

**Agenda Item:** 9.1  
**Source:** NTT DoCoMo  
**Title:** lu UP framing  
**Document for:** Discussion

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## 1. Introduction

This document proposes lu UP framing policy for service of which NAS structure is "a bit".

## 2. Discussion

Structure of NAS data relies on type of each service. The following table shows the structure of NAS data for each service expected in R99:

Table 1

Name of service	Structure of NAS data
Speech	GSM AMR frame (20msec)
Packet	GTP SDU (approx.1500Byte max.)
CS Data (e.g. FAX/MODEM)	RLP PDU (576bit)
UDI	Bit (1bit)
Multi-media telephony (MMT)	Bit (1bit)

In general, it is assumed to place one NAS data structure onto one lu UP frame, since this rule reduces complexity while queuing delay is minimised. This procedure is suitable for Speech, Packet, and FAX/MODEM. Figure 1 and Figure 2 show how the assembly and segmentation procedures for GSM AMR and Packet service are performed across lu IF (and lur/lub as well) respectively. It must be noted that, in the figures, one NAS data structure is placed onto one lu UP frame.

However, should such procedure be applied to UDI or MMT, one lu UP frame should be prepared for each UDI/MMT structure that is "one bit". It is easy to consider that such implementation is unrealistic. Such services as UDI, MMT, or services with short structure shall be treated differently from the other services.

This contribution proposes to adopt the interleaving unit as a payload length of lu UP frame for short structures such as UDI and MMT. This procedure will drastically reduce the number of lu UP frames compared with the procedure stated above, while minimising the queuing delay in SRNC.

In addition, it is also proposed that the SRNC shall perform the assembly of NAS data unit out of Transport Blocks in UL and perform the segmentation from NAS data unit into Transport Block in DL respectively. Figure 3 shows how the assembly and segmentation procedures for UDI and MMT are performed. It must be noted that, for example in DL, one interleaving unit (40msec or 80msec of bits, for example) are placed onto one lu UP frame in the CN and the SRNC disassemble the received lu UP frame into several transport blocks.

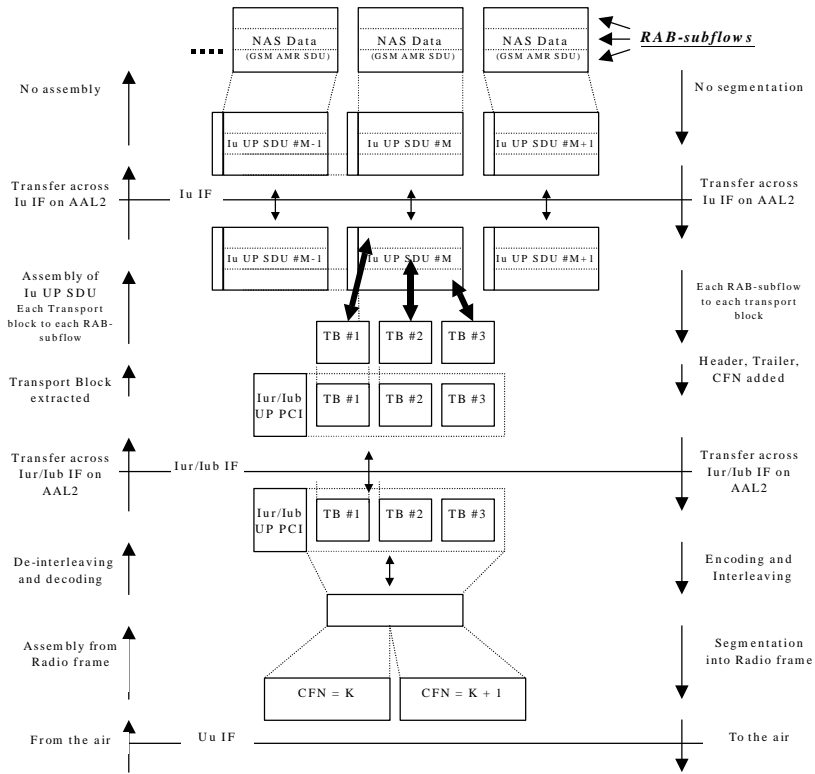


Figure 1 NAS data assembly and segmentation procedure (GSM AMR speech service)

