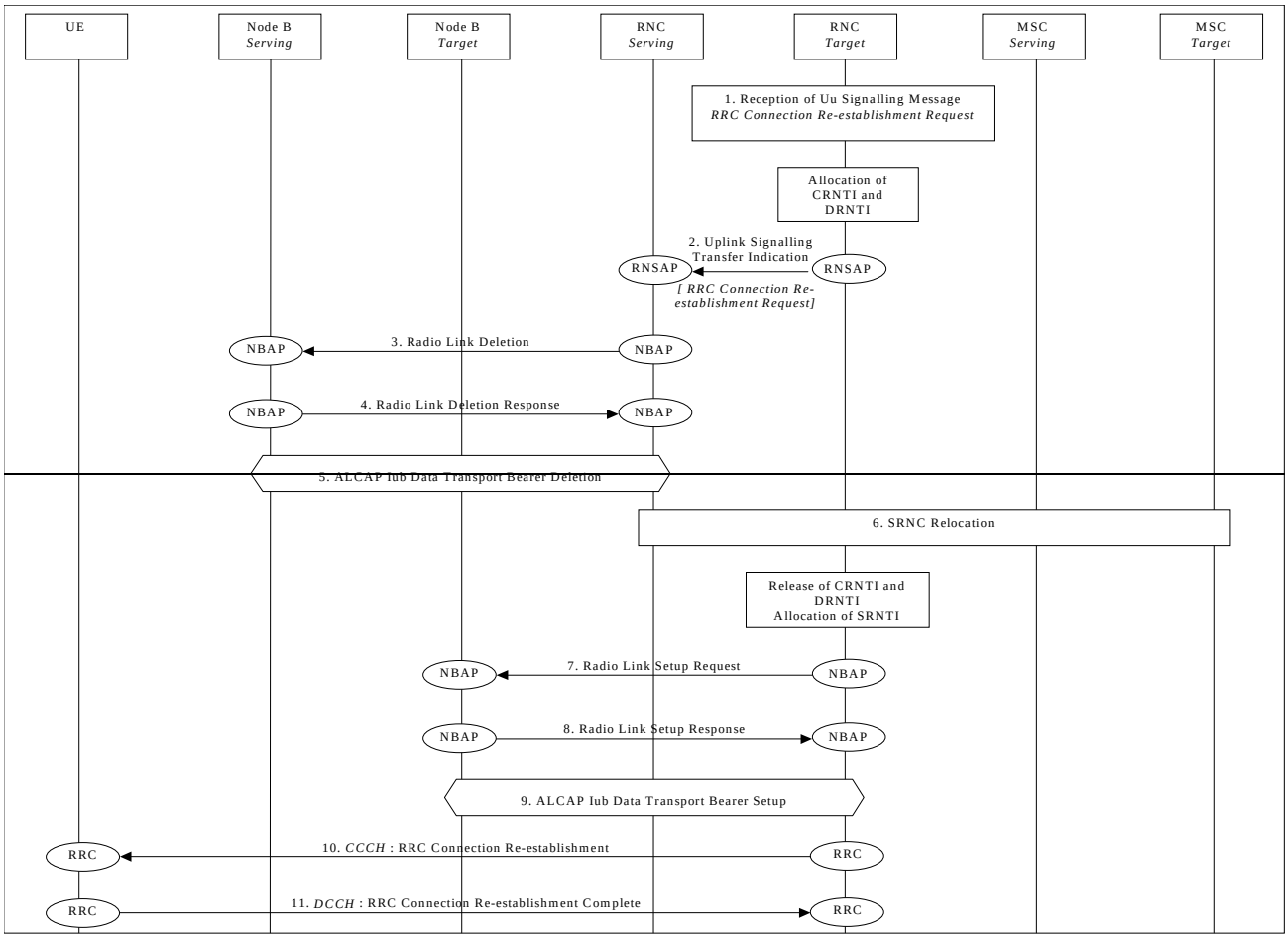


Figure 12: RRC Connection Re-establishment with SRNC Relocation - DCH Re-establishment

1. The UE initiates the re-establishment of the RRC connection with the new cell by sending ~~**RRC Connection Re-establishment Request**~~**Cell Update** message on CCCH. The message is received by the Target RNC.
2. The target RNC delivers the received message transparently as **Uplink Signalling Transfer Indication** message to the serving RNC.
3. The Serving RNC sends NBAP message **Radio Link Deletion** to Node B.
   Parameters: Cell id, Transport layer addressing information.
4. Node B deallocates radio resources. Successful outcome is reported in NBAP message **Radio Link Deletion Response**.
5. The SRNC initiates release of Iub Data Transport bearer using ALCAP protocol.
6. SRNC relocation procedure is triggered by the reception of the message ~~**RRC Connection Re-establishment Request**~~**Cell Update** embedded in the RNSAP **Uplink Signalling Transfer Indication** message (relocation is performed in parallel with Radio Link release).
7. The target RNC (new SRNC) allocates RNTI and radio resources for the RRC connection, and sends the NBAP message **Radio Link Setup Request** to the target Node B.
   Parameters: Cell id, Transport Format Set, Transport Format Combination Set, frequency, UL scrambling code (FDD only), Time Slots (TDD only), User Codes (TDD only), Power control information.
8. Target Node B allocates resources, starts PHY reception, and responses with NBAP message **Radio Link Setup Response**.
   Parameters: Signalling link termination, Transport layer addressing information for the Iub Data Transport Bearer.
9. Target RNC (new SRNC) initiates set-up of Iub Data Transport bearer using ALCAP protocol. This request contains the AAL2 Binding Identity to bind the Iub Data Transport Bearer to the DCH. The request for set-up of Iub Data Transport bearer is acknowledged by Node B.
10. Message ~~**RRC Connection Re-establishment**~~**Cell Update Confirm** is sent on CCCH from target RNC (new SRNC) to UE.
    Parameters: Old RNTI, New RNTI, Transport Format Set, Transport Format Combination Set, frequency, DL scrambling code (FDD only), Time Slots (TDD only), User Codes (TDD only)

11. Target Node B achieves uplink sync on the Uu and notifies SRNC with NBAP message **Radio Link Restore Indication**.
12~~1~~. Message ~~**RRC Connection Re-establishment Complete**~~**UTRAN Mobility Info Confirm** is sent on the new DCCH from the UE to the Target RNC (new SRNC).

NOTE 1: SRNC Relocation execution is performed asynchronously with respect to the RL deletion procedure (step 3/4).

NOTE 2: Whether SRNC Relocation involves two MSCs (as depicted in the figure) or a single one, has no impact on the UTRAN message flow shown in this example.

7.6.3 RACH/FACH - DCH Establishment

This example shows the establishment of a radio access bearer (DCH) in common transport channel (RACH/FACH) RRC State.

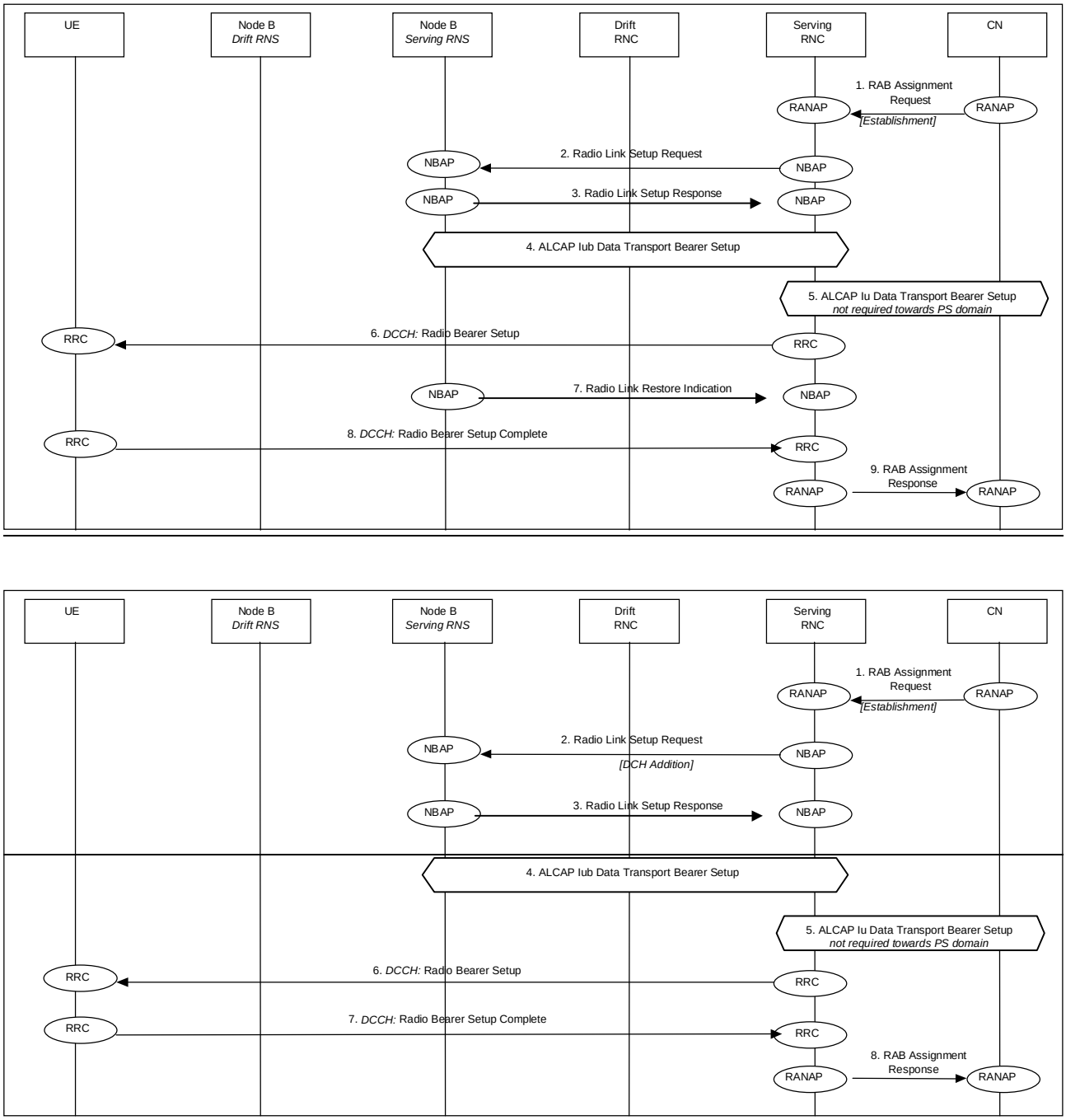


Figure 15: Radio Access Bearer Establishment – RACH/FACH - DCH Establishment – Unsynchronised

1. CN initiates establishment of the radio access bearer with RANAP **Radio Access Bearer Assignment Request** message.
   Parameters: radio access bearer parameters, User Plane Mode, Transport Address, Iu Transport Association.
2. DRNC requests its Node B to establish of a new DCH in the existing Radio Link sending the **Radio Link Setup Request** message.
   Parameters: Transport Format Set, Transport Format Combination Set, Power control information.

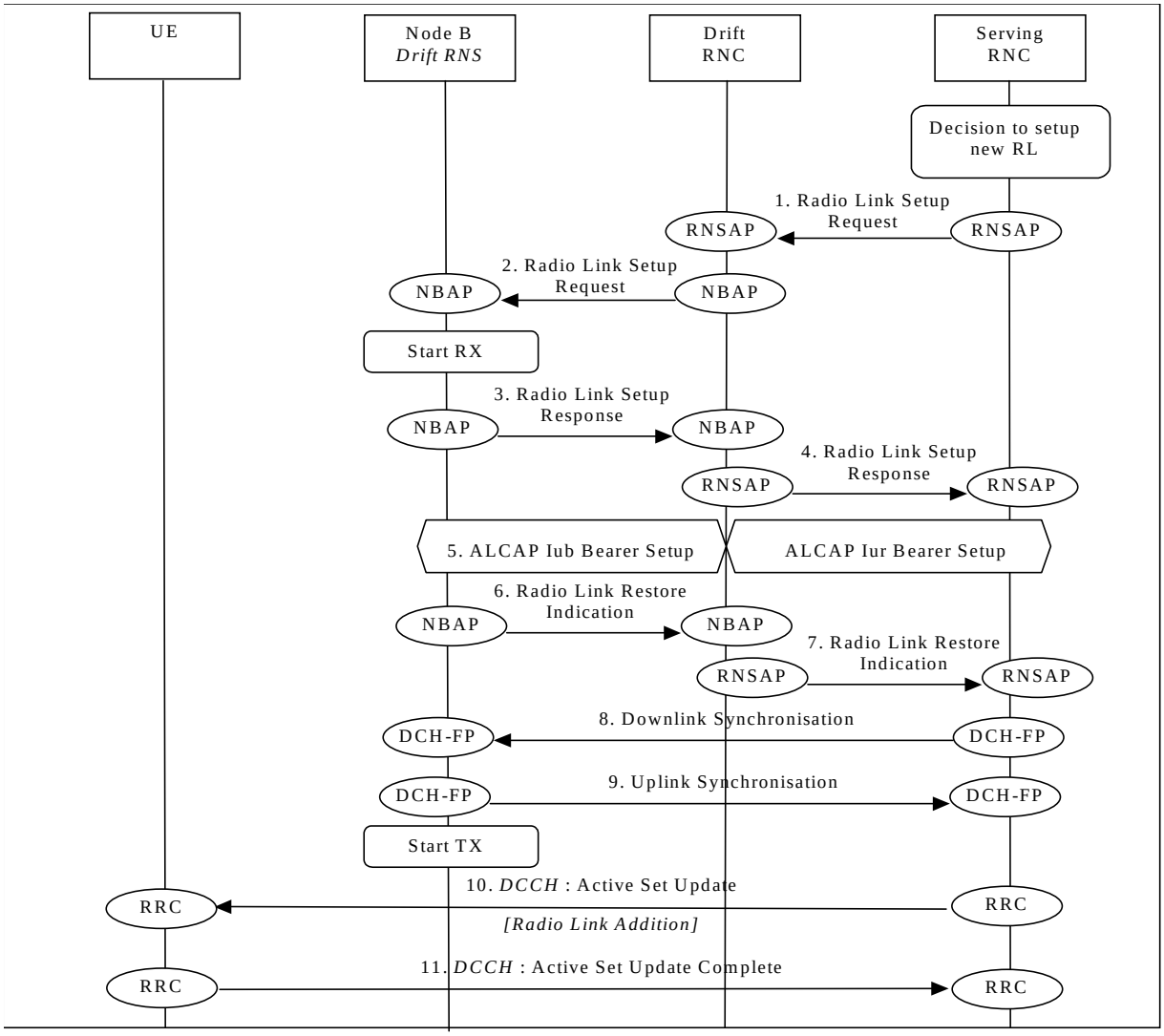
3. Node B allocates resources and notifies SRNC that the setup is sending the **Radio Link Setup Response**.
   Parameters: Transport layer addressing information (AAL2 address, AAL2 Binding Id) for Iub Data Transport Bearer.
4. SRNC initiates setup of Iub Data Transport Bearer using ALCAP protocol. This request contains the AAL2 Binding Identity to bind the Iub Data Transport Bearer to DCH.
5. SRNC performs mapping of the radio access bearer QoS parameters to AAL2 link characteristics and initiates set-up of Iu Data Transport bearer using ALCAP protocol (this step is not required towards PS domain)
6. RRC message **Radio Bearer** Setup is sent by SRNC to UE.
   Parameters: Transport Format Set, Transport Format Combination Set.
7. Node B achieves uplink sync and notifies SRNC with NBAP message **Radio Link Restore Indication**.
8. UE sends RRC message **Radio Bearer Setup Complete** to SRNC.
9. SRNC sends RANAP message **Radio Access Bearer Assignment Response** to CN.

7.8.2 DCCH on RACH/FACH

This example shows reconfiguration of a radio access bearer using a common transport channel (RACH/FACH). The difference with respect to the previous example is that here there is no macrodiversity because with a physical common channel (e.g. PRACH) it's impossible to be on macrodiversity

7.10.1 Radio Link Addition (Branch Addition)

This example shows establishment of a radio link via a Node B controlled by another RNC than the serving RNC. This is the first radio link to be established via this RNS, thus macro-diversity combining/splitting with already existing radio links within DRNS is not possible.



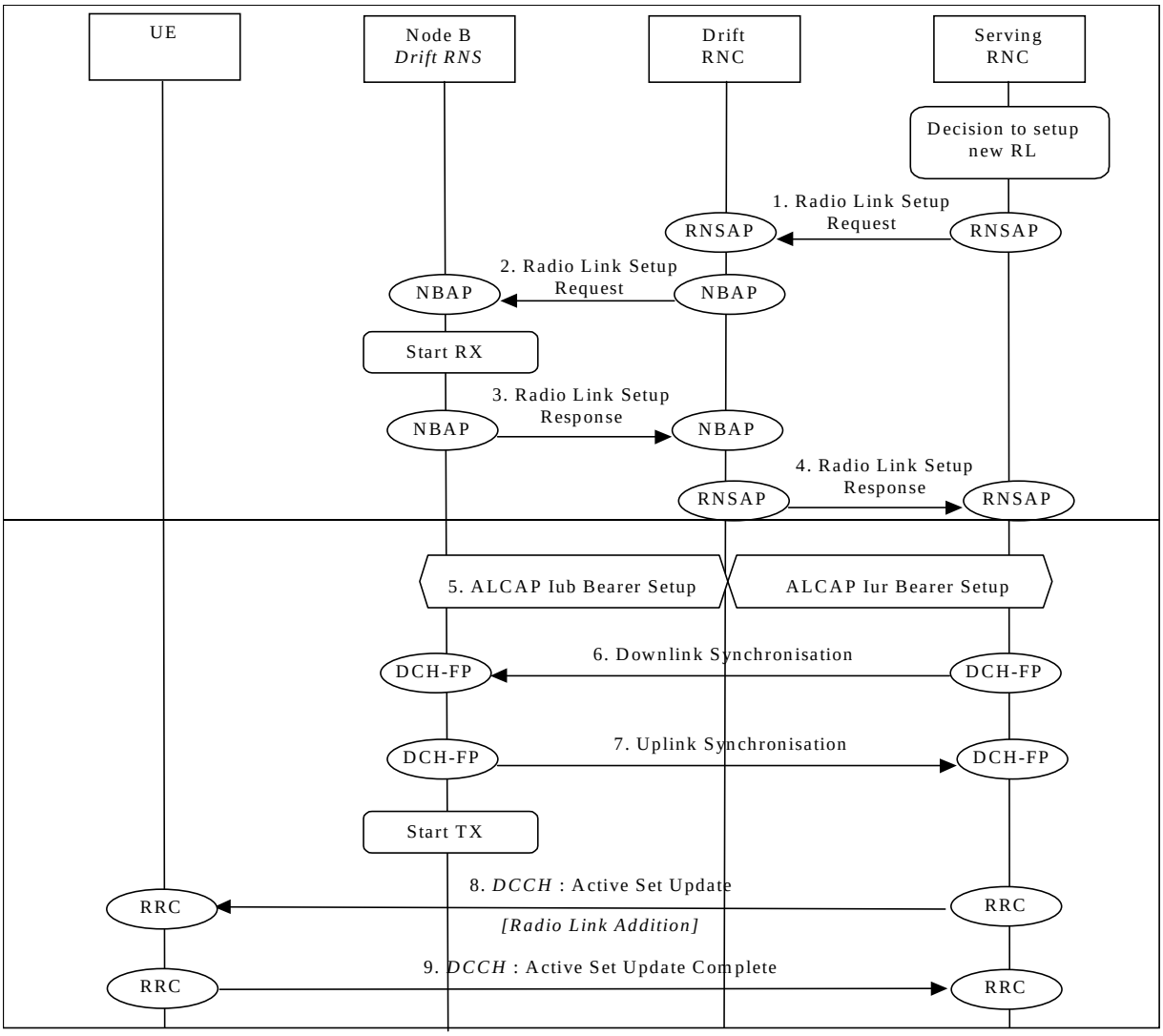


Figure 24: Soft Handover - Radio Link Addition (Branch Addition)

1. SRNC decides to setup a radio link via a new cell controlled by another RNC. 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. If requested resources are available, 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.
   Then Node B starts the UL reception.
3. Node B allocates requested resources. 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).
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/Iub Data Transport Bearer using ALCAP protocol. This request contains the AAL2 Binding Identity to bind the Iub Data Transport Bearer to DCH.
   This may be repeated for each Iur/Iub Data Transport Bearer to be setup.

6./7.Node B achieves uplink sync on the Uu and notifies DRNC with NBAP message **Radio Link Restore Indication**.
In its turn DRNC notifies SRNC with RNSAP message **Radio Link Restore Indication.**

8./9.~~6./7.~~ Node B and SRNC establish synchronism for the Data Transport Bearer(s) by means of exchange of the appropriate DCH Frame Protocol frames **Downlink Synchronisation** and **Uplink Synchronisation**, relative already existing radio link(s). Then Node B starts DL transmission.

10~~8~~.SRNC sends RRC message **Active Set Update** (Radio Link Addition) to UE on DCCH.
Parameters: Update type, Cell id, DL scrambling code, Power control information, Ncell information.

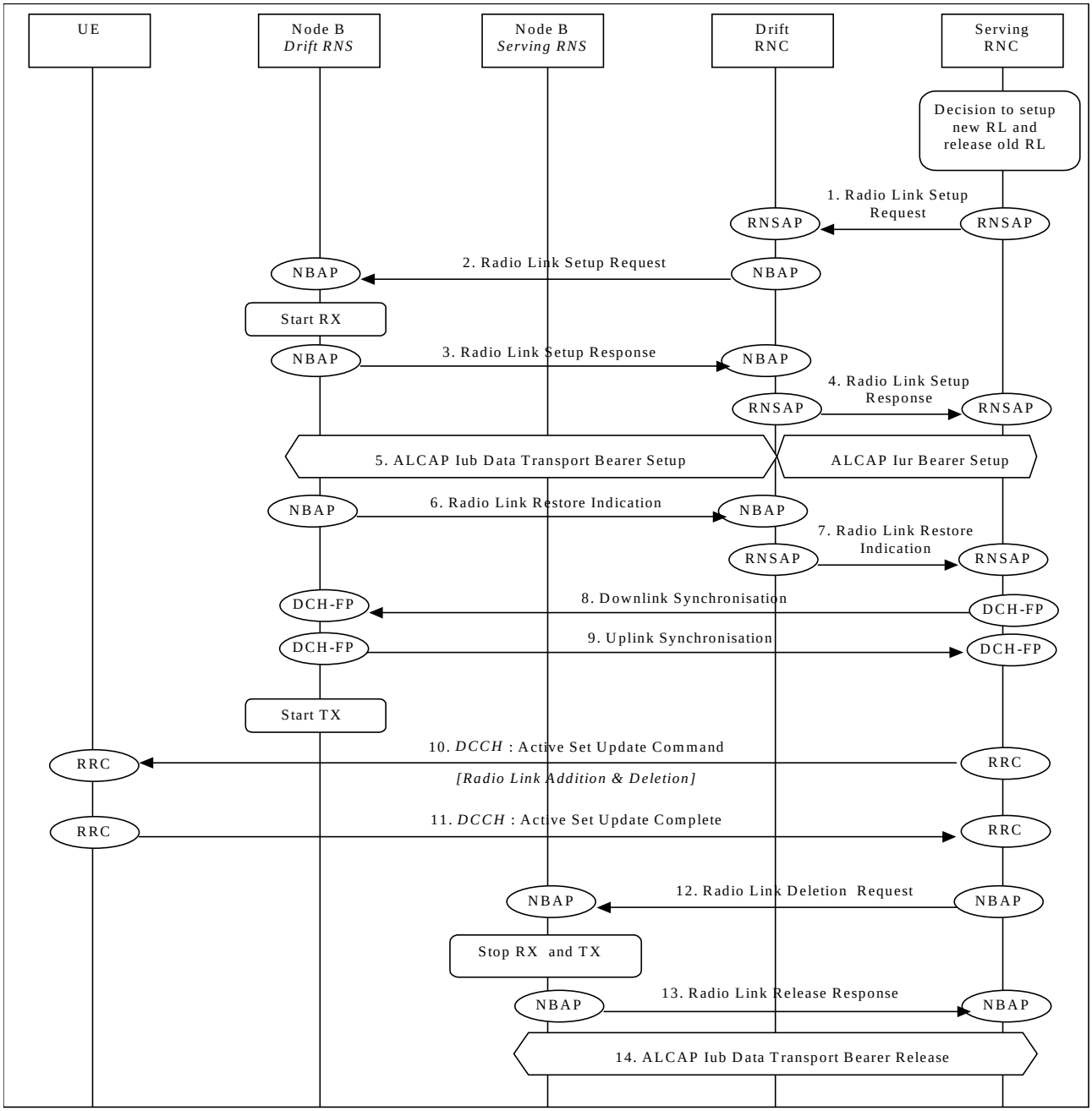
11~~9~~.UE acknowledges with RRC message **Active Set Update Complete**.

NOTE: The order of transmission of **Radio Link Restore Indication** messages (steps 6 and 7) is not necessarily identical to that shown in the example. These messages could be sent before the ALCAP bearer setup (step 5) or after the transport bearer synchronisation (steps 8 and 9).

7.10.3 Radio link Addition & Deletion (Branch Addition & Deletion - simultaneously)

This example shows simultaneous deletion of a radio link belonging to a Node B controlled by the serving RNC and the establishment of a radio link via a Node B controlled by another RNC than the serving RNC. This is the first radio link to be established via this RNS, thus macro-diversity combining/splitting with already existing radio links within DRNS is not possible.

This procedure is needed when the maximum number of branches allowed for the macrodiversity set has already been reached.



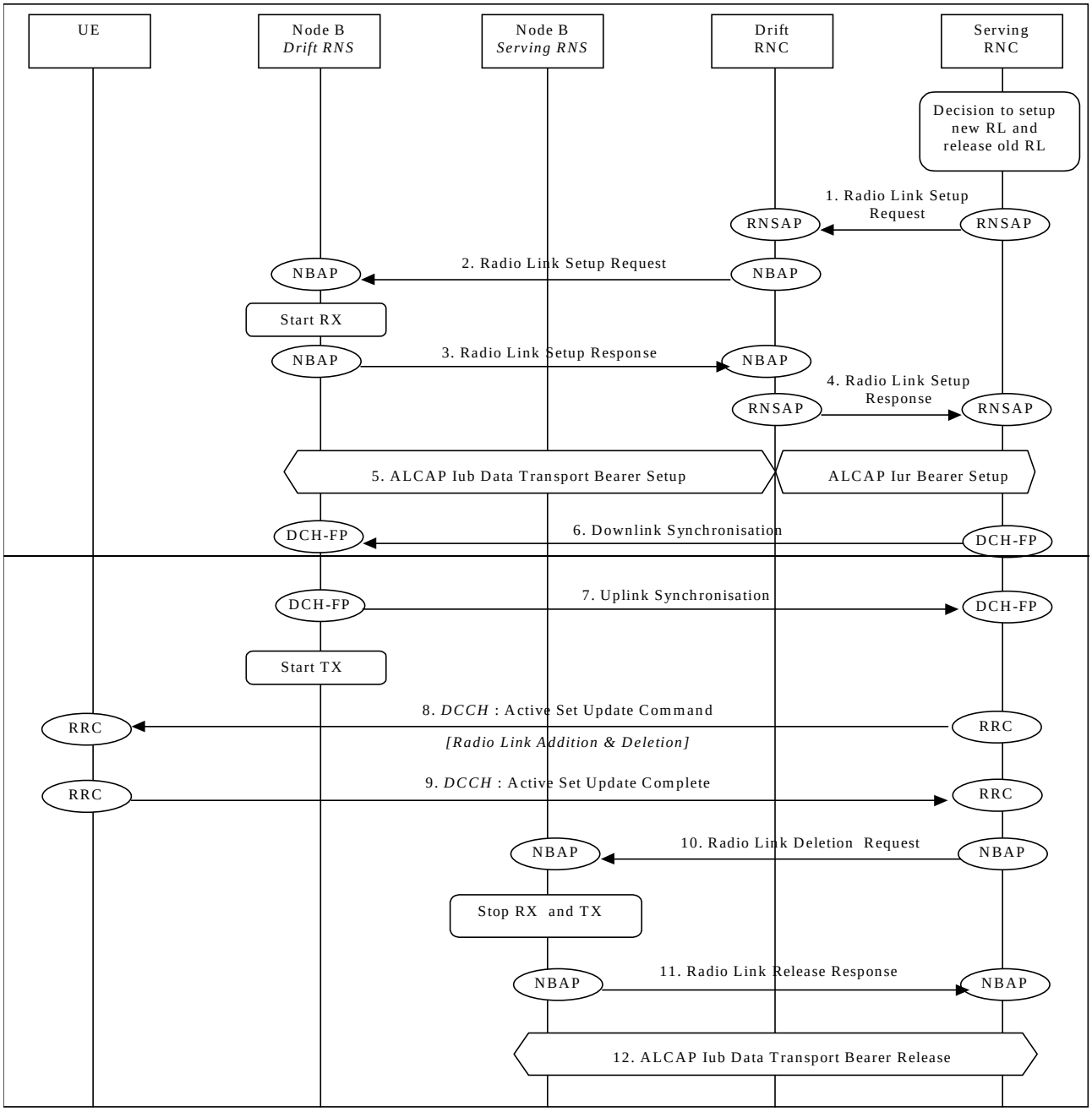


Figure 26: Soft Handover - Radio link Addition & Deletion (Branch Addition & Deletion - simultaneously)

1. ⇒ 9~~7~~. See description 1. ⇒ 9~~7~~. in subclause 7.10.1.

