3GPP TSG RAN WG1 #105-e R1-21xxxxx

e-Meeting, May 10th – 27th, 2021

Source: Moderator (Qualcomm)

Title: [105-e-NR-XR-01] Discussion on response LS to SA4 new 5QIs values

Agenda Item: 8.14.1

Document for: Discussion and Decision

# Introduction

SA2 is discussing new standardized 5QIs for 5G AIS and sent an LS to RAN1 and SA4 [1].

SA4’s reply to the above LS includes standardised 5QIs newly proposed by SA4 and asked RAN1 which of the proposed new standardised 5QIs can be supported by NG-RAN [2].

RAN1 replied to [2] in [3] in RAN1#104bie-e: “In addition to the response LS from RAN1#104-e in February 2021 to SA2, SA4 (cc: RAN2) in R1-2101976 that already addresses new SA4 5QIs values #3 and #4, RAN1 would like to provide the following additional information in response to the LS from SA4: RAN1 has  finalized in RAN1#104bis-e traffic models and evaluation methodology for AR/VR/CG applications over NG-RAN for baseline scenarios and configurations, and is expecting to have additional evaluation results available in May RAN1#105-e that may be related to new SA4 5QIs values #1 and #2.”

It is proposed in [4] to send SA2 and SA4 an updated answer based on additional evaluation results available in RAN1#105-e.

# Discussion

The following answer is proposed in [4] in response to [2] that is copied in Section 3. Please note that many companies have submitted PER results to RAN1#105-e.

**Proposed Answer**: In addition to the response LS from RAN1#104-bis-e in April 2021 to SA2 and SA4 (cc: RAN2) in R1-2104117, RAN1 would like to provide the following information in response to the LS from SA4, based on additional evaluation results: the new SA4 5QIs values can be supported by NG-RAN.

**Question: Please share your view on the proposed answer.**

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| **Company** | **Comment** |
| OPPO | We are fine with the proposal.  FYI: I added our tdoc in the reference as [5], which is missed in the summary. |
| MTK | We support the FL proposal. |
| Huawei, HiSilicon | We support the FL’s proposal. |
| Ericsson | We prefer to await results from more companies before sending another LS response. |
| vivo | We are fine with FL’s proposal. |
| ZTE, Sanechips | As discussed during the previous meeting, the mapping between FER RAN1 simulated and the PER which is defined by the new 5QI should be critical to determine whether the 5QIs should be guaranteed. Given we didn't observe any contribution with simulation based on FER inferior to 0.01, then we should mention the concrete mapping relationship that is assumed in this reply.  Assuming that if one packet in a frame occur error, the frame is regarded as a wrong frame, FER=10-2 for RAN1 simulation can map to PER = 10-4 required in SA4 new 5QI items.With this assumption, we can conclude that the new SA4 5QIs values can be supported by NG-RAN. Moreover, we would like to capture in the reply that 5QI values beyond 45Mbps is not guaranteed according the evaluations.  Hence, the following reply LS to SA4 and SA2 is proposed:  Assuming that if one packet in a frame occur error, the frame is regarded as a wrong frame, it is concluded that NG-RAN is able to support the new SA4 5QIs values #1 and #2. RAN1 would also like to point out that support of new SA4 5QIs values #1 and #2 beyond 45Mbps is not guaranteed according to evaluations in RAN1 #105-e. |

# SA4’s newly proposed standardised 5QIs

**Standardised 5QIs newly proposed by SA4**

[…]

Finally, it is relevant to understand that due to the periodic nature of the video traffic based on video frames with frame rates of for example 60 fps or 90 fps (i.e. every 17ms or 11ms) and certain video rate control mechanisms, the size of one frame is restricted, typically 30 kByte, but also up to possibly 100 kByte. This implies that the peak throughput requirement can be higher than the average throughput requirement for this traffic. This information may be useful for appropriate QoS settings, for example in order to define peak throughputs, and decisions on admitting this traffic.

Based on these observations, SA4 kindly invites SA2 to consider the following new parameters to the table, reflecting the SA4 vision on how to guarantee the media quality experience:

* Relax the latency targets (potentially increasing the radio capacity) in the downlink but support lower loss rates from 5ms and 10ms to 10ms and 20ms, respectively.
* Invert the loss rate requirements for uplink and downlink based on the considerations above to provide lower loss rates in downlink and accept higher ones in the uplink.
* Consider adding delay Critical GBR type to downlink with associated default MDBV values in the order of 50-100kB to support sufficiently high peak-to-average throughputs.

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| **5QI**  **Value** | **Resource Type** | **Default Priority Level** | **Packet Delay Budget**  **(NOTE 3)** | **Packet Error**  **Rate** | **Default Maximum Data Burst Volume**  **(NOTE 2)** | **Default**  **Averaging Window** | **Example Services** |
| New Value#1 | GBR  (NOTE 1) | 25 | 10~~5~~ms | 10-4 | N/A | 2000 ms | Interactive Service - visual content for cloud/edge/split rendering, (see TS 22.261 [2]) |
| New Value#2 | 25 | 20~~10~~ms | 10-4 | N/A | 2000 ms | Interactive Service - visual content for cloud/edge/split rendering, (see TS 22.261 [2]) |

**Question**: SA4 kindly asks RAN1 which of these proposed new standardised 5QIs can be supported by NG-RAN and provides feedback to SA2 and SA4.

# References

1. [R1-2100015](C:\\3GPP\\RAN1_Meetings\\Tdocs\\2021\\R1-2100015.zip) LS on New Standardized 5QIs for 5G-AIS (Advanced Interactive Services) SA2, Tencent
2. [R1-2102308](file:///C:\3GPP\RAN1_Meetings\Tdocs\2021\R1-2100015.zip) Reply LS on New Standardized 5QIs for 5G-AIS (Advanced Interactive Services) SA4, Qualcomm Incorporated.
3. [R1-2104117](file:///C:\3GPP\RAN1_Meetings\Tdocs\2021\R1-2100015.zip) Reply LS on New Standardized 5QIs for 5G-AIS (Advanced Interactive Services) RAN1, Qualcomm Incorporated.
4. [R1-2105948](file:///C:\3GPP\RAN1_Meetings\Tdocs\2021\R1-2100015.zip) [Draft] LS response on New Standardized 5QIs for 5G-AIS (Advanced Interactive Services)
5. R1-2104749 Draft reply LS on New Standardized 5QIs for 5G-AIS (Advanced Interactive Services) OPPO