

Agenda Item:

Source: Ericsson

Title: CN Discriminator for connection of CN-UE peer entities

Document for:

1. Introduction

In GSM, signaling relationships between the Mobility Management and higher layers of the MS on one hand and the MSC/VLR, SGSN on the other is achieved through separate RR connections in the BSS and in the MS. This approach does not require means to address the different MM Service Access Points in the UE nor it does require the MS to point to the network node entity the signaling addressed to.

In UMTS, assuming two CN nodes (MSC/VLR and SGSN) terminating their respective Iu connection into a single RRC connection in the SRNC, UE-CN Control plane signaling from both CNs is multiplexed over one RRC connection. The UE terminating signaling shall point to the right MM Service Access point in the UE, and in the opposite direction, UE originating signaling shall be relayed by the SRNC onto the right Iu connection point.

Over the Iu interface, signaling bearers addressing mechanisms provide RANAP functions with originating CN entity identity, thereby enabling identification and internal processing. Therefore, there is no need for identifying UE-CN control plane over Iu interface.

This contribution proposes a method to identify UE-CN control plane layers. This method is according to the preferred method recommended by SMG12 in [5].

2. CN Distribution function within UTRAN for Non Access Stratum messages

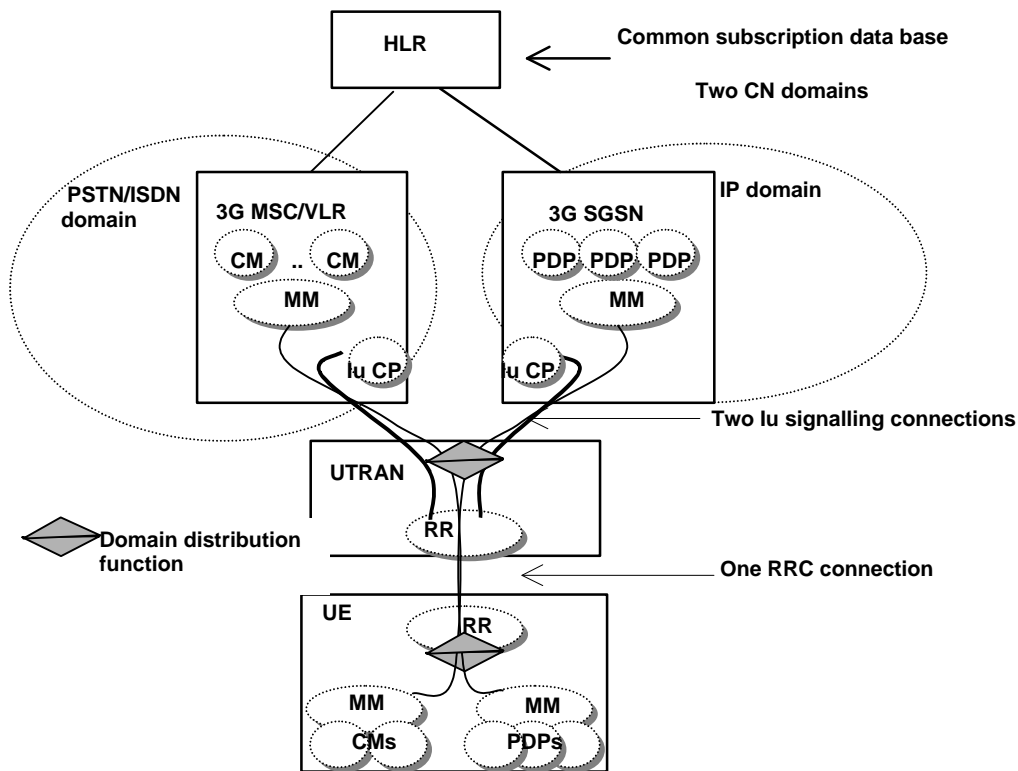
In the RRC protocol, messages from the NAS shall be transparently transferred within the Access Stratum using the Direct Transfer procedure. In the two CN scenario, a distribution function in the UE and the SRNC at the RRC level shall handle a CN discriminator to direct messages to the appropriate NAS entity i.e. the appropriate Mobility Management instance in the UE domain and the appropriate CN domain.

In the downlink direction, the signaling bearers addressing shall be used to identify the originating CN domain (e.g. from CN node originating address). The process performed by the distribution function simply consists in adding one CN discrimination octet set to the value corresponding to the originating CN domain and passing the NAS message to the underneath protocol layers for transparent transfer to the UE.

In the uplink direction, the process performed by the distribution function in the SRNC consists in removing the CN discrimination octet inserted by the peer UE RRC layer and distribute the NAS message to the corresponding RANAP instance of the RRC connection for transfer over Iu interface.

The same peer domain distribution function in the UE is performing mirror process at RRC level.

The following figure illustrates the CN distribution function:



3. Stage 3 considerations:

An example of a format of Distribution Data Unit and Length indicator of NAS messages over Uu is shown below:

Note: The exact coding is pending to decision on encoding rules within RAN TSG protocols.

The length indicator is coded in one octet and is a binary representation of the number of octets of the subsequent NAS message parameter.

RRC Protocol	Octet	NAS messages format over Uu	
Distribution Data Unit	1	CN Discrimination Octet	
Length Indicator	2	Length L	
NAS Message	3	TI *	PD*
		<i>Message Type</i> *	
	...	IE *	
	L+2	IE *	

** For information only*

Distribution Data Unit

Discrimination octet values:

0 **Circuit Switched PSTN/ISDN Core Network Domain**

1 **Packet Switched Core Network Domain**

All other values are reserved for future use.

4. Conclusion and Proposal

According to the description above, it is proposed to include text of section 2 in the UTRAN architecture document ref. [4], section 11.

5. References

- [1] GSM08.06, Ver.5.2.0," Signalling Transport Mechanism specification for the BSS-MSC Interface".
- [2] GSM04.07, Ver.6.2.1," Mobile Radio Interface signalling Layer 3".
- [3] Tdoc SMG12 98S994, Ericsson Contribution, "UMTS Location Management and Mobility Management concept, Castle Combe Meeting, 23-27 November, 1998.
- [4] UMTS ZZ.01 V0.1.0, Draft UTRAN Architecture Description
- [5] Liaison Statement from SMG12 to SMG2 UMTS-L23 Expert Group on the UTRAN with the distribution functionality, SMG12 TDoc C-99-087