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Technical Specification

3GPP

3rd Generation Partnership Project (3GPP); Technical Specification Group (TSG) RAN RNSAP Specification

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Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project, Technical Specification Group <TSG name>.

The contents of this TS may be subject to continuing work within the 3GPP and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released with an identifying change of release date and an increase in version number as follows:

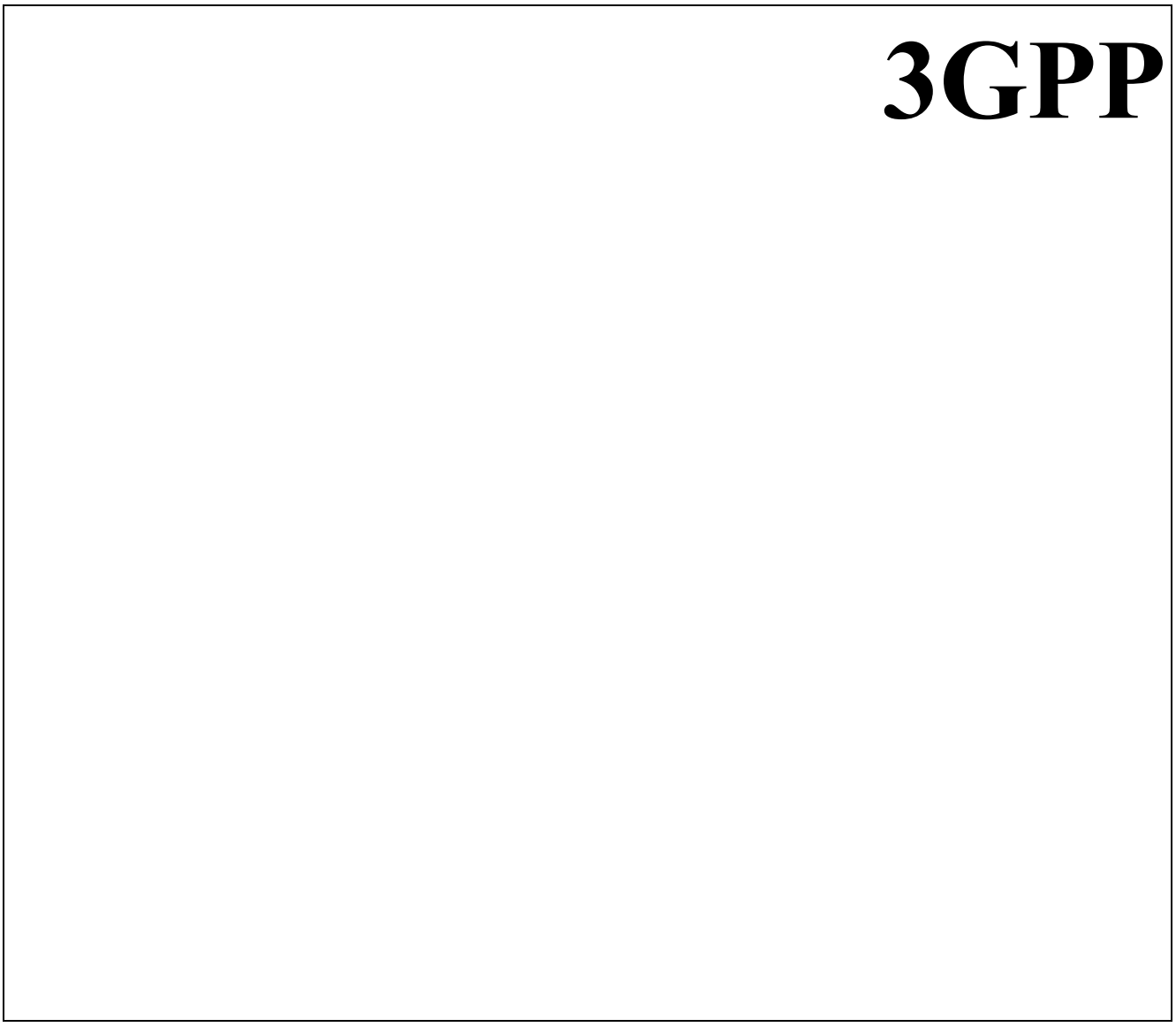
Version m.t.e

where:

- m indicates [major version number]
- x the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- y the third digit is incremented when editorial only changes have been incorporated into the specification.

Scope

The present document …



References

The following documents contain provisions which, through reference in this text, constitute provisions of the present

document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1]

[2]

Definitions, symbols and abbreviations

Definitions

For the purposes of the present document, the [following] terms and definitions [given in ... and the following] apply.

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<defined term>: <definition>.
example: text used to clarify abstract rules by applying them literally.

Symbols

For the purposes of the present document, the following symbols apply:
<symbol> <Explanation>

Abbreviations

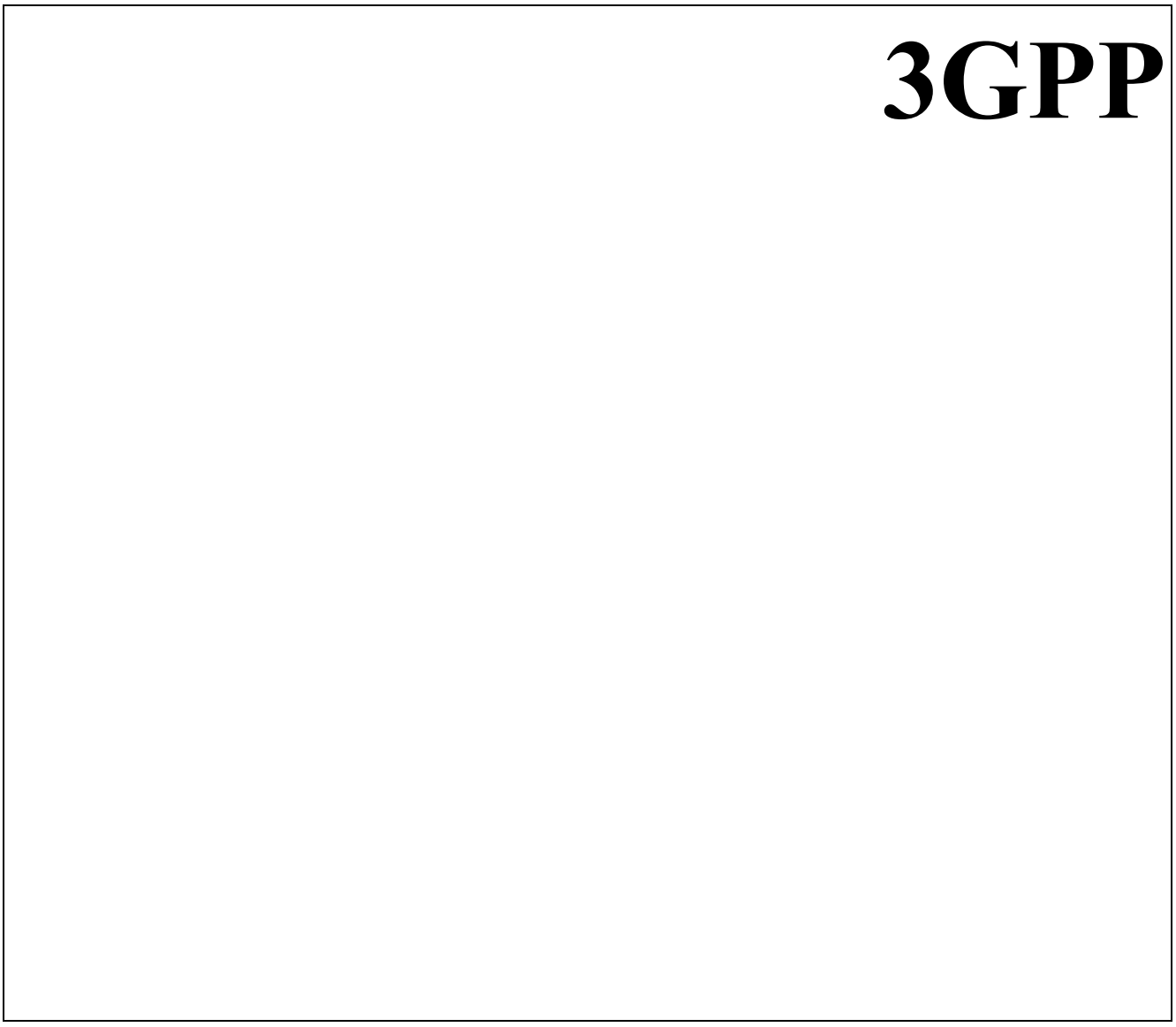
<ACRONYM> <Explanation>

General

[Editor's note: This chapter should describe requirements on RNSAP forward/backward compatibility, error handling principles, message coding principles etc.]

The issue of the transport layer address is FFS.

RNSAP Services



The RNSAP offers the following services:

Services expected from signalling transport
Functions of RNSAP

Elementary RNSAP procedures

[Editor´s note: This chapter should list RNSAP procedures, including a text describing the procedure (triggering events, successful and unsuccessful outcome. Message sequences should be provided (using Word pictures for simple editing).
]

Radio Link Setup

When the serving RNS makes an algorithmic decision to add the first cell or set of cells from another RNS (a drift RNS) to the active set of a specific RRC connection, the RNSAP message RADIO LINK SETUP is sent to the corresponding drift RNS to request setup of the radio link(s). This message contains essentially RL identifier(s), the target cell identifier(s), transport format sets (TFSs) for each active DCH and desired radio resources for each radio link. The serving RNS also indicates when several radio links are to be setup in the drift RNS, either that

1) the radio links may be combined by the DRNS, or
2) the radio links must not be combined.

Additional information is FFS.

Since the drift RNS is responsible for its own radio resources the load control (Admission control) must be performed due to the request, In successful case (the load is not too high) the drift RNS allocates requested type of channelisation codes for each RL and assigns a binding identifier and a transmission address (e.g. ATM Address) for each DCH. This information is sent to the serving RNS in the message RADIO LINK SETUP RESPONSE, The drift RNS also provides the serving RNS with the:

Cell identity of all neighboring cells to the cell(s) where the radio link(s) is added. Information related to neighboring cells necessary for the serving RNS (the exact parameters are FFS), and the Signaling Address of any RNC controlling neighboring cells not controlled by the drift RNS.