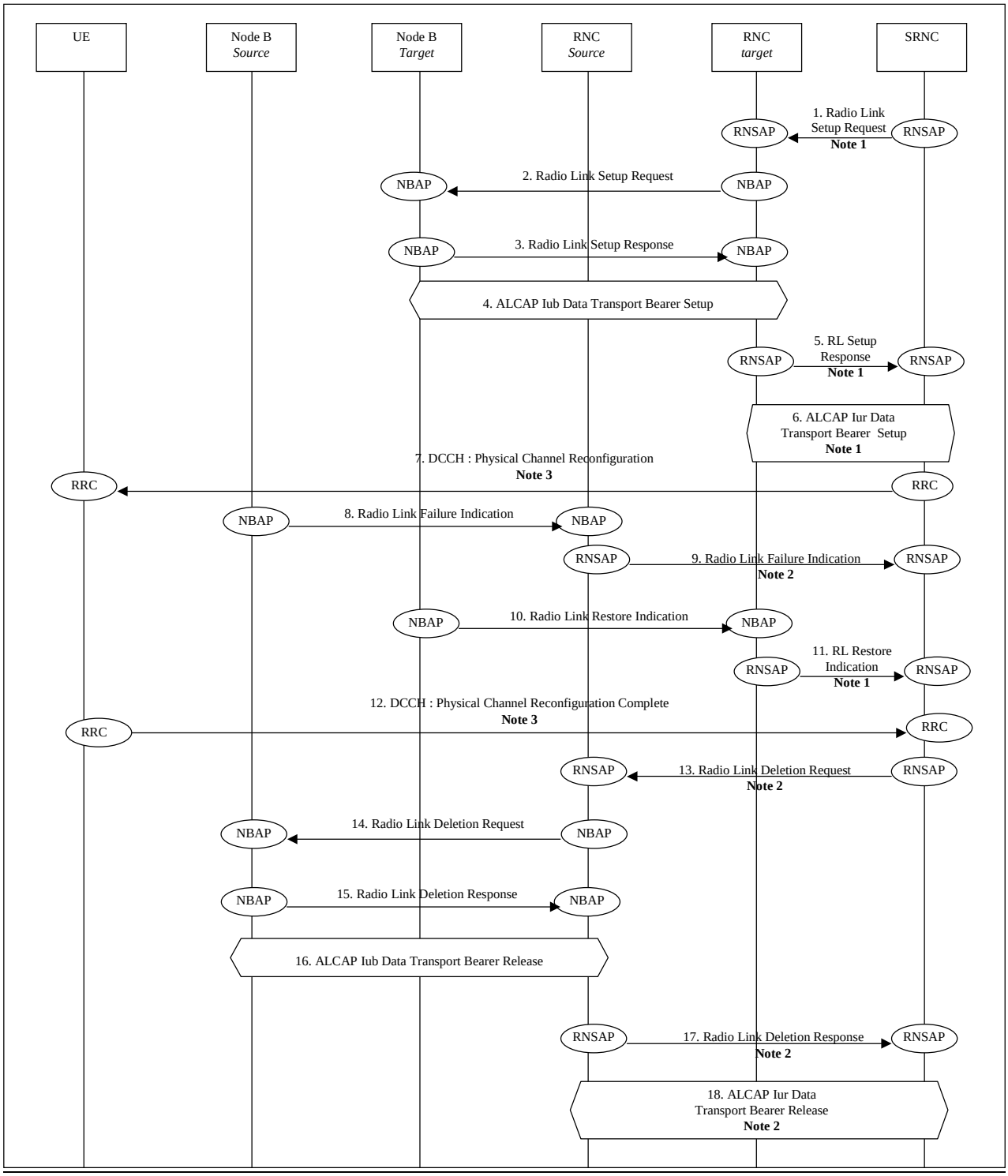
10~~8~~. SRNC sends RRC message **Active Set Update** (Radio Link Addition & Deletion) to UE on DCCH.
Parameters: Update type, Cell id, DL scrambling code, Power control information, Ncell information.

11~~9~~. UE deactivates DL reception via old branch, activates DL reception via new branch and acknowledges with RRC message **Active Set Update Complete**.

12~~0~~. ⇒ 14~~2~~. See description 3. ⇒ 7. in subclause 7.10.2.

7.11.1.1 Hard Handover via Iur (DCH State)

This subclause shows an example of Hard Handover via Iur, when the mobile is in DCH state, for both successful and unsuccessful cases.



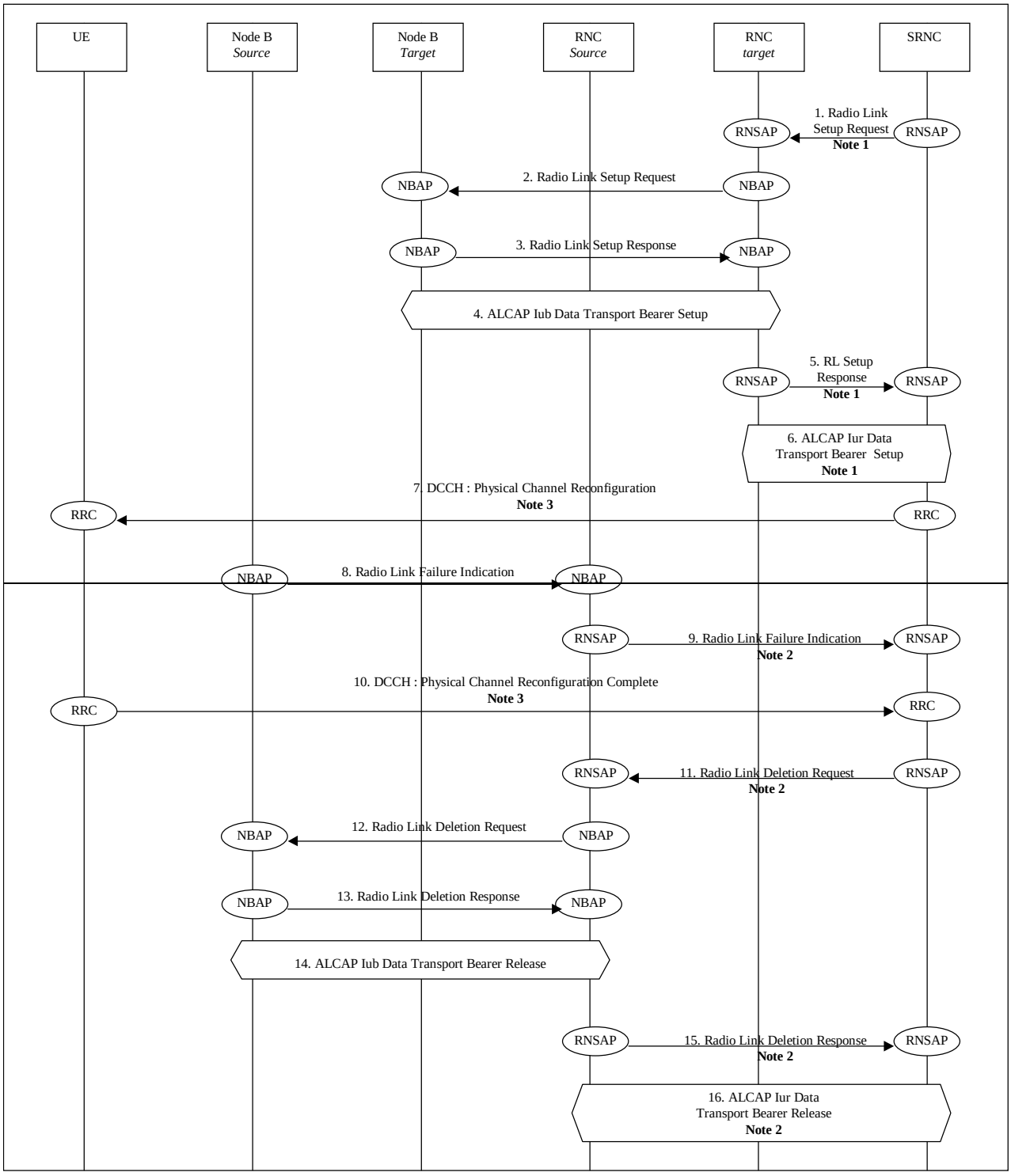


Figure 27: Hard Handover via Iur (DCH on Iur) – successful case

1. SRNC sends **Radio Link Setup Request** message to the target RNC.
   Parameters: target RNC identifier, s-RNTI, Cell id, Transport Format Set, Transport Format Combination Set. (Note 1).
2. The target RNC allocates RNTI and radio resources for the RRC connection and the Radio Link(s) (if possible), and sends the NBAP message **Radio Link Setup Request** to the target Node-B.
   Parameters: Cell id, Transport Format Set, Transport Format Combination Set, frequency, UL scrambling code (FDD only), Time Slots (TDD only), User Codes (TDD only), Power control information etc.

3. Node B allocates resources, starts PHY reception, and responds with NBAP message **Radio Link Setup Response**. Parameters: Signalling link termination, Transport layer addressing information for the Iub Data Transport Bearer.
4. Target RNC initiates set-up of Iub Data Transport bearer using ALCAP protocol. This request contains the AAL2 Binding Identity to bind the Iub Data Transport Bearer to the DCH. The request for set-up of Iub Data Transport bearer is acknowledged by Node B.
5. When the Target RNC has completed preparation phase, **Radio Link Setup Response** is sent to the SRNC (*Note 1).*
6. SRNC initiates set-up of Iur Data Transport bearer using ALCAP protocol. This request contains the AAL2 Binding Identity to bind the Iur Data Transport Bearer to the DCH. The request for set-up of Iur Data Transport bearer is acknowledged by Target RNC (*Note 1).*
7. SRNC sends a RRC message **Physical Channel Reconfiguration** to the UE.
8. When the UE switches from the old RL to the new RL, the source Node B detects a failure on its RL and sends a NBAP message **Radio Link Failure Indication** to the source RNC.
9. The source RNC sends a RNSAP message **Radio Link Failure Indication** to the SRNC (*Note 2).*
10. Target Node B achieves uplink sync on the Uu and notifies target RNC with NBAP message **Radio Link Restore Indication**.
11. Target RNC sends RNSAP message **Radio Link Restore Indication** to notify SRNC (*Note 2)* that uplink sync has been achieved on the Uu.

12~~0~~. When the RRC connection is established with the target RNC and necessary radio resources have been allocated, the UE sends RRC message **Physical Channel Reconfiguration Complete** to the SRNC.

13~~1~~. The SRNC sends a RNSAP message **Radio Link Deletion Request** to the source RNC (*Note 2).*

14~~2~~. The source RNC sends NBAP message **Radio Link Deletion Request** to the source Node B. Parameters: Cell id, Transport layer addressing information.

15~~3~~. The source Node B de-allocates radio resources. Successful outcome is reported in NBAP message **Radio Link Deletion Response**.

16~~4~~. The source RNC initiates release of Iub Data Transport bearer using ALCAP protocol.

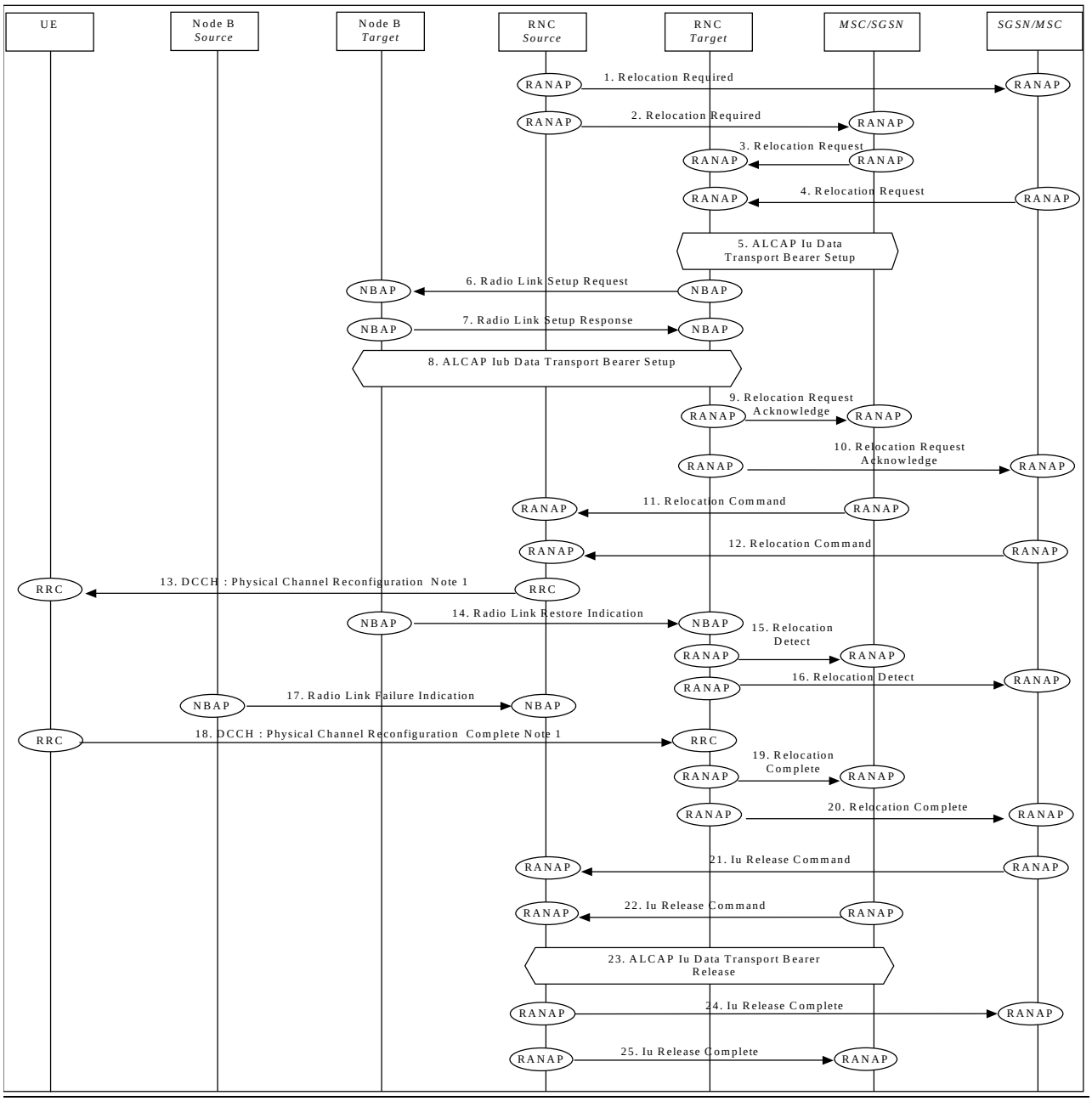
17~~5~~. When the source RNC has completed the release the RNSAP message Radio Link Deletion Response is sent to the SRNC (*Note 2).*

18~~6~~. SRNC initiates release of Iur Data Transport bearer using ALCAP protocol. This request contains the AAL2 Binding Identity to bind the Iur Data Transport Bearer to the DCH. The request for release of Iur Data Transport bearer is acknowledged by the Source RNC *(Note 2).*

NOTE 1: This message is not necessary when the target RNC is the SRNC.
NOTE 2: This message is not necessary when the source RNC is the SRNC.
NOTE 3: The messages used are only one example of the various messages which can be used to trigger a handover, to confirm it or to indicate the handover failure. The different possibilities are specified in the RRC specification (25.331), subclause 8.3.5.2.

7.11.1.2 Hard Handover with switching in the CN (UE connected to two CN nodes, DCH state)

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.



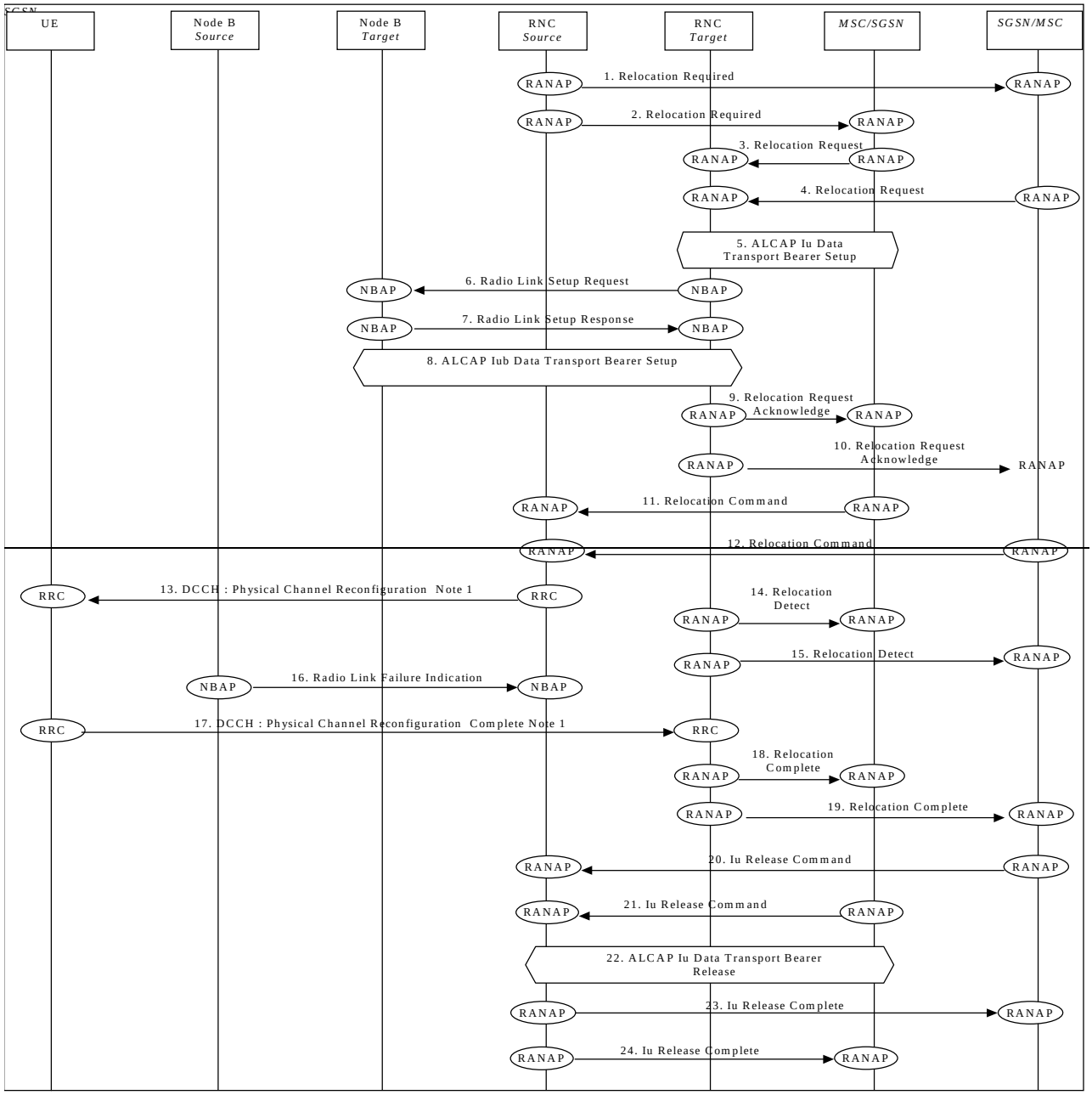


Figure 29: Hard Handover with switching in the CN (UE connected to two CN nodes, DCH state)

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 **Relocation 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 **Relocation 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 CN is aware of preparation, CN node conveys a **Relocation Request** message to the target RNC to allocate resources.
Parameters: bearer ID's requested to be rerouted towards the CN node, from which the **Relocation 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.

5. Target RNC and CN node establish the new Iu transport bearers for each Radio Access Bearer related to the CN node.

6./7./8. The target RNC allocates RNTI and radio resources for the RRC connection and the Radio Link, then sends the NBAP message **Radio Link Setup Request** to the target Node-B.
Parameters: Cell id, Transport Format Set, Transport Format Combination Set, frequency, UL scrambling code (FDD only), Time Slots (TDD only), User Codes (TDD only), Power control information etc.
Node B allocates resources, starts PHY reception, and responds with NBAP message **Radio Link Setup Response**. Target RNC initiates set-up of Iub Data Transport bearer using ALCAP protocol. This request contains the AAL2 Binding Identity to bind the Iub Data Transport Bearer to the DCH.

9./10. When RNC has completed preparation phase, **Relocation Request Acknowledge** is sent to the CN elements.
Parameters: transparent field to the CN that is to be transmitted to the Source RNS.

11./12. When CN is ready for the change of SRNC, CN node sends a **Relocation Command** to the RNC. Message contains the transparent field provided by Target RNC.
Parameters: information provided in the Information field from the target RNC.

13. Source RNC sends a RRC message **Physical Channel Reconfiguration** to the UE.

14. Target Node B achieves uplink sync on the Uu and notifies target RNC with NBAP message **Radio Link Restore Indication**.

15/16~~14./15~~. When target RNC has detected the UE, Relocation Detect message is sent to the CN nodesTarget 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 B16. When the UE switch from the old RL to the new RL, the source Node B detect a failure on its RL and send a NBAP message **Radio Link Failure Indication** to the source RNC.

18~~7~~. When the RRC connection is established with the target RNC and necessary radio resources have been allocated the UE sends RRC message **Physical Channel Reconfiguration Complete** to the target RNC.

19/20~~18./19~~ After a successful switch and resource allocation at target RNC, RNC sends **Relocation Complete** messages to the involved CN nodes.
At any phase, before the **Relocation 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 unexceptional thing occurs a **Relocation Failure** message may be sent instead of any message numbered 3-10 and 13-14 described in this above.

21/22~~20./21~~. The CN node initiates the release of the Iu connections to the source RNC by sending RANAP message **Iu Release Command**.

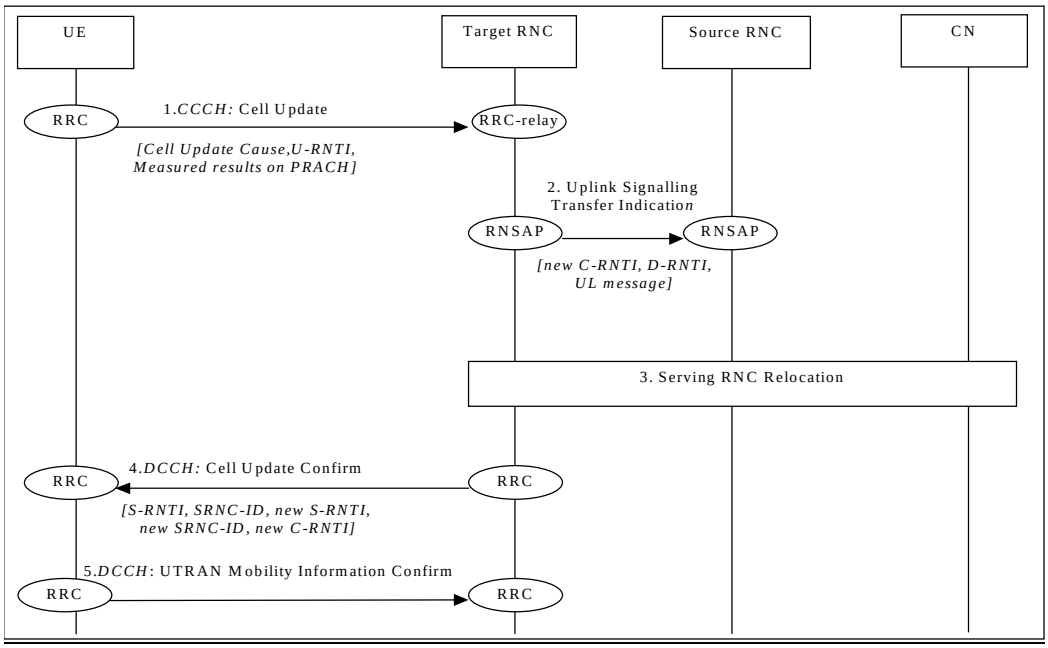
23~~2~~. Upon reception of the release requests from the CN nodes the old SRNC executes all necessary procedures to release all visible UTRAN resources that were related to the RRC connection in question.

24/25~~23./24~~. SRNC confirm the IU release to the CN nodes sending the message **Iu Release Complete.**

NOTE 1: The messages used are only one example of the various messages which can be used to trigger a handover, to confirm it or to indicate the handover failure. The different possibilities are specified in the RRC specification (25.331), subclause 8.3.5.2.

7.11.2.1 Cell Update with SRNS relocation

This example shows Inter-RNS Cell Update with switching in the CN (therefore with SRNS relocation) and RNTI reallocation.



