

**(S4-000652, to TSG-RAN WG2) LS on Request for information with regard to RAN handling of bit erroneous SDUs within packet switched domain radio bearers**

**Title: LS on TSG-SA4 request for information with regard to RAN handling of bit erroneous SDUs within packet switched domain radio bearers**

**Source: TSG-SA WG4**

**To: TSG-RAN WG2**

**Cc:**

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3GPP TSG-SA WG4 (SA4) has started working on definition of codecs for packet switched multimedia services, both for the conversational real-time services provided by the IM Subsystem and the transparent packet switched multimedia streaming service (named by SA4 as PSS). The set of codecs being discussed has error resilience properties that could potentially be used also with packet switched services. SA4 assumption is that codec data is encapsulated into RTP/UDP/IP packets and header compression is performed by the PDCP layer. During the SA4 discussions it has become clear that there is not sufficient knowledge of the surrounding radio protocol related technical issues that set further borders for our packet switched multimedia specification work.

## **1 Residual bit errors and handling of erroneous SDUs**

Firstly, SA4 would request confirmation from TSG-RAN WG2 on the validity/non-validity of following assumptions with regard to IP packet handling issues in RAN (SA4 recognises that handling may depend on whether conversational IM Subsystem or end-to-end streaming are addressed):

- The assumption for IP packet handling at network and link layer has been that these protocol layers (such as PDCP, RLC & MAC) are specified to discard SDUs in which bit errors have been detected. This, respectively, will result in packet loss at the IP layer. As a result, the 3G terminal applications using PS bearers are assumed not to receive RTP payloads that include any detected bit errors.
- Furthermore, in case the assumption said above does apply SA4 would kindly request more information on the applicable residual (undetected) bit error ratios for radio bearers that should carry RTP/UDP/IP packets compressed with ROHC (Taken into account the maximum residual BERs that can be handled by the header compression algorithm.).

## **2 CRC options**

SA4 as a group of codec experts has limited understanding on the Layer 1 and 2 options. We assume that the detection of erroneous SDUs is based on various length CRCs. However, SA4 does not know what is the accepted CRC usage for packet domain bearers. We would like to understand

- How the varying CRC length affects the required radio access bearer properties for a fixed bit-rate user plane data stream.
- What implications a short CRC length (e.g., length 0 or length 8) has for the RAN behaviour and bandwidth efficiency. Specifically, does using a very short CRC bring significant radio capacity benefits for real-time packet switched services?