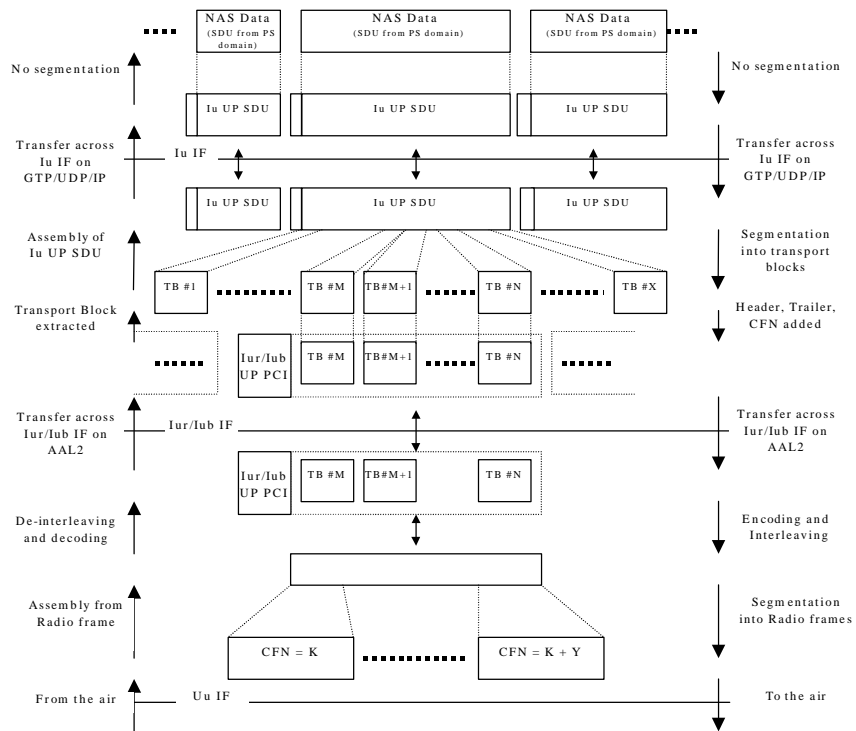


Figure 2 NAS data assembly and segmentation procedure (PS service)

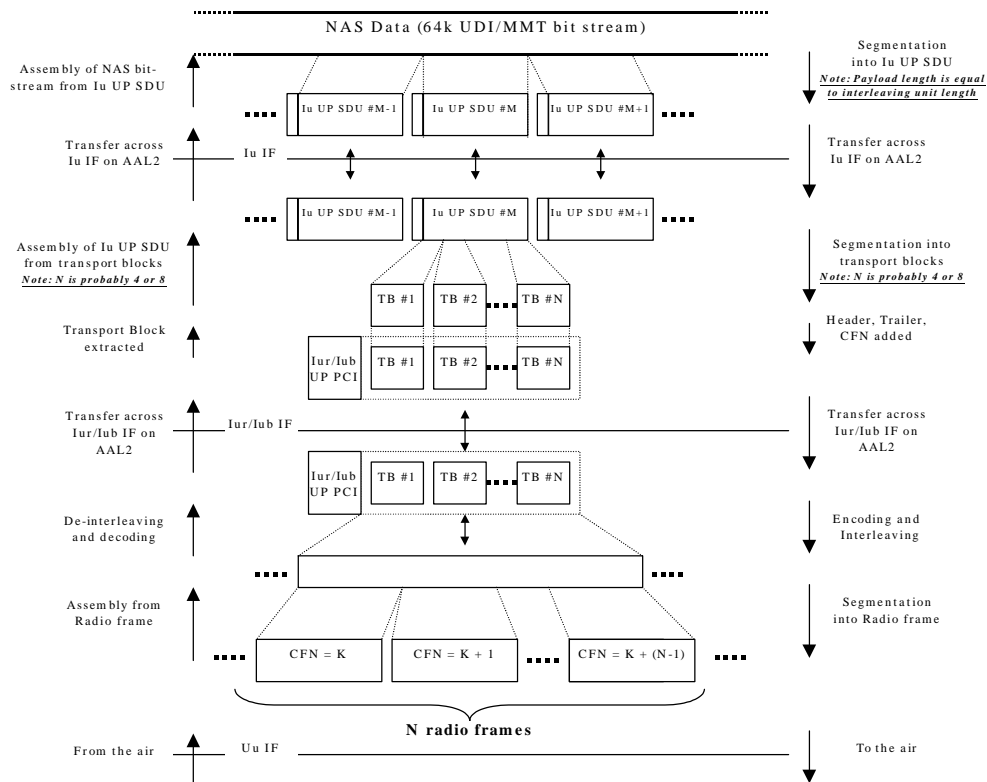


Figure 3 NAS data assembly and segmentation procedure (UDI / Multimedia Telephony service)

### 3. Proposal

It is proposed that following Table 2 should be added in an annex of [1].

Name of service	Iu UP frame payload
Speech	GSM AMR frame (20msec)
Packet	GTP/UDP/IP PDU (approx. 1500Byte max.)
CS Data (e.g. FAX/MODEM)	RLP PDU (576bit)
UDI	Interleaving unit (640bit x N, where N is probably either 4 or 8)
Multi-media telephony (MMT)	Interleaving unit

It is proposed that the SRNC shall perform the assembly of NAS data unit out of Transport Blocks in UL and perform the segmentation from NAS data unit into Transport Block in DL respectively

### 4. References

[1] UMTS 25.415, Ver.0.2.1