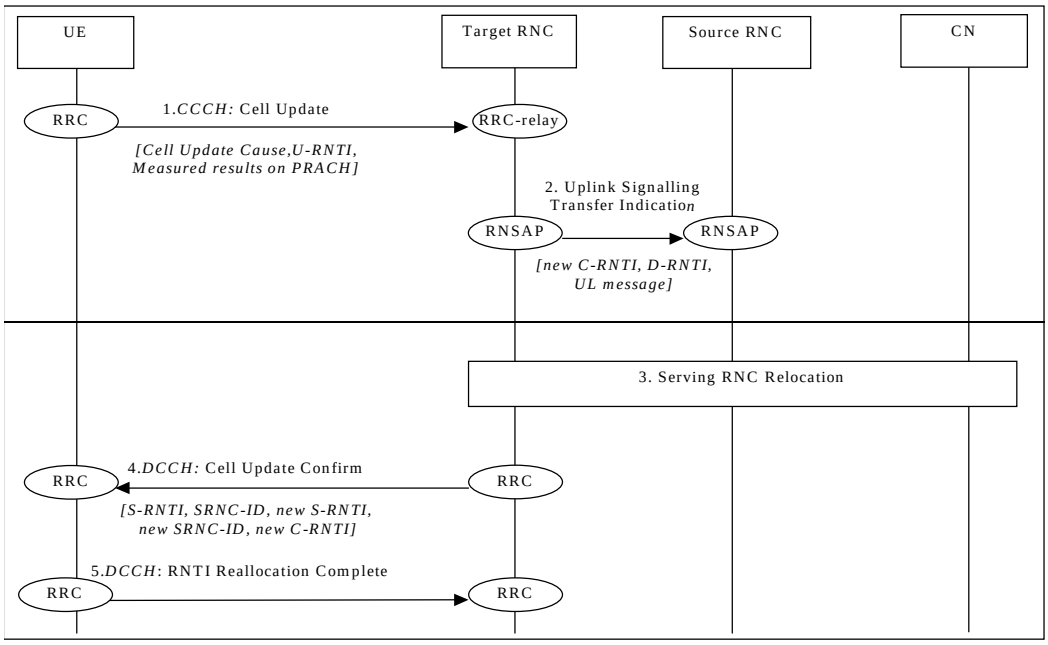


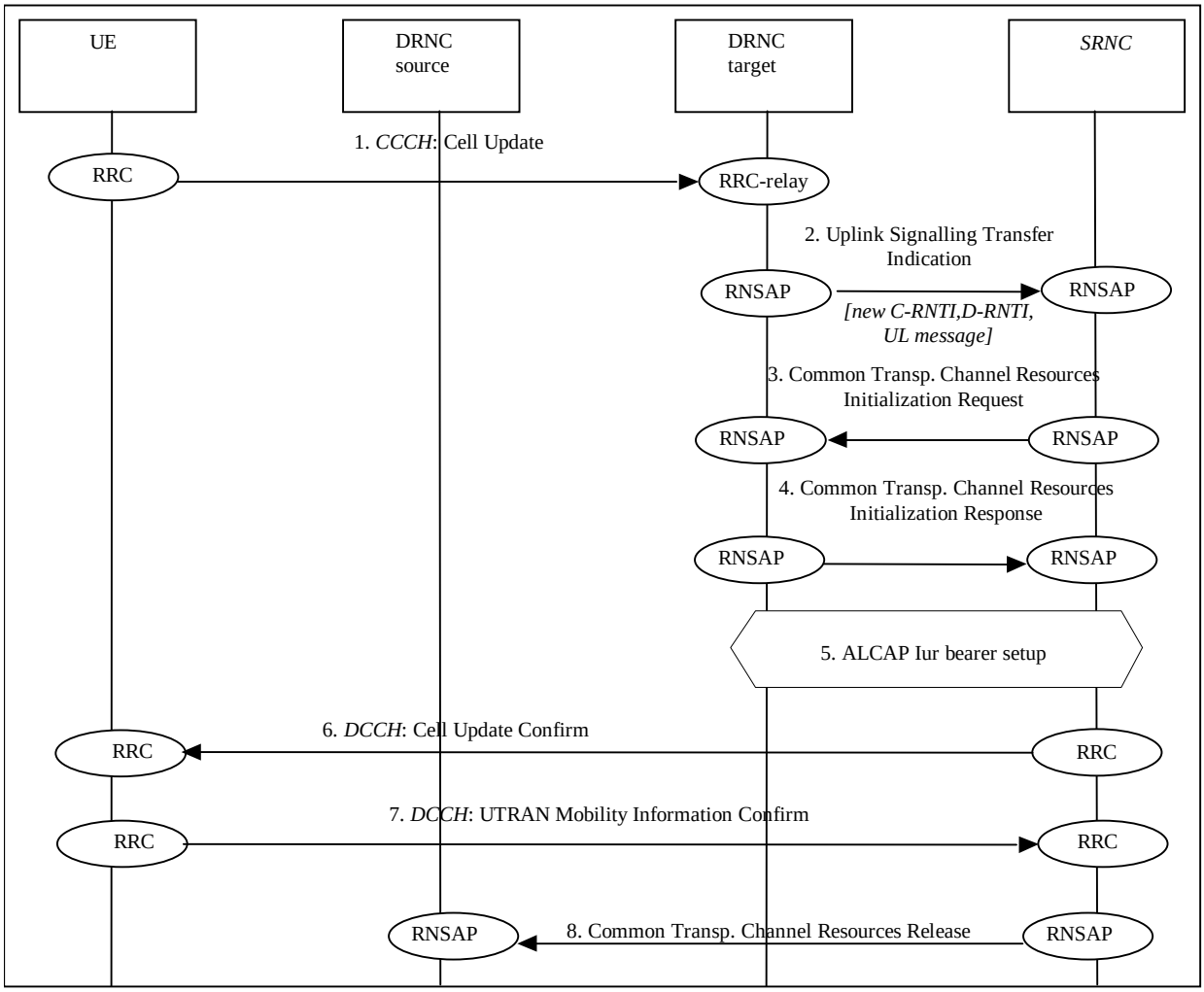
Figure 30: Cell Update with SRNS Relocation

1. UE sends a RRC message **Cell Update** to the UTRAN, after having made cell re-selection. Upon reception of a CCCH message from a UE, target RNC allocates a C-RNTI for the UE.
2. Controlling target RNC forward the received message (on CCCH) via **Uplink Signalling Transfer Indication** RNSAP message towards the SRNC. Message includes, besides target RNC-ID, also the allocated C-RNTI, which is to be used as UE identification within the C-RNC, and the D-RNTI. Upon reception of the RNSAP message SRNC decides to perform SRNS Relocation towards the target RNC.
3. Serving RNC relocation procedure is executed as defined in subclause 'SRNS Relocation Relocation (UE connected to a single CN node)'. After completing SRNS Relocation, target RNC allocates new S-RNTI for the UE, UE becoming the new serving RNC.
4. Target RNC responds to UE by RRC **Cell Update Confirm**, including old S-RNTI and SRNC ID as UE identifiers. Message contains also the new S-RNTI, SRNC-ID and C-RNTI.

5. UE acknowledges the RNTI reallocation by sending the RRC message **UTRAN Mobility Information Confirm**~~**RNTI Reallocation Confirm**~~

7.11.2.2 Cell Update via Iur without SRNS relocation

This example shows an Inter RNS cell update in DRNS without SRNS relocation when no Iur RACH/FACH transport bearer exists. In this example target DRNS, source DRNS and serving RNS are all located separately from each other. Other scenarios can be easily derived from this most comprehensive signalling procedure.



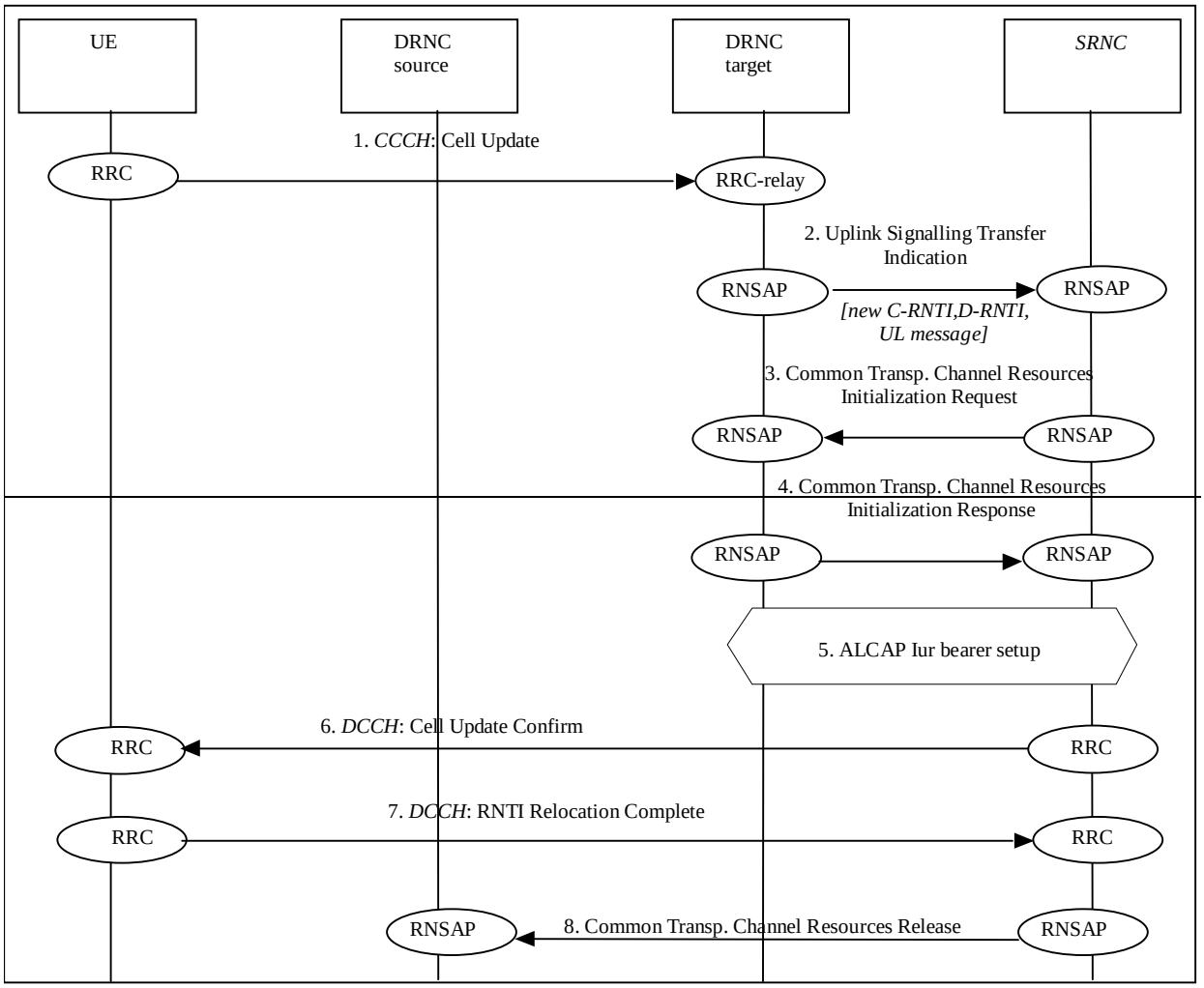
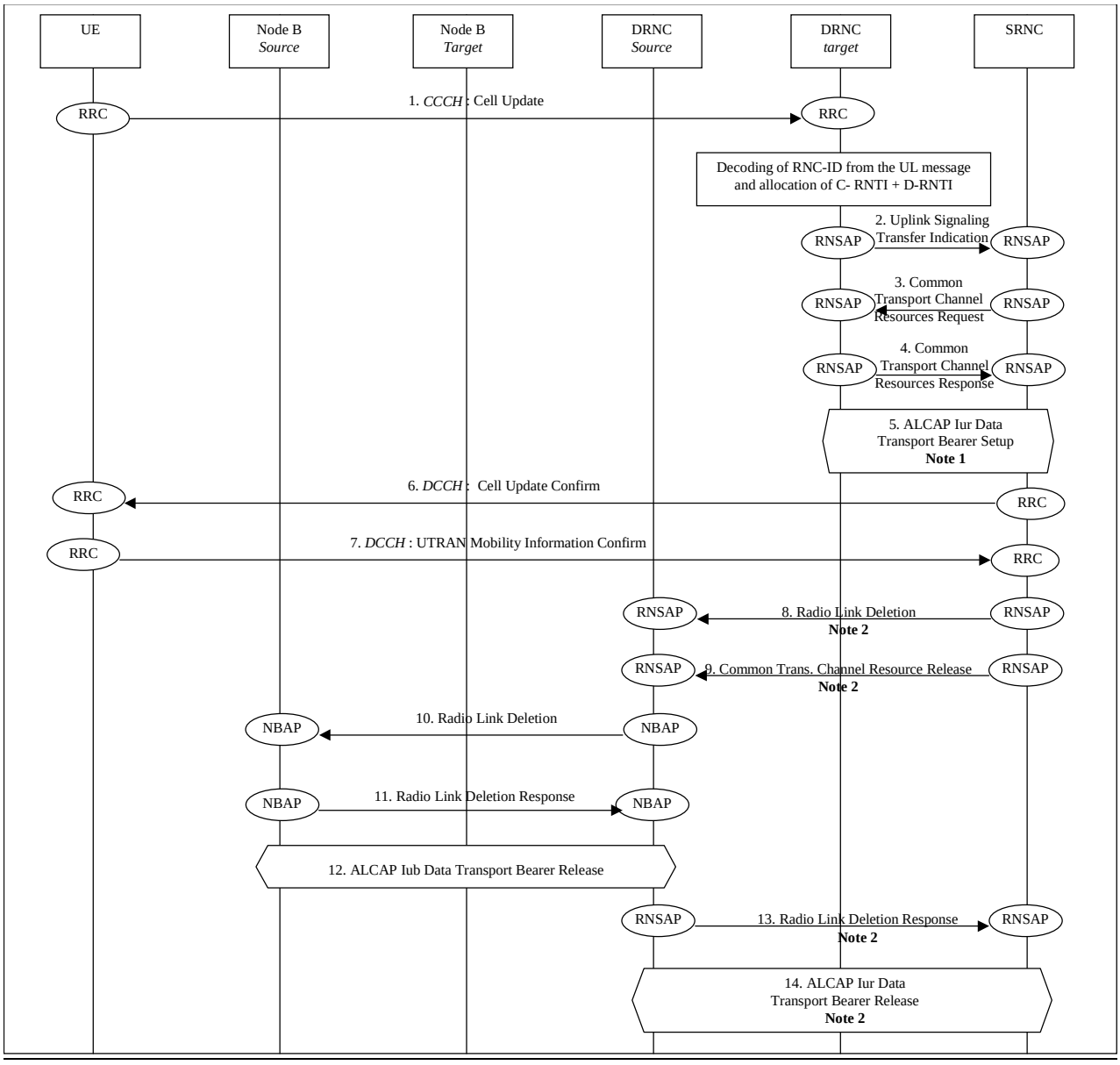


Figure 31: Cell Update via Iur without SRNS Relocation

1. UE sends an RRC message **Cell Update** to the UTRAN (Target DRNC), after having made cell re-selection.
2. Upon reception of a CCCH message from a UE, the target DRNC decodes the SRNC-ID and the S-RNTI. The UE is not registered in the target DRNC, thus the target DRNC allocates C-RNTI and D-RNTI for the UE. The target DRNC forwards the received uplink CCCH message towards the SRNC in the RNSAP **Uplink Signalling Transfer Indication** message. The Uplink Signalling Transfer message includes also the cell-ID of the cell from which the CCCH message was received, the D-RNC ID and the allocated C-RNTI and D-RNTI.
3. Upon reception of the Uplink Signalling Transfer message the SRNC decides not to perform an SRNS Relocation towards the target RNC. The SRNC initialises the UE context in the target RNC with the **RNSAP Common Transport Channel Resources Initialisation Request** message. The message includes the D-RNTI and the cell identity previously received in the Uplink Signalling Transfer indication message, as well as a request for transport layer address and binding identity if there exists no appropriate Iur transport bearer to be used for the UE.
4. The target DRNC sends the transport layer address, binding identity and optionally PHY parameters (FACH code,) to the SRNC with the RNSAP **Common Transport Channel Resources Initialisation Response** message
5. If there does not already exist an appropriate Iur transport bearer to be used for the UE, a transport bearer is established from the SRNC.
6. The SRNC sends RRC **Cell Update Confirm** to the UE. The message is sent in the Iur user plane. It will be sent by the target DRNC to the UE on the FACH coupled to the RACH. Subsequent FACH data may be sent on a different FACH if so decided by the target DRNC.
7. UE acknowledges the RNTI reallocation by sending the RRC message **UTRAN Mobility Information Confirm~~RNTI Reallocation Confirm~~**.
8. The SRNC releases the UE context in the source DRNC by sending a **Common Transport Channel Resources Release** message. The source DRNC releases the D-RNTI.

7.11.2.4 Cell Update via Iur with USCH/DSCH, without SRNS relocation

This example shows an inter-RNS cell update without SRNS relocation, when the UE is in Cell_FACH state and has been allocated DSCH and USCH (TDD) before the Cell Update and when no Iur RACH/FACH transport bearer exists. In this example target RNS, source RNS and serving RNS are all located separately from each other. The procedure includes an implicit release of the USCH and DSCH, which includes release of the Radio Link in the old cell. A potential restoration of USCH and DSCH after the cell update, triggered by the SRNC, is not shown.



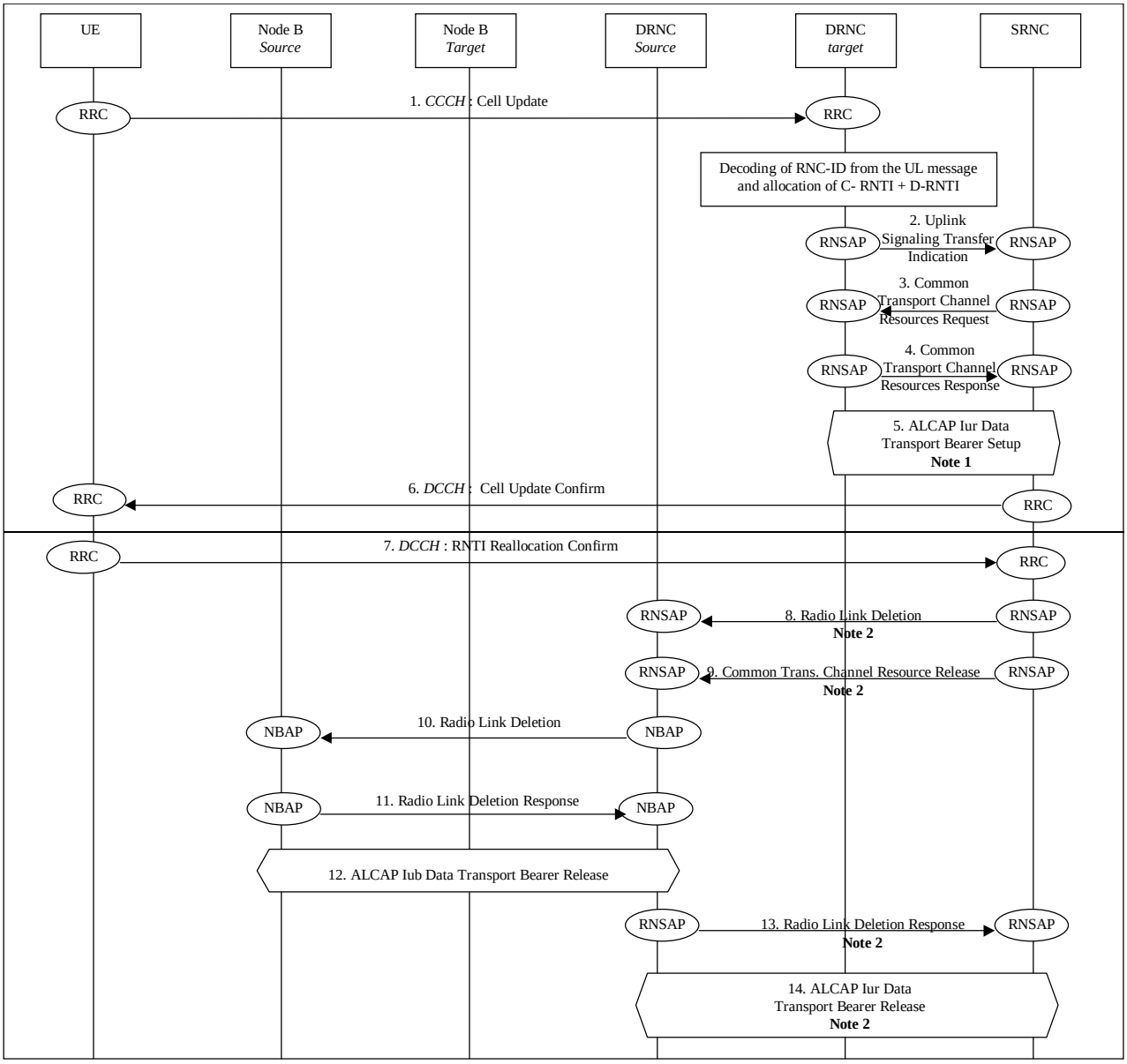


Figure 32: Backward Cell Update via Iur (Cell_FACH State with USCH/DSCH) – successful case.

Note 1: These messages are not necessary if the Target RNC and the SRNC are identical.
Note 2: These messages are not necessary if the Source RNC and the SRNC are identical.

1. When the UE decides that a cell update is necessary, it sends an RRC message **Cell Update** to the Target RNC. This is a *CCCH* message carried on the *RACH* in the new cell. Upon reception of a CCCH message from a UE, the target DRNC decodes the SRNC ID and the S-RNTI. Supposing that the UE is not registered in the target DRNC (RNC ID and SRNTI unknown), the target DRNC allocates a C-RNTI and a D-RNTI for the UE.
2. The Target RNC forwards the **Cell Update** to the SRNC via an RNSAP **Uplink Signaling Transfer** message. (*Note 1*). The Uplink Signalling Transfer message includes also the cell-ID of the cell from which the CCCH message was received, the D-RNTI and the allocated C-RNTI. Upon reception of the Uplink Signalling Transfer message the SRNC decides not to perform a SRNS Relocation towards the target RNC.
3. The SRNC initialises the UE context in the target RNC with the **RNSAP Common Transport Channel Resource Request** message. The message includes the D-RNTI and the cell identity previously received in the Uplink Signalling Transfer indication message, as well as a request for transport layer address and binding identity if there exists no appropriate Iur transport bearer to be used for the UE. (*Note 1*)
4. The Target RNC responds with an RNSAP message **Common Transport Channel Resources Response** including the transport layer address, binding identity and optionally PHY parameters (FACH code, ..) (*Note 1*).
5. If there does not already exist an appropriate Iur transport bearer to be used for the UE, a transport bearer is established from the SRNC (*Note 1*).

6. The SRNC sends an RRC message **Cell Update Confirm** within the *DCCH* on *FACH* to the UE. The message is sent in the Iur user plane. It will be sent by the target DRNC to the UE on the FACH coupled to the RACH. Subsequent FACH data may be sent on a different FACH if so decided by the target DRNC.
7. UE acknowledges the RNTI reallocation by sending the RRC message **UTRAN Mobility Information Confirm**~~**RNTI Reallocation Confirm**~~.
8. The SRNC releases the UE context in the source DRNC by sending a **Common Transport Channel Resource Release** message. The source DRNC releases the D-RNTI (*Note 2*).
9. The SRNC sends an RNSAP message **Radio Link Deletion** to the source RNC(*Note 2*).
10. The source RNC sends NBAP message **Radio Link Deletion** to the source Node B.
    Parameters: Cell id, Transport layer addressing information.
11. The source Node B deletes the previous Radio link and the Communication Context. Successful outcome is reported in NBAP message **Radio Link Deletion Response**.
12. The source RNC initiates release of the corresponding Iub Data Transport bearers using ALCAP protocol.
13. When the source RNC has completed the release, the RNSAP message **Radio Link Deletion Response** is sent to the SRNC (*Note 2).*
14. SRNC initiates release of Iur Data Transport bearer using ALCAP protocol. The request for release of Iur Data Transport bearer is acknowledged by the Source RNC *(Note 2).*

7.12.1 Inter-RNS URA Update with SRNS Relocation

This example shows Inter-RNS URA Update with switching in the CN (SRNS relocation).

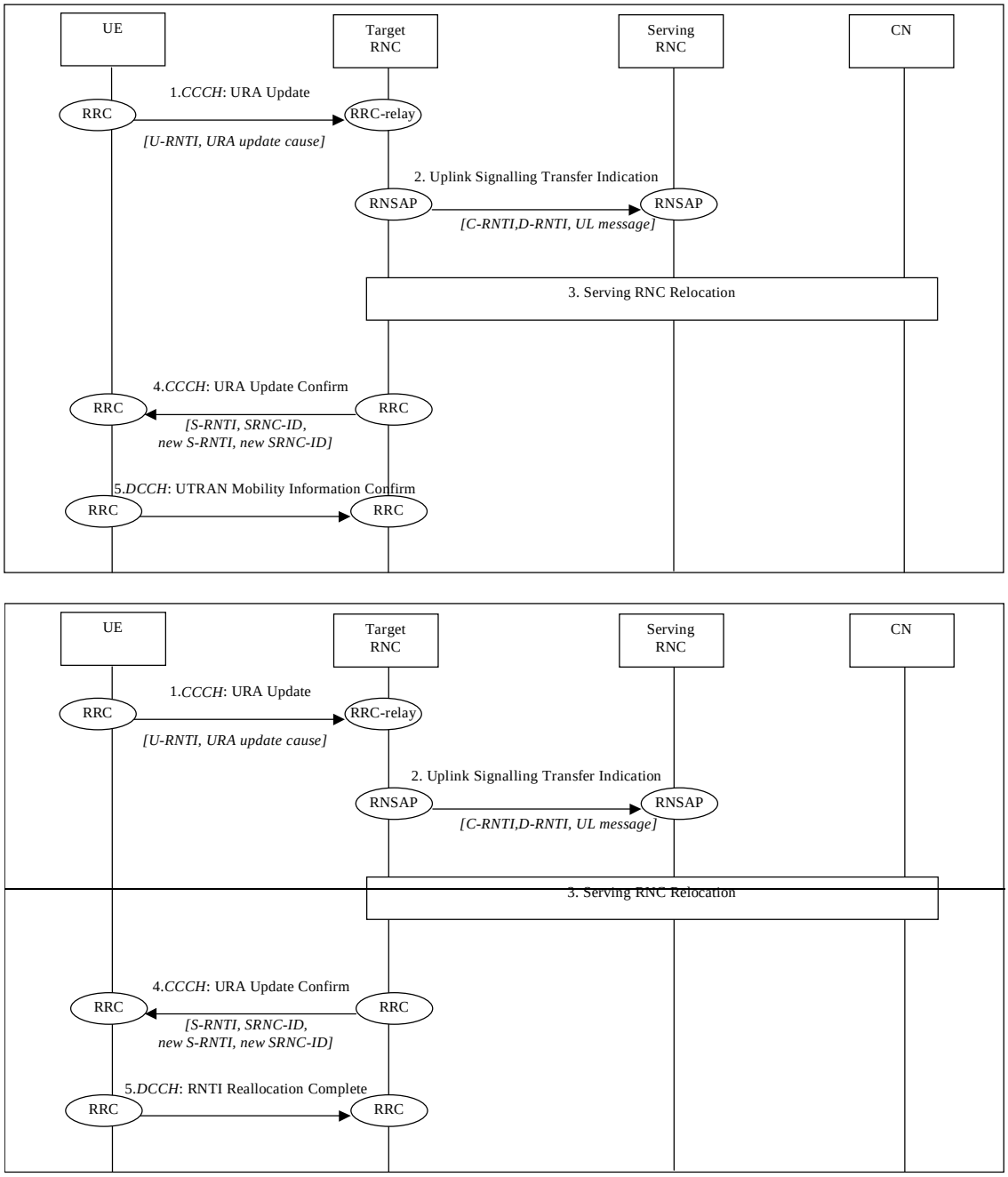


Figure 33: Inter RNS URA Update with switching in CN.

