**RAN Plenary Meeting #12**

*RP-010463*

**Stockholm, Sweden, June 12<sup>th</sup> – 15<sup>th</sup>, 2001**

**Agenda Item:** **9.9**

**Source:** **Nokia**

**Title:** **Proposed WI, SRNS relocation enhancement**

**Document for:** **Decision**

# 1 Introduction

SRNS relocation is used to move the control of a UE connection from a source (old serving) RNC to a target (new serving) RNC. This means that both control and user plane are moved to the target (new serving) RNC.

The SRNS relocation procedure is specified in TS 25.413, TS 25.423, TS 23.060, TS 23.009 and TR 25.832, TR 25.842, TR 25.946.

# 2 SRNS relocation problems

The current SRNS relocation procedure requires that the Drift RNC maintains all the radio links prior to it becoming the target RNC. In addition it does not support the relocation of a UE to a Drift RNC when another Drift RNC is involved (Figure 1), or when previous SRNC is involved (Figure 2). The Iu-r, while the relocation is taking place, is not allowed to establish connections from the new SRNC to the previously existing DRNCs or to the previous SRNC.

It should be noted that both of these relocation scenarios are included in TR 25.832 Manifestations for Handover and SRNS Relocation (section 5.2.2), but are marked as unsupported by R99 procedures. The following two figures illustrate the two non supported relocation cases.
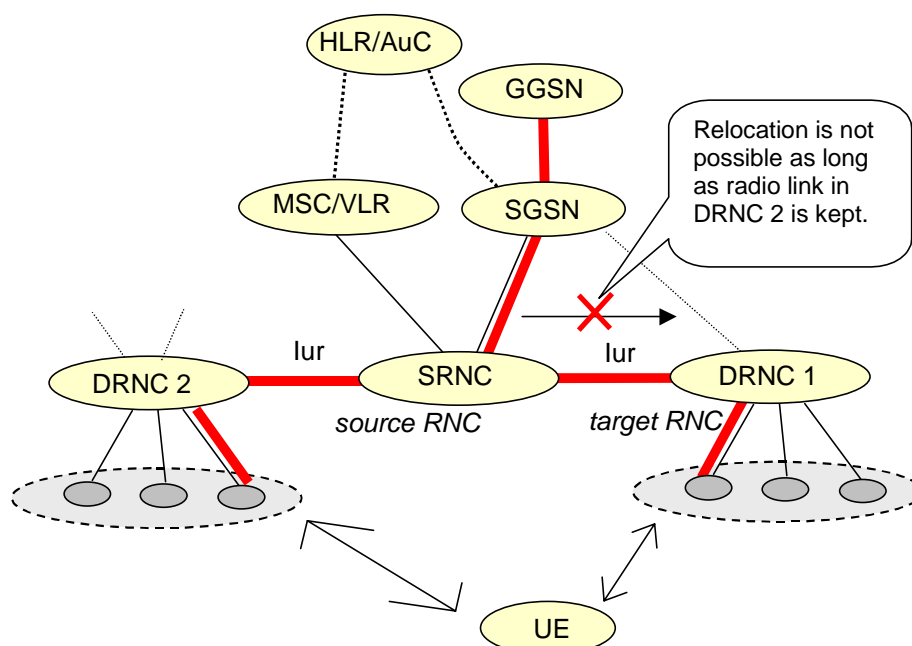


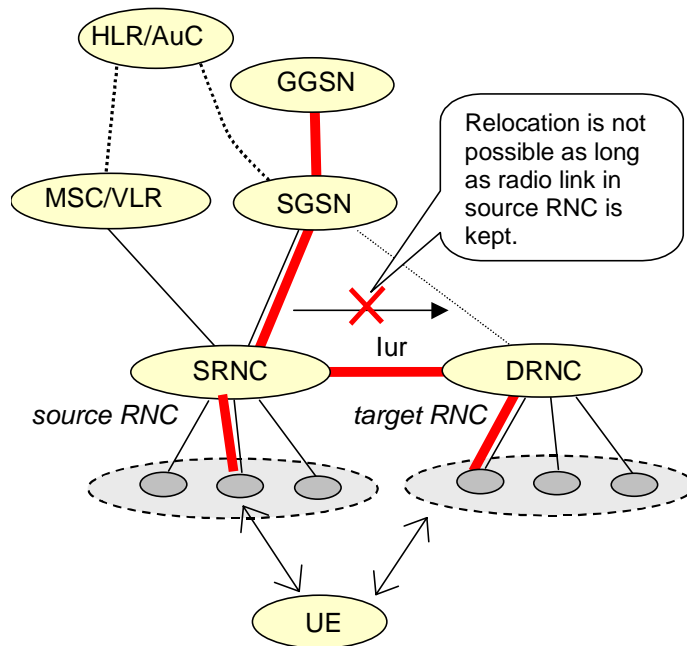*Figure 1. Relocation to DRNC1 is not possible due to existence of DRNC 2*

*Figure 1 Relocation not possible due to source RNC still keeping a radio link*

This drawback means that when a relocation is required, all connections where a UE is in soft handover (approximately 20-40% of the dedicated connections) and the above preconditions are fulfilled, will need to either:

1. Wait until the UE leaves the soft handover state with two involved RNCs (i.e. radio link from the source RNC is cleared) and perform the relocation at this time (this will lead to inefficient usage of transport resources).