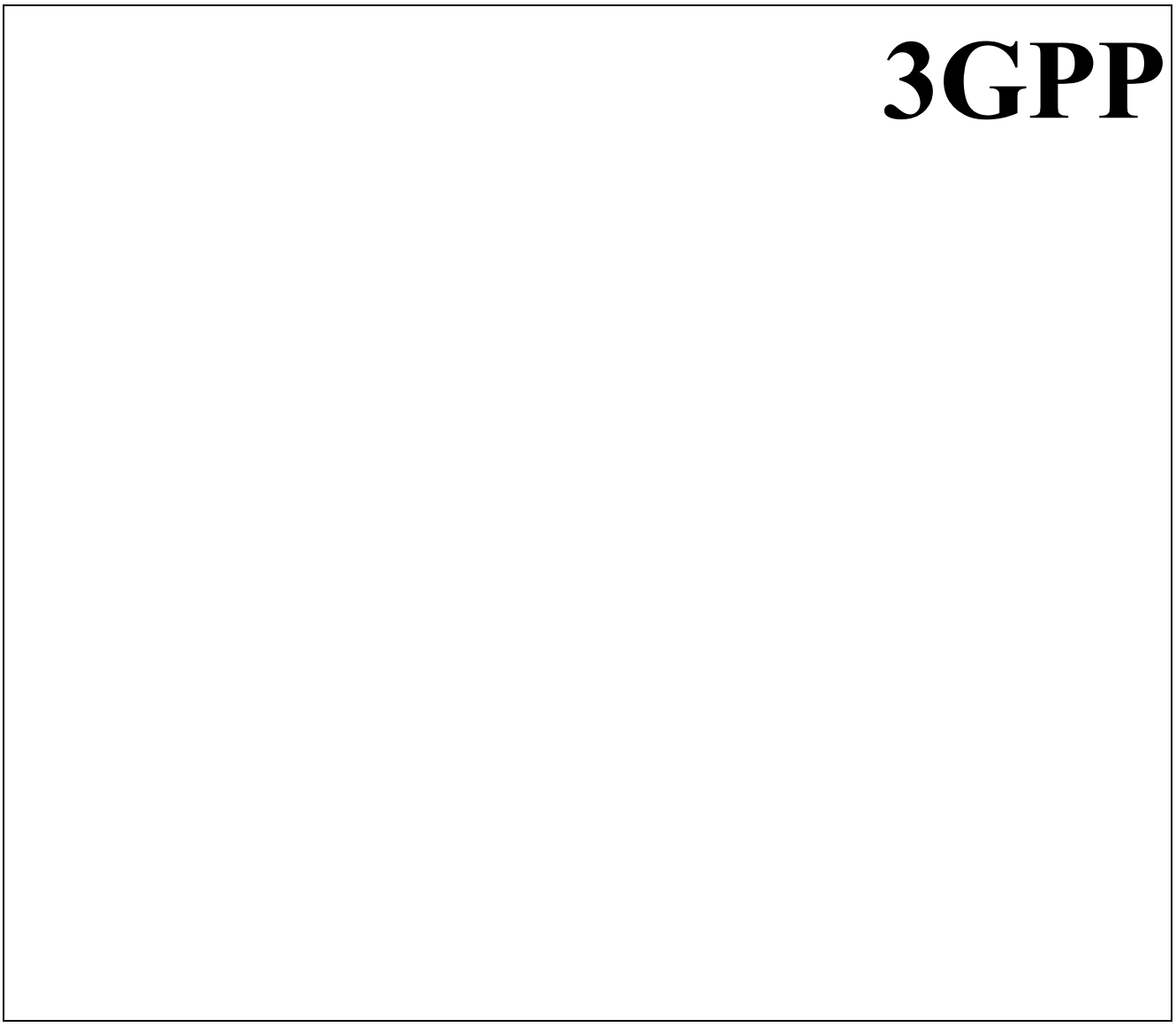
Mechanisms to reduce the amount of information to be transported are FFS.

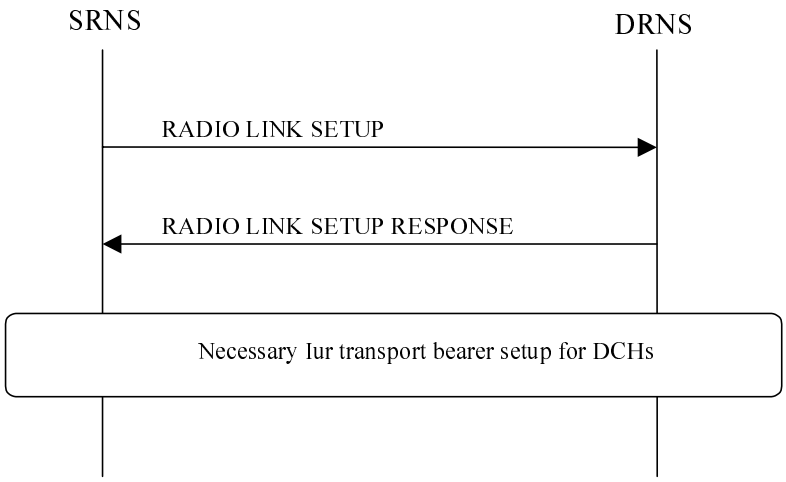
The serving RNS is responsible for setting up the I_{ur} transport bearers for each DCH. The transport bearers are setup towards the address indicated in the RADIO LINK SETUP

RESPONSE message from the drift RNS. Also the setup messages should include the corresponding binding identifier, which will be used by the drift RNS to map each transport bearer to the corresponding DCH.

In unsuccessful case an RNSAP message RADIO LINK SETUP FAILURE is returned, indicating among other things the reason for failure.

An example of a corresponding message flow at the Iur interface is presented in Figure 9-1.





(Successful Case)

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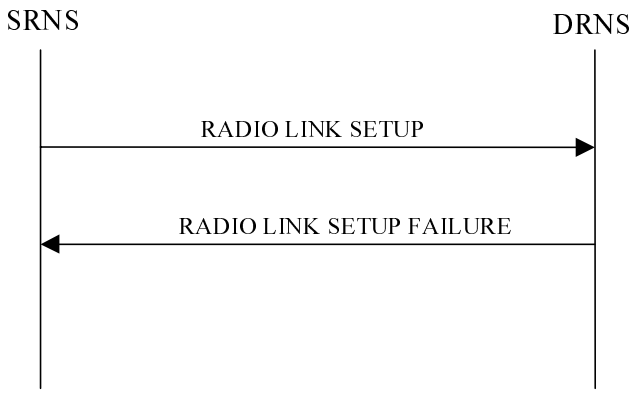

(Unsuccessful Case)

Figure 9-1. An example RNSAP message flow at I_{ur} interface for RL setup.

Radio Link Addition

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When the serving RNS makes an algorithmic decision to add an additional cell or set of cells from another RNS (a drift RNS) to the active set of a specific RRC connection, the RNSAP message RADIO LINK ADDITION is sent to the corresponding drift RNS to request addition of a radio link. This message contains essentially RL identifier, the target

cell identifier, transport format sets (TFSs) for each active DCH and desired radio resources for each radio link. The serving RNS also indicates either that

1) the new radio link may be combined with already existing radio links for this RRC connection, or
2) the new radio link must not be combined with already existing radio links for this RRC connection.

Additional information is ffs.

Since the drift RNS is responsible for its own radio resources the load control (Admission control) must be performed due to the request. In successful case (the load is not too high) the drift RNS allocates requested type of channelisation codes for each RL and assigns a binding identifier and a transmission address (e.g. AAL2 address) for each DCH. The time at which the DRNS allocates the channelisation code is FFS. This information is sent to the Serving RNS in the message RL ADDITION RESPONSE. The drift RNS also provides the SRNC with the:

- Cell Identity of all neighboring cells to the cell(s) where the radio link(s) is added,
- information related to neighboring cells necessary for the SRNC (the exact parameters are FFS), and
- the Signaling Address of any RNC controlling neighboring cells not controlled by the drift RNC

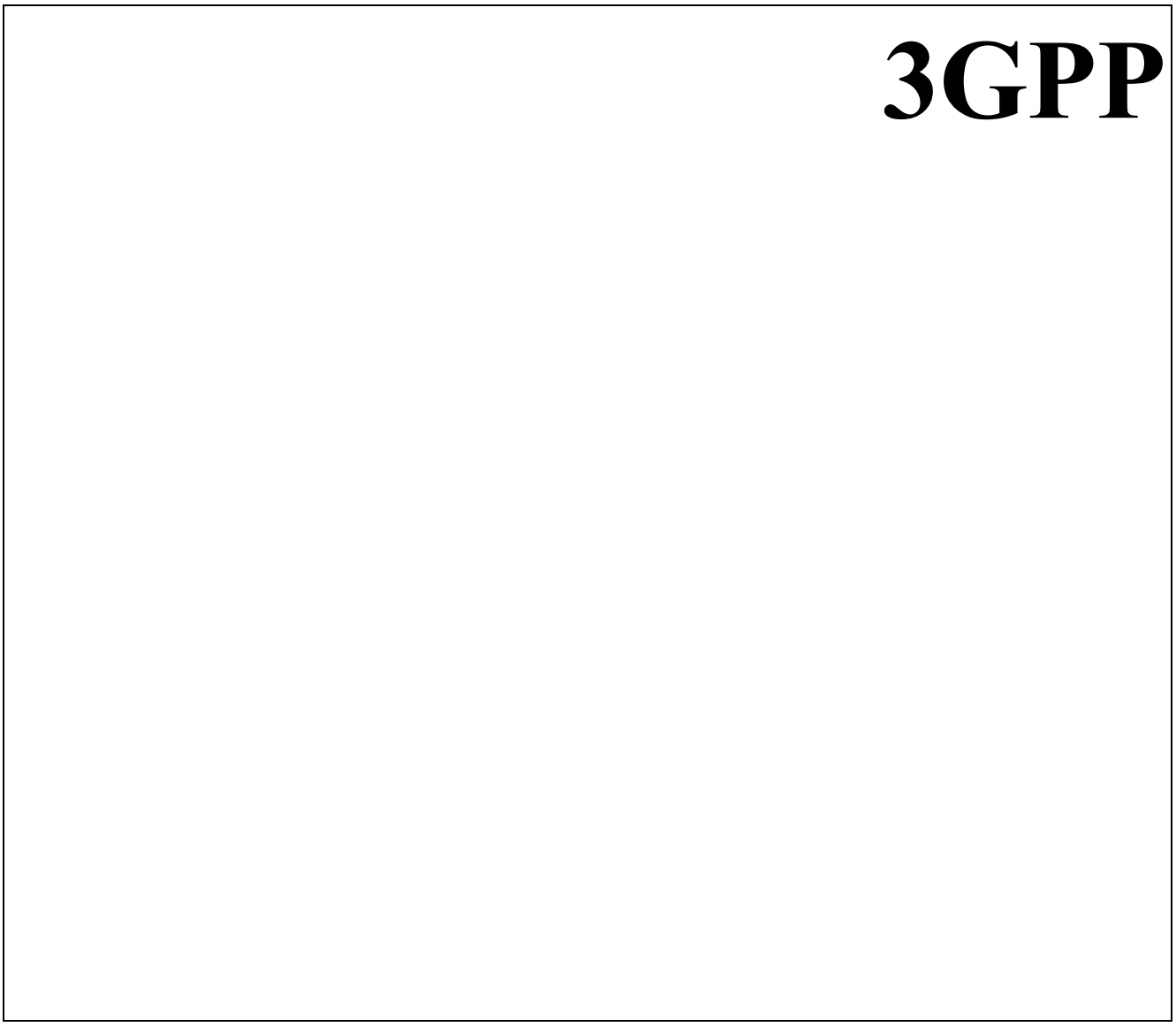
Mechanisms to reduce the amount of information to be transported is FFS.