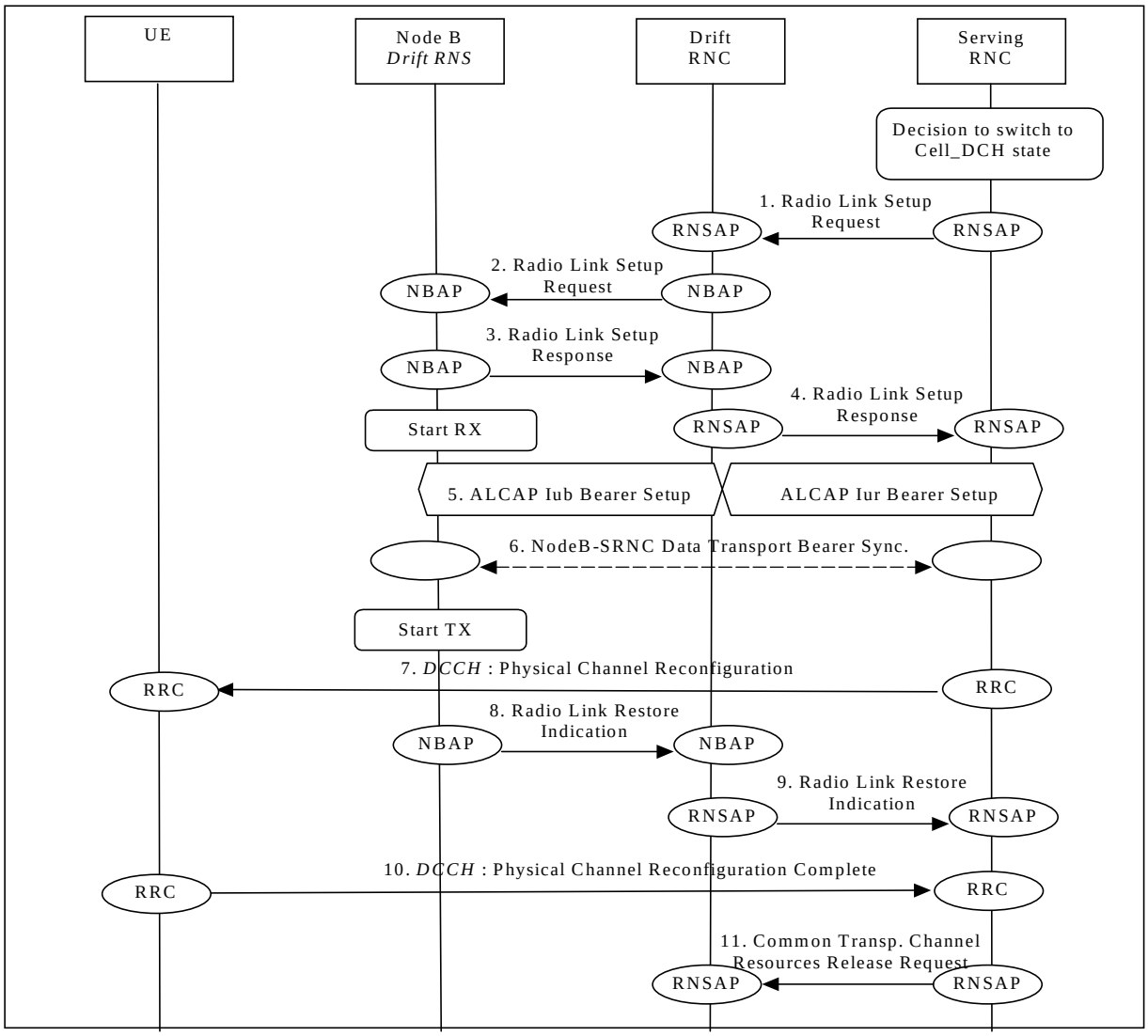
1. UE sends a RRC message **URA Update** to the UTRAN, after having made cell re-selection. Upon reception of a CCCH message from an unknown UE, the target RNC becomes a controlling RNC and it allocates a new C-RNTI and a new D-RNTI for the UE.
2. The target RNC forwards the received uplink CCCH message towards the SRNC by RNSAP **Uplink Signalling Transfer Indication** message to the old Source/Controller RNC. Message includes, besides target RNC-ID, also the allocated C-RNTI, which is to be used as UE identification within the C-RNC, and the D-RNTI. Upon reception of the RNSAP message SRNC decides to perform SRNS Relocation towards the target RNC.
3. Serving RNC relocation procedure is executed as defined in subclause 'SRNS Relocation (UE connected to a single CN node)'. After having completed SRNS Relocation, target RNC allocates new S-RNTI for the UE becoming the new serving RNC. New SRNC also deletes the allocated C-RNTI, since it is not needed for an UE in URA_PCH state.

4. Serving RNC acknowledges the message by RRC **URA Update Confirm**, including old S-RNTI and SRNC ID as UE identifiers. Message contains also the new S-RNTI and RNC-ID.
5. UE acknowledges the RNTI reallocation by sending the RRC message **UTRAN Mobility Information Confirm**~~**RNTI Reallocation Confirm**~~ on DCCH.

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:



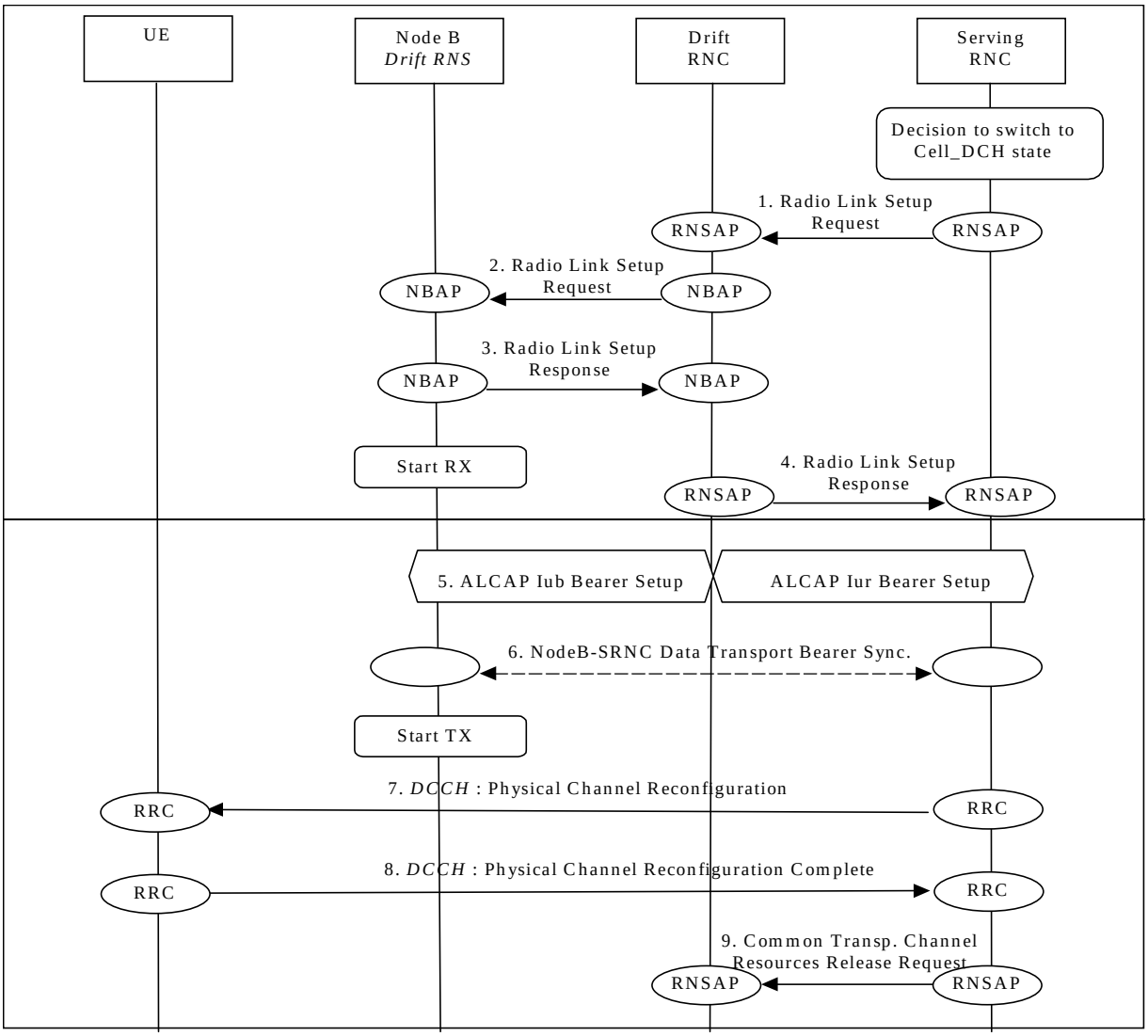


Figure 45B Switching from Cell_FACH to Cell_DCH State via Iur

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. Node B achieves uplink sync on the Uu and notifies DRNC with NBAP message **Radio Link Restore Indication**.
9. DRNC sends RNSAP message **Radio Link Restore Indication** to notify SRNC that uplink sync has been achieved on the Uu.
~~8.~~10. After the reconfiguration, the UE sends RRC message **Physical Channel Reconfiguration Complete** to SRNC.
~~9.~~11. The SRNC releases the UE context for CELL_FACH state in the source DRNC by sending a **Common Transport Channel Resources Release** message.

3GPP TSG-RAN3 #25 Meeting
Makuhari, Japan, November 26th – 30th 2001

Tdoc R3-013492

CR-Form-v3

CHANGE REQUEST

⌘ **25.931** **CR** **012** ⌘ rev **1** ⌘ Current version: **4.1.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network [X] Core Network ☐

Title:	⌘	Obsolete or Missing Messages
Source:	⌘	R-WG3
Work item code:	⌘	TEI
Date:	⌘	November 2001
Category:	⌘	**A**
Release:	⌘	REL-4

Use one of the following categories:
F *(essential correction)*
A *(corresponds to a correction in an earlier release)*
B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change: ⌘ In the present version of 25.931 there are two obsolete RRC messages: **RRC Connection Re-establishment** and **RNTI Reallocation**.
Moreover, there are no examples with the NBAP/RNSAP message **Radio Link Restore Indication**.

Summary of change: ⌘
In 4.4: add Radio Link Restore Indication to the table.
In 4.5: add Radio Link Restore Indication to the table.
In 4.7: delete RRC Connection Re-establishment and RNTI Reallocation Complete messages; add UTRAN Mobility Information Confirm message.
In 7.3.1: add Radio Link Restore Indication (figure and text).
In 7.5: change text.
In 7.5.1.1 and 7.5.1.2: replace RRC Connection Re-establishment with Cell Update; add UTRAN Mobility Information Confirm (figure and text).
In 7.6.3: add Radio Link Restore Indication (figure and text).
In 7.8.2: typo.
In 7.10.1, 7.10.3, 7.11.1.2: add Radio Link Restore Indication (figure and text).
In 7.11.2.1, 7.11.2.2, 7.11.2.4, 7.12.1: add UTRAN Mobility Information Confirm (figure and text).
In 7.18.2: add Radio Link Restore Indication (figure and text).

Consequences if not approved: ⌘ Several non-essential omissions will remain in the specification.

Impact Analysis:

This CR has no impact on the previous version of the specification (same release) because 25.931 has purely informative character.

Clauses affected: ⌘ 4.4; 4.5; 4.7; 7.3.1; 7.5; 7.5.1.1; 7.5.1.2; 7.6.3; 7.8.2; 7.10.1; 7.10.3; 7.11.1.1; 7.11.1.2; 7.11.2.1; 7.11.2.2; 7.11.2.4; 7.12.1; 7.18.2

Other specs	⌘	**X**	Other core specifications	⌘	TS 25.931 v3.4.0 CR011
affected:			Test specifications		
			O&M Specifications		
Other comments:	⌘				

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

4.4 RNSAP Procedures & Messages

For a detailed description of RNSAP procedures and messages refer to [4]. Only Messages mentioned in the present document are shown. For each message is also given the list of example procedures where the message is used, as provided by this document.

Table 3

Message Name	UTRAN Procedure	Direction
Common Transport Channel Resources Release	Cell Update	SRNC ⇒ DRNC
Common Transport Channel Resources Initialisation Request	Cell Update	SRNC ⇒ DRNC
Common Transport Channel Resources Initialisation Response	Cell Update	DRNC ⇒ SRNC
DL Power Control Request	Downlink Power Control	SRNC ⇒ DRNC
Downlink Signalling Transfer Request	RRC Connection Re-establishment URA Update	SRNC ⇒ DRNC SRNC ⇒ DRNC
Radio Link Addition Request	RRC Connection Release Soft Handover Hard Handover	SRNC ⇒ DRNC SRNC ⇒ DRNC SRNC ⇒ DRNC
Radio Link Addition Response	RRC Connection Release Soft Handover Hard Handover	DRNC ⇒ SRNC DRNC ⇒ SRNC DRNC ⇒ SRNC
Radio Link Deletion Request	RRC Connection Re-establishment Soft Handover Hard Handover	SRNC ⇒ DRNC SRNC ⇒ DRNC SRNC ⇒ DRNC
Radio Link Deletion Response	RRC Connection Re-establishment Soft Handover Hard Handover	DRNC ⇒ SRNC DRNC ⇒ SRNC DRNC ⇒ SRNC
Radio Link Failure Indication	Hard Handover	DRNC ⇒ SRNC
Radio Link Reconfiguration Request	Radio Access Bearer Establishment Radio Access Bearer Release Physical Channel Reconfiguration Transport Channel Reconfiguration	SRNC ⇒ DRNC SRNC ⇒ DRNC SRNC ⇒ DRNC SRNC ⇒ DRNC
Radio Link Reconfiguration Commit	Radio Access Bearer Establishment Radio Access Bearer Release Physical Channel Reconfiguration Transport Channel Reconfiguration Radio Access Bearer Modification	SRNC ⇒ DRNC SRNC ⇒ DRNC SRNC ⇒ DRNC SRNC ⇒ DRNC SRNC ⇒ DRNC
Radio Link Reconfiguration Prepare	Radio Access Bearer Establishment Radio Access Bearer Release Physical Channel Reconfiguration Transport Channel Reconfiguration Radio Access Bearer Modification	SRNC ⇒ DRNC SRNC ⇒ DRNC SRNC ⇒ DRNC SRNC ⇒ DRNC SRNC ⇒ DRNC
Radio Link Reconfiguration Ready	Radio Access Bearer Establishment Radio Access Bearer Release Physical Channel Reconfiguration Transport Channel Reconfiguration Radio Access Bearer Modification	DRNC ⇒ SRNC DRNC ⇒ SRNC DRNC ⇒ SRNC DRNC ⇒ SRNC DRNC ⇒ SRNC
Radio Link Reconfiguration Response	Radio Access Bearer Establishment Radio Access Bearer Release Physical Channel Reconfiguration Transport Channel Reconfiguration	DRNC ⇒ SRNC DRNC ⇒ SRNC DRNC ⇒ SRNC DRNC ⇒ SRNC
Radio Link Restore Indication	Soft Handover Hard Handover Channel and Mobile State Switching on Iur	DRNC ⇒ SRNC DRNC ⇒ SRNC DRNC ⇒ SRNC
Radio Link Setup Request	RRC Connection Re-establishment Hard Handover USCH/DSCH Configuration and Capacity Allocation [TDD]	SRNC ⇒ DRNC SRNC ⇒ DRNC SRNC ⇒ DRNC
Radio Link Setup Response	RRC Connection Re-establishment Hard Handover USCH/DSCH Configuration and Capacity Allocation [TDD]	DRNC ⇒ SRNC DRNC ⇒ SRNC DRNC ⇒ SRNC
Relocation Commit	SRNS Relocation URA Update	Source RNC ⇒ Target RNC
Uplink Signalling Transfer Indication	RRC Connection Re-establishment URA Update	DRNC ⇒ SRNC DRNC ⇒ SRNC

4.5 NBAP Procedures & Messages

For a detailed description of NBAP procedures and messages refer to [5]. Only Messages mentioned in the present document are shown. For each message is also given the list of example procedures where the message is used, as provided by this document.

Table 4

Message Name	UTRAN Procedure	Direction
DL Power Control Request	Downlink Power Control	RNC ⇒ Node B
Paging	Paging	RNC ⇒ Node B
Physical Shared Channel Reconfiguration Request	USCH/DSCH Configuration and Capacity Allocation [TDD]	RNC ⇒ Node B
Physical Shared Channel Reconfiguration Request	USCH/DSCH Configuration and Capacity Allocation [TDD]	Node B ⇒ RNC
Radio Link Addition Request	Hard Handover Soft Handover	RNC ⇒ Node B RNC ⇒ Node B
Radio Link Addition Response	Hard Handover Soft Handover	RNC ⇒ Node B RNC ⇒ Node B
Radio Link Deletion	RRC Connection Release RRC Connection Re-establishment Hard Handover Soft Handover	RNC ⇒ Node B RNC ⇒ Node B RNC ⇒ Node B RNC ⇒ Node B
Radio Link Deletion Response	RRC Connection Release RRC Connection Re-establishment Hard Handover Soft Handover	Node B ⇒ RNC Node B ⇒ RNC Node B ⇒ RNC Node B ⇒ RNC
Radio Link Failure Indication	Hard Handover	Node B ⇒ RNC
Radio Link Reconfiguration Commit	Radio Access Bearer Establishment Radio Access Bearer Release Physical Channel Reconfiguration Transport Channel Reconfiguration Radio Access Bearer Modification	RNC ⇒ Node B RNC ⇒ Node B RNC ⇒ Node B RNC ⇒ Node B RNC ⇒ Node B
Radio Link Reconfiguration Prepare	Radio Access Bearer Establishment Radio Access Bearer Release Physical Channel Reconfiguration Transport Channel Reconfiguration Radio Access Bearer Modification	RNC ⇒ Node B RNC ⇒ Node B RNC ⇒ Node B RNC ⇒ Node B RNC ⇒ Node B
Radio Link Reconfiguration Ready	Radio Access Bearer Establishment Radio Access Bearer Release Physical Channel Reconfiguration Transport Channel Reconfiguration Radio Access Bearer Modification	Node B ⇒ RNC Node B ⇒ RNC Node B ⇒ RNC Node B ⇒ RNC Node B ⇒ RNC
Radio Link Reconfiguration Request	Radio Access Bearer Establishment Radio Access Bearer Release Physical Channel Reconfiguration Transport Channel Reconfiguration	RNC ⇒ Node B RNC ⇒ Node B RNC ⇒ Node B RNC ⇒ Node B
Radio Link Reconfiguration Response	Radio Access Bearer Establishment Radio Access Bearer Release Physical Channel Reconfiguration Transport Channel Reconfiguration	Node B ⇒ RNC Node B ⇒ RNC Node B ⇒ RNC Node B ⇒ RNC
Radio Link Restore Indication	RRC Connection Establishment RRC Connection Re-establishment Soft Handover Hard Handover Channel and Mobile State Switching on Iur	Node B ⇒ RNC Node B ⇒ RNC Node B ⇒ RNC Node B ⇒ RNC Node B ⇒ RNC
Radio Link Setup Request	RRC Connection Establishment RRC Connection Re-establishment Hard Handover Soft Handover USCH/DSCH Configuration and Capacity Allocation [TDD]	RNC ⇒ Node B RNC ⇒ Node B RNC ⇒ Node B RNC ⇒ Node B RNC ⇒ Node B
Radio Link Setup Response	RRC Connection Establishment RRC Connection Re-establishment Hard Handover Soft Handover USCH/DSCH Configuration and Capacity Allocation [TDD]	Node B ⇒ RNC Node B ⇒ RNC Node B ⇒ RNC Node B ⇒ RNC Node B ⇒ RNC
System Information Broadcast Request	System Information Broadcasting Service Area Broadcast	RNC ⇒ Node B RNC ⇒ Node B
System Information Broadcast Response	System Information Broadcasting Service Area Broadcast	Node B ⇒ RNC Node B ⇒ RNC

4.7 RRC Procedures & Messages

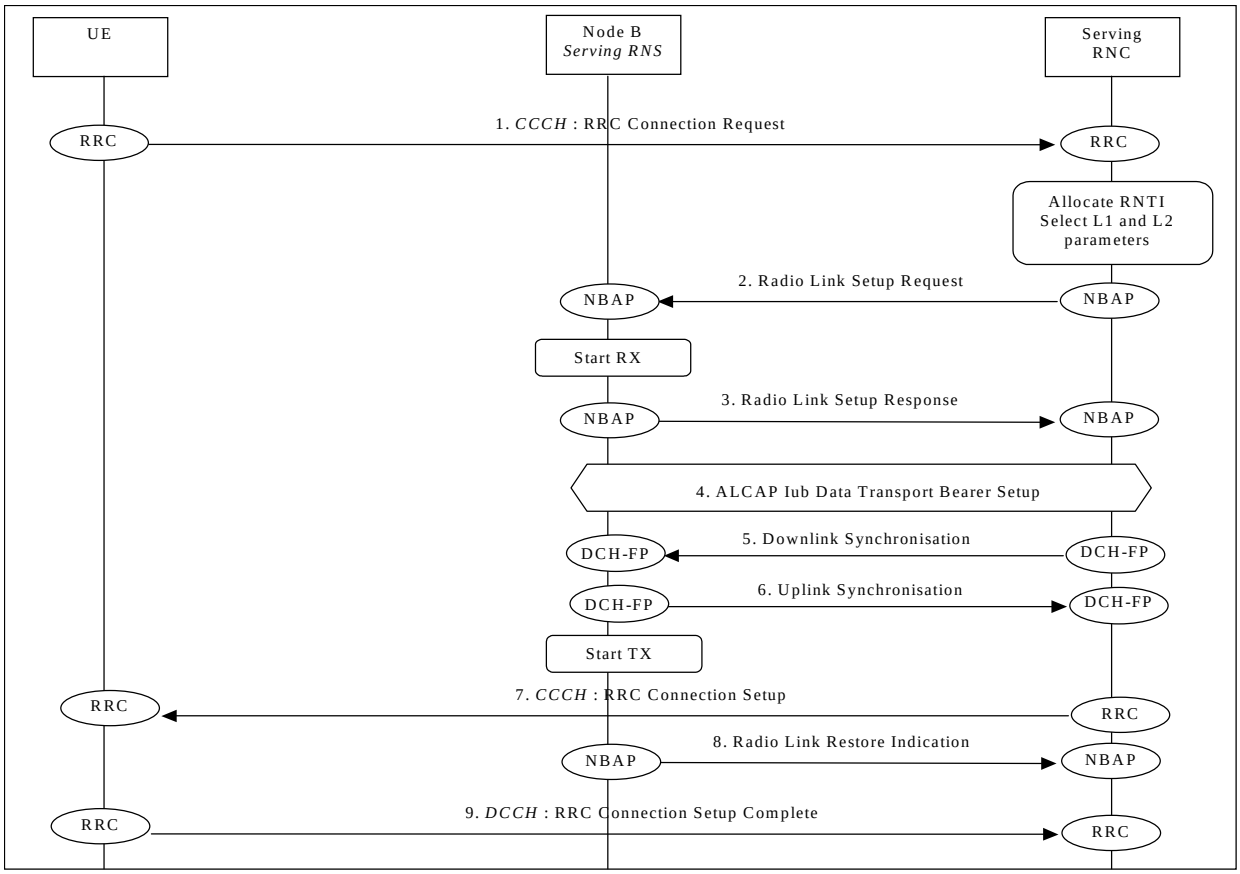
For a detailed description of RRC procedures and messages refer to [8]. Only Messages mentioned in the present document are shown. For each message is also given the list of example procedures where the message is used, as provided by this document.

Table 5

Message Name	UTRAN Procedure	Direction
Active Set Update	Soft Handover	RNC ⇒ UE
Active Set Update Complete	Soft Handover	UE ⇒ RNC
Cell Update	RRC Connection Re-establishment Cell Update	UE ⇒ RNC UE ⇒ RNC
Cell Update Confirm	RRC Connection Re-establishment Cell Update	RNC ⇒ UE RNC ⇒ UE
Direct Transfer	NAS Signalling Conn. Establishment	UE ⇔ RNC
Downlink Direct Transfer	Downlink Direct Transfer	RNC ⇒ UE
Initial Direct Transfer	NAS Signalling Connection Establishment	UE ⇒ RNC
Measurement Control	Downlink Power Control	RNC ⇒ UE
Measurement Report	Downlink Power Control	UE ⇒ RNC
Paging Type 1	Paging for a UE in RRC Idle Mode and RRC connected mode (CELL_PCH and URA_PCH states)Paging for a UE in RRC Connected Mode	RNC ⇒ UE
Paging Type 2	Paging for a UE in RRC Connected Mode (CELL_DCH and CELL_FACH states)	RNC ⇒ UE
Physical Channel Reconfiguration	Physical Channel Reconfiguration Hard Handover	RNC ⇒ UE RNC ⇒ UE
Physical Channel Reconfiguration Allocation	USCH/DSCH Configuration and Capacity Allocation [TDD]	RNC ⇒ UE
Physical Channel Reconfiguration Complete	Physical Channel Reconfiguration Hard Handover	UE ⇒ RNC UE ⇒ RNC
PUSCH Capacity Request	USCH/DSCH Configuration and Capacity Allocation [TDD]	UE ⇒ RNC
RB Reconfiguration	USCH/DSCH Configuration and Capacity Allocation [TDD]	RNC ⇒ UE
RB Reconfiguration Complete	USCH/DSCH Configuration and Capacity Allocation [TDD]	UE ⇒ RNC
RB Release	Radio Access Bearer Release	RNC ⇒ UE
RB Release Complete	Radio Access Bearer Release	UE ⇒ RNC
RB Setup	Radio Access Bearer Establishment	RNC ⇒ UE
RB Setup Complete	Radio Access Bearer Establishment	UE ⇒ RNC
~~RNTI Reallocation Complete~~	~~Cell Update~~ ~~URA Update~~	~~UE ⇒ RNC~~ ~~UE ⇒ RNC~~
~~RRC Connection Re-establishment~~	~~RRC Connection Re-establishment~~	~~RNC ⇒ UE~~
~~RRC Connection Re-establishment Complete~~	~~RRC Connection Re-establishment~~	~~UE ⇒ RNC~~
~~RRC Connection Re-establishment Request~~	~~RRC Connection Re-stablishment~~	~~UE ⇒ RNC~~
RRC Connection Release	RRC Connection Release	RNC ⇒ UE
RRC Connection Release Complete	RRC Connection Release	UE ⇒ RNC
RRC Connection Request	RRC Connection Establishment.	UE ⇒ RNC
RRC Connection Setup	RRC Connection Establishment	RNC ⇒ UE
RRC Connection Setup Complete	RRC Connection Establishment	UE ⇒ RNC
System Information	System Information Broadcasting	Node B ⇒ UE
Transport Channel Reconfiguration	Physical Channel Reconfiguration	RNC ⇒ UE
Transport Channel Reconfiguration Complete	Physical Channel Reconfiguration	UE ⇒ RNC
UE Capability Information	NAS Signalling Conn. Establishment.	UE ⇒ RNC
Uplink Direct Transfer	Uplink Direct Transfer	UE ⇒ RNC
URA Update	Cell Update	UE ⇒ RNC
URA Update Confirm	Cell Update	RNC ⇒ UE
UTRAN Mobility Information Confirm	RRC Connection Re-establishment Cell Update URA Update	UE ⇒ RNC UE ⇒ RNC UE ⇒ RNC

7.3.1 DCH Establishment

This example shows establishment of an RRC connection in dedicated transport channel (DCH) state.



