TSG GERAN #8 **Tdoc GP-020492**
Rome, Italy **Rev. Tdoc GP-020360**
February 4- 8 2002 **Agenda item 6.6 and 7.2.5.1.4**

Source: Ericsson
Title: Work Item Description for GERAN Intra Domain Connection of RAN Nodes to Multiple CN Nodes.
Document for: Approval

Work Item Description

Title

Work Item Description for GERAN Intra Domain Connection of RAN Nodes to Multiple CN Nodes.

1 3GPP Work Area

X	Radio Access
X	Core Network
	Services

2 Linked work items

F1 Intra Domain Connection of RAN Nodes to Multiple CN Nodes: Overall System Architecture
SA 2 is responsible for this.

BB2 RAN work for Intra Domain Connection of RAN Nodes to Multiple CN Nodes
RAN 3 is responsible for this.

BB4 CN work for Intra Domain Connection of RAN Nodes to Multiple CN Nodes
CN 1 is responsible for this.

3 Justification

In the current network architecture, a BSC can only be connected to one SGSN and/or one MSC. The same restriction applies to RNCs. This has the following consequences:

a) when a BSC (or RNC) has a relatively large capacity compared to that of an SGSN/MSC there are frequently a significant wastage of hardware. (For example, if a BSC has 40% of the capacity of an SGSN, do you connect 2 or 3 BSCs to that SGSN?)

b) as networks carry more traffic, the geographic area covered by one SGSN or MSC (of a given capacity) decreases. However, subscribers still tend to travel the same physical distances and therefore there are more inter-SGSN/MSC registration updates. The signalling associated with these inter SGSN/MSC updates causes additional load on SGSNs, MSCs, HLRs, the core network signalling networks and on the radio interface signalling channels.

The ability to connect BSCs (and RNCs) to more than one SGSN and to more than one MSC could reduce the above problems. In addition, the ability to provide load sharing between SGSNs (MSCs) would further improve the efficiency of hardware utilisation.

This work will focus on a solution where a routeing function is placed in the BSC (or RNC). This avoids most of the problems of a standalone node (TR 23.913 called it the Turbo Routeing Function), while retaining the other advantages described in R'99, TR 23.913.

This Work Item (which is a Building Block) proposes to provide a standardised mechanism for the connection of multiple SGSNs (and MSCs) to a BSC or an RNC (both A/Gb mode and Iu mode) which reduces mobility management signalling and permits improved efficiency in hardware utilisation.

It is intended that this new concept is an architectural option for any PLMN. Its deployment, or non-deployment, by one network operator should not place requirements on other network operators.

4 Objective

The objective of this Work Item is to produce the necessary updates to the GERAN TSs and to verify that there is no impact on other GERAN TSs.

5 Proposed building blocks and work tasks:

Feature	Building Block	Work Task	Date of completion
Intra Domain Connection of RAN Nodes to Multiple CN Nodes: Overall System Architecture	GERAN work for Intra Domain Connection of RAN Nodes to Multiple CN Nodes	Stage 2 (changes to) • 43.051 Introduction of support for IDNNS in GERAN Iu mode Stage 3 (changes to) • 48.016 Use of Gb interface concepts when a network applies IDNNS • 48.018 Include MSC/VLR identity in CS IMSI paging	April 2002 (TSG GERAN #9)

6 Service Aspects

None.

7 MMI-Aspects

None.

8 Charging Aspects

None.

9 Security Aspects

None.

10 Impacts

Affects:	SIM	ME	AN	CN	Others
Yes		X	X	X	
No	X				X
Don't know					

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

Finalisation of this work item is planned to April 2002.

12 Work item raporteurs

Ericsson – Ingemar Backlund

13 Work item leadership

TSG GERAN

14 Supporting Companies

Telia, Vodafone, Siemens, Nokia, Ericsson

15 Classification of the WI (if known)

	Feature (go to 14a)
X	Building Block (go to 14b)
	Work Task (go to 14c)

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

(list of Work Items identified as building blocks)

14b The WI is a Building Block:

Parent Feature, F1: Intra Domain Connection of RAN Nodes to Multiple CN Nodes: Overall System Architecture

SA 2 is responsible for this.

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

(one Work Item identified as a building block)