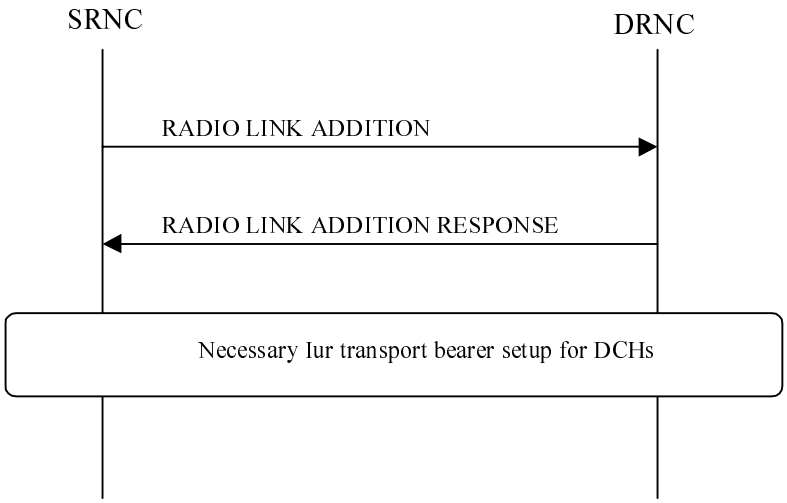
The serving RNS is responsible for setting up the I_{ur} transport bearers for each DCH. The transport bearers are setup

towards the address indicated in the RL ADDITION RESPONSE message from the drift RNS. Also the setup messages should include the corresponding binding identifier, which will be used by the drift RNS to map each transport bearer to the corresponding DCH.

In case the serving RNS has indicated that the new radio link may be combined with already existing radio links for this RRC connection, the drift RNS may instead of assigning binding identifiers and transport addresses in the RL ADDITION RESPONSE message indicate that the already existing I_{ur} transport bearers can be used also for the new radio link. In such a case the response includes the ATM Binding ID of the already existing AAL2 connection. If old transport bearers are used, then the serving RNS does not perform additional transport bearer setups.

An example of a corresponding message flow at I_{ur} interface is presented in figure 9-2.





(Successful case)

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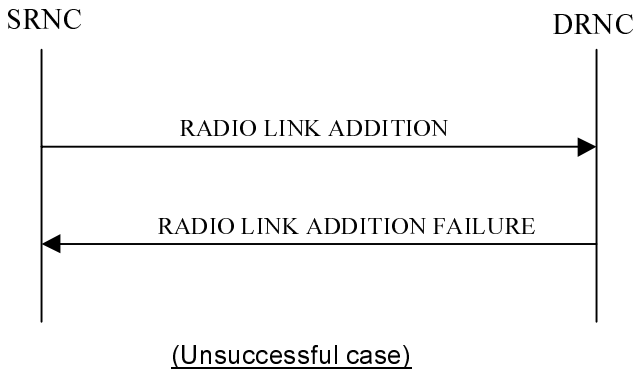

Figure 9-2. An example RNSAP protocol message flow at I_{ur} interface for inter RNS RL addition.

Radio Link Deletion

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When the serving RNS makes an algorithmic decision to delete a cell from another RNS (drift RNS) from the active set of a specific RRC connection, the message RL DELETION to request deletion of radio link is sent to the corresponding drift RNS. The message contains essentially the RL identifier to be deleted. Upon reception of the message, the Drift

RNS should immediately delete the radio link and all related allocations within the drift RNS and acknowledge the deletion to the Serving RNS by the message RL DELETION RESPONSE.

The serving RNS is responsible to release the corresponding I_{ur} transport bearers, if they are not used by other radio links.

An example of a corresponding message flow at I_{ur} interface is presented in figure 9-3.

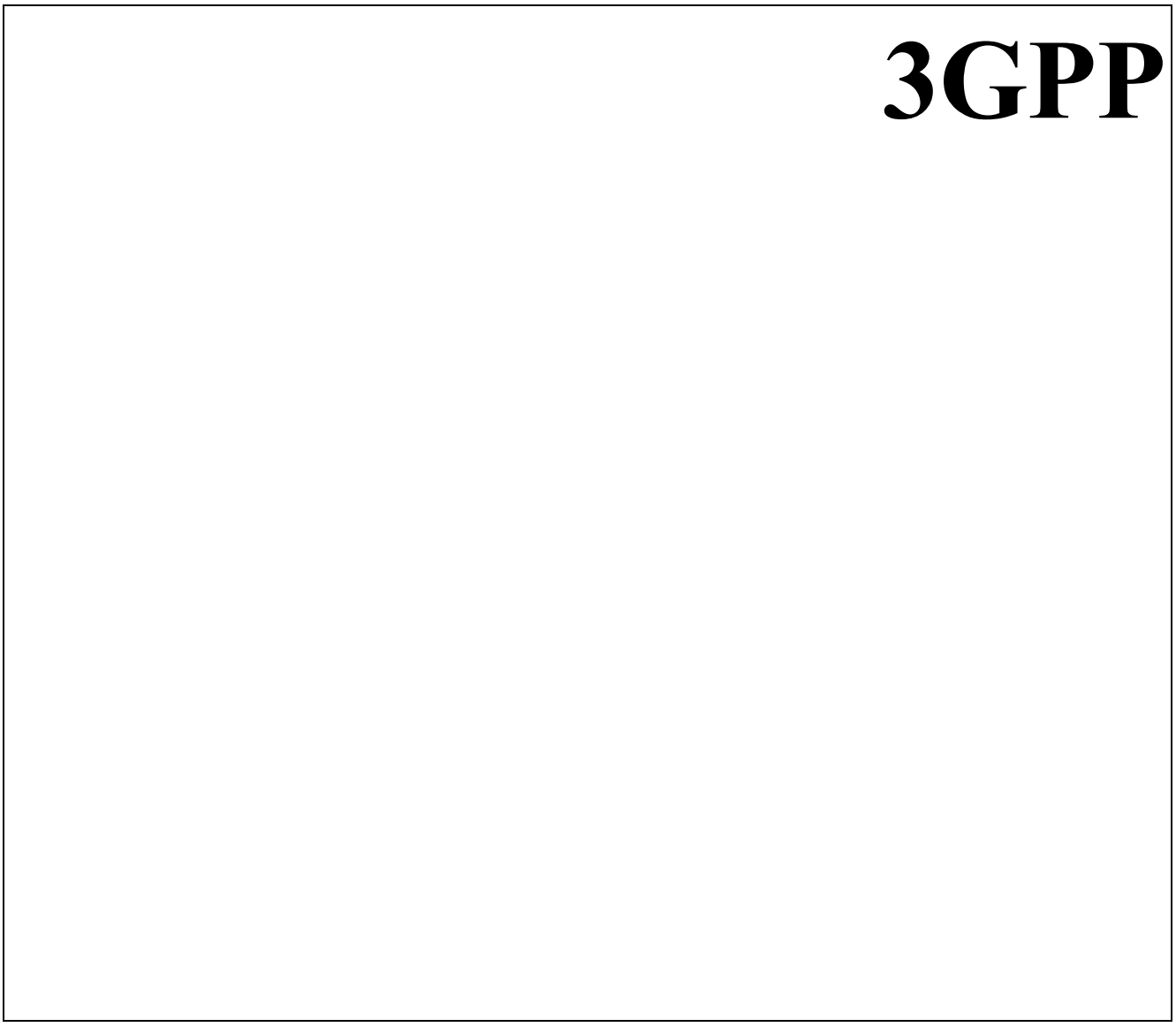

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Figure 9-3. An example RNSAP protocol message flow at I_{ur} interface for interRNS RL deletion.

Radio Link Reconfiguration (synchronised)

RL Reconfiguration procedure is used to reconfigure radio links related to one UE-UTRAN connection within one DRNS. The procedure can be used to add, delete or modify a DCH, or to perform physical channel reconfiguration.

The RL Reconfiguration procedure is initiated by the serving RNS by sending the RNSAP message RL RECONFIGURATION PREPARE to the DRNS. The message is sent using the relevant signalling connection.

The message includes essentially the desired radio link parameters for the radio links after completion of this procedure. The following parameters can be specified (the list is to be considered as an incomplete example):

Possible parameters related to all radio links after completion of the procedure:

- DL channelisation code type(s)
- New UL channelisation type
- New TFCS

- IDs of the DCHs to be added / deleted or modified
- Priority of the added/modified DCH

- TFS of the added/modified DCH

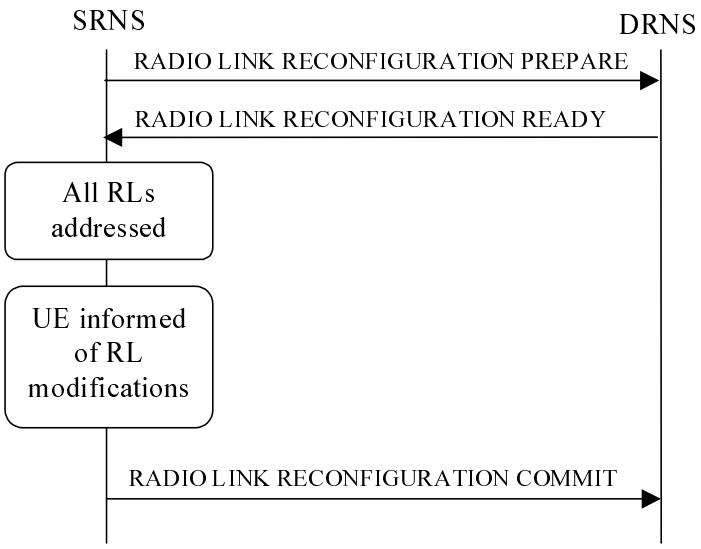
If the proposed modifications are allowed by the DRNS resource management algorithms, and the DRNS has successfully reserved the required resources it responds to the SRNS with RL RECONFIGURATION READY message. In unsuccessful case a RNSAP message RL RECONFIGURATION FAILURE is returned, indicating among other things the reason for failure.

The RL RECONFIGURATION READY message contains the downlink channelisation codes for each radio link (if changed), a Binding Identifier (BID) and transmission address (e.g. AAL2 address) for each new Iur transport bearer (if any).

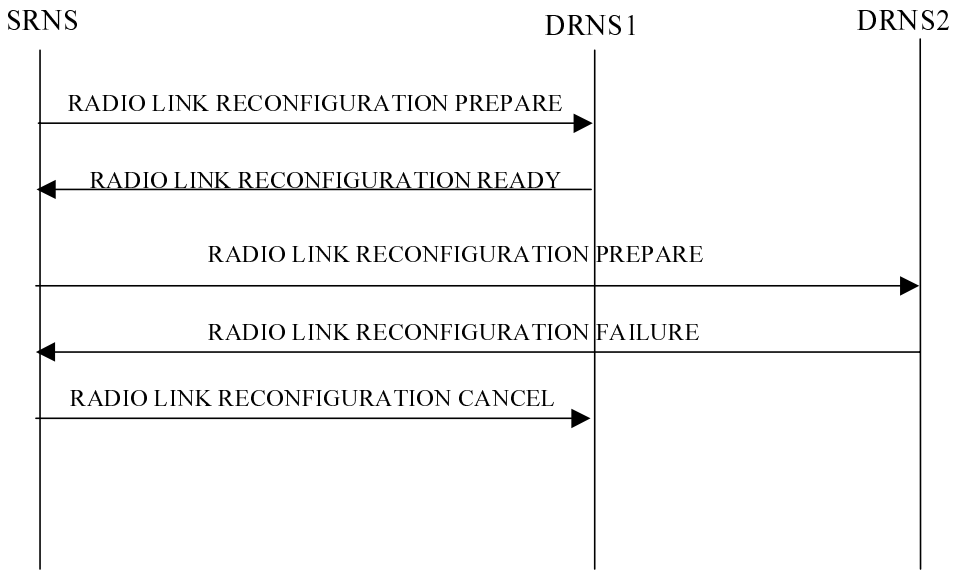
SRNS informs the UE about the changes in radio links (RL) with the relevant RRC message(s) and sends the RL RECONFIGURATION COMMIT message to DRNSs.

SRNC is responsible for releasing unnecessary Iur transport bearers (if any).