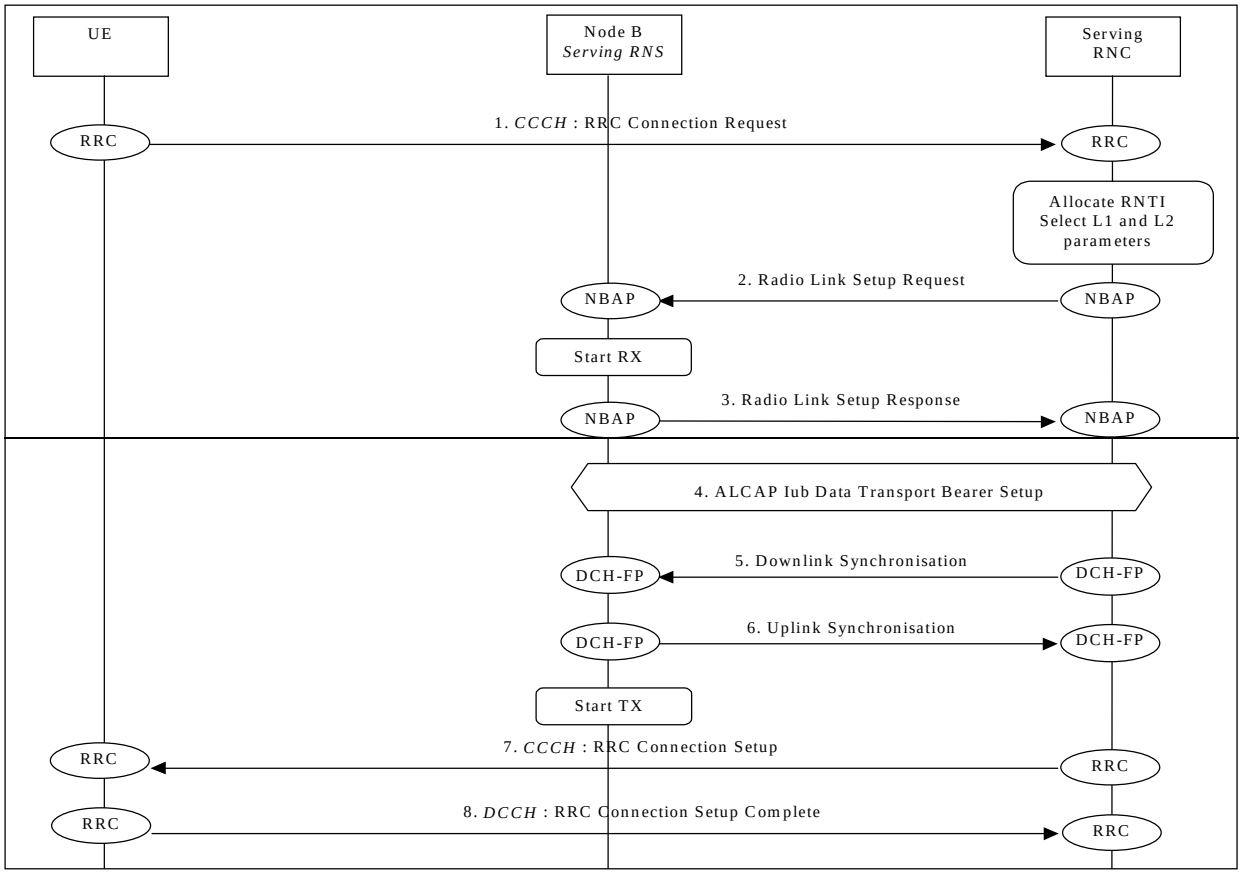


Figure 8: RRC Connection Establishment - DCH Establishment

1. The UE initiates set-up of an RRC connection by sending RRC message **Connection Request** on CCCH. Parameters: Initial UE Identity, Establishment cause, Initial UE Capability.
2. The SRNC decides to use a DCH for this RRC connection, allocates RNTI and radio resources for the RRC connection. When a DCH is to be set-up, NBAP message **Radio Link Setup Request** is sent to Node B.
   Parameters: Cell id, Transport Format Set, Transport Format Combination Set, frequency, UL scrambling code (FDD only), Time Slots (TDD only), User Codes (TDD only), Power control information.
3. Node B allocates resources, starts PHY reception, and respond~~s~~es with NBAP message **Radio Link Setup Response**.
   Parameters: Signalling link termination, Transport layer addressing information (AAL2 address, AAL2 Binding Identity) for the Iub Data Transport Bearer.
4. SRNC initiates set-up of Iub Data Transport bearer using ALCAP protocol. This request contains the AAL2 Binding Identity to bind the Iub Data Transport Bearer to the DCH. The request for set-up of Iub Data Transport bearer is acknowledged by Node B.

5./6. The Node B and SRNC establish synchronism for the Iub and Iur Data Transport Bearer by means of exchange of the appropriate DCH Frame Protocol frames **Downlink Synchronisation** and **Uplink Synchronisation**. Then Node B starts DL transmission.

7. Message **RRC Connection Setup** is sent on CCCH from SRNC to UE.
   Parameters: Initial UE Identity, RNTI, Capability update Requirement, Transport Format Set, Transport Format Combination Set, frequency, DL scrambling code (FDD only), Time Slots (TDD only), User Codes (TDD only), Power control information.
8. Node B achieves uplink sync and notifies SRNC with NBAP message **Radio Link Restore Indication**.
9~~8~~. Message **RRC Connection Setup Complete** is sent on DCCH from UE to SRNC.
   Parameters: Integrity information, ciphering information.

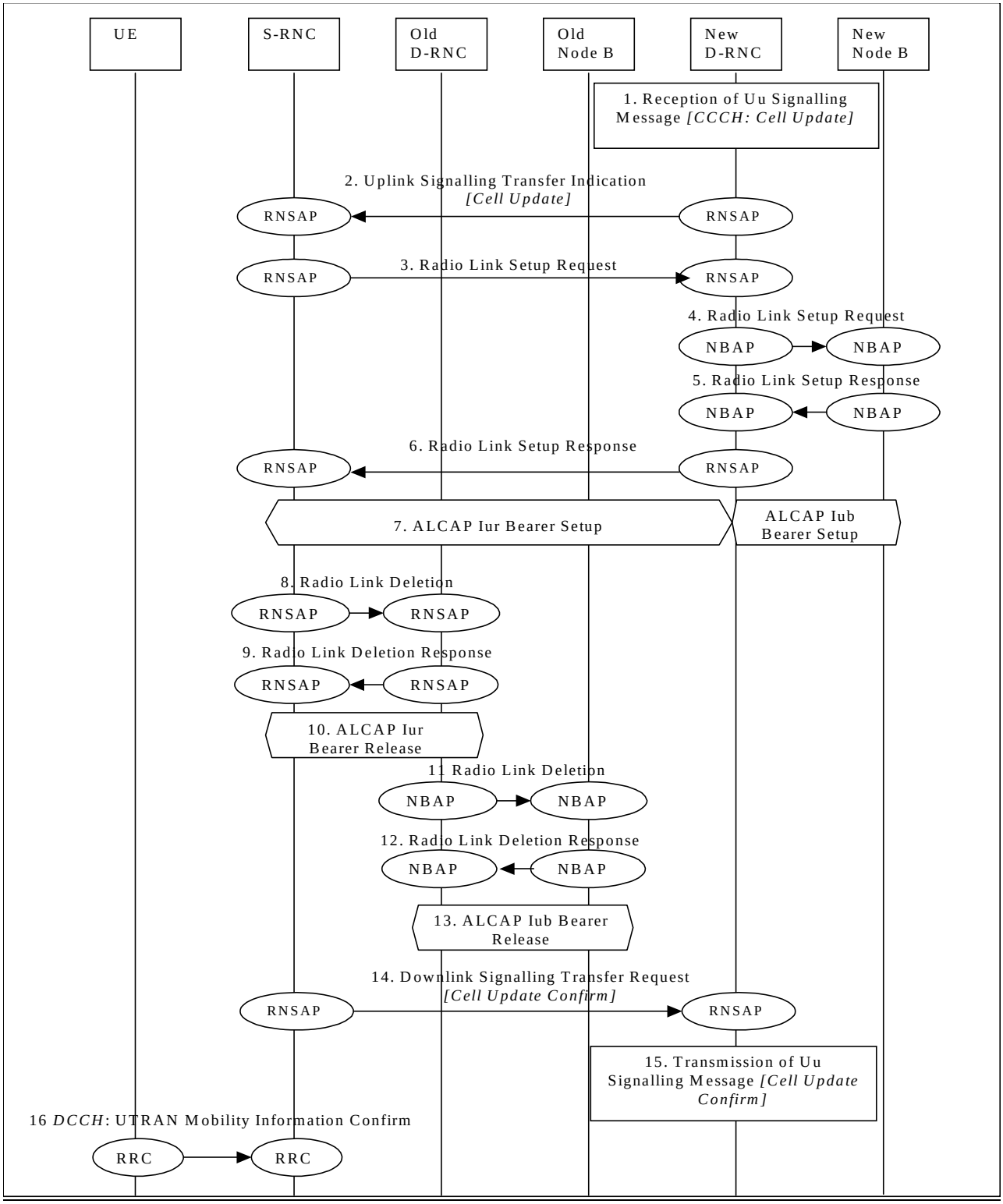
7.5 RRC Connection Re-establishment

The following examples show re-establishment of a RRC connection ~~either~~ on a dedicated channel (DCH) ~~or on a common transport channel~~. Examples of RRC Connection Re-establishment on a common channel (RACH/FACH) are found in the "Cell Update" section of this document.

7.5.1 DCH Re-establishment

7.5.1.1 RRC connection Re-establishment (Anchor approach) – DCH Re-establishment

This example shows re-establishment of a RRC connection in dedicated transport channel (DCH) state.


UE
S-RNC
Old D-RNC
Old Node B
New D-RNC
New Node B
1. Reception of Uu Signalling Message [CCCH: Cell Update]
2. Uplink Signalling Transfer Indication [Cell Update]
RNSAP
RNSAP
3. Radio Link Setup Request
RNSAP
RNSAP
4. Radio Link Setup Request
NBAP
NBAP
5. Radio Link Setup Response
NBAP
NBAP
6. Radio Link Setup Response
RNSAP
RNSAP
7. ALCAP Iur Bearer Setup
ALCAP Iub Bearer Setup
8. Radio Link Deletion
RNSAP
RNSAP
9. Radio Link Deletion Response
RNSAP
RNSAP
10. ALCAP Iur Bearer Release
11 Radio Link Deletion
NBAP
NBAP
12. Radio Link Deletion Response
NBAP
NBAP
13. ALCAP Iub Bearer Release
14. Downlink Signalling Transfer Request [Cell Update Confirm]
RNSAP
RNSAP
15. Transmission of Uu Signalling Message [Cell Update Confirm]
16 DCCH: UTRAN Mobility Information Confirm
RRC
RRC

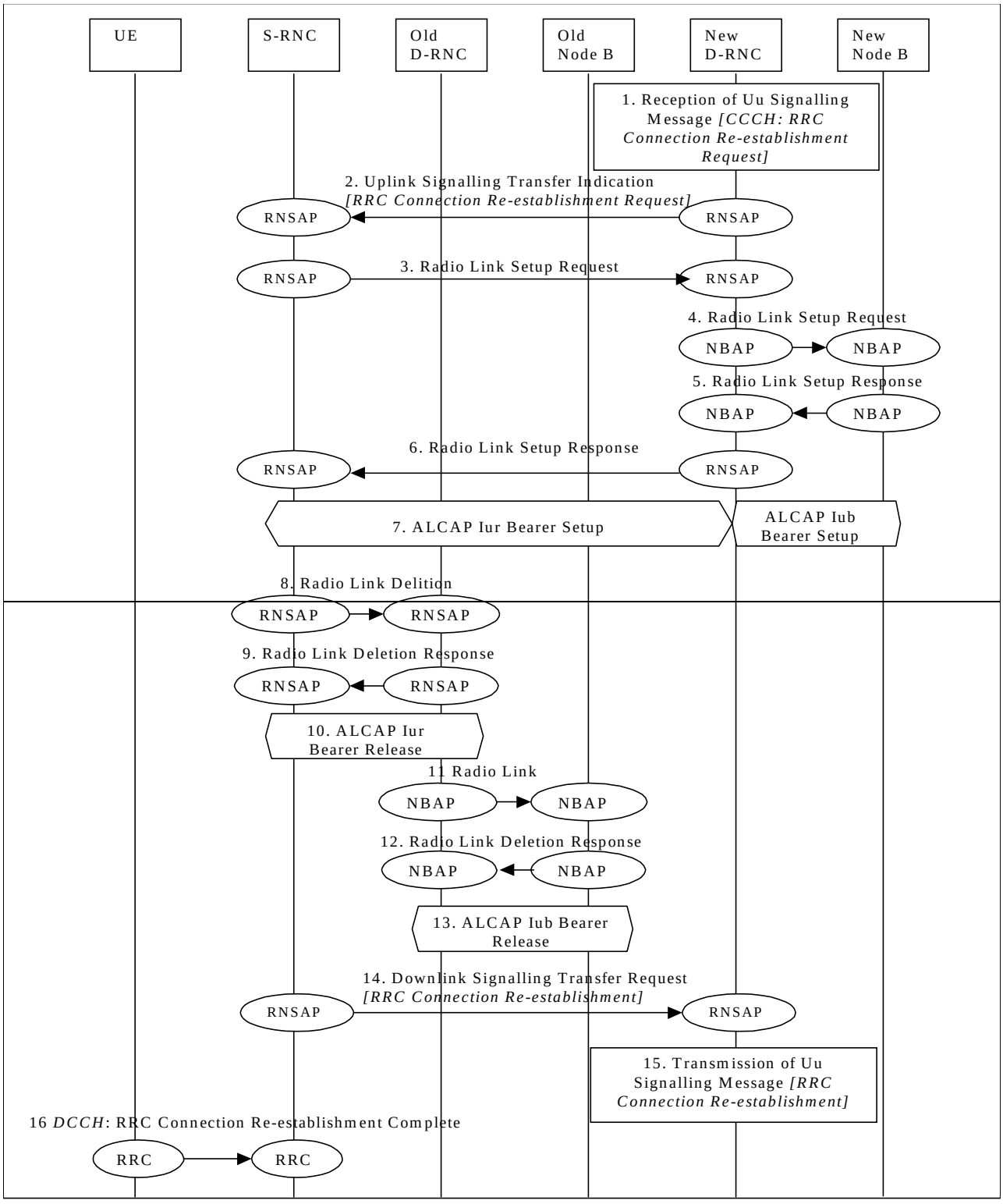


Figure 11: RRC connection Re-establishment (Anchor approach) – DCH Re-establishment

1. The UE initiates the re-establishment of the RRC connection with the new cell by sending ~~**RRC Connection Re-establishment Request**~~ **Cell Update** message on CCCH.
2. The new RNC delivers this message transparently as **Uplink Signalling Transfer Indication** message to the serving RNC, the RNSAP delivers it to the RRC.
3. The serving RNC allocates radio resources for the RRC connection on Iur, and sends the RNSAP message **Radio Link Setup Request** to the target RNC.
4. The target RNC sends the NBAP message **Radio Link Setup Request** to the target Node B.

5. Node B allocates resources, and respond~~s~~es with NBAP message **Radio Link Setup Response**.
6. Target RNC respond~~s~~es with RNSAP message **Radio Link Setup Response**.
7. Serving RNC initiates set-up 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 the DCH. The request for set-up of Iur / Iub Data Transport bearer is acknowledged by target RNC / Node B.

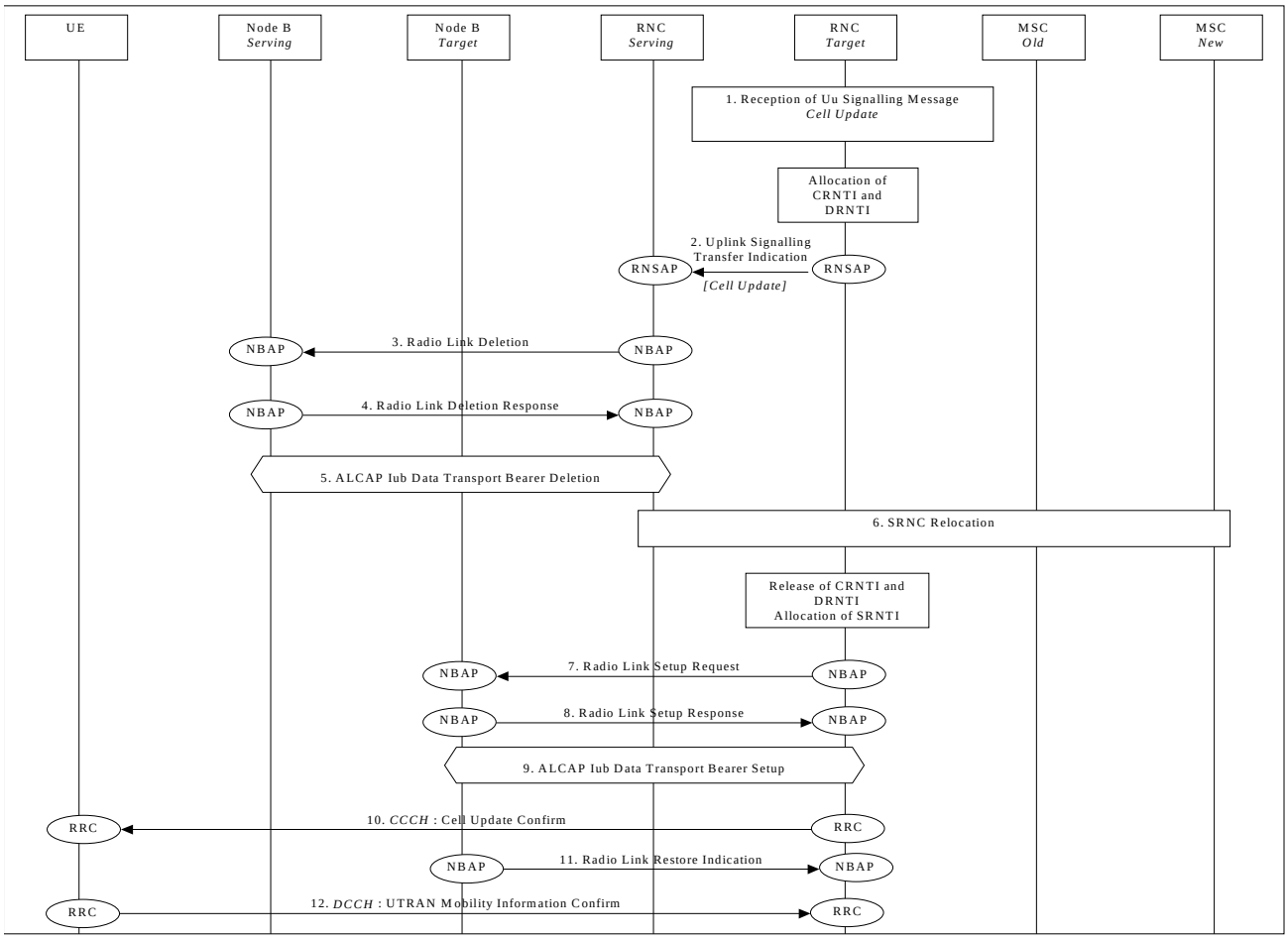
8./9./10./11./12./13. The SRNC initiates release of Iur/Iub Data Transport bearer using ALCAP protocol and also release of Iur/Iub Radio resource using RNSAP / NBAP protocols.

14. The RRC in the serving RNC prepare a RRC Connection Re-establishment message and the RNSAP sends it in the transparent message **Downlink Signalling Transfer Request** to the new CRNC.
15. The New CRNC delivers the ~~**RRC Connection Re-establishment message**~~ **Cell Update Confirm** message on CCCH.
16. Message ~~**RRC Connection Re-establishment Complete**~~**UTRAN Mobility Information Confirm** is sent on the new DCCH from the UE to the serving RNC.

7.5.1.2 RRC Connection Re-establishment with SRNC Relocation - DCH Re-establishment

This subclause shows an example for the RRC Connection Re-establishment procedure, in dedicated transport channel (DCH) state.

It is assumed that a signalling link is available on the Iur, but no DCH is established on this interface.



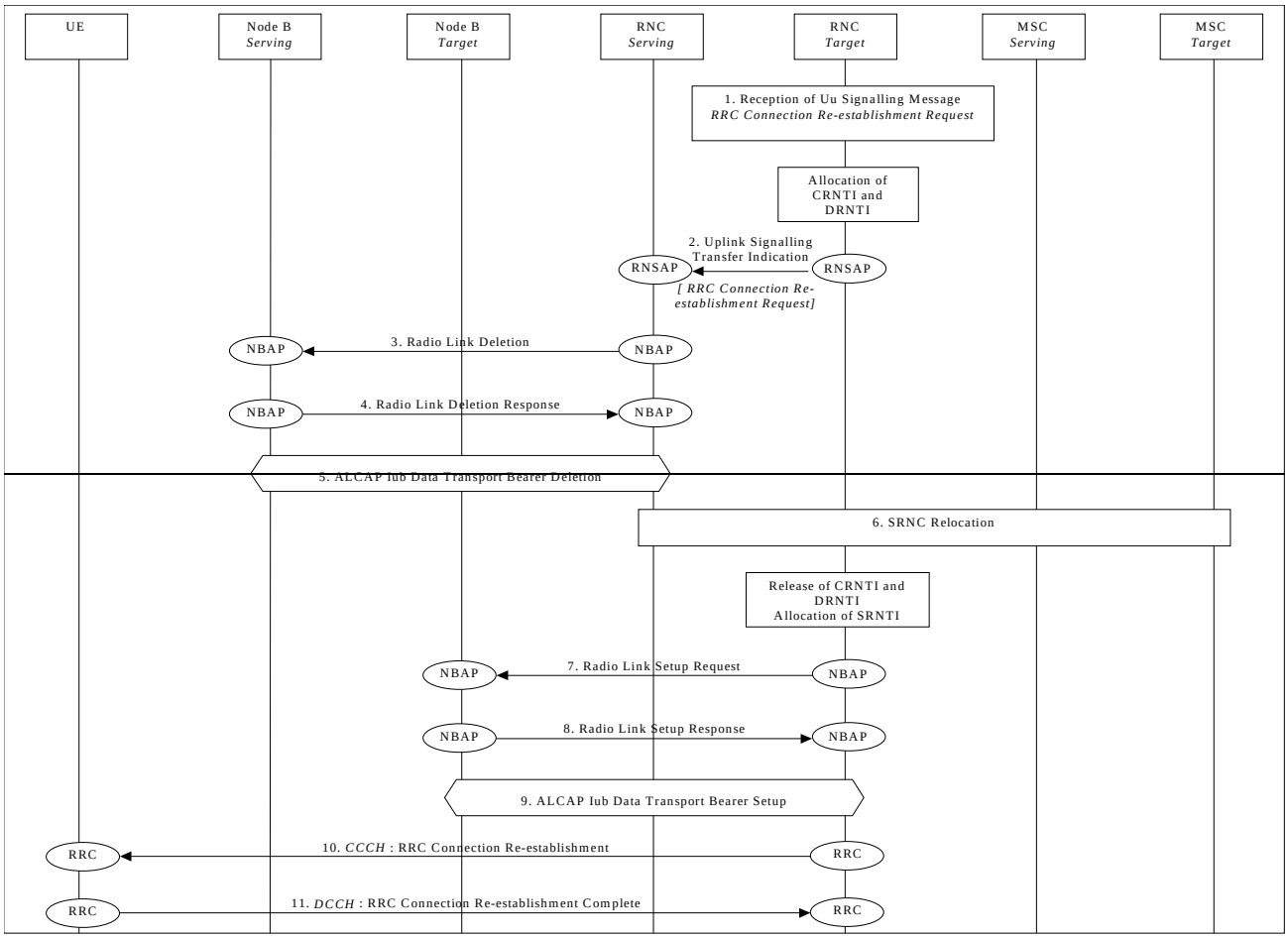


Figure 12: RRC Connection Re-establishment with SRNC Relocation - DCH Re-establishment

1. The UE initiates the re-establishment of the RRC connection with the new cell by sending ~~**RRC Connection Re-establishment Request**~~**Cell Update** message on CCCH. The message is received by the Target RNC.
2. The target RNC delivers the received message transparently as **Uplink Signalling Transfer Indication** message to the serving RNC.
3. The Serving RNC sends NBAP message **Radio Link Deletion** to Node B.
   Parameters: Cell id, Transport layer addressing information.
4. Node B deallocates radio resources. Successful outcome is reported in NBAP message **Radio Link Deletion Response**.
5. The SRNC initiates release of Iub Data Transport bearer using ALCAP protocol.
6. SRNC relocation procedure is triggered by the reception of the message ~~**RRC Connection Re-establishment Request**~~**Cell Update** embedded in the RNSAP **Uplink Signalling Transfer Indication** message (relocation is performed in parallel with Radio Link release).
7. The target RNC (new SRNC) allocates RNTI and radio resources for the RRC connection, and sends the NBAP message **Radio Link Setup Request** to the target Node B.
   Parameters: Cell id, Transport Format Set, Transport Format Combination Set, frequency, UL scrambling code (FDD only), Time Slots (TDD only), User Codes (TDD only), Power control information.
8. Target Node B allocates resources, starts PHY reception, and responses with NBAP message **Radio Link Setup Response**.
   Parameters: Signalling link termination, Transport layer addressing information for the Iub Data Transport Bearer.
9. Target RNC (new SRNC) initiates set-up of Iub Data Transport bearer using ALCAP protocol. This request contains the AAL2 Binding Identity to bind the Iub Data Transport Bearer to the DCH. The request for set-up of Iub Data Transport bearer is acknowledged by Node B.
10. Message ~~**RRC Connection Re-establishment**~~**Cell Update Confirm** is sent on CCCH from target RNC (new SRNC) to UE.
    Parameters: Old RNTI, New RNTI, Transport Format Set, Transport Format Combination Set, frequency, DL scrambling code (FDD only), Time Slots (TDD only), User Codes (TDD only)

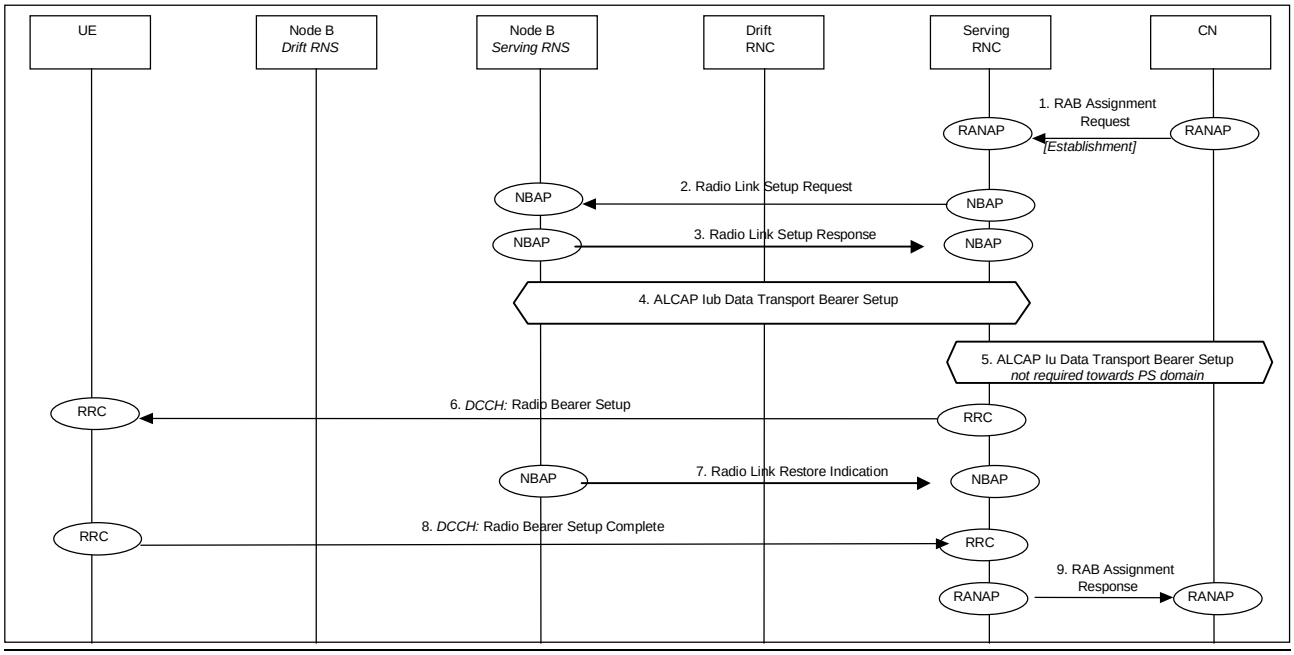
11. Target Node B achieves uplink sync on the Uu and notifies SRNC with NBAP message **Radio Link Restore Indication**.
12~~1~~. Message ~~**RRC Connection Re-establishment Complete**~~**UTRAN Mobility Info Confirm** is sent on the new DCCH from the UE to the Target RNC (new SRNC).

NOTE 1: SRNC Relocation execution is performed asynchronously with respect to the RL deletion procedure (step 3/4).

NOTE 2: Whether SRNC Relocation involves two MSCs (as depicted in the figure) or a single one, has no impact on the UTRAN message flow shown in this example.

7.6.3 RACH/FACH - DCH Establishment

This example shows the establishment of a radio access bearer (DCH) in common transport channel (RACH/FACH) RRC State.



