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Agenda Item: 15.1 and 15.2

Source: Ericsson

Title: Parallel Procedures on RNSAP

Document for: Decision

1 Introduction

The current RNSAP specification [1] describes 11 DCH procedures related to (managing) radio links used for transporting dedicated physical channels (and in some cases also the DSCH):

	Procedure	Initiated by	Ack. message	Chapter in ref. 1
1	RL Setup	SRNC	yes	8.2.1
2	RL Addition	SRNC	yes	8.2.2
3	RL Deletion	SRNC	yes	8.2.2
4	RL Reconfiguration (synchronised)	SRNC	yes	8.2.4
5	RL Reconfiguration (unsynchronised)	SRNC	yes	8.2.5
6	Physical Channel Reconfiguration	DRNC	yes	8.2.6
7	RL Failure	DRNC	no	8.2.7
8	RL Load Indication	DRNC	no	8.2.8
9	Measurement Request	SRNC	yes	8.2.9
10	Measurement Reporting	DRNC	no	8.2.10
11	Measurement Termination	SRNC or DRNC	no	8.2.11
12	DL Power Control	SRNC	no	8.2.12

In the RAN WG3 meeting #4 in Warwick, it was decided to include statements in both the RNSAP specification [1] and the NBAP specification [2] concerning the fact that there will only be one ongoing procedure towards a UE-context in DRNC/Node B.

This contribution looks at all the DCH procedures from the perspective of procedure parallelism.

Note that at the RAN WG3 meeting #5 in Helsinki a modification to the NBAP specification, similar to the one proposed in this contribution, was discussed and agreed.

2 Discussion

2.1 Parallelism of Procedures in RNSAP

Even though chapter 5.1 in ref. 1 states that there can only be one procedure active for a particular UE at a certain point in time there are some exceptions to this described in chapter 8.2.

The Physical Channel Reconfiguration procedure can be interrupted by another procedure, e.g. the RL Deletion or the synchronised or unsynchronised RL Reconfiguration procedures. This is already described in [1].

In practice it is impossible to guarantee that the SRNC and the DRNC does not initiate procedures more or less simultaneously. This is of course one of the reasons for the exception described for the Physical Channel Reconfiguration procedure. This exception applies to other procedures as well, see the chapters below.

2.2 RL Failure Procedure

This procedure is initiated autonomously by the DRNC and it is thus impossible to prevent initiation in parallel with procedures initiated by the SRNC. However, there does not seem to be a need for allowing the RL Failure procedure in parallel with the Physical Channel Reconfiguration procedure, which also is initiated by the DRNC, especially not in the case of concerning the same radio link.

Therefore it is proposed to allow this procedure to be executed in parallel to any of the procedures 1 through 5 and procedure 9.

2.3 RL Load Indication Procedure

This procedure is initiated autonomously by the DRNC and it is thus impossible to prevent initiation in parallel with procedures initiated by the SRNC. Whether this procedure has any significant interaction with the Physical Channel Reconfiguration procedure or not depends of the definition of the procedure.

Therefore it is proposed to allow this procedure to be executed in parallel to any of the procedures 1 through 5 and procedure 9. Pending a more clear definition of the procedure it is further more proposed to have the issue of whether or not the RL Load Indication procedure can be allowed in parallel with the Physical Channel Reconfiguration procedure FFS.

2.4 Measurement Reporting Procedure

This procedure is initiated autonomously by the DRNC and it is thus impossible to prevent initiation in parallel with procedures initiated by the SRNC. This procedure further more has very limited interaction with the Physical Channel Reconfiguration procedure. It is more important to perform the reporting in according with the

reporting criterion set when the reporting was initiated, e.g. periodic reporting. Thus it is no problem allowing the Measurement Reporting procedure to be executed in parallel with all procedures initiated by the SRNC and with the only acknowledged procedure initiated by the DRNC, i.e. Physical Channel Reconfiguration.

Therefore it is proposed to allow this procedure to be executed in parallel to any of the procedures 1 through 6 and procedure 9.

2.5 Measurement Termination Procedure

This procedure, when initiated by the DRNC, is initiated autonomously and it is thus impossible to prevent initiation in parallel with procedures initiated by the SRNC. This procedure further more, when initiated by the DRNC, has very limited interaction with the Physical Channel Reconfiguration procedure. It is more important to inform the SRNC that the measure reporting cannot be continued as requested. Thus it is no problem allowing the Measurement Termination procedure, when initiated by the DRNC, to be executed in parallel with all procedures initiated by the SRNC and with the only acknowledged procedure initiated by the DRNC, i.e. Physical Channel Reconfiguration.

Therefore it is proposed to allow this procedure to be executed in parallel to any of the procedures 1 through 6 and procedure 9.

2.6 DL Power Control Procedure

For three reasons we would like to propose the DL Power Control procedure as an exception to the above mentioned statements:

1. This procedure has very limited interaction with any of the other procedures initiated by the SRNC.
2. It is impossible to prevent initiation in parallel with procedures initiated by the DRNC
3. Long lasting unintended DL power level differences will generate unnecessary interference.

Therefore it is proposed to allow this procedure to be executed in parallel to any of the procedures 1 through 6 and procedure 9, except when deletion of the last RL is requested.

3 Conclusion

The present RNSAP does not accurately enough describe the possible cases of parallel procedures. Further more, the RNSAP specification imposes unnecessary restrictions.

4 Proposal

Based on the information provided in this contribution, the following changes are proposed to [1]:

1. Update chapter 5.1 according to the following:

There can only be one RNSAP procedure for a specific UE active. Unless explicitly indicated in the procedure description, at any one instance in of time one protocol peer shall have initiated maximum one ongoing RNSAP DCH procedure related to a certain UE.

2. Add the following paragraph to chapter 8.2.7:

The DRNC is allowed to initiate the Radio Link Failure procedure at any time after establishing a Radio Link, except when the Physical Channel Reconfiguration procedure is ongoing.

3. Add the following paragraph to chapter 8.2.8:

The DRNC is allowed to initiate the Radio Link Load Indication procedure at any time after establishing a Radio Link, except when the Physical Channel Reconfiguration procedure is ongoing. Whether or not the procedure can be allowed to be initiated in parallel with the Physical Channel Reconfiguration procedure is FFS.

4. Add the following paragraph to chapter 8.2.10:

The DRNC is allowed to initiate the Measurement Reporting procedure at any time after establishing a Radio Link.

5. Add the following paragraph to chapter 8.2.11:

The DRNC is allowed to initiate the Measurement Termination procedure at any time after establishing a Radio Link and there exists a dedicated signalling bearer.

6. Add the following paragraph to chapter 8.2.12:

The Down Link Power Control procedure can be initiated by the SRNC at any time, irrespective of other ongoing CRNC initiated RNSAP DCH procedures for a specific UE. The only exception occurs when the SRNC has requested the deletion of the last RL in this DRNC, in which case the Down Link Power Control procedure shall no longer be initiated.

5 REFERENCES

1. UMTS 25.423 UTRAN Iur Interface RNSAP Signalling
2. UMTSTS 25.433 UTRAN Iub Interface NBAP Signalling