Note. A mechanism for synchronising the switch from the old to the new configuration in the UE and the DRNS in needed and FFS.



(Successful case)



(Unsuccessful case)

Figure 9-4. RL Reconfiguration procedure (synchronised)

Radio Link Reconfiguration (unsynchronised)

RL Reconfiguration procedure is used to reconfigure radio links related to one UE-UTRAN connection within one DRNS. The procedure can be used to add, delete or modify a DCH or to perform transport channel reconfiguration.

The Unsynchronised RL Reconfiguration is used when there is no need to synchronise the time of the switching from the old to the new configuration in the NodeBs used by the UE-UTRAN connection. This is the case when new TFCs are added or old TFCs are deleted without changing the TFCI values of the TFCs that are maintained during the reconfiguration.

The RL Reconfiguration procedure (unsynchronised) is initiated by the serving RNS by sending the RNSAP message RL RECONFIGURATION to the DRNS. The message is sent using the relevant signalling connection.

The message includes essentially the desired radio link parameters for the radio links after completion of this procedure. The following parameters can be specified (the list is to be considered as an incomplete example):

Possible parameters related to all radio links after completion of the procedure:

- New TFCS
- IDs of the DCHs to be added / deleted or modified

- Priority of the added/modified DCH
- TFS of the added/modified DCH

If the proposed modifications are allowed by the DRNS resource management algorithms, and the DRNS has successfully reserved the required resources it responds to the SRNS with RL RECONFIGURATION RESPONSE message. In unsuccessful case a RNSAP message RL RECONFIGURATION FAILURE is returned, indicating among other things the reason for failure.

The RL RECONFIGURATION RESPONSE message contains the downlink spreading codes for each radio link (if changed), a Binding Identifier (BID) and transmission address (e.g. AAL2 address) for each new Iur transport bearer (if any).

SRNC is responsible for releasing unnecessary Iur transport bearers (if any).

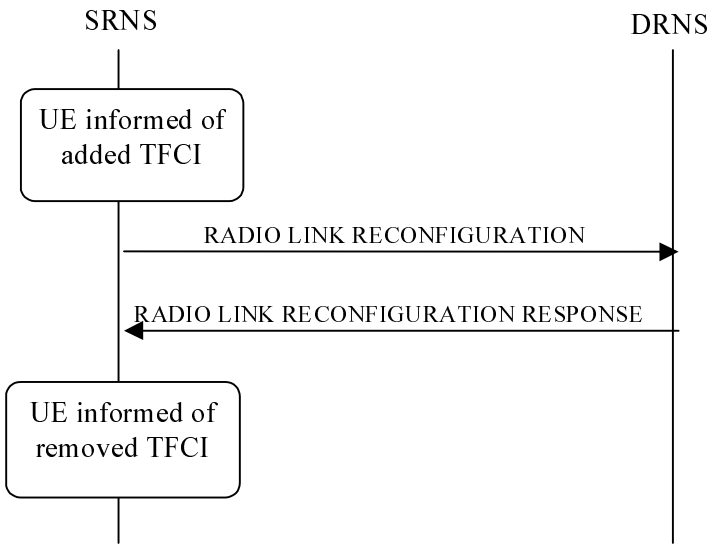


Figure 9-5. RL Reconfiguration procedure (unsynchronised)

Down Link Code Reconfiguration (ETSI version)

[Editor's note: This procedure is FFS. Study item Iur/2 from TTC/ARIB-ETSI merging: Separate reconfiguration trigger and reconfiguration procedure, or combined DRNC initiated DL reconfiguration procedure.]

DL Code Reconfiguration is used to change the DL channelisation codes of radio link(s) related to one UE-UTRAN connection. The spreading factor can not be changed and this procedure is used only to defragment the DL channelisation code pool.

Code reconfiguration procedure is initiated by the DRNS, when it detects unwanted fragmentation in the DL channelisation code pool(s). DRNC sends DL CODE RECONFIGURATION REQUEST to the SRNC via the appropriate dedicated connection. The message includes the radio link ID(s) and proposal for the new DL channelisation codes for them.

SRNC decides appropriate execution time for the change. SRNC sends relevant RRC message(s) to the UE and RNSAP DL CODE RECONFIGURATION COMMAND to the DRNS.

DRNS makes the switch to the new codes and releases the old DL channelisation codes.

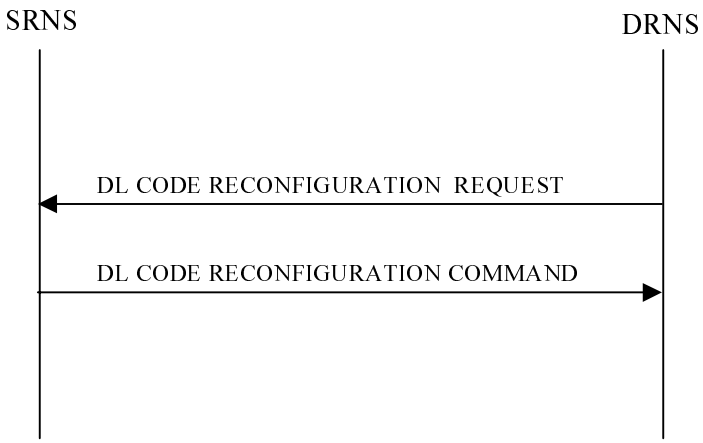


Figure 9-6. DL Code Reconfiguration procedure

Down Link Code Reconfiguration Trigger (TTC/ARIB version)

[Editor's note: This procedure is FFS. Study item Iur/2 from TTC/ARIB-ETSI merging: Separate reconfiguration trigger and reconfiguration procedure, or combined DRNC initiated DL reconfiguration procedure.]

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Down Link Code Reconfiguration Trigger procedure is initiated by the DRNS when it detects unwanted

fragmentation in the DL channelisation code pool(s). The DRNS sends a DL CODE RECONFIGURATION TRIGGER message to the SRNC via the appropriate dedicated connection.

Figure 9-7. An example RNSAP message flow at I_{ur} interface for DL Code Reconfiguration Trigger

Cell/URA Update Indication/SRNS Relocation (ETSI version)

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[Editor's note: This procedure is FFS. Study item Iur/3 from TTC/ARIB-ETSI merging: cell and URA update.]

[Editor's note: The Cell-and URA Update procedures listed in YY.02 [10] have not yet been specified by the SMG2-UMTS ARC EG. The usage of this procedure needs to be further studied together with the Cell- and URA Update procedures, and also with respect to common channel handling over Iur. The name of the procedure is only a working name proposed by the editor.]

UTRAN Cell update is an RRC procedure, which can be executed while in RACH/FACH common channel substate [6]. This functionality is required for the forward type of operation of scenario 2b (Inter RNS/Intra UTRAN) as defined in [7].
UTRAN Registration Area update is an RRC procedure, which can be executed while in RACH/PCH common channel substate [6]. This functionality is required for the forward type of operation of scenario 2b (Inter RNS/Intra UTRAN) as defined in [7].
Upon reception of RRC message UTRAN Cell Update or UTRAN Registration Area Update from a UE the drift RNS inserts necessary information received in the RRC message to the Cell/URA Update Indication message and sends the message to the serving RNS.

At reception of the Cell/URA Update Indication message, there are two options:

1. Perform the update without SRNS Relocation (How this is done is FFS.).
2. Perform the update with an SRNS Relocation (see [10] for a description of the SRNS Relocation procedure)

Which option to use is decided by the SRNS.

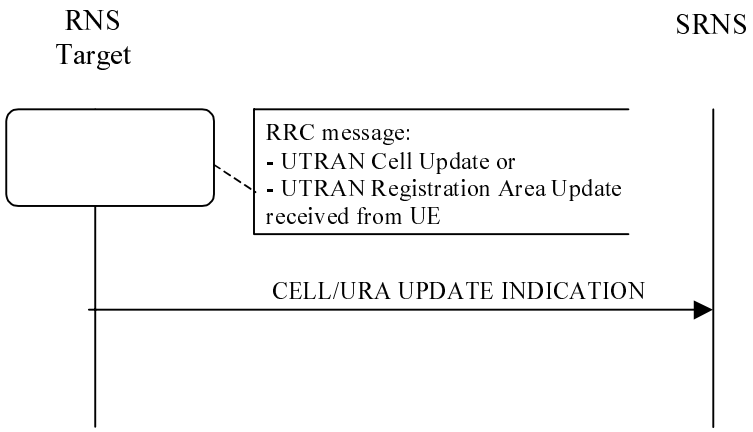


Figure 9-8: An example RNSAP message flow at I_{ur} interface for Cell/URA Update Indication/SRNS Relocation (ETSI version)

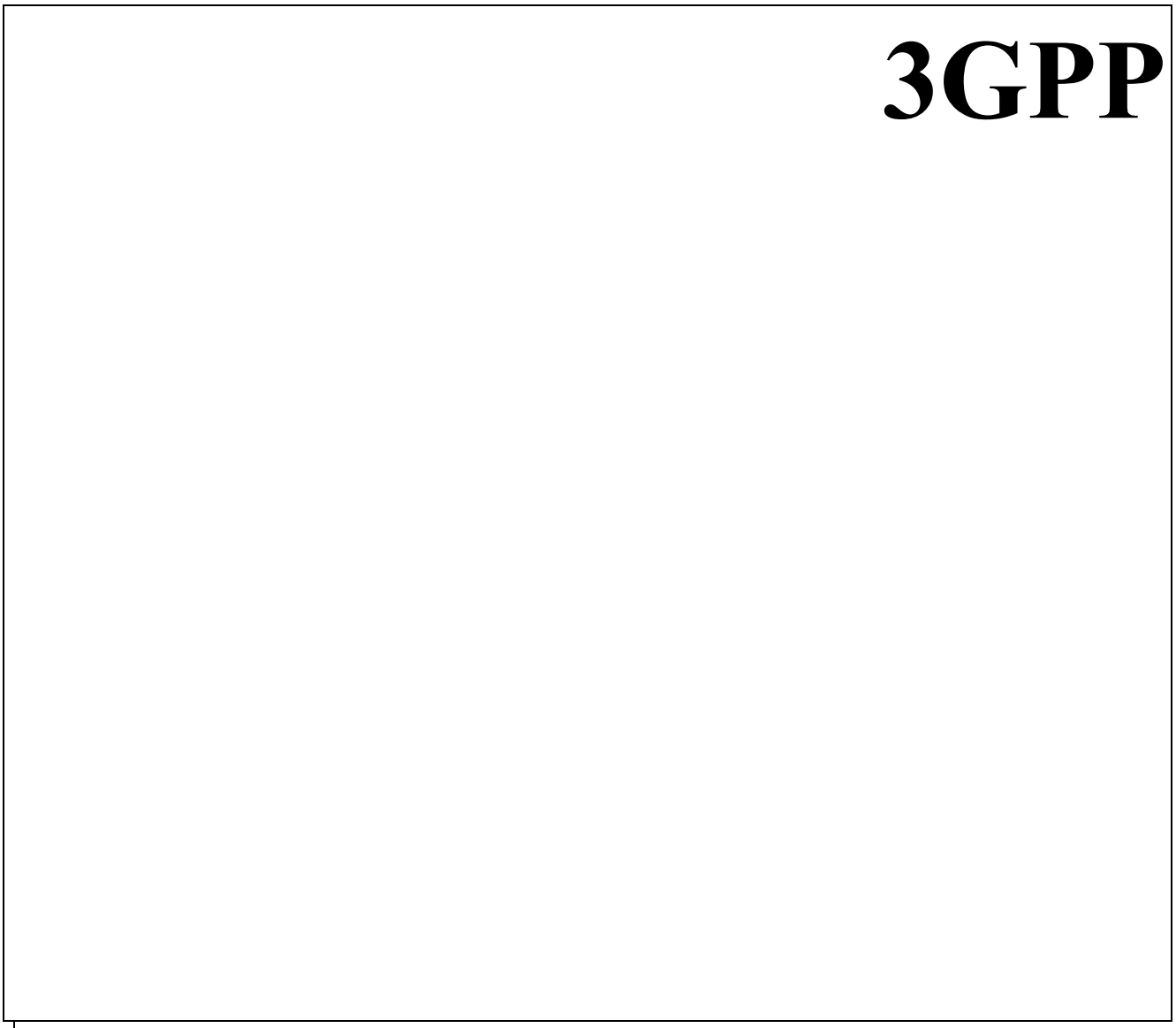
Cell/URA Update Indication. Cell/URA Update Indication/SRNS Relocation (TTC/ARIB version)

[Editor's note: This procedure is FFS. Study item Iur/3 from TTC/ARIB-ETSI merging: cell and URA update.]