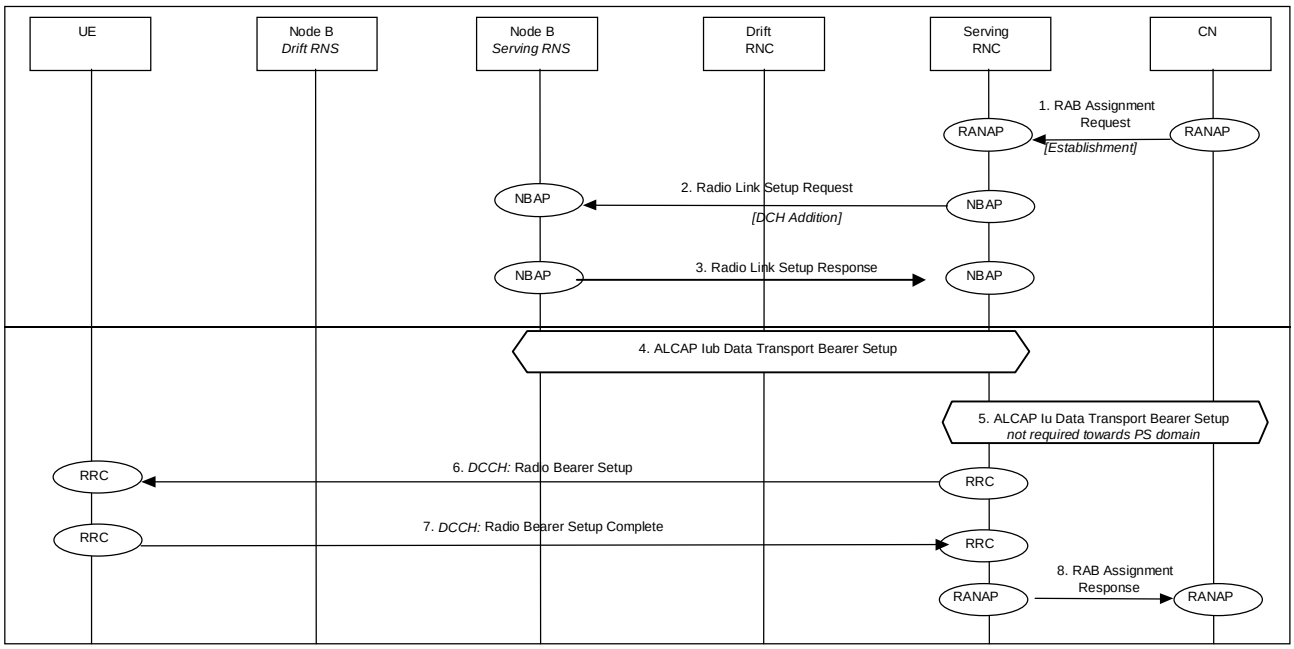


Figure 15: Radio Access Bearer Establishment – RACH/FACH - DCH Establishment – Unsynchronised

1. CN initiates establishment of the radio access bearer with RANAP **Radio Access Bearer Assignment Request** message.
   Parameters: radio access bearer parameters, User Plane Mode, Transport Address, Iu Transport Association.
2. DRNC requests its Node B to establish of a new DCH in the existing Radio Link sending the **Radio Link Setup Request** message.
   Parameters: Transport Format Set, Transport Format Combination Set, Power control information.

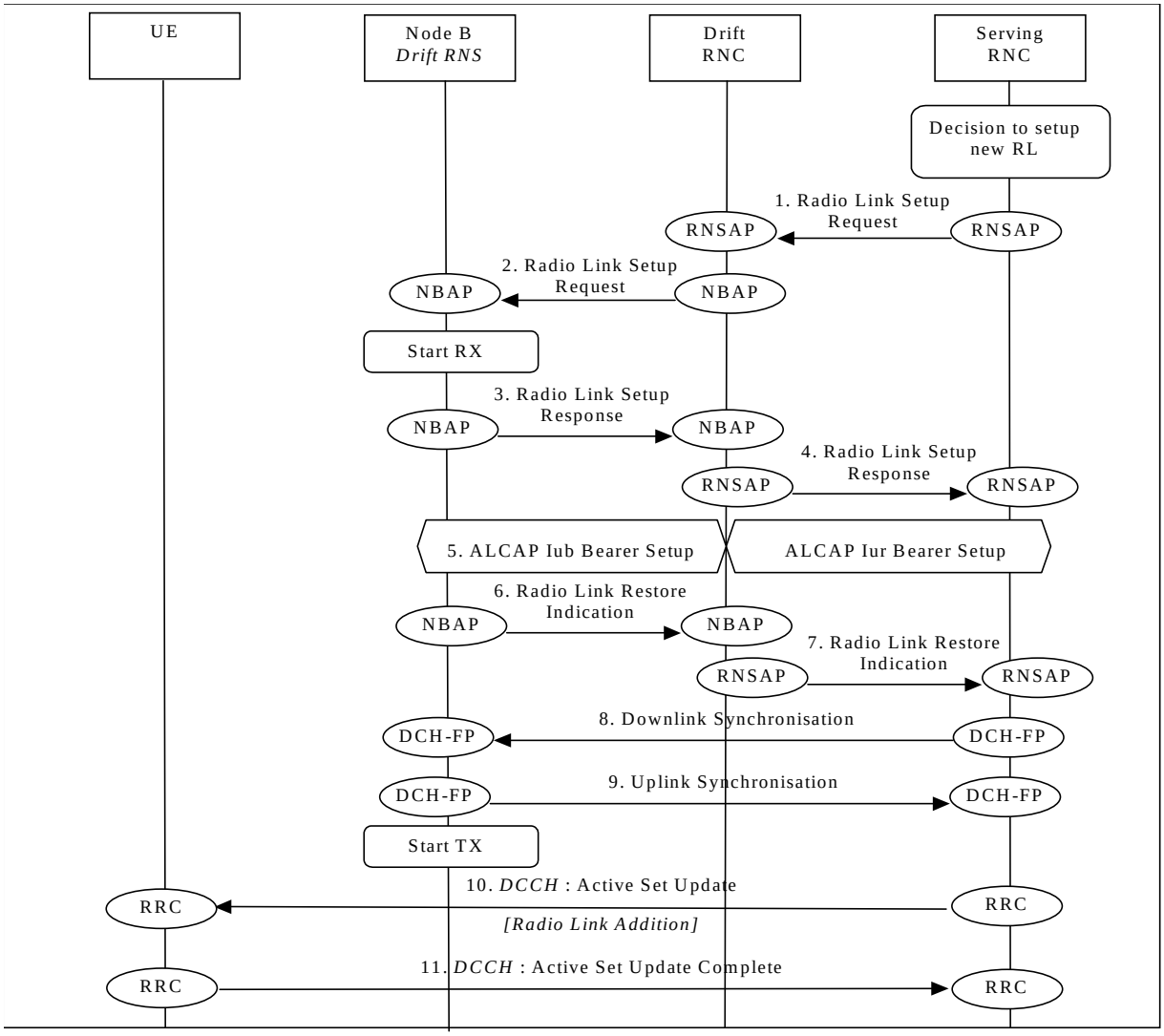
3. Node B allocates resources and notifies SRNC that the setup is sending the **Radio Link Setup Response**.
   Parameters: Transport layer addressing information (AAL2 address, AAL2 Binding Id) for Iub Data Transport Bearer.
4. SRNC initiates setup of Iub Data Transport Bearer using ALCAP protocol. This request contains the AAL2 Binding Identity to bind the Iub Data Transport Bearer to DCH.
5. SRNC performs mapping of the radio access bearer QoS parameters to AAL2 link characteristics and initiates set-up of Iu Data Transport bearer using ALCAP protocol (this step is not required towards PS domain)
6. RRC message **Radio Bearer** Setup is sent by SRNC to UE.
   Parameters: Transport Format Set, Transport Format Combination Set.
7. Node B achieves uplink sync and notifies SRNC with NBAP message **Radio Link Restore Indication**.
8. UE sends RRC message **Radio Bearer Setup Complete** to SRNC.
9. SRNC sends RANAP message **Radio Access Bearer Assignment Response** to CN.

7.8.2 DCCH on RACH/FACH

This example shows reconfiguration of a radio access bearer using a common transport channel (RACH/FACH). The difference with respect to the previous example is that here there is no macrodiversity because with a physical common channel (e.g. PRACH) it's impossible to be on macrodiversity

7.10.1 Radio Link Addition (Branch Addition)

This example shows establishment of a radio link via a Node B controlled by another RNC than the serving RNC. This is the first radio link to be established via this RNS, thus macro-diversity combining/splitting with already existing radio links within DRNS is not possible.



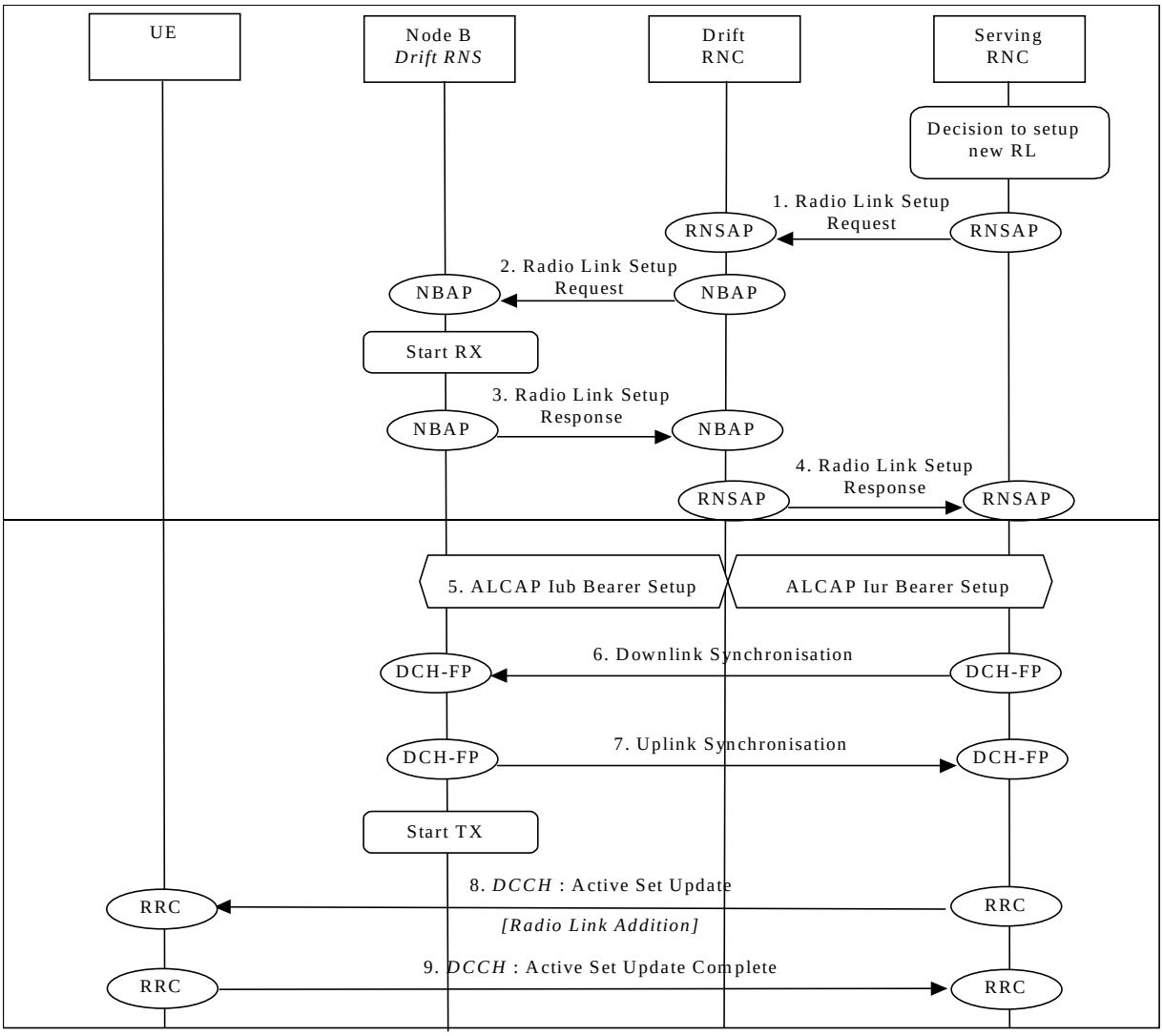


Figure 24: Soft Handover - Radio Link Addition (Branch Addition)

1. SRNC decides to setup a radio link via a new cell controlled by another RNC. 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. If requested resources are available, 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.
   Then Node B starts the UL reception.
3. Node B allocates requested resources. 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).
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/Iub Data Transport Bearer using ALCAP protocol. This request contains the AAL2 Binding Identity to bind the Iub Data Transport Bearer to DCH.
   This may be repeated for each Iur/Iub Data Transport Bearer to be setup.

6./7.Node B achieves uplink sync on the Uu and notifies DRNC with NBAP message **Radio Link Restore Indication**. In its turn DRNC notifies SRNC with RNSAP message **Radio Link Restore Indication.**

8./9.~~6./7.~~ Node B and SRNC establish synchronism for the Data Transport Bearer(s) by means of exchange of the appropriate DCH Frame Protocol frames **Downlink Synchronisation** and **Uplink Synchronisation**, relative already existing radio link(s). Then Node B starts DL transmission.

10~~8~~.SRNC sends RRC message **Active Set Update** (Radio Link Addition) to UE on DCCH.
Parameters: Update type, Cell id, DL scrambling code, Power control information, Ncell information.

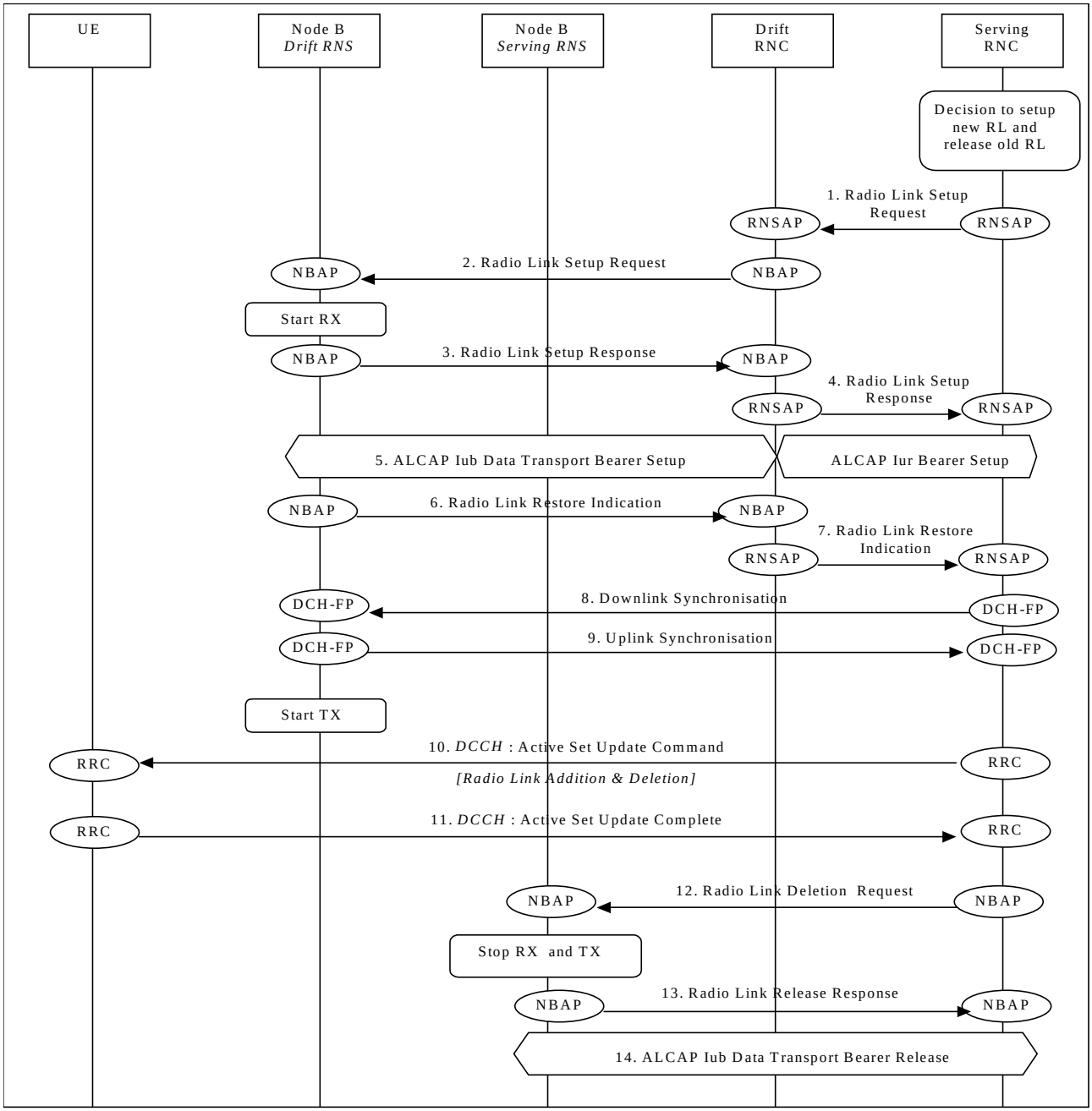
11~~9~~.UE acknowledges with RRC message **Active Set Update Complete**.

NOTE: The order of transmission of **Radio Link Restore Indication** messages (steps 6 and 7) is not necessarily identical to that shown in the example. These messages could be sent before the ALCAP bearer setup (step 5) or after the transport bearer synchronisation (steps 8 and 9).

7.10.3 Radio link Addition & Deletion (Branch Addition & Deletion - simultaneously)

This example shows simultaneous deletion of a radio link belonging to a Node B controlled by the serving RNC and the establishment of a radio link via a Node B controlled by another RNC than the serving RNC. This is the first radio link to be established via this RNS, thus macro-diversity combining/splitting with already existing radio links within DRNS is not possible.

This procedure is needed when the maximum number of branches allowed for the macrodiversity set has already been reached.



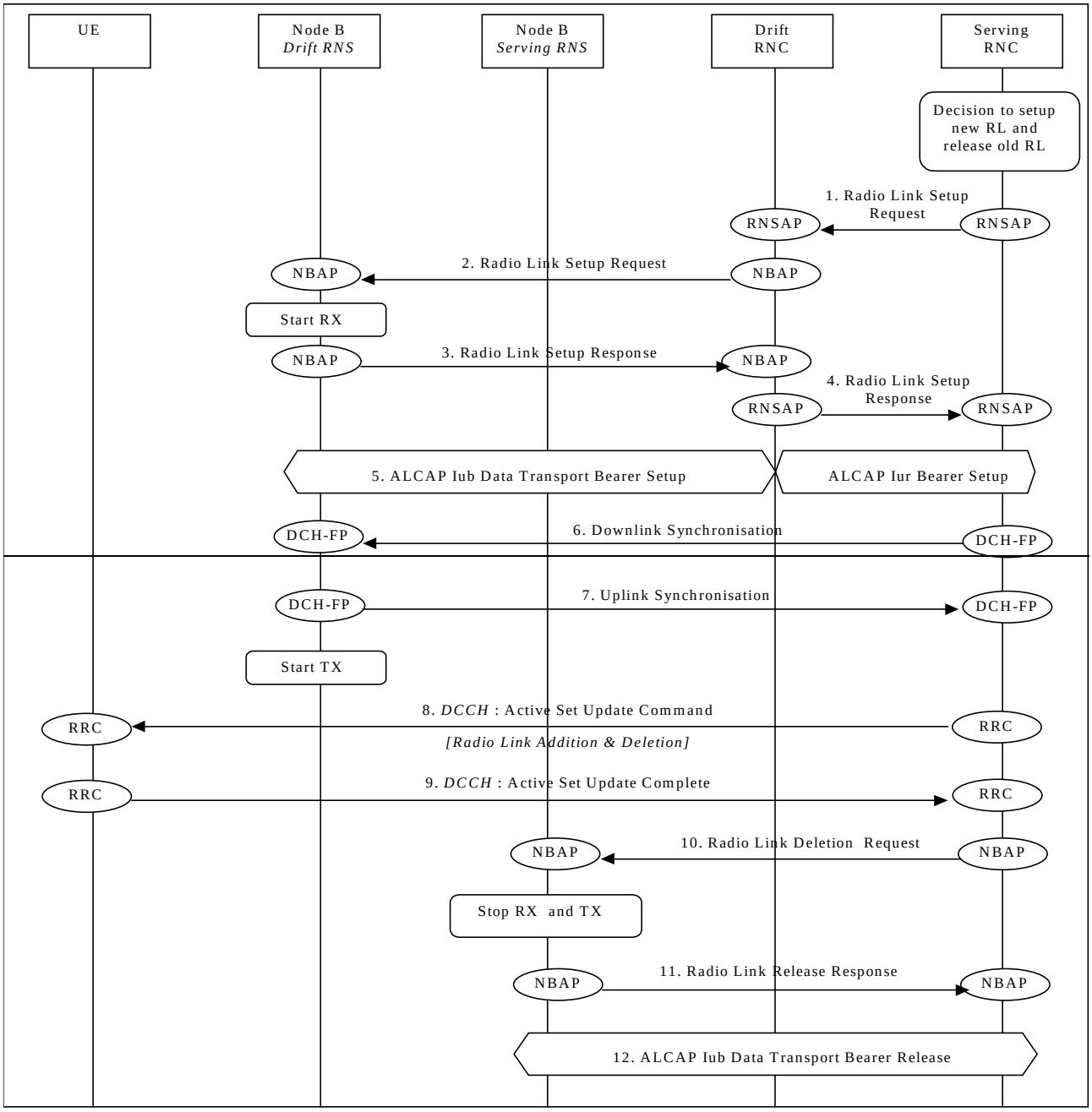
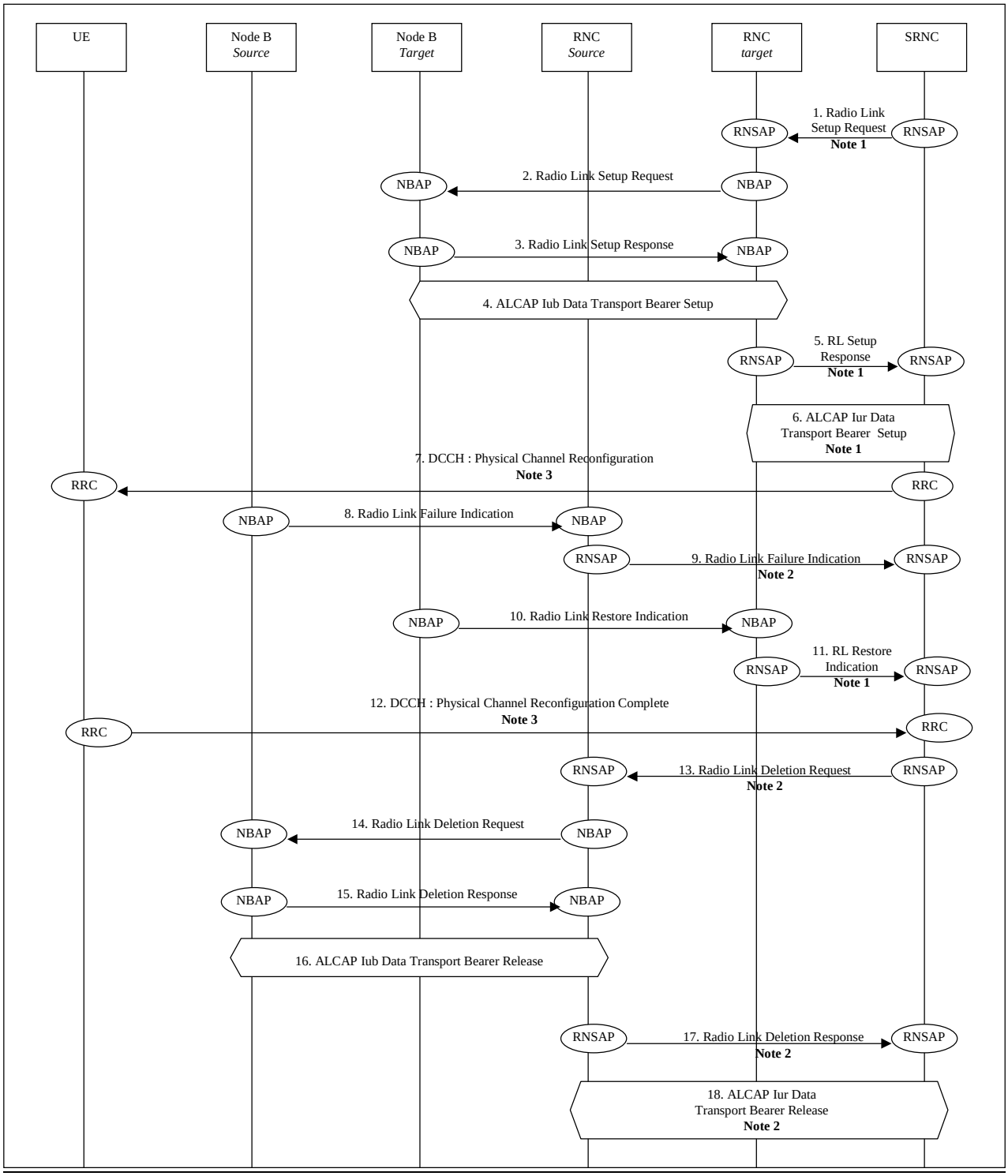


Figure 26: Soft Handover - Radio link Addition & Deletion (Branch Addition & Deletion - simultaneously)

1. ⇒ 9~~7~~. See description 1. ⇒ 9~~7~~. in subclause 7.10.1.
10~~8~~. SRNC sends RRC message **Active Set Update** (Radio Link Addition & Deletion) to UE on DCCH.
Parameters: Update type, Cell id, DL scrambling code, Power control information, Ncell information.
11~~9~~. UE deactivates DL reception via old branch, activates DL reception via new branch and acknowledges with RRC message **Active Set Update Complete**.
12~~0~~. ⇒ 14~~2~~. See description 3. ⇒ 7. in subclause 7.10.2.

7.11.1.1 Hard Handover via Iur (DCH State)

This subclause shows an example of Hard Handover via Iur, when the mobile is in DCH state, for both successful and unsuccessful cases.



