3GPP TSG-RAN3 Meeting #109-E R3-205509

E-meeting, 17 – 28 August 2020

Agenda Item: 10.2.1.2

Source: Ericsson

Title: SoD for SONMDT\_EnergyEff

Document for: Discussion, Decision

# Introduction

This is a summary of offline discussions for the topic of Energy Efficiency in AI 10.2.1.2.

* + - * 1. ***10.2.1.2. Energy Efficiency***

*OAM requirements*

*Including the postponed LSin from SA5 ([R3-204288](C:\\Users\\z00274494\\Downloads\\Docs\\R3-204288.zip)) received at RAN3 #108-e*

The scope of the SoD is as follows:

**CB: # 1002\_SONMDT\_EnergyEff**

**- Topics to discuss:**

**- RLC level KPIs**

**- UL/DL PDCP SDU data volume measurement**

**- KPIs at specific network nodes**

**- Any other topic based on contributions submitted**

**- Reply LS to SA5**

**- If there are agreements, can proceed to draft reply LS**

(E/// - moderator)

Summary of offline disc [R3-205509](C:\\Users\\z00274494\\Downloads\\Inbox\\R3-205509.zip)

# For the Chairman’s Notes

Following agreements were proposed on the first round of offline discussion:

# Discussion

## Metric Name

It was highlighted in R3-205538 that it seems erroneous to speak about Energy Efficiency when the metric under analysis in this discussion is [Data Volumes] / [Energy Consumption].

An “efficiency” metric is usually represented in a unit-less way, e.g. as a percentage.

Furthermore, it appears that ETSI EE and ITU-T are working on other metrics named “Energy Efficiency”, which are unit-less. Using the name Energy Efficiency for [Data Volumes] / [Energy Consumption] can only create confusion.

For this reason, it is proposed to name the metric under discussion ([Data Volumes] / [Energy Consumption]) as “Energy Performance”.

**Proposal 1: It is proposed to name the metric ([Data Volumes] / [Energy Consumption]) as “Energy Performance”**

Companies are invited to provide their feedback on this proposal

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| Company | Comments |
| Huawei | Sorry, but where is R3-205538? Where is proposal 1 coming from?  In general, I think the main stuff of this email discussion should be how to reply the LS from SA5 on energy efficiency.  Therefore, I propose to focus on the questions that SA5 asked in their LS in this email discussion. |

## Metric Definition

In the calculation of the ([Data Volumes] / [Energy Consumption]) metric, companies have expressed different views on how to calculate data volumes.

Two possible approaches are available:

Option 1 (R3-205538): Calculate UL and DL data volumes as volumes of data measured at RLC. This allows data volume to be calculated on a per gNB-DU basis

Option 2 (R3-204737): Calculate data volume as the UL and DL PDCP SDU data volume measurement defined in TS 28.552 [3], clause 5.1.3.6.2.1 and 5.1.3.6.2.2, provided that these measurements can be taken on a per F1-U interface basis (To be confirmed by SA5). This allows data volume to be calculated on a per gNB-DU basis

Companies are invited to provide comments on the above statement also taking into consideration the data duplication scenario in Section 3.3.

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| Company | Comments |
| Huawei | We prefer to reuse the existing DV per interface defined in TS 28.552 as much as possible.  And we think that it’s SA5 responsibility to make the decision on whether a RLC level DV is needed or not. And if needed, they can define it by them own without any impact on RAN3. |

## Data Duplication

In R3-205307 the case of PDCP duplication is described. In this case the PDCP layer duplicates PDUs and sends them to two RLC layers.

It should be noted that PDCP SDUs entering RLC are numbered and will be signalled to the UE even if the RLC layer receives a command to flush the RLC buffer.

However, those PDCP SDUs that have not entered RLC at the time a command to flush the RLF buffer or to discard some PDCP SDUs is received, will be removed by the gNB-DU.

This creates a case where a PDCP data volume metric could be affected by errors because while the PDCU PDU/SDU is signalled to the gNB-DU, the gNB-DU may not transmit it over the air and instead discard it.

Companies are invited to provide their comments to the case above and whether it affects the selection of the data volume metric in section 3.2.

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| Company | Comments |
| Huawei | We don't see any impact on the data volume metric. |

## Granularity of Data Volume / Energy Consumption

R3-205307 proposes to consider different granularities of the Data Volume / Energy Consumption metric. In the above sections the focus is on measurement of Data Volume / Energy Consumption per gNB-DU.

It is also clear that in a non split RAN architecture, it is already possible to achieve a measure of the Data Volume / Energy Consumption per gNB.

The remaining nodes for which Data Volume / Energy Consumption could be measured are

* gNB-CU-CP
* gNB-CU-UP
* gNB in split architecture

Companies are invited to provide their comments on whether such increase in granularity is required and is feasible.

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| Company | Comments |
| Huawei | Again.  We checked the granularity issue with our SA5 delegates, there is no any issue/problem found.  Sa5 should be the responsibility group for EE. Therefore, I don't think the granularities of EE should be discussed here. In split architecture, whether per DU, per CU-CP, or per CU-UP EE is needed should be discussed and decided in SA5.  What RAN3 could do is to provide feedback according to the questions in the LS from SA5.  For example, we may notify SA5 in the reply LS that per gNB EE may be less accurate in split architecture, due to deployment reason. And let SA5 to make the final decision. |

# Conclusion, Recommendations [if needed]

If needed