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Agenda Item: 8.4.1

Source: Nokia

Title: Additions to RRC procedures related to UE capabilities

Document for: Decision

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1. INTRODUCTION

Currently a UE Capability information procedure is described in document 3GPP S2.31 "RRC Protocol Specification" [1]. Due to requirements from SRNC relocation and handover procedures, some modifications and additions are required. This contribution describes both the requirements and proposed modifications and additions to the RRC procedures related to UE capabilities based on those requirements.

2. REQUIREMENTS

2.1 SRNC Relocation/ Hard Handover

UTRAN shall maintain the UE capability information received from UE for the duration of the RRC connection or until the UE capability information is updated by the UE. During a small time period related to procedures involving the change of SRNC, UTRAN is however not able to update the UE capability information to the new SRNC [2]. Update of UE Capability Information should therefore be defined as a bi-directional RRC procedure, which includes in successful case a confirmation and in unsuccessful case a failure message from UTRAN to UE.

When SRNC sends the Handover/SRNC relocation required message to the target RNC via the CN, the information of the UE capabilities is included. If, after the transmission of that message, the SRNC receives an update for the UE capabilities it is still able to receive it correctly (i.e. positive L2 acknowledgement can be sent to UE) but it is not anymore able to forward that information to the target RNC. In this case SRNC should indicate to UE that the UE capability information was not updated.

Currently the UE Capability information is the only RRC procedure that has this problem, but in case similar RRC procedures would be introduced, this requirement is valid for those also.

2.2 UMTS->GSM Inter System Handover

In GSM inter BSC handover the target BSC receives the (GSM) MS Classmark from the CN, in the Handover Request BSSMAP message [3]. The Inter system Handover from UMTS to GSM shall use the same BSSMAP procedure on the GSM side and therefore the (GSM) MS classmark has to be transmitted from the UE via UTRAN to the target BSS. (The same may apply for inter system handovers to other systems as well.)

UTRAN should be able to request the transmission of different UE Capability information from UE. A *UE Capability Enquiry* procedure is proposed to be used for the purpose. In this procedure UTRAN indicates the capability information that it needs to receive (e.g. one or several GSM MS Classmark information elements).

3. ADDITIONS TO S2.31

8.3.8.1 Transmission of UE capability information

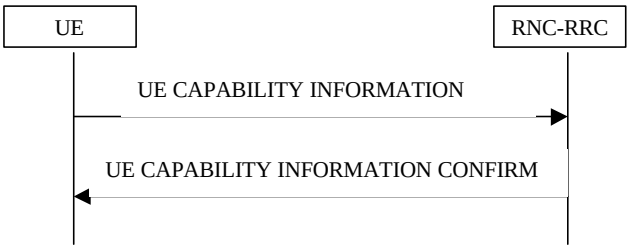

Figure 1) Procedure for transmission of UE capability information

The UE transfers its capability information to the network by transmitting the UE CAPABILITY INFORMATION message ~~using acknowledged mode~~ on the DCCH. UTRAN acknowledges the successful update of UE capability by UE CAPABILITY INFORMATION CONFIRM message.

This procedure can (optionally) be performed after RRC Connection Setup procedure and also during the lifetime of the RRC Connection if the UE capability information changes (e.g. due to change in UE power class).

UE capability information can also explicitly be requested by UTRAN (see chapter 8.3.x.x).

8.3.x.x UE Capability Enquiry

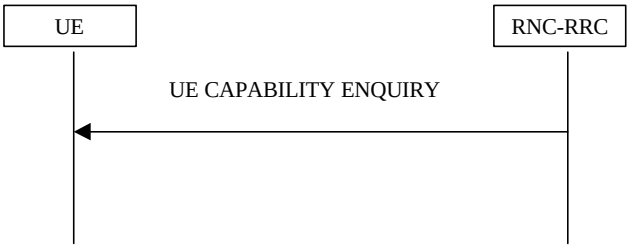

Figure 2. UE capability Enquiry procedure.

UE Capability Enquiry can be used to request UE to transmit its capability information related to any radio access network that is supported by the UE. UE CAPABILITY ENQUIRY message is transmitted on the DCCH and it includes indication of the desired UE capability information (e.g.. UE UTRAN capability information, GSM Classmark N, etc.)

4. PROPOSAL

It is proposed that the following changes to the 3GPP RAN WG2 document S2.31 "RRC Protocol Specification" [1] are done

- Modify the procedure UE Capability Information as proposed in chapter 3
- Add a new procedure UE Capability Enquiry as proposed in chapter 3

4 REFERENCES

[1] S2.31, version 0.0.2

[2] Merged "Description of Iu Interface", v0.0.2, 3GPP TSG RAN WG3

[3] GSM 08.08 Mobile-services Switching Centre - Base Station System (MSC - BSS) interface; Layer 3 specification