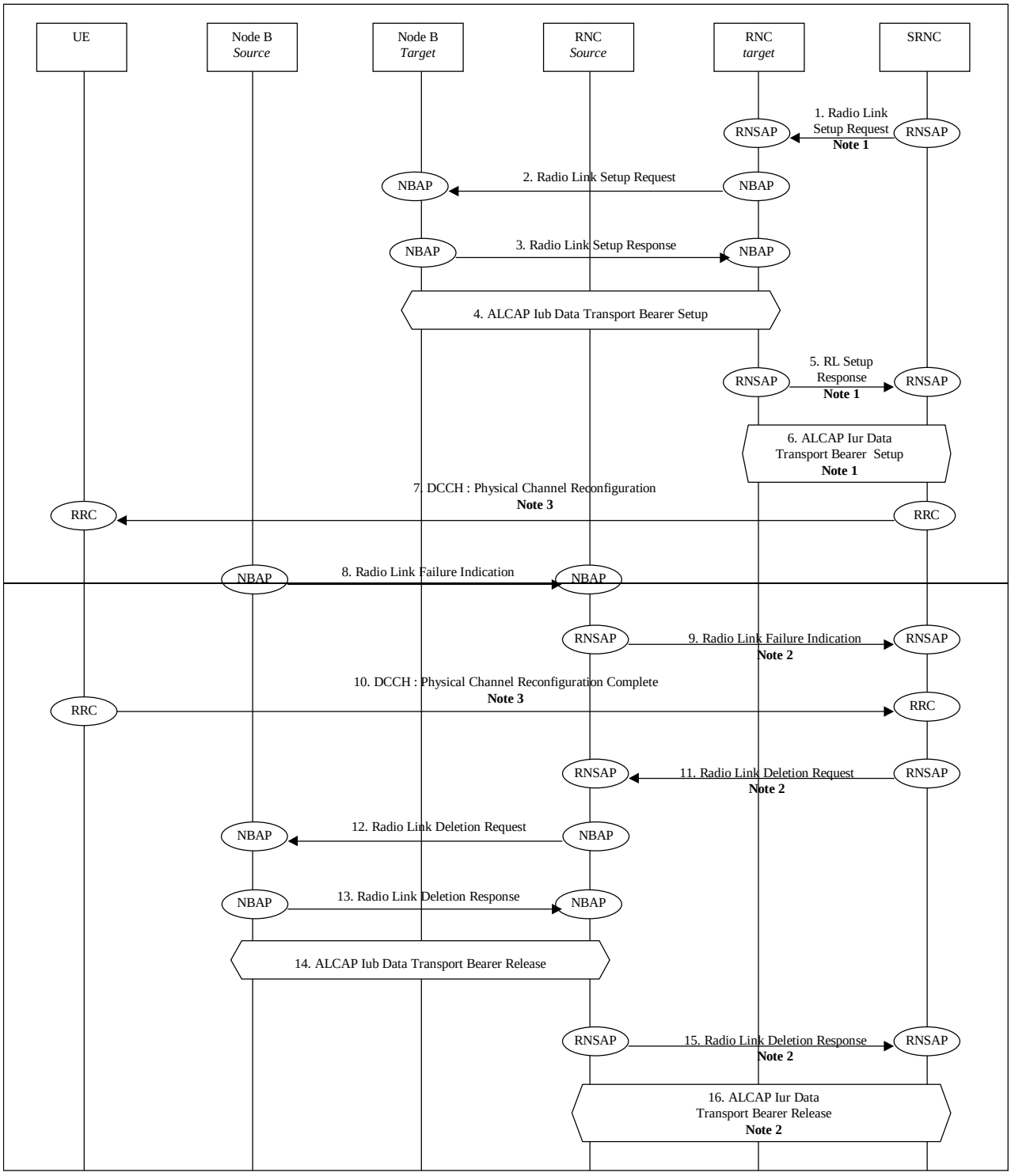


Figure 27: Hard Handover via Iur (DCH on Iur) – successful case

1. SRNC sends **Radio Link Setup Request** message to the target RNC.
   Parameters: target RNC identifier, s-RNTI, Cell id, Transport Format Set, Transport Format Combination Set. (Note 1).
2. The target RNC allocates RNTI and radio resources for the RRC connection and the Radio Link(s) (if possible), and sends the NBAP message **Radio Link Setup Request** to the target Node-B.
   Parameters: Cell id, Transport Format Set, Transport Format Combination Set, frequency, UL scrambling code (FDD only), Time Slots (TDD only), User Codes (TDD only), Power control information etc.

3. Node B allocates resources, starts PHY reception, and responds with NBAP message **Radio Link Setup Response**. Parameters: Signalling link termination, Transport layer addressing information for the Iub Data Transport Bearer.
4. Target RNC initiates set-up of Iub Data Transport bearer using ALCAP protocol. This request contains the AAL2 Binding Identity to bind the Iub Data Transport Bearer to the DCH. The request for set-up of Iub Data Transport bearer is acknowledged by Node B.
5. When the Target RNC has completed preparation phase, **Radio Link Setup Response** is sent to the SRNC (*Note 1).*
6. SRNC initiates set-up of Iur Data Transport bearer using ALCAP protocol. This request contains the AAL2 Binding Identity to bind the Iur Data Transport Bearer to the DCH. The request for set-up of Iur Data Transport bearer is acknowledged by Target RNC (*Note 1).*
7. SRNC sends a RRC message **Physical Channel Reconfiguration** to the UE.
8. When the UE switches from the old RL to the new RL, the source Node B detects a failure on its RL and sends a NBAP message **Radio Link Failure Indication** to the source RNC.
9. The source RNC sends a RNSAP message **Radio Link Failure Indication** to the SRNC (*Note 2).*
10. Target Node B achieves uplink sync on the Uu and notifies target RNC with NBAP message **Radio Link Restore Indication**.
11. Target RNC sends RNSAP message **Radio Link Restore Indication** to notify SRNC (*Note 2)* that uplink sync has been achieved on the Uu.

12~~0~~. When the RRC connection is established with the target RNC and necessary radio resources have been allocated, the UE sends RRC message **Physical Channel Reconfiguration Complete** to the SRNC.

13~~1~~. The SRNC sends a RNSAP message **Radio Link Deletion Request** to the source RNC (*Note 2).*

14~~2~~. The source RNC sends NBAP message **Radio Link Deletion Request** to the source Node B. Parameters: Cell id, Transport layer addressing information.

15~~3~~. The source Node B de-allocates radio resources. Successful outcome is reported in NBAP message **Radio Link Deletion Response**.

16~~4~~. The source RNC initiates release of Iub Data Transport bearer using ALCAP protocol.

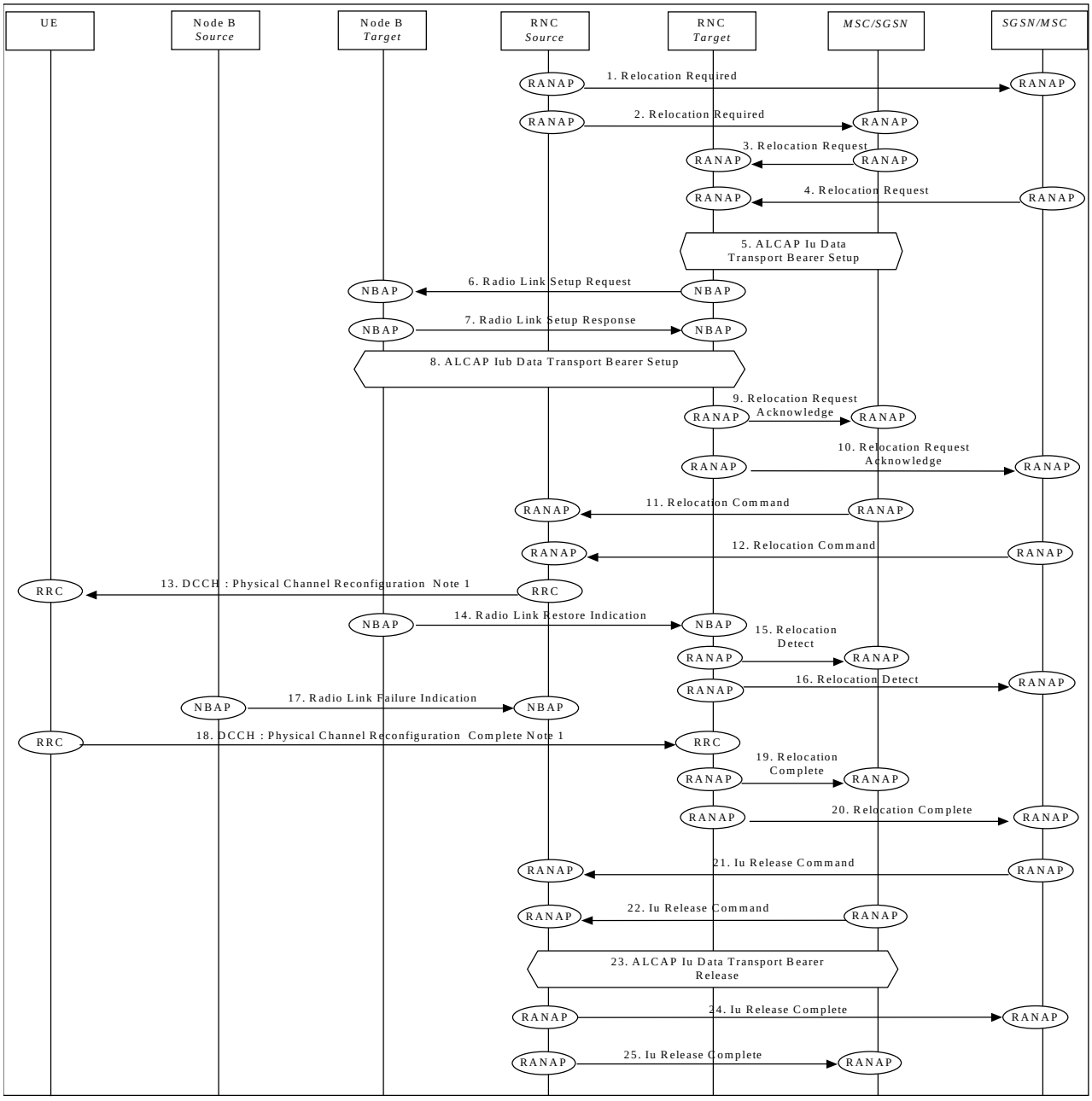
17~~5~~. When the source RNC has completed the release the RNSAP message Radio Link Deletion Response is sent to the SRNC (*Note 2).*

18~~6~~. SRNC initiates release of Iur Data Transport bearer using ALCAP protocol. This request contains the AAL2 Binding Identity to bind the Iur Data Transport Bearer to the DCH. The request for release of Iur Data Transport bearer is acknowledged by the Source RNC *(Note 2).*

NOTE 1: This message is not necessary when the target RNC is the SRNC.
NOTE 2: This message is not necessary when the source RNC is the SRNC.
NOTE 3: The messages used are only one example of the various messages which can be used to trigger a handover, to confirm it or to indicate the handover failure. The different possibilities are specified in the RRC specification (25.331), subclause 8.3.5.2.

7.11.1.2 Hard Handover with switching in the CN (UE connected to two CN nodes, DCH state)

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.



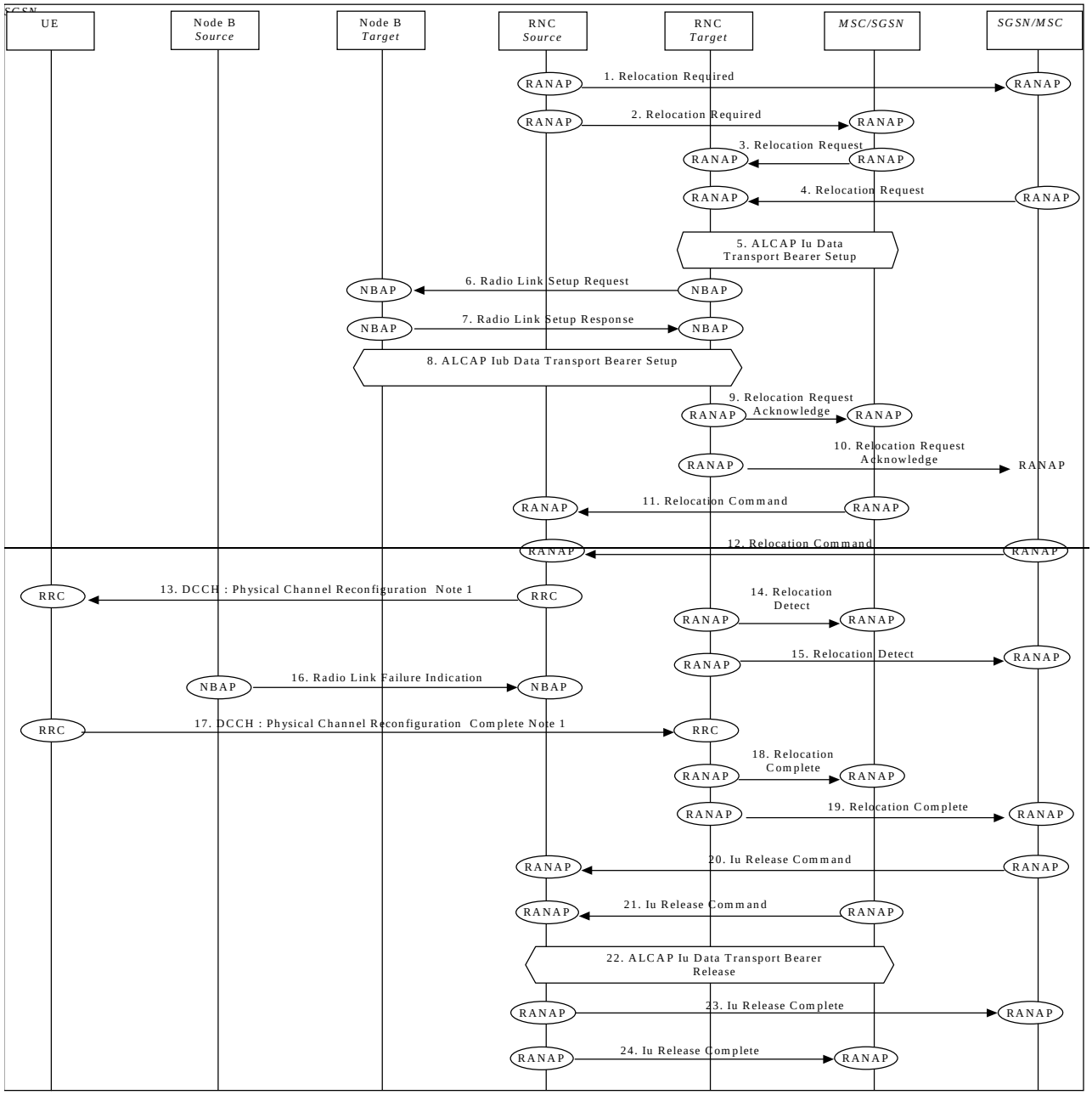


Figure 29: Hard Handover with switching in the CN (UE connected to two CN nodes, DCH state)

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 **Relocation 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 **Relocation 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 CN is aware of preparation, CN node conveys a **Relocation Request** message to the target RNC to allocate resources.
Parameters: bearer ID's requested to be rerouted towards the CN node, from which the **Relocation 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.

5. Target RNC and CN node establish the new Iu transport bearers for each Radio Access Bearer related to the CN node.

6./7./8. The target RNC allocates RNTI and radio resources for the RRC connection and the Radio Link, then sends the NBAP message **Radio Link Setup Request** to the target Node-B.
Parameters: Cell id, Transport Format Set, Transport Format Combination Set, frequency, UL scrambling code (FDD only), Time Slots (TDD only), User Codes (TDD only), Power control information etc.
Node B allocates resources, starts PHY reception, and responds with NBAP message **Radio Link Setup Response**. Target RNC initiates set-up of Iub Data Transport bearer using ALCAP protocol. This request contains the AAL2 Binding Identity to bind the Iub Data Transport Bearer to the DCH.

9./10. When RNC has completed preparation phase, **Relocation Request Acknowledge** is sent to the CN elements.
Parameters: transparent field to the CN that is to be transmitted to the Source RNS.

11./12. When CN is ready for the change of SRNC, CN node sends a **Relocation Command** to the RNC. Message contains the transparent field provided by Target RNC.
Parameters: information provided in the Information field from the target RNC.

13. Source RNC sends a RRC message **Physical Channel Reconfiguration** to the UE.

14. Target Node B achieves uplink sync on the Uu and notifies target RNC with NBAP message **Radio Link Restore Indication**.

15/16~~14./15~~. When target RNC has detected the UE, Relocation Detect message is sent to the CN nodesTarget 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 B16. When the UE switch from the old RL to the new RL, the source Node B detect a failure on its RL and send a NBAP message **Radio Link Failure Indication** to the source RNC.

18~~7~~. When the RRC connection is established with the target RNC and necessary radio resources have been allocated the UE sends RRC message **Physical Channel Reconfiguration Complete** to the target RNC.

19/20~~18./19~~ After a successful switch and resource allocation at target RNC, RNC sends **Relocation Complete** messages to the involved CN nodes.
At any phase, before the **Relocation 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 unexceptional thing occurs a **Relocation Failure** message may be sent instead of any message numbered 3-10 and 13-14 described in this above.

21/22~~20./21~~. The CN node initiates the release of the Iu connections to the source RNC by sending RANAP message **Iu Release Command**.

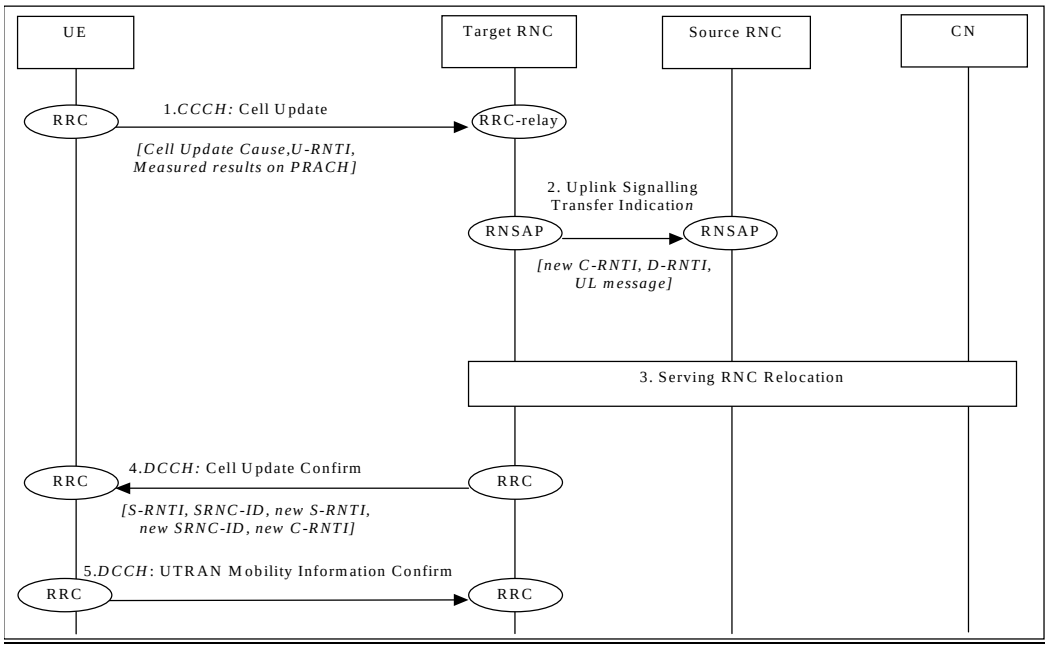
23~~2~~. Upon reception of the release requests from the CN nodes the old SRNC executes all necessary procedures to release all visible UTRAN resources that were related to the RRC connection in question.

24/25~~23./24~~. SRNC confirm the IU release to the CN nodes sending the message **Iu Release Complete.**

NOTE 1: The messages used are only one example of the various messages which can be used to trigger a handover, to confirm it or to indicate the handover failure. The different possibilities are specified in the RRC specification (25.331), subclause 8.3.5.2.

7.11.2.1 Cell Update with SRNS relocation

This example shows Inter-RNS Cell Update with switching in the CN (therefore with SRNS relocation) and RNTI reallocation.



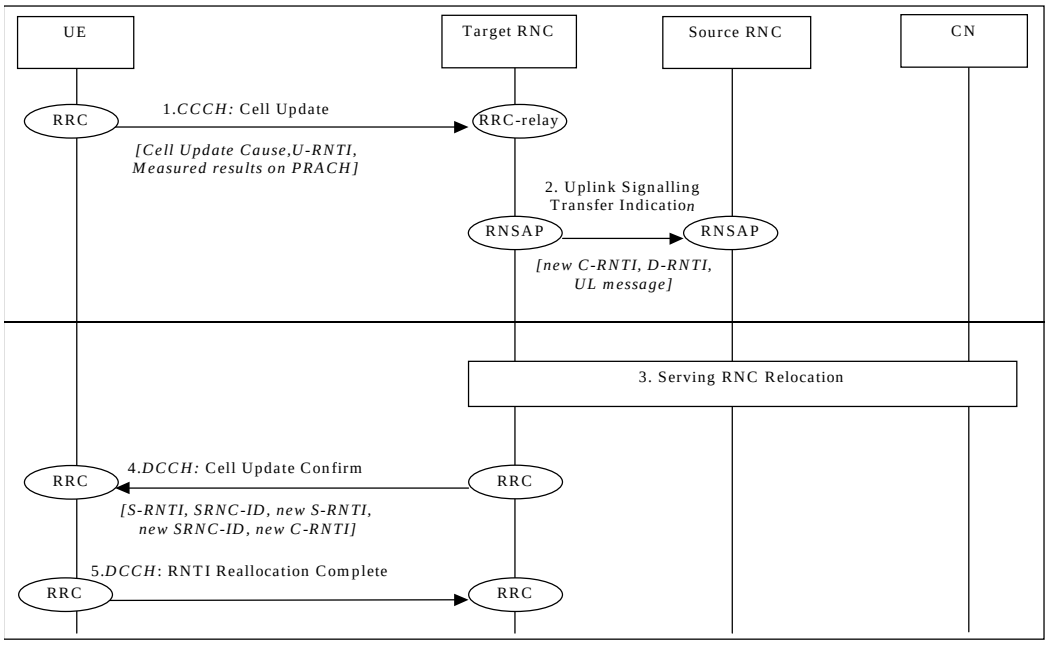


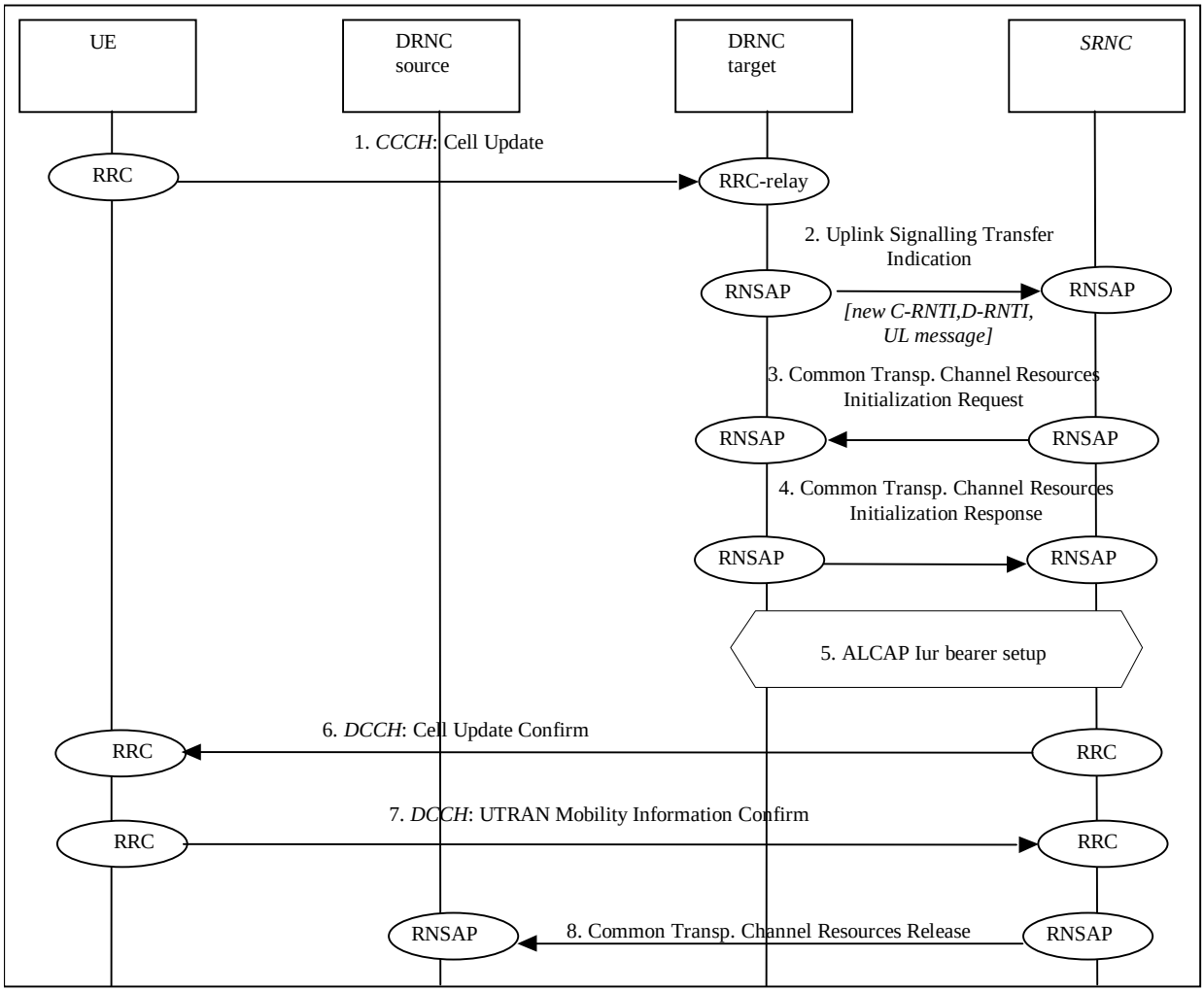
Figure 30: Cell Update with SRNS Relocation

1. UE sends a RRC message **Cell Update** to the UTRAN, after having made cell re-selection. Upon reception of a CCCH message from a UE, target RNC allocates a C-RNTI for the UE.
2. Controlling target RNC forward the received message (on CCCH) via **Uplink Signalling Transfer Indication** RNSAP message towards the SRNC. Message includes, besides target RNC-ID, also the allocated C-RNTI, which is to be used as UE identification within the C-RNC, and the D-RNTI. Upon reception of the RNSAP message SRNC decides to perform SRNS Relocation towards the target RNC.
3. Serving RNC relocation procedure is executed as defined in subclause 'SRNS Relocation Relocation (UE connected to a single CN node)'. After completing SRNS Relocation, target RNC allocates new S-RNTI for the UE, UE becoming the new serving RNC.
4. Target RNC responds to UE by RRC **Cell Update Confirm**, including old S-RNTI and SRNC ID as UE identifiers. Message contains also the new S-RNTI, SRNC-ID and C-RNTI.

5. UE acknowledges the RNTI reallocation by sending the RRC message **UTRAN Mobility Information Confirm**~~**RNTI Reallocation Confirm**~~

7.11.2.2 Cell Update via Iur without SRNS relocation

This example shows an Inter RNS cell update in DRNS without SRNS relocation when no Iur RACH/FACH transport bearer exists. In this example target DRNS, source DRNS and serving RNS are all located separately from each other. Other scenarios can be easily derived from this most comprehensive signalling procedure.