UTRAN Cell update is an RRC procedure, which can be executed while in Cell Connected State (RACH/FACH substate). UTRAN Registration Area update is an RRC procedure, which can be executed while in URA Connected State (RACH/PCH substate).

There may exist two ways of procedure to reallocate RNC.

< 1. Backward method >
Upon reception of RRC message Cell Update REQUEST or UTRAN Registration Area Update REQUEST from a UE the drift RNC inserts necessary information received in the RRC message to the RNC Relocation REQUEST message and sends the message to the serving RNC and Perform the update with an SRNC relocation.
< 2. Forward method >
Upon reception of RRC message Cell Update REQUEST or UTRAN Registration Area Update REQUEST from a UE the drift RNC inserts necessary information received in the RRC message to the RRC Context Retrieval message and sends the message to the serving RNC and receive the RRC Context Retrieval Response message. After that the update with an SRNC relocation will be performed.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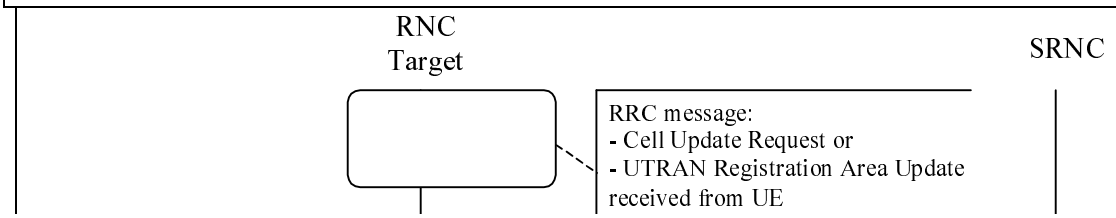
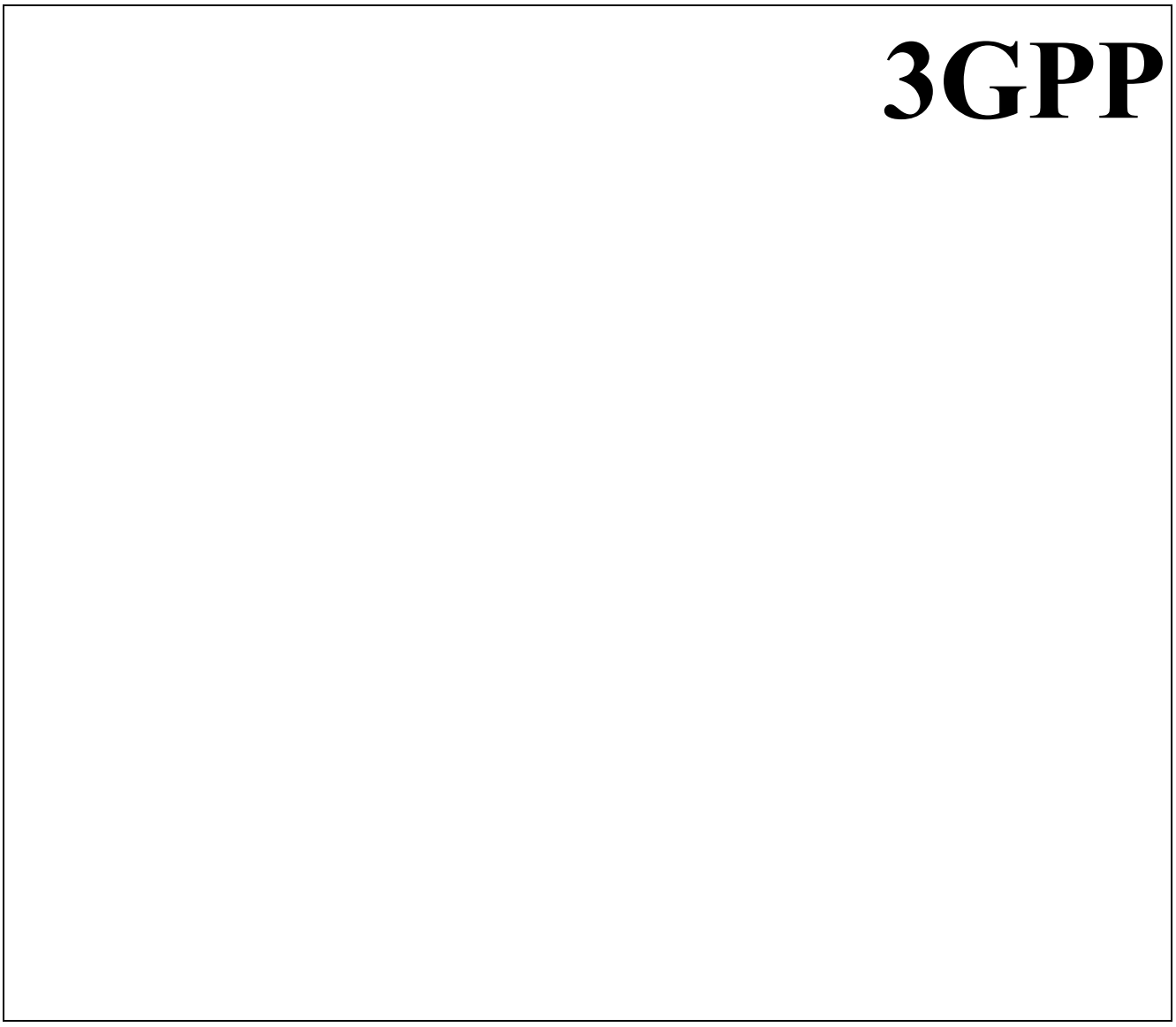

RNC
Target
SRNC
RRC message:
- Cell Update Request or
- UTRAN Registration Area Update
received from UE

Figure 9-9. An example RNSAP message flow at I_{ur} interface for RNC Relocation (Backward method)



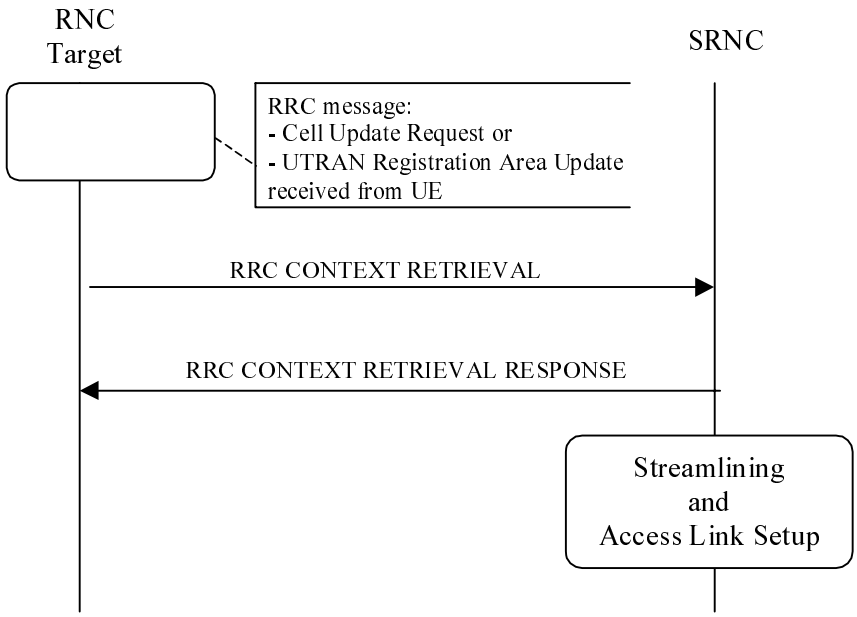


Figure 9-10. An example RNSAP message flow at I_{ur} interface for RNC Relocation (Forward method)

Radio Link Dropped Notification

This procedure is started by the drift RNS when a radio link has been dropped without any request from the serving RNS. The reasons for this is a DRNS internal failure or congestion (in the RNC or in the Node B or in the interfaces). Other reasons are FFS.

As consequence the SRNC sends the RNSAP message RL DROPPED NOTIFICATION to the SRNC. The message is sent using the relevant signalling connection.

The message specifies at least:
- RL ID(s): The message may address all the radio links of the drift RNC
- A reason code for the release (ex: cell congestion, hardware failures, etc.)

At reception of the RL DROPPED NOTIFICATION the SRNS could perform the following actions:
- Inform the MS that the radio link has to be removed.
- Perform relevant procedures (Branch Deletion) in order to release all the resources allocated in the DRNS to the removed RL(s), including the transmission resources on the Iur interface.

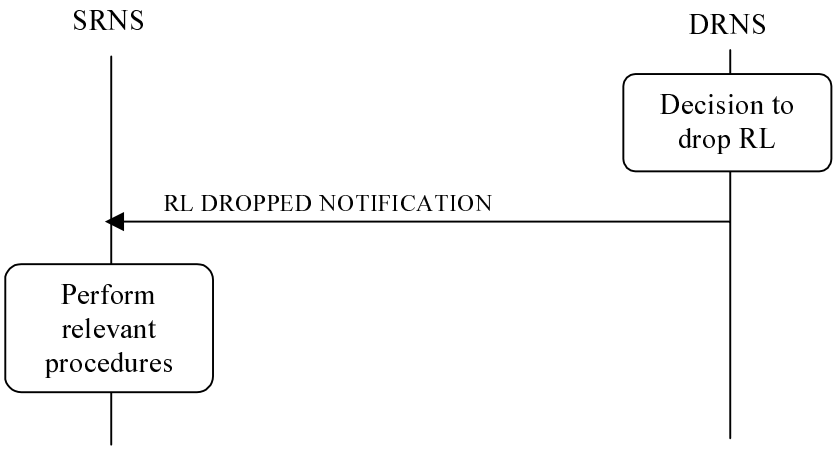


Figure 9-11. RL Dropped Notification procedure

Whether this procedure can also be used to notify dropping of DCH(s) is FFS.