2. Force the UE out of the soft handover state, perform the relocation and take the UE back to soft handover. This is the main bottleneck. As radio link from the SRNC has to be removed to perform relocation, then we have to establish it again if required (this will lead to unnecessary signalling and inefficient usage of radio resources).

The enhanced relocation has the following advantages:

3. Faster relocation. This is because the link from the SRNC does not have to cleared to perform relocation. Hence, in other words the existing relocation is slow (waiting).

4. The new relocation scheme provides the flexibility to configure different DRNCs while SRNC can be moved freely. Hence SRNC relocation is not dependent on existing DRNC configurations.

Figure 3 shows a deployment scenario, where the operator in phase 1 deploy the network for coverage. When the operator in phase 2 for capacity reasons wants to make the network more dense, it can for many reasons be more practical to connect the new Node Bs to a new RNC (transport network deployment, configuration reasons O&M, etc), and connect the two RNCs with an Iur interface.

Phase 1:
Deployment for
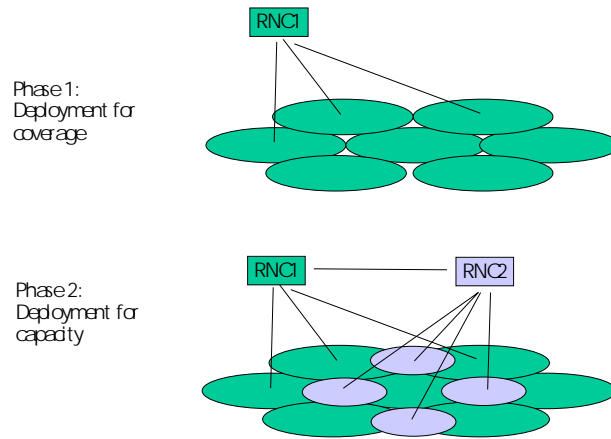coverage

Phase 2:
Deployment for
capacity

Figure 3: Deployment scenario

In this scenario, soft handover with a DRNC involved is a common case, and performance losses might be severe due to the limitations of the current standards.

# 3 Proposals

Nokia proposes that a new work item is opened, with the goal to enhance the SRNS relocation procedure, so that a DRNC can be kept during the relocation.

It is proposed that this work item is handled by RAN WG3.

# 4       Proposed WI, SRNS relocation enhancement

## Work Item Description

## Title

SRNS Relocation Procedure Enhancement

## 1       3GPP Work Area

| X | Radio Access |
|---|---|
|   | Core Network |
|   | Services |

## 2       Linked work items

None

## 3       Justification

SRNS relocation is used to move the control of a UE connection from a source (old serving) RNC to a target (new serving) RNC. This means that both control and user plane are moved to the target (new serving) RNC.

The current SRNS relocation procedure requires that the Drift RNC maintains all the radio links prior to it becoming the target RNC. In addition it does not support the relocation of a UE to a Drift RNC when another Drift RNC is involved or when previous SRNC is involved. The Iu-r, while the relocation is taking place, is not allowed to establish connections from the new SRNC to the previously existing DRNCs or to the previous SRNC.

Both of these relocation scenarios are included in TR 25.832 Manifestations for Handover and SRNS Relocation (section 5.2.2), but are marked as unsupported by R99 procedures.

## 4       Objective

This work item should enhance the SRNS relocation procedure so that a DRNC can be kept during the relocation.

## 5       Service Aspects

None/Text

## 6       MMI-Aspects

None/Text

## 7 Charging Aspects

None/Text

## 8 Security Aspects

None/Text

## 9 Impacts

The Core Network part of Iu signalling (RANAP) is not affected by the changes implied in this Working Item.

| Affects: | USIM | ME | AN | CN | Others |
|---|---|---|---|---|---|
| **Yes** | | | X | | |
| **No** | X | X | | X | X |
| **Don't know** | | | | | |

## 10 Expected Output and Time scale (to be updated at each plenary)

| New specifications | | | | | | |
|---|---|---|---|---|---|---|
| Spec No. | Title | Prime rsp. WG | 2ndary rsp. WG(s) | Presented for information at plenary# | Approved at plenary# | Comments |
| | | | | | | |
| | | | | | | |
| **Affected existing specifications** | | | | | | |
| Spec No. | CR | Subject | | Approved at plenary# | | Comments |
| TS 25.413 | | | | | | |
| TS 25.423 | | | | | | |
| TS 23.060 | | | | | | |
| TS 23.009 | | | | | | |
| TR 25.832 | | | | | | |
| TR 25.842 | | | | | | |
| TR 25.946 | | | | | | |

## 11 Work item raporteurs

Olivier Guyot, Nokia.

## 12 Work item leadership

TSG-RAN WG3

## 13 Supporting Companies

Hutchison3g, Mannesmann Mobilfunk, Nokia, Omnitel-Vodafone, Sonera,

## 14 Classification of the WI (if known)

| | Feature (go to 14a) |
|---|---|

| | |
|---|---|
| | Building Block (go to 14b) |
| X | Work Task (go to 14c) |

14a     The WI is a Feature: List of building blocks under this feature

14b     The WI is a Building Block: parent Feature

14c     The WI is a Work Task: parent Building Block

UTRAN Improvement Feature