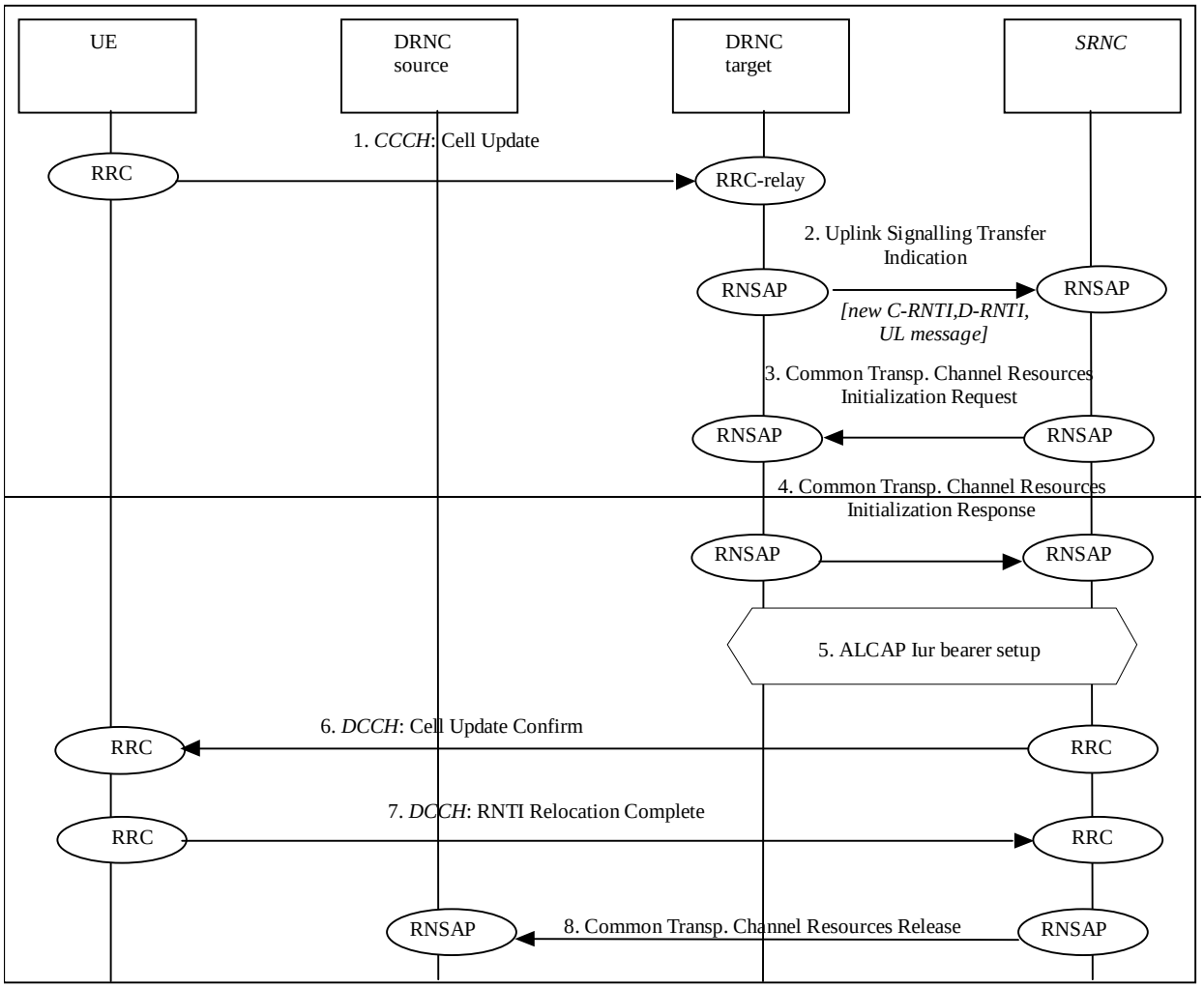
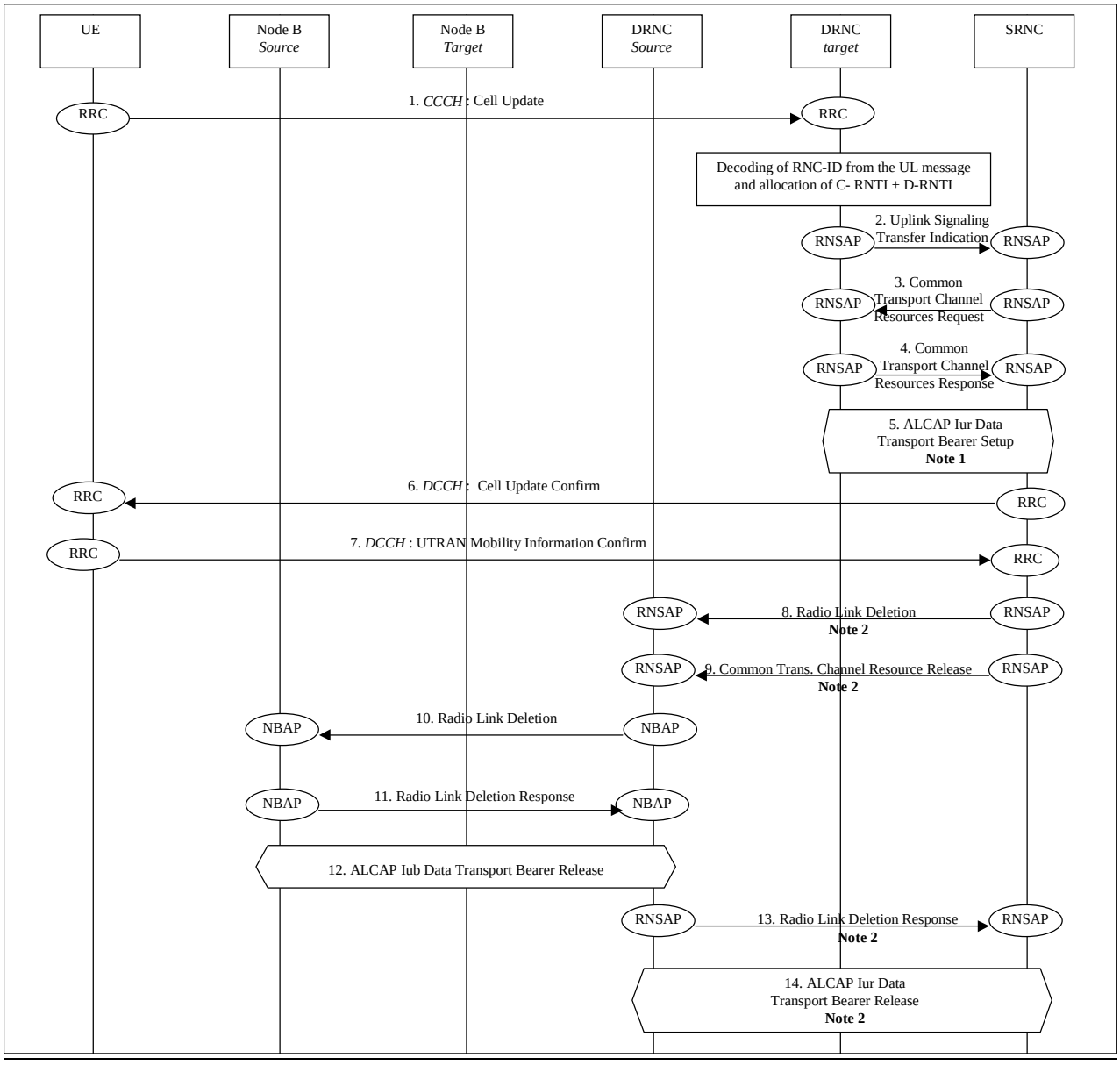


Figure 31: Cell Update via Iur without SRNS Relocation

1. UE sends an RRC message **Cell Update** to the UTRAN (Target DRNC), after having made cell re-selection.
2. Upon reception of a CCCH message from a UE, the target DRNC decodes the SRNC-ID and the S-RNTI. The UE is not registered in the target DRNC, thus the target DRNC allocates C-RNTI and D-RNTI for the UE. The target DRNC forwards the received uplink CCCH message towards the SRNC in the RNSAP **Uplink Signalling Transfer Indication** message. The Uplink Signalling Transfer message includes also the cell-ID of the cell from which the CCCH message was received, the D-RNC ID and the allocated C-RNTI and D-RNTI.
3. Upon reception of the Uplink Signalling Transfer message the SRNC decides not to perform an SRNS Relocation towards the target RNC. The SRNC initialises the UE context in the target RNC with the **RNSAP Common Transport Channel Resources Initialisation Request** message. The message includes the D-RNTI and the cell identity previously received in the Uplink Signalling Transfer indication message, as well as a request for transport layer address and binding identity if there exists no appropriate Iur transport bearer to be used for the UE.
4. The target DRNC sends the transport layer address, binding identity and optionally PHY parameters (FACH code,) to the SRNC with the RNSAP **Common Transport Channel Resources Initialisation Response** message
5. If there does not already exist an appropriate Iur transport bearer to be used for the UE, a transport bearer is established from the SRNC.
6. The SRNC sends RRC **Cell Update Confirm** to the UE. The message is sent in the Iur user plane. It will be sent by the target DRNC to the UE on the FACH coupled to the RACH. Subsequent FACH data may be sent on a different FACH if so decided by the target DRNC.
7. UE acknowledges the RNTI reallocation by sending the RRC message **UTRAN Mobility Information Confirm~~RNTI Reallocation Confirm~~**.
8. The SRNC releases the UE context in the source DRNC by sending a **Common Transport Channel Resources Release** message. The source DRNC releases the D-RNTI.

7.11.2.4 Cell Update via Iur with USCH/DSCH, without SRNS relocation

This example shows an inter-RNS cell update without SRNS relocation, when the UE is in Cell_FACH state and has been allocated DSCH and USCH (TDD) before the Cell Update and when no Iur RACH/FACH transport bearer exists. In this example target RNS, source RNS and serving RNS are all located separately from each other. The procedure includes an implicit release of the USCH and DSCH, which includes release of the Radio Link in the old cell. A potential restoration of USCH and DSCH after the cell update, triggered by the SRNC, is not shown.



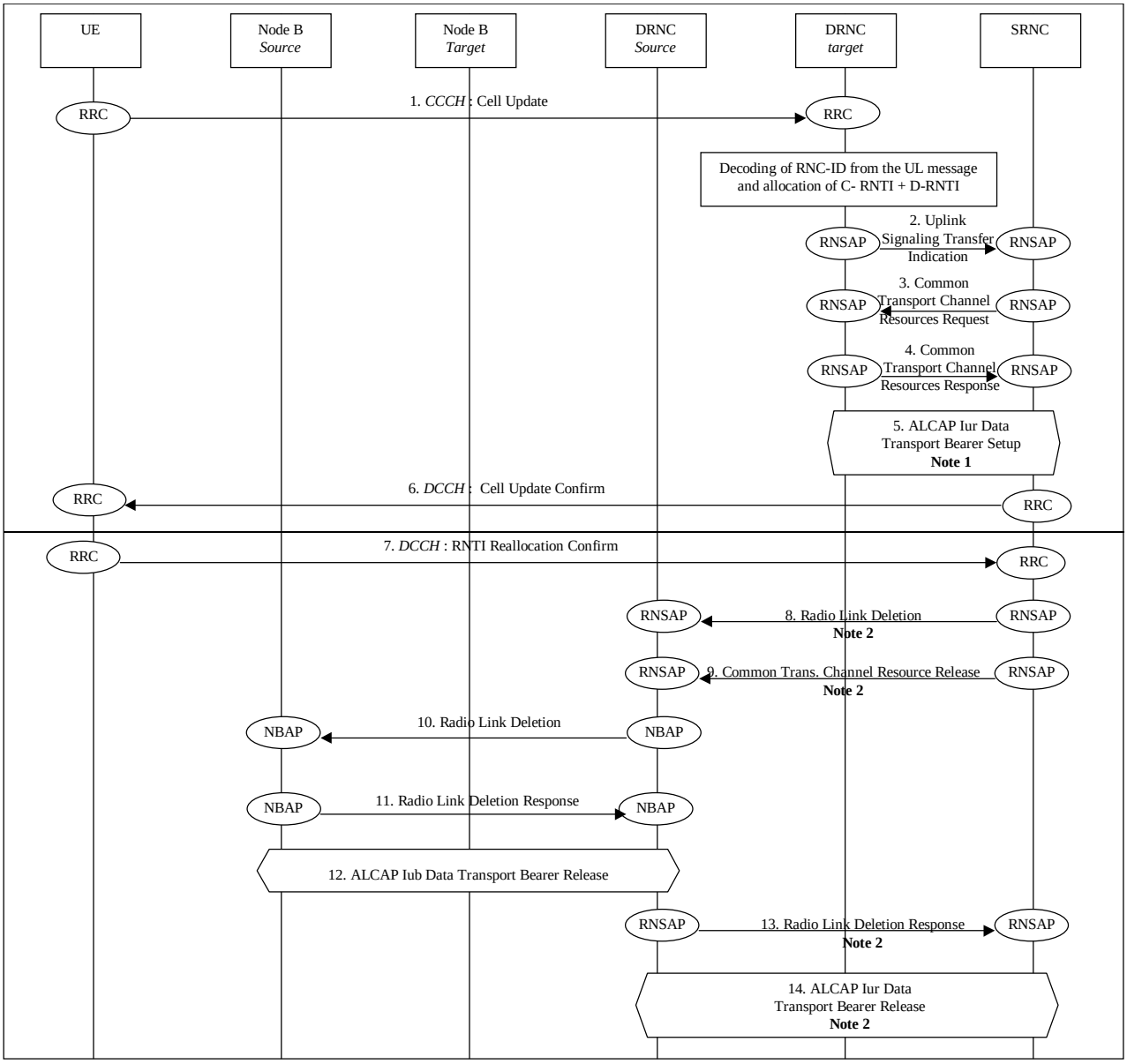


Figure 32: Backward Cell Update via Iur (Cell_FACH State with USCH/DSCH) – successful case.

Note 1: These messages are not necessary if the Target RNC and the SRNC are identical.
Note 2: These messages are not necessary if the Source RNC and the SRNC are identical.

1. When the UE decides that a cell update is necessary, it sends an RRC message **Cell Update** to the Target RNC. This is a *CCCH* message carried on the *RACH* in the new cell. Upon reception of a CCCH message from a UE, the target DRNC decodes the SRNC ID and the S-RNTI. Supposing that the UE is not registered in the target DRNC (RNC ID and SRNTI unknown), the target DRNC allocates a C-RNTI and a D-RNTI for the UE.
2. The Target RNC forwards the **Cell Update** to the SRNC via an RNSAP **Uplink Signaling Transfer** message. (*Note 1*). The Uplink Signalling Transfer message includes also the cell-ID of the cell from which the CCCH message was received, the D-RNTI and the allocated C-RNTI. Upon reception of the Uplink Signalling Transfer message the SRNC decides not to perform a SRNS Relocation towards the target RNC.
3. The SRNC initialises the UE context in the target RNC with the **RNSAP Common Transport Channel Resource Request** message. The message includes the D-RNTI and the cell identity previously received in the Uplink Signalling Transfer indication message, as well as a request for transport layer address and binding identity if there exists no appropriate Iur transport bearer to be used for the UE. (*Note 1*)
4. The Target RNC responds with an RNSAP message **Common Transport Channel Resources Response** including the transport layer address, binding identity and optionally PHY parameters (FACH code, ..) (*Note 1*).
5. If there does not already exist an appropriate Iur transport bearer to be used for the UE, a transport bearer is established from the SRNC (*Note 1*).

6. The SRNC sends an RRC message **Cell Update Confirm** within the *DCCH* on *FACH* to the UE. The message is sent in the Iur user plane. It will be sent by the target DRNC to the UE on the FACH coupled to the RACH. Subsequent FACH data may be sent on a different FACH if so decided by the target DRNC.
7. UE acknowledges the RNTI reallocation by sending the RRC message **UTRAN Mobility Information Confirm**~~**RNTI Reallocation Confirm**~~.
8. The SRNC releases the UE context in the source DRNC by sending a **Common Transport Channel Resource Release** message. The source DRNC releases the D-RNTI (*Note 2*).
9. The SRNC sends an RNSAP message **Radio Link Deletion** to the source RNC(*Note 2*).
10. The source RNC sends NBAP message **Radio Link Deletion** to the source Node B.
    Parameters: Cell id, Transport layer addressing information.
11. The source Node B deletes the previous Radio link and the Communication Context. Successful outcome is reported in NBAP message **Radio Link Deletion Response**.
12. The source RNC initiates release of the corresponding Iub Data Transport bearers using ALCAP protocol.
13. When the source RNC has completed the release, the RNSAP message **Radio Link Deletion Response** is sent to the SRNC (*Note 2).*
14. SRNC initiates release of Iur Data Transport bearer using ALCAP protocol. The request for release of Iur Data Transport bearer is acknowledged by the Source RNC *(Note 2).*

7.12.1 Inter-RNS URA Update with SRNS Relocation

This example shows Inter-RNS URA Update with switching in the CN (SRNS relocation).

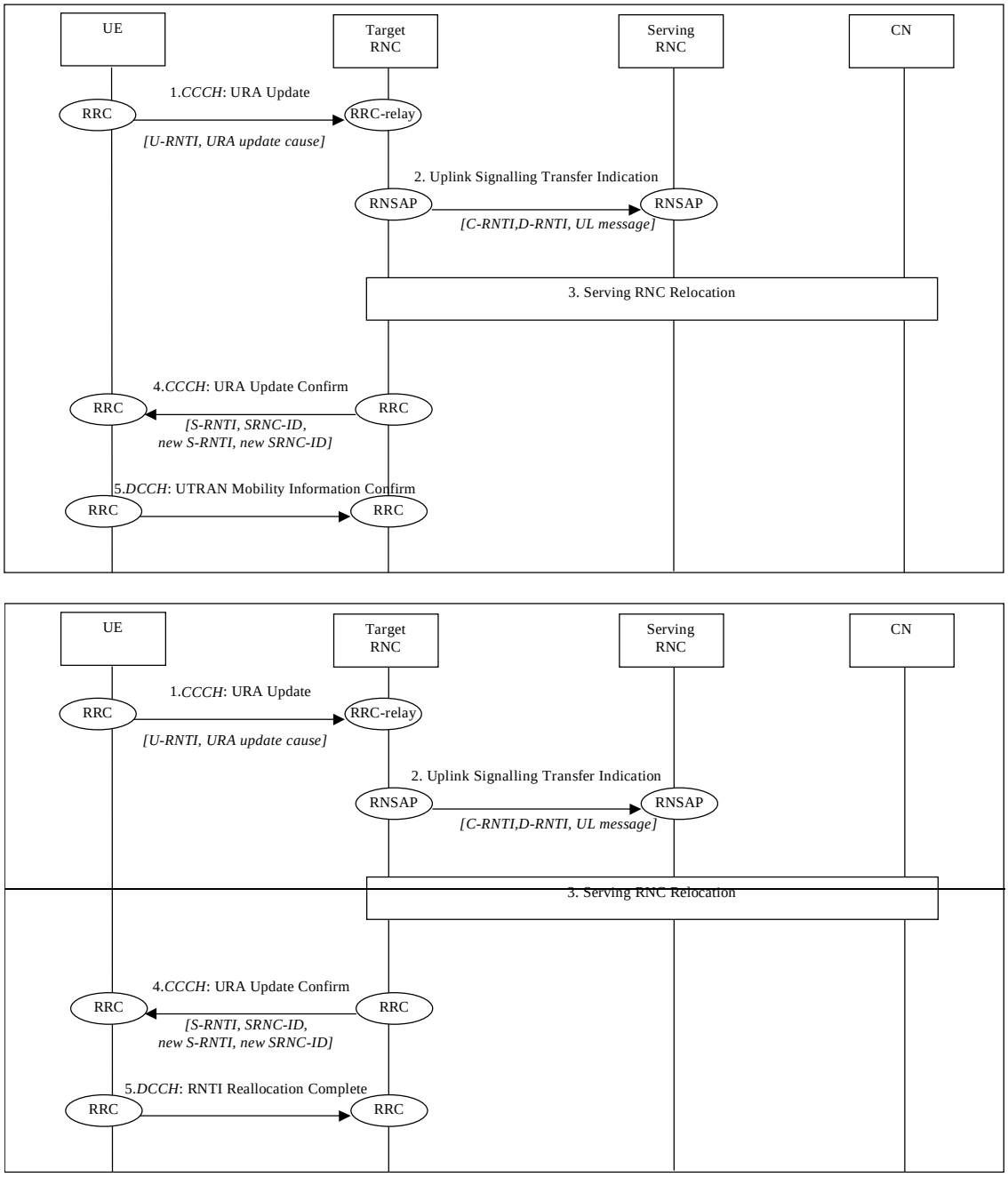


Figure 33: Inter RNS URA Update with switching in CN.

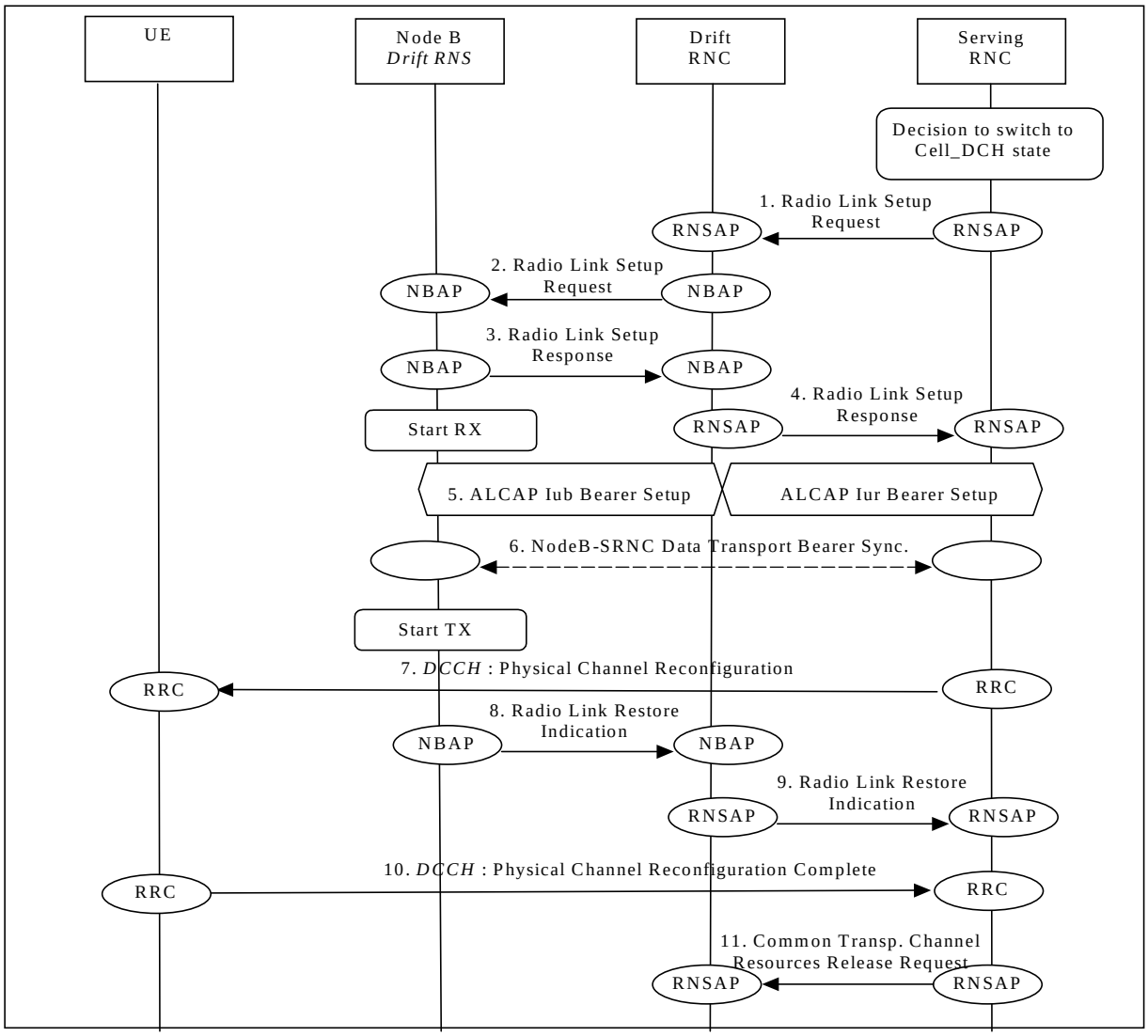
1. UE sends a RRC message **URA Update** to the UTRAN, after having made cell re-selection. Upon reception of a CCCH message from an unknown UE, the target RNC becomes a controlling RNC and it allocates a new C-RNTI and a new D-RNTI for the UE.
2. The target RNC forwards the received uplink CCCH message towards the SRNC by RNSAP **Uplink Signalling Transfer Indication** message to the old Source/Controller RNC. Message includes, besides target RNC-ID, also the allocated C-RNTI, which is to be used as UE identification within the C-RNC, and the D-RNTI. Upon reception of the RNSAP message SRNC decides to perform SRNS Relocation towards the target RNC.
3. Serving RNC relocation procedure is executed as defined in subclause 'SRNS Relocation (UE connected to a single CN node)'. After having completed SRNS Relocation, target RNC allocates new S-RNTI for the UE becoming the new serving RNC. New SRNC also deletes the allocated C-RNTI, since it is not needed for an UE in URA_PCH state.

4. Serving RNC acknowledges the message by RRC **URA Update Confirm**, including old S-RNTI and SRNC ID as UE identifiers. Message contains also the new S-RNTI and RNC-ID.
5. UE acknowledges the RNTI reallocation by sending the RRC message **UTRAN Mobility Information Confirm**~~**RNTI Reallocation Confirm**~~ on DCCH.

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:



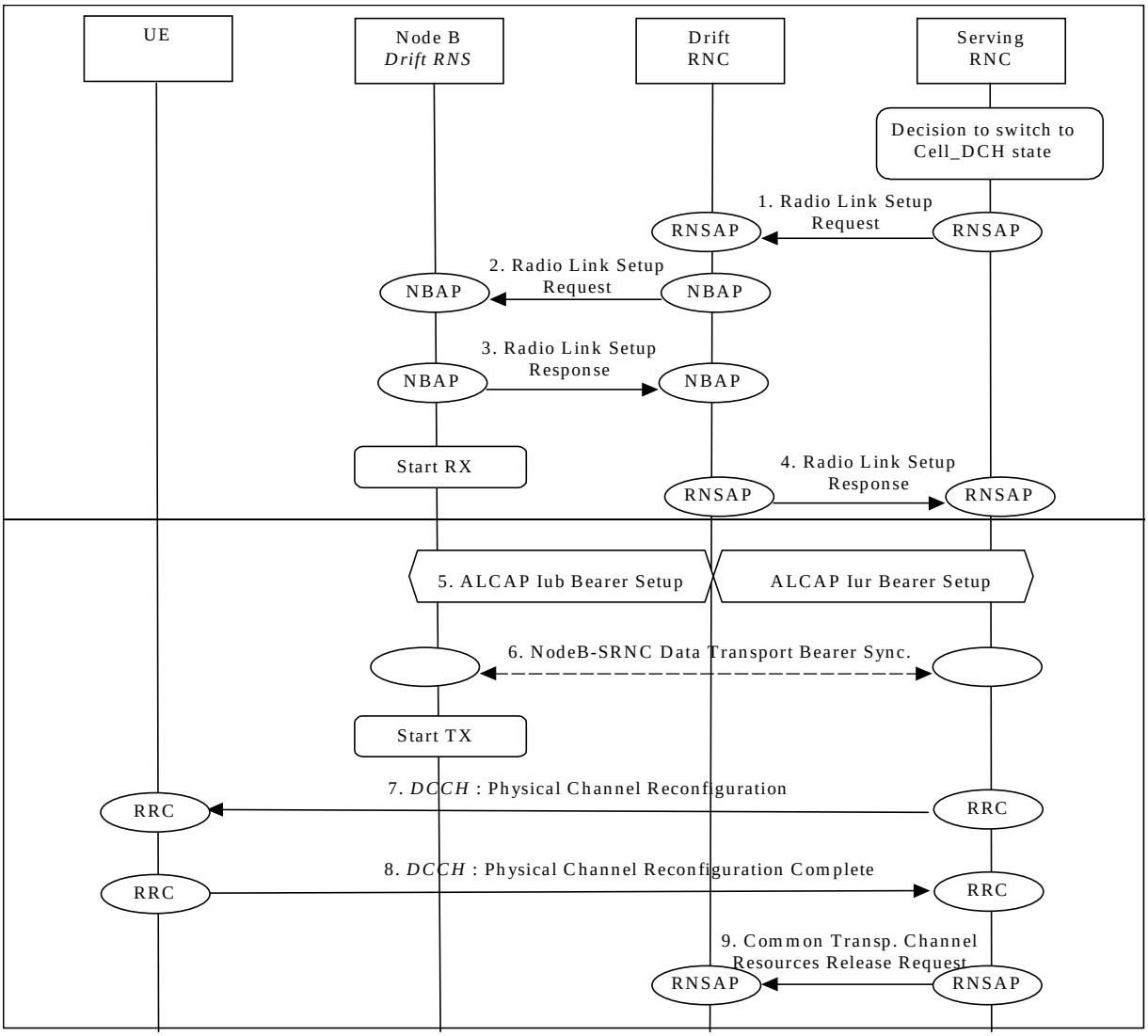


Figure 45B Switching from Cell_FACH to Cell_DCH State via Iur

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. Node B achieves uplink sync on the Uu and notifies DRNC with NBAP message **Radio Link Restore Indication**.
9. DRNC sends RNSAP message **Radio Link Restore Indication** to notify SRNC that uplink sync has been achieved on the Uu.
10. After the reconfiguration, the UE sends RRC message **Physical Channel Reconfiguration Complete** to SRNC.
11. The SRNC releases the UE context for CELL_FACH state in the source DRNC by sending a **Common Transport Channel Resources Release** message.