3GPP TSG-RAN WG2 #119-e DocNumber

Electronic meeting, 17th August–29th August 2022

Agenda Item: 6.13.4

Source: Ericsson

Title: [AT117e][801] Total RAN delay calculation (Ericsson)

Document for: Discussion, Decision

# Introduction

This contribution addresses the following offline discussion:

\* **[AT119e][801][R17 SON/MDT] Total RAN delay calculation (Ericsson)**

Based on related agreement in RAN2#118, considering R2-2207948, R2-2208206 together, to discuss the necessity and how to calculate the total RAN delay.

Intended outcome: Report

Deadline for comments: 15:00 UTC, Thursday Aug 24th

 Deadline: 04:44 UTC, Thursday Aug 25th

To aid better communication between the respective delegates handling this topic from different companies, it is requested to fill-in the contact information.

**Contact Information**

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| Company | Name | Email |
| Qualcomm | Rajeev Kumar | rkum@qti.qualcomm.com |
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# Discussion

In RAN2#118-e meeting, RAN2 received a reply LS from RAN3 regarding M6 calculations in split-bearer scenario. RAN3 reply in [1] is quoted below-

*RAN3 thanks RAN2 for the reply LS in R2-2111290. Based on the answers in the reply LS, RAN3 studies the following use cases for M6 calculation for split bearers in MR-DC:*

* ***Case 1: PDCP duplication is activated within the report interval of M6***
* ***Case 2: PDCP duplication is not activated within the report interval of M6***
* ***Case 3: PDCP transmission mode switches between duplication and non-duplication within the report interval of M6***

*In order to calculate the M6 in TCE correctly, RAN3 agreed to allow the NG-RAN node to report the following additional measurements to TCE:*

* ***Number of PDCP PDUs sent via MN or SN within a measurement period, when PDCP duplication is enabled.***
* ***Number of PDCP PDUs sent over MN within a measurement period, when the PDCP duplication is not enabled.***
* ***Number of PDCP PDUs sent over SN within a measurement period, when the PDCP duplication is not enabled.***

In current version (V17.1.0) of 38.314, the additional measurements mentioned above are included.

However, set of formulas covering the totall RAN delay calculation in the three mentioned scenarios based on the additiopnal measurements agreed in RAN2 are not present.

This might raise the risk of inconsistency in calculating the total RAN delay calculation by different entitties. For example different RAN nodes (provided by different vendors) may calculate the total RAN delay differently and send to the core network. Or different OAM applications may calculate the total RAN delay differently that results inconsistent and ambegious analysis at the OAM.

Two papers [2,3] submitted to the AI 6.13.4 addresses this issue and provided CRs to add the corresponding formulars to assist a consistent calculation onf the total RAN delay by the RAN node (to be sent to the core network) and by the OAM for QoS verification purpose.

During the online session it has been discussed whether is is neccesary to have such formulas in the L2 measurement specification 38.314. Therefore the moderator would like to ask the following question:

**Q1: Do you agree that for a consistent calculation of the total RAN delay per UE at RAN nodes provided to core network, and at OAM, a set of formulas for total RAN delay calculation are needed?**

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| Company | Agree (i.e., it is needed)  Disagree (i.e., not needed. Please comment your solution for consistent measurements) | Comment |
| Qualcomm | Disagree | In RAN2, we agreed on computing delay when packet duplication and packet aggregation are used. RAN3 agreed to report the number of packets sent over MN or SN in different scenarios to TCE.  Based on the reported measurements, TCE calculates the total RAN2 delay. As the total RAN delay is not computed at the RAN node, I do not think this should be captured in the RAN2 specification. |
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**Conclusion 1: TBW**

If companies conclude that it is needed to define the formulas for total RAN delay calculation, the moderator would like to ask them to provide their wiew on the following question.

In [2] it has been proposed to deifne the formulas for all the three scenarios quoted by RAN3 and the additonal measurements agreed by RAN3 i.e., defining total RAN delay formulars for the following scenarios:

1. **PDCP dupplication is not enabled during the delay measurement period**
2. **PDCP dupplication was enabled during the delay measurement period**
3. **PDCP dupplication was enabled per packet basis i.e., some packets transmitted with dupplication and some packets without dupplication in a delay measurement period.**

While the solution proposed in [3] covers two first scenarios. Hence moderator would like to ask the companies to provide their view on the following question.

**Q2: If companies agree that defineing total RAN delay formulas are needed, do companies agree that the total RAN delay formulas are requried for all three scenarios mentioned in the RAN3 LS.**

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| Company | Agree (to all 3 scenarios)  Disagree (please comment which scenarios do you think are needed to be covered) | Comment |
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**Conclusion 2: TBW**

# Conclusion

**To be added later.**

# References

1. R2-2204498 – Reply LS on MDT M6 calculation for split bearers in MR-DC, RAN3, 3GPP TSG RAN WG2#118-e, e-Meeting, 9th - 20th May, 2022.
2. R2-2208206, Total RAN Delay calculation, Ericsson, 3GPP TSG-RAN2 Meeting #119, Electronic Meeting , 17th Aug - 29th Aug 2022.
3. R2-2207948 - Discussion on Capturing L2M Agreements in TS 38.314, Huawei, HiSilicon, 3GPP TSG-RAN WG2 Meeting #119, Electronic Meeting, Online, 17th – 29th August, 2022.