TSG-RAN Working Group 3 meeting #1　　　　　*TSGW3#1(99)017*
Bonn 2nd - 5th February 1999

Agenda Item:

Source:　　　　　**Ericsson**

Title:　　　　　**Iu Release RANAP procedure**

Document for:

1　Introduction

At the last SMG2 ARC meeting, it was proposed to introduce a separate Iu Release procedure that could be invoked to tear down a complete Iu connection after or prior RAB assignment.

This contribution proposes specification text for this procedure to be included into the Description of Iu Interface document.

In order to ease understanding of the specification text, the principles used to define the procedure are highlighted in the section below.

2　Discussion

In order to propose a consistent specification of Iu Release procedure, the following principles have been used as the basis for the Iu Release procedure text offered in section 3:

1)　The Iu Release procedure is a dedicated procedure using the connection oriented service of SCCP.

2)　The Iu Release procedure can only be invoked after successful establishment of the signaling bearer

3)　The Iu Release procedure can be initiated without previous release of resources assigned for user plane bearers

4)　The UTRAN or the CN can initiate the Iu Release procedure

　　a)　The UTRAN initiates the procedure by sending an Iu Release Request to the CN node(s) he has successfully established Iu connections with.

　　b)　The CN initiates the procedure by sending an Iu Release Command message to UTRAN.

5)　The RAN only release the resources associated with the CN node initiating the release

6)　It is the RAN that initiates the user plane(s) resources release upon reception of the CS CN Iu Release Command. For the IP domain CN, the rules for release control of Iu UP are FFS.

7)　The Iu Release procedure shall always terminate with an Iu RELEASE COMPLETE to avoid hanging situations at the Iu access points

3　Iu Release

The Iu Release procedure can be initiated for the following reasons:
- Completion of transaction between UE and CN
- UTRAN generated reasons
- Completion of successful handover or SRNS relocation

The Iu Release procedure messages i.e. Iu RELEASE REQUEST, Iu RELEASE COMMAND, Iu RELEASE COMPLETE are sent as connection oriented messages over the appropriate SCCP connection.

3.1   Iu Release due to completion of transaction between UE and CN

The release of assigned radio bearers at the end of a transaction will take place as follows:

Release negotiation will take place directly between the UE and CN using transparent messages via UTRAN. The CN will then send an Iu RELEASE COMMAND, indicating that the radio bearers(s) and Iu resources should be released. After the Iu RELEASE COMMAND has been sent, the CN shall not send further RANAP connection oriented messages on this particular connection, except Iu RELEASE COMMAND.

The Iu RELEASE COMMAND message shall include a Cause Information Element, indicating the reason for the release.

The RNS at the opposite access point shall initiate the release of the user plane resources allocated to the connection, if any.

When the RNS receives the Iu RELEASE COMMAND:

1)   The clearing on the radio interface initiated

2)   The RNS returns an Iu RELEASE COMPLETE message to the CN originating the Iu RELEASE COMMAND message and takes action to return any assigned user plane resources to idle. (The RNC need not wait for the radio channel release to be completed before returning the Iu RELEASE COMPLETE message.)

The signalling flow for Iu Release procedure due to completion of transaction between UE and CN is shown in figure X:
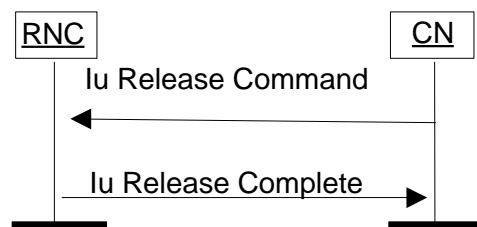

Figure X: Iu Release: Completion of transaction between UE and CN

3.2   Iu Release due to UTRAN generated reasons

If the release of the radio bearers assigned to a particular UE is required because of a UTRAN generated reason (e.g. "O and M intervention", "equipment failure") then, the RNS controlling the Iu connection(s) of that particular UE shall generate an Iu RELEASE REQUEST message towards the CN. If it exists two Iu connections for that particular UE, then an Iu RELEASE REQUEST message shall be sent to CN domain.

If the contact with the UE is lost then an Iu RELEASE REQUEST message shall be sent to the CN node(s) having an Iu connection with the RNS for that particular UE.

The Iu RELEASE REQUEST message shall include a Cause Information Element, indicating the reason for the release.

On receipt of an Iu RELEASE REQUEST message, the CN node shall initiate the release, as defined above, by sending an Iu RELEASE COMMAND message. On receipt of this message the RNS shall, if the resources are not already released, release the resources in the normal way. The procedure is always terminated with an Iu RELEASE COMPLETE to the CN originating the Iu RELEASE COMMAND message.

The signalling flow for Iu Release procedure due to UTRAN generated reasons is shown in figure X+1:
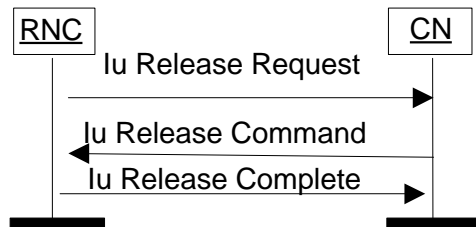

Figure X+1: Iu Release: UTRAN generated reasons

3.3   Iu Release due successful handover or SRNS relocation

In the case of a handover or SRNS relocation being successfully completed, then the resources at the old RNS are released by the CN using the Iu release sequence. The cause value used by the CN in the Iu RELEASE COMMAND message shall be set to the appropriate value: "handover successful" or "SRNS relocation successful".

When the RNS detects one of these cause values in an Iu RELEASE COMMAND message, then it shall return an Iu RELEASE COMPLETE message to the appropriate CN and take action to return to idle any resources attached to that particular Iu connection.

In the case where there is a second Iu connection for that particular UE, then the RNC shall wait the second Iu RELEASE COMMAND message before returning the remaining resources assigned to that UE to idle. Once the second Iu RELEASE COMMAND is received, the procedure completes normally.

The signalling flow for Iu Release procedure due to completion of transaction between UE and CN is shown in figure X+2:
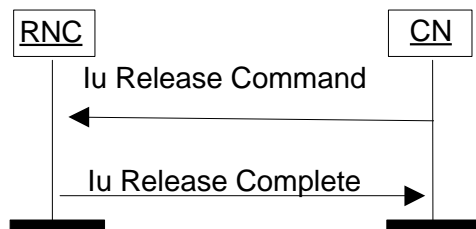

Figure X+2: Iu Release: successful handover or SRNS relocation

4   Proposal

It is proposed to include text of section 3 in the Description of Iu interface document ref. [1].

5   References

[1] UMTS ZZ.11 V.0.1.0, Description of Iu Interface, Source: Editor

[2] GSM08.08 V.7.0.0., MSC-BSC Interface, Layer 3 Specification