3GPP TSG SA WG2 #8   S2-99996

September 13-17, 1999

Bonn, Germany

To: 3GPP CN WG1, RAN WG3

CC: 3GPP RAN WG2

Source: 3GPP SA WG2

Title: Liaison statement on registration areas and on hierarchical tracking concept specification status in SA WG2

TSG SA WG2 approved in their last meetings some change requests to TS 23.121 regarding the relation between the different registration areas URA, RA and LA. Furthermore, TS 23.121 describes a hierarchical tracking concept using a mix of URA and RA updates for UEs with active packet sessions. TSG SA WG2 would like to inform the interested 3GPP groups about this status and asks to evaluate these adopted mechanisms with regard to the specification status and assumptions in their groups.

A brief presentation of the current status with description of possible implications is given in the following.

TS 23.121 on Relationship between the different areas

The following area relations exist:
   1) There may not be any relation between URA and LA respectively between URA and RA. The URA concept is defined in TS 25.331.

   2) One RA consists of a number of cells belonging to RNC:s that are connected to the same CN node.

   3) One LA consists of a number of cells belonging to RNC:s that are connected to the same CN node.

   4) One RA is handled by only one CN serving node, i.e. one UMSC or one 3G_SGSN.

   5) One LA is handled by only one CN serving node, i.e. one UMSC or one 3G_MSC/VLR.

The GSM defined relations between LA and RA applies i.e. the following relations between LA and RA are possible:
- RA and LA is equal
- one RA is a subset of one, and only one, LA, meaning that a RA do not span more than one LA

The interested groups are asked to verify the status with their status and assumptions. TSG SA WG2 wants to draw the attention onto possible implications from changing the relation between URA, RA and LA.

23.121 on Hierarchical tracking concept

A packet UE (in RRC connected mode) is tracked at the cell level by RNC during an active connection.

A packet UE (in RRC connected mode) is tracked at the URA level by RNC when no data are actively transfer, and the probability of data transfer is quite high.

A packet UE (in PS-Idle state) is tracked at the Routing Area level by SGSN when no data is actively transferred and the probability of data transfer is quite low. The network operator should be able to optimise paging and updating load by controlling the size of the different areas and the probability of data transfer (controlled by the RRC_connection_release timer). For example, one operator may decide that URA are small, and that RRC connection are released after a relatively short time of inactivity, so that most attached packet UE are tracked in the Routing Area level (optimum for packet UE mainly using client-server type of service).

Another operator may decide that URA are large, and that RRC connection are released only if RRC connection is lost, so that most attached packet UE are tracked at the URA level.

Different timer values are required for the URA Update Timer and for the RRC Connection Release Timer. It is for further study whether the duration of the RRC_Connection_Release timer is set on a per UE basis, or configurable by the operator to be the same for all UE.

TSG SA WG2 asks interested groups to verify the status with their specification status and assumptions. Especially, the hierarchy and the relation between resource release in UTRAN and the comparable Iu resource release both for established packet bearer should be considered as the possible usage (between only use of URA connected and only use of RAB release) may lead to contrary UTRAN and SGSN requirements for rather static resources (context and signalling address capacity) or rather dynamic resources (signalling capacity).