Load Indication

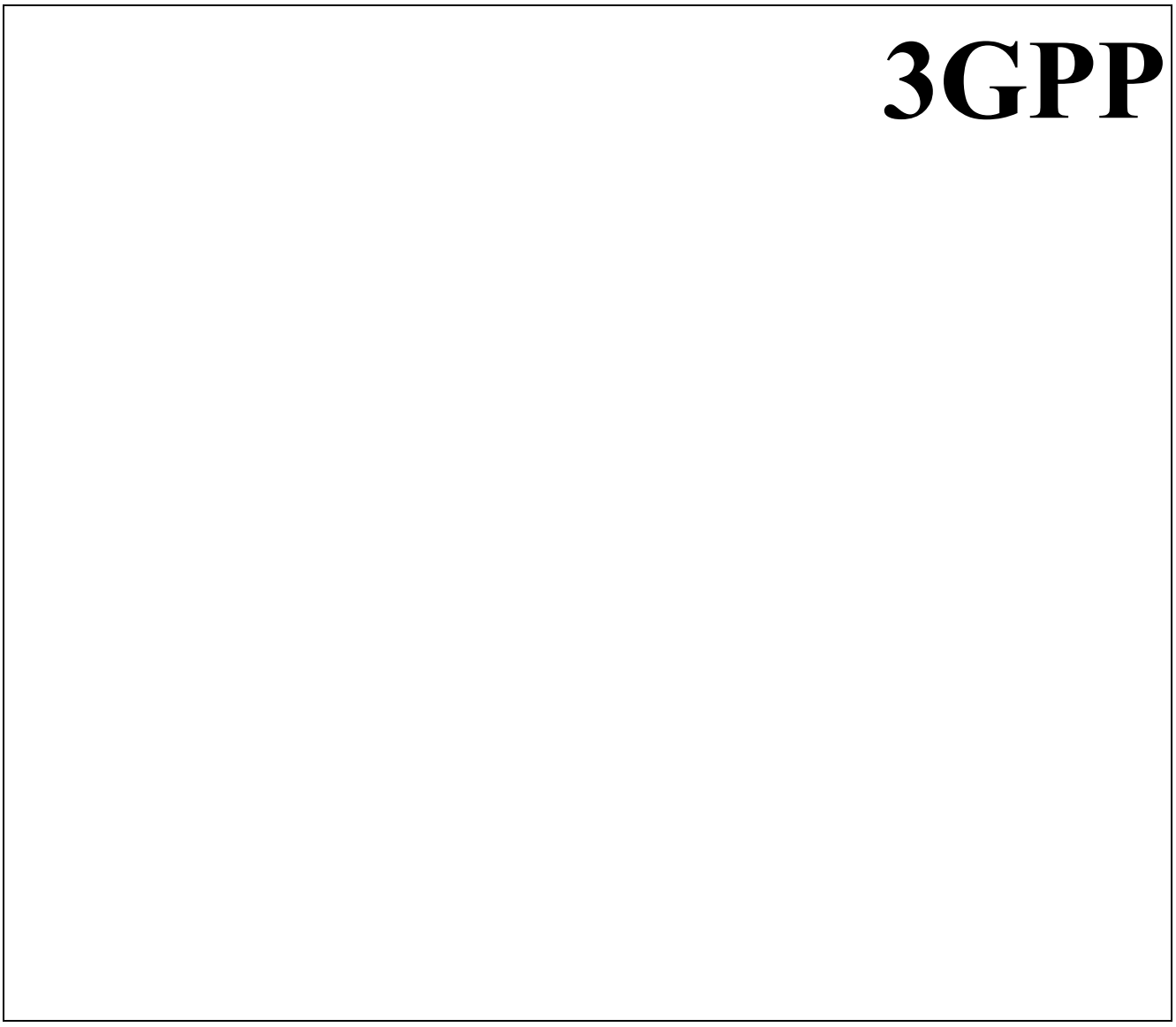
[Editor´s note: First paragraph of this chapter is added by the editor, based on Tdoc SMG2 UMTS-ARC 145/98. Minor editorial changes has been mabde to the bulleted list]

Load Indication procedure is triggered by the Drift RNS. It is used to indicate to the Serving RNS about the necessity to modify some DCH parameters within the Drift RNS.

Although the subsequent actions of the SRNS after the Load Indication procedure are out of the scope of this contribution, following examples can be assumed to be carried out by the SRNS.

- DCH modification procedure
- Ignoring the command,
- Performing an handover,
- Branch deletion procedure
- Triggering the renegotiation of the bearer quality of service
- Release the bearer

Radio Measurements Reporting



This procedure is used by the DRNS to report its radio measurements to the SRNS.

Figure 9-12. Radio Measurements Reporting

Note. It is FFS whether the reporting is done in the u-plane (inband) or in the c-plane (RNSAP).

URA Paging Request

This procedure is used by the SRNC to indicate to the Controlling RNC that a UE should be paged in a URA. The UE is identified by its RNTI, and the SRNC indicates in the message the URA identity as well as potential information that may be needed (e.g. DRX parameters).

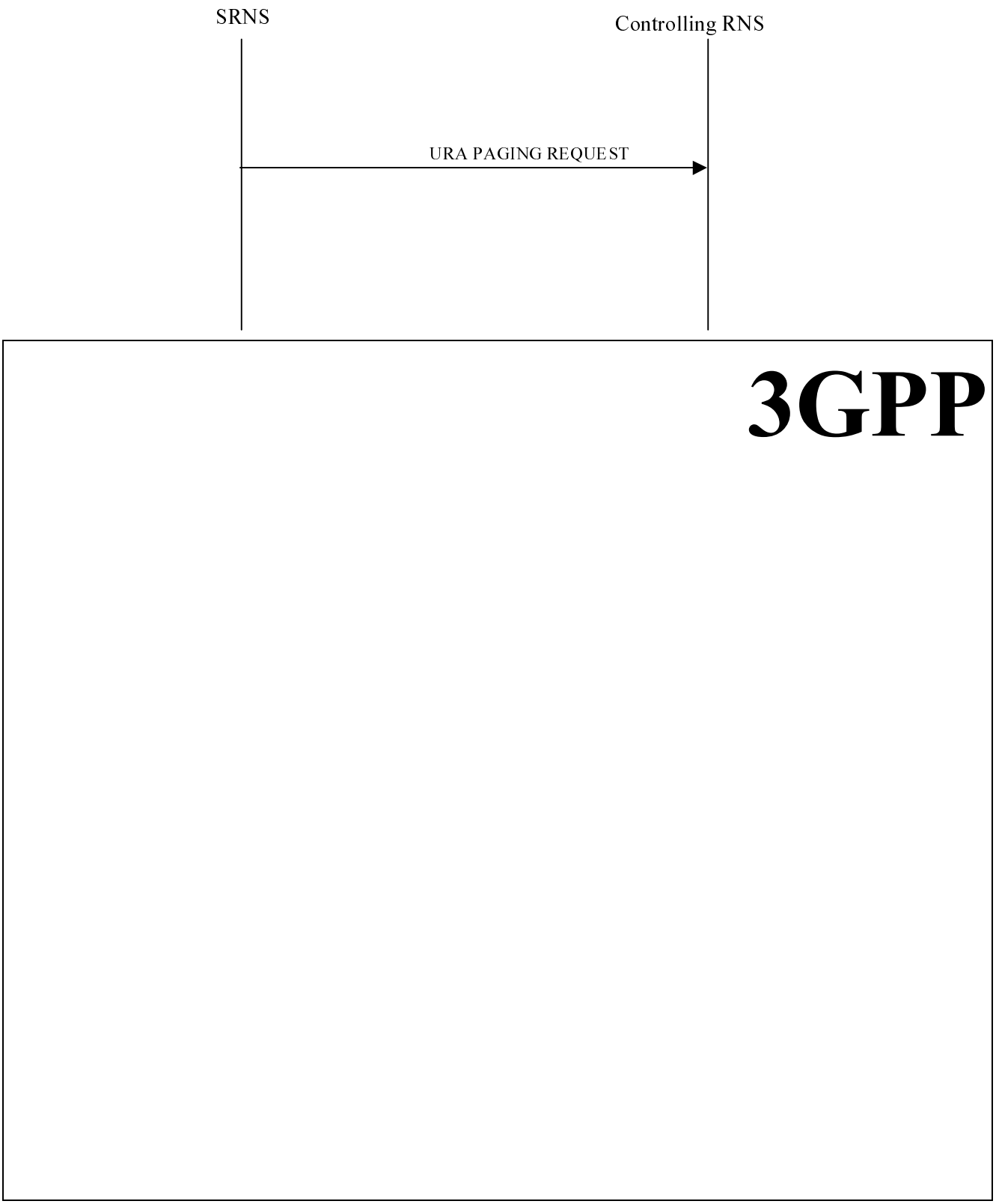


Figure 9-13. URA Paging Request

SRNC Relocation Commit

[Editor's note: This procedure is FFS. Study item Iu/3 from TTC/ARIB-ETSI merging: SRNS Relocation.]

The SRNC RELOCATION COMMIT procedure is part of the SRNC Relocation procedure described in YY.02 UTRAN Functions, Examples on Signalling Procedures [10].

The source RNC sends the SRNC RELOCATION COMMIT message to the target RNC when it has received an indication that it can proceed with the SRNC Relocation procedure from all the involved CN nodes [10].

At reception of the SRNC RELOCATION COMMIT message from the source RNC the target RNC executes the DL and UL switch for all RABs belonging to the UE at the earliest suitable time instance.

Prior to reception of the SRNC RELOCATION COMMIT message the target RNC has received a request to perform SRNC Relocation from all the involved CN nodes and responded to the CN nodes with a proceeding indication. The Iu transport bearers for each radio access bearer have also been established between the target RNC and all CN nodes.

Fig. 9-14: SRNC Relocation Commit

Down Link Power Control

[Editor's note: This procedure is FFS. Study item Iur/1 from TTC/ARIB-ETSI merging: Out-band or in-band Power Control (both UL and DL).]

The purpose of this procedure is to balance the DL transmission powers of the radio links used for the related RRC connection within the NodeB. The DL POWER CONTROL procedure is initiated by the Serving RNC by

sending a DL POWER CONTROL message to the DRNC, which contains the desired power range for the radio links within the NodeB of the DRNS.

Figure 9-15: DL POWER CONTROL Procedure.

Outer Loop Power Control

[Editor's note: This procedure is FFS. Study item Iur/1 from TTC/ARIB-ETSI merging: Out-band or in-band Power Control (both UL and DL).]

This procedure is used to provide the DRNC with a new quality target value (Eb/I0) for the UL quality.

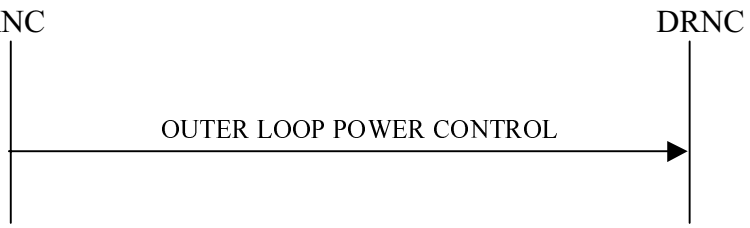


Figure 9-16: Outer loop Control Procedure

Elements for RNSAP communication

Message functional definition and content ~~and information element coding~~

[Editor's note: This chapter should describe RNSAP messages and information elements]

3GPP

[Editor's note: The contents of this chapter is FFS. It has not been agreed between ETSI and TTC/ARIB .]

This chapter defines the structure of the messages required for the RNSAP protocols.

For each message there is, a table listing the signaling elements in their order of appearance in the transmitted message.

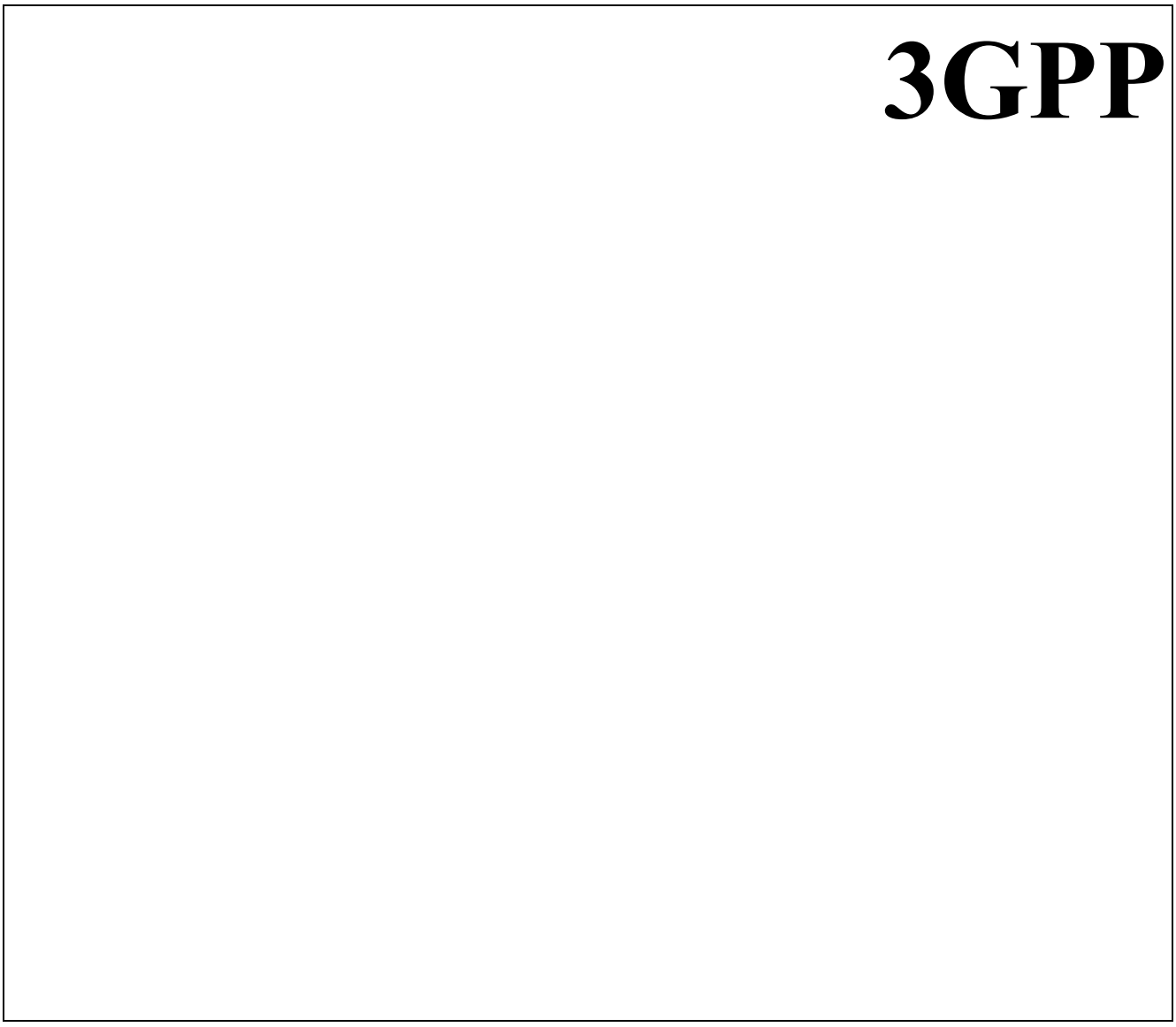
All the RNSAP messages are listed in the following table :
[Note : All of these message name are tentative, these can be changed after complete discussion]

Message name	Reference
RADIO LINK SETUP	~~9.2.3.1.1~~
RADIO LINK SETUP RESPONSE	~~9.2.3.1.2~~
RADIO LINK SETUP FAILURE	~~9.2.3.1.3~~
RADIO LINK ADDITION	~~9.2.3.1.4~~
RADIO LINK ADDITION RESPONSE	~~9.2.3.1.5~~
RADIO LINK ADDITION FAILURE	~~9.2.3.1.6~~
RADIO LINK DELETION	~~9.2.3.1.7~~
RADIO LINK DELETION RESPONSE	~~9.2.3.1.8~~
RADIO LINK RECONFIGURATION PREPARE	~~9.2.3.1.9~~
RADIO LINK RECONFIGURATION READY	~~9.2.3.1.10~~
RADIO LINK RECONFIGURATION COMMIT	~~9.2.3.1.11~~
RADIO LINK RECONFIGURATION FAILURE	~~9.2.3.1.12~~

RADIO LINK RECONFIGURATION CANCEL	~~9.2.3.1.13~~
POWER CONTROL	~~9.2.3.1.14~~
OUTER LOOP POWER CONTROL	~~9.2.3.1.15~~
DL USER DATA RETRIEVAL	~~9.2.3.1.16~~
DL USER DATA RETRIEVAL RESPONSE	~~9.2.3.1.17~~
RNC RELOCATION REQUEST	~~9.2.3.1.18~~
RRC CONTEXT RETRIEVAL	~~9.2.3.1.19~~
RRC CONTEXT RETRIEVAL RESPONSE	~~9.2.3.1.20~~
DL CODE RECONFIGURATION REQUEST	~~9.2.3.1.21~~
RESET (FFS)	~~9.2.3.1.22~~
RESET ACKNOWLEDGE (FFS)	~~9.2.3.1.23~~
CONFUSION (FFS)	~~9.2.3.1.24~~

Message Contents

[Note: INFORMATION ELEMENT for each message shall be described in detail with each TYPE M/O.]



RADIO LINK SETUP

INFORMATION ELEMENT	REFERENCE	DIRECTION	TYPE	LEN
Message Identifier		SRNC-DRNC	M	
Length			M	
Message Compatibility Information			M	
No. of DCHs			M	
DCH ID (# 1)			M	
TFS (for DCH ID# 1)			M	
DCH ID (# n)			M	
TFS (for DCH ID# n)			M	
TFCS (for DCHs)			M	
Radio Frequency			M	

UL scrambling code			M	

UL channelisation code type			M	
No. of UL channelisation code			M	
UL channelisation code id(s)			M	
DL channelisation code type			M	
No. of DL channelisation code			M	
No. of Radio Links			M	
Radio Link ID			M	
Cell ID			M	
Phase Difference			M	
Radio Link ID			O	
Cell ID			O	
Soft Combination Indication			O	
Phase Difference			O	

Slot offset			M	

Frame offset			M	
Initial DL Power			M	
Target UL Eb/Io			M	

RADIO LINK SETUP RESPONSE

INFORMATION ELEMENT	REFERENCE	DIRECTION	TYPE	LEN
Message Identifier		DRNC -SRNC	M	
Length			M	
Message Compatibility Information			M	
No. of DCHs			M	
DCH ID (# 1)			M	
ATM Binding ID			M	
ATM Address			O	

DCH ID (# n)			M	

ATM Binding ID			M	
ATM Address			O	
UL Interference Level			M	
No. of Radio Links			M	
Radio Link ID			M	
Neighbor Cell Information			M	
No. of DL channelisation code			M	
DL channelisation code id #1			M	
DL channelisation code id #m			M	
Radio Link ID			O	
Neighbor Cell Information			O	
No. of DL channelisation code			O	
DL channelisation code id #1			O	

DL channelisation code id #m			O	

RADIO LINK SETUP FAILURE

INFORMATION ELEMENT	REFERENCE	DIRECTION	TYPE	LEN
Message Identifier		SRNC-DRNC	M	
Length			M	
Message Compatibility Information			M	
Cause			M	

RADIO LINK ADDITION

INFORMATION ELEMENT	REFERENCE	DIRECTION	TYPE	LEN
Message Identifier		SRNC-DRNC	M	
Length			M	
Message Compatibility Information			M	

Radio Frequency			O	

No. of Radio Links			M	
Radio Link ID			M	
Cell ID			M	
Soft Combination Indication			M	
Phase Difference			M	
Radio Link ID			O	
Cell ID			O	
Soft Combination Indication			O	
Phase Difference			O	

RADIO LINK ADDITION RESPONSE

INFORMATION ELEMENT	REFERENCE	DIRECTION	TYPE	LEN

Message Identifier		DRNC-SRNC	M	

	Length			M	
	Message Compatibility Information			M	
	No. of DCHs			M	
	DCH ID (# 1)			M	
	ATM Binding ID			M	
	ATM Address			O	
	DCH ID (# n)			M	
	ATM Binding ID			M	
	ATM Address			O	
	UL Interference Level			O	
	No. of Radio Links			M	
	Radio Link ID			M	
	Neighbor Cell Information			M	

	No. of DL channelisation code			M	

DL channelisation code id #1			M	
DL channelisation code id #m			M	
Radio Link ID			O	
Neighbor Cell Information			O	
No. of DL channelisation code			O	
DL channelisation code id #1			O	
DL channelisation code id #m			O	

RADIO LINK ADDITION FAILURE

INFORMATION ELEMENT	REFERENCE	DIRECTION	TYPE	LEN
Message Identifier		SRNC-DRNC	M	
Length			M	

Message Compatibility Information			M	

Cause			M	

RADIO LINK DELETION

INFORMATION ELEMENT	REFERENCE	DIRECTION	TYPE	LEN
Message Identifier		SRNC-DRNC	M	
Length			M	
Message Compatibility Information			M	
No. of Radio Links			M	
Radio Link ID #1			M	
Radio Link ID #2			O	

RADIO LINK DELETION RESPONSE

INFORMATION ELEMENT	REFERENCE	DIRECTION	TYPE	LEN

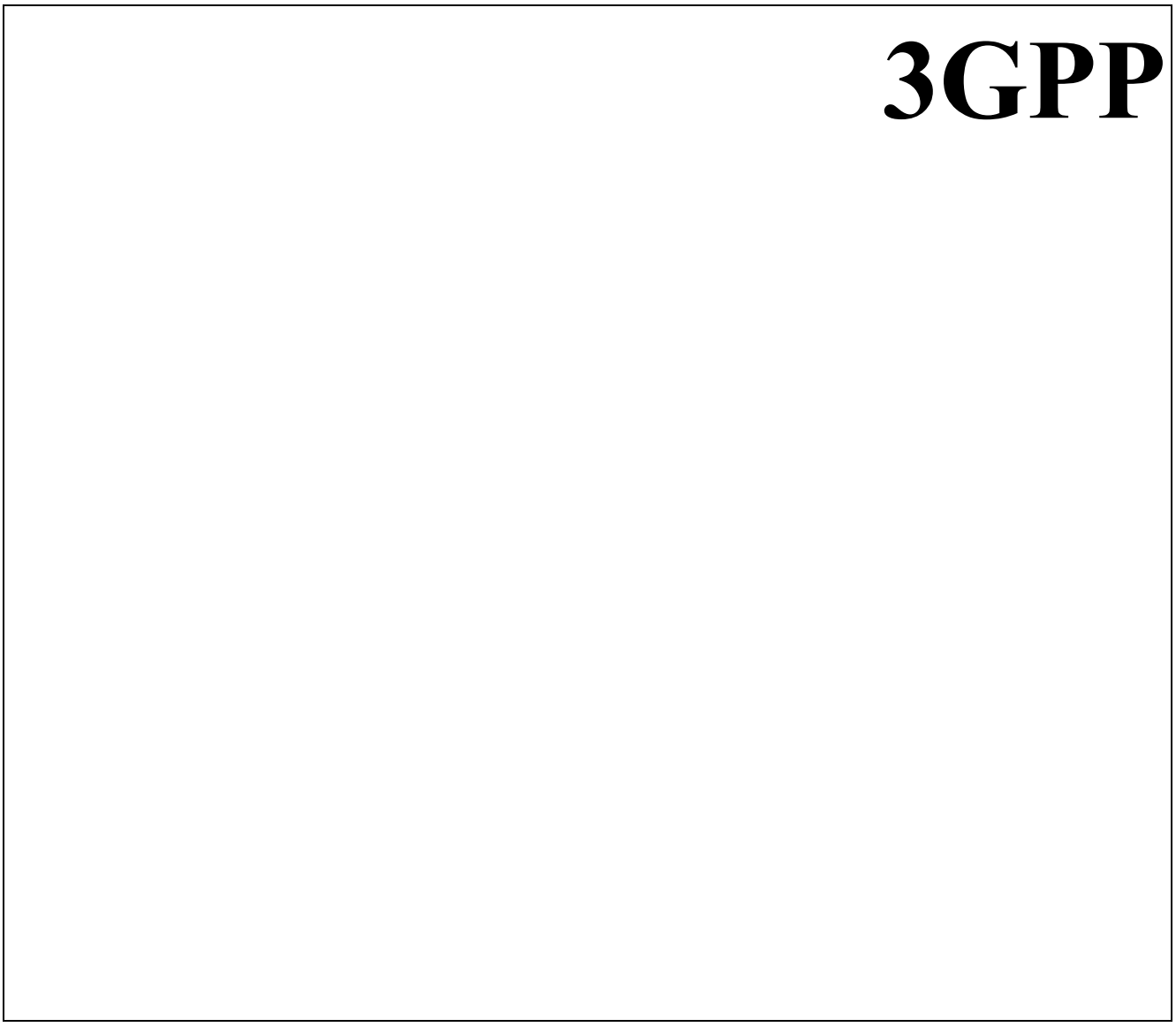
Message Identifier		DRNC -SRNC	M	
Length			M	
Message Compatibility Information			M	

RADIO LINK RECONFIGURATION PREPARE

INFORMATION ELEMENT	REFERENCE	DIRECTION	TYPE	LEN
Message Identifier		SRNC-DRNC	M	
Length			M	
Message Compatibility Information			M	
No. of DCHs			M	
DCH ID (# 1)		For Addition	M	
TFS (for DCH ID# 1)			O	

DCH QoS			M	

DCH ID (# n)			O	
TFS (for DCH ID# n)			O	
DCH QoS			O	
TFCS (for DCHs)		For Reconfiguration	M	
UL channelisation code type			M	
No. of UL channelisation code			M	
UL channelisation code id(s)			M	
DL channelisation code type			M	
No. of DL channelisation code			M	
No. of Radio Links		For Deletion	M	
Radio Link ID#1			M	
Radio Link ID#2			O	



RADIO LINK RECONFIGURATION READY

INFORMATION ELEMENT	REFERENCE	DIRECTION	TYPE	LEN
Message Identifier		DRNC-SRNC	M	
Length			M	
Message Compatibility Information			M	
No. of DCHs			O	
DCH ID (# 1)		For Addition	O	
ATM Binding ID			O	
ATM Address			O	
DCH ID (# n)			O	
ATM Binding ID			O	
ATM Address			O	

No. of Radio Links		For Reconfiguration	M	

Radio Link ID			M	
No. of DL channelisation code			M	
DL channelisation code id #1			M	
DL channelisation code id #m			M	
Radio Link ID		For Deletion	O	
No. of DL channelisation code			O	
DL channelisation code id #1			O	
DL channelisation code id #m			O	

RADIO LINK RECONFIGURATION COMMIT

INFORMATION ELEMENT	REFERENCE	DIRECTION	TYPE	LEN
Message Identifier		SRNC-DRNC	M	

Length			M	

Message Compatibility Information			M	
Execution Time			M	

RADIO LINK RECONFIGURATION FAILURE

INFORMATION ELEMENT	REFERENCE	DIRECTION	TYPE	LEN
Message Identifier		DRNC-SRNC	M	
Length			M	
Message Compatibility Information			M	
Cause			M	

RADIO LINK RECONFIGURATION CANCEL

INFORMATION ELEMENT	REFERENCE	DIRECTION	TYPE	LEN

Message Identifier		SRNC-DRNC	M	

Length			M	
Message Compatibility Information			M	

POWER CONTROL

INFORMATION ELEMENT	REFERENCE	DIRECTION	TYPE	LEN
Message Identifier		SRNC-DRNC	M	
Length			M	
Message Compatibility Information			M	
DL Power Range			M	

OUTER LOOP POWER CONTROL

INFORMATION ELEMENT	REFERENCE	DIRECTION	TYPE	LEN

Message Identifier		SRNC-DRNC	M	

Length			M	
Message Compatibility Information			M	
Target UL Eb/Io			M	

DL USER DATA RETRIEVAL

INFORMATION ELEMENT	REFERENCE	DIRECTION	TYPE	LEN
Message Identifier		RNC Target-SRNC	M	
Length			M	
Message Compatibility Information			M	
Old RNTI			M	
Old URA ID			M	

DL USER DATA RETRIEVAL RESPONSE

INFORMATION ELEMENT	REFERENCE	DIRECTION	TYPE	LEN
Message Identifier		SRNC- RNC Target	M	
Length			M	
Message Compatibility Information			M	

RNC RELOCATION REQUEST

INFORMATION ELEMENT	REFERENCE	DIRECTION	TYPE	LEN
Message Identifier		RNC Target- SRNC	M	
Length			M	
Message Compatibility Information			M	

Old RNTI			M	

Old URA ID			M	

RRC CONTEXT RETRIEVAL

INFORMATION ELEMENT	REFERENCE	DIRECTION	TYPE	LEN
Message Identifier		RNC Target-SRNC	M	
Length			M	
Message Compatibility Information			M	
Old RNTI			M	
Old URA ID			M	

RRC CONTEXT RETRIEVAL RESPONSE

INFORMATION ELEMENT	REFERENCE	DIRECTION	TYPE	LEN

Message Identifier		SRNC-RNC Target	M	
Length			M	
Message Compatibility Information			M	

DL CODE RECONFIGURATION REQUEST

INFORMATION ELEMENT	REFERENCE	DIRECTION	TYPE	LEN
Message Identifier		DRNC-SRNC	M	
Length			M	
Message Compatibility Information			M	

RESET (FFS)

RESET ACKNOWLEDGE (FFS)

CONFUSION (FFS)

Message Format and Information Element Coding

[Editor's note: The contents of this chapter is FFS. It has not been agreed between ETSI and TTC/ARIB. Study item Iu/7 from TTC/ARIB-ETSI merging: Usage of abstract syntax (ASN.1 with CSN.1 as encoding rules, as recommended by SMG2) versus explicitly coding the transfer syntax (bit matrix, as proposed by TTC/ARIB).]

This paragraph contains the CODING of the signaling elements used.
The following convention are assigned for the sequence of transmission of bits and bytes:
Each bit position is marked as 1 to 8. Bit 1 is the least significant bit and is transmitted first.
In an element octets are identified by number, octet 1 is transmitted first, then octet 2 etc.

Length Indicator
It is desirable to have Length for messages and parameters because future version of protocol may have extension to the present message or parameter, and also variable size can be present in some parameters as well.
In case of message size exceeding 256 byte it is better to have 2 bytes for message LENGTH.
However it is enough to have 1 byte for parameter LENGTH.

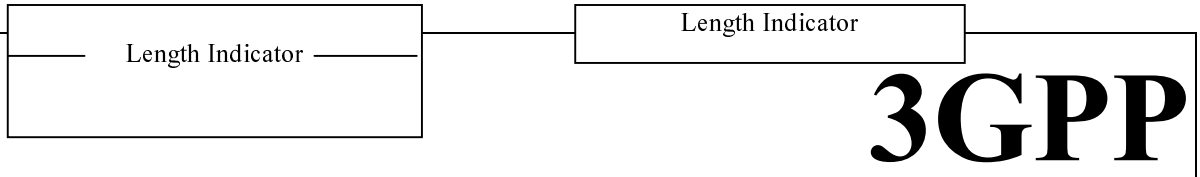


Fig. 3.2.2-2 Length Indicator for Parameter

Fig. 3.2.2-1 Length Indicator for Message

Compatibility Information

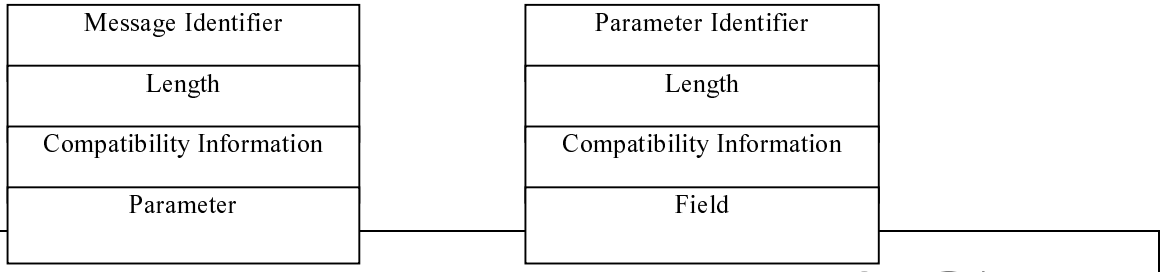
Compatibility Information is used in the situation of unrecognized messages or parameter. This parameter should be placed at a certain place then it is easy to pick up this parameter in any circumstances.

Consequently, the format can be as follow:

Message Identifier / Length / Compatibility Info / parameters

Parameter Identifier / Length / Compatibility Info / Fields

Figure 3 shows the coding format of message and Figure 4 shows the coding format of parameter.



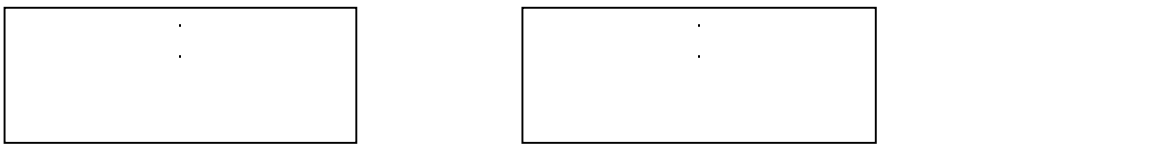


Fig. 3.2.2-3 Message Coding Format Fig. 3.2.2-4 Parameter Coding Format

Fixed size data and Variable size data in Field

It may have two types of filed i.e. with variable size or fixed size in data of field. It has no any problem to specify the fixed size field. Figure5 shows an example of fixed size data in field.

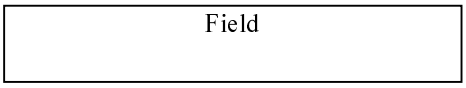


Fig. 3.2.2-5 Format for fixed size field

Regarding the variable size of data

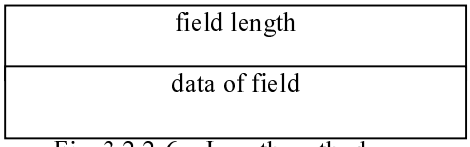


Fig. 3.2.2-6 Length method

The elements used and their CODING are:

Message Identifier

3GPP