**3GPP TSG-RAN WG2 Meeting #130 R2-250xxxx**

**St Julian, Malta, 19th – 23rd May 2025**

**Source: vivo**

**Title: Remaining RLC open issues for XR Enhancements**

**Agenda Item: 8.7.1**

**Document for: Discussion and Decision**

1. Introduction

This document summarizes the discussion of the following email discussion and collects the RLC open issues for XR Enhancements according to the following email discussion.

* [POST129bis][505][XR] RLC running CR and open issues (vivo)

 Scope:

* Update and review the CR
* List open issues related to the CR

 Intended outcome:

* Running CR for endorsement in the next meeting
* List of open issues for discussion at the next meeting

 Deadline: Long

Companies are invited to provide comments/additional open issues in the below table by 2nd May, 2025.

# Contact information

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| Company | Name, Email |
| Vivo | Chenli, chenli5g@vivo.com |
| Ofinno | Hsin-Hsi Tsai, htsai@ofinno.com |
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# Discussion

* 1. Issues related to running CR

**Open issue RLC-1 (essential): Terminology for avoiding unnecessary retransmission, e.g. “obsolete”, or “outdated”, or “discard”**

In the current RLC running CR, there is an EN as below:

Editor’s Note: FFS on the term, whether it should be “obsolete”, or “outdated”, or “discard”. Same as below.

Current RLC running CR use the term from RRC running CR “*stopReTxObsoleteSDU”*, “*t-RxDiscard*” . Meanwhile, some corresponding description is used, e.g. “This timer is used by the receiving side of an AM RLC entity in order to abandon an obsolete SDU”.

During the discussion, companies have different preference on the term regarding the enhancement to avoid unnecessary RLC retransmission, e.g. “obsolete”, or “outdated”, or “discard”.

**Companies are invited to provide your preference on the term to be used for the enhancement to avoid unnecessary RLC retransmission for both UL and DL operations, e.g. “obsolete”, or “outdated”, or “discard”, or others, please specify:**

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| **Company** | **Preference(s)** | **Comments, if any** |
| Ofinno | x) *stopReTxSDU*This parameter is used by the transmitting side of each AM RLC entity to determine whether to stop RLC transmission and retransmission of SDUs (see clause 5.2.3) .x) *t-RxDiscard*This timer is used by the receiving side of an AM RLC entity in order to discard AMD PDU(s) (see clause 5.2.3.2.x). … | For *stopReTxObsoleteSDU*, we prefer not to use the words “obsolete” and “outdated” unless the standard clearly defines what is “obsolete” or “outdated”. Regarding “discard”, since the discarding for “*stopReTxObsoleteSDU*” occurs at PDCP rather than RLC, “dicard” might not be the appropriate term to use. In our understanding, there’s no need to assign an adjective to this word considering that the exact UE behavior is clearly specified, thus *stopReTxSDU* seems already be clear.For *t-RxDiscard*, there is no issue with the naming of this parameter as it is indeed related to the discarding operation within RLC. However, we also feel that “obsolete” is unnecessary for similar reasons stated earlier. Additionally, “abandon” could be replaced with “discard” since the terminology for the timer and actions in 5.2.3.3.x is “discard”. Furthermore, the expiry of the *t-RxDiscard* may result in discarding multiple AMD PDUs instead of just a single PDU. We suggest updating it to AMD PDU**(s)**. |
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**Open issue RLC-2 (not essential, but important): whether further changes are needed for SR triggered by t-RxDiscard expires.**

In the current RLC running CR, there is an EN as below:

Editor’s Note: FFS whether any further changes are needed for SR triggered by *t-RxDiscard* expires. Companies are invited to provide views (if any) in the summary.

RAN2 agreement is:

*When the t-RxDiscard expires, the expiration of t-RxDiscard triggers an SR. FFS whether this is just usual SR or some changes are needed, or if UE implementation can decide (to be discussed during CR review)*

Current RLC running CR captured the SR is triggered when *t-RxDiscard* expires as below:

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| Triggers to initiate STATUS reporting include:….- Detection of obsolescence of an AMD PDU:- The receiving side of an AM RLC entity shall trigger a STATUS report when *t-RxDiscard* expires. |

**Companies are invited to provide comments on any further changes are needed for SR triggered by *t-RxDiscard* expires.**

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| **Company** | **Yes/No** | **Comments, if any** |
| Ofinno | Yes (further changes are needed) | In 5.2.3.2.x, when *t-RxDiscard* expires, it is possible that no AMD PDU is dicarded, for example, if there is no AMD PDU in the reception beffer with SN < RX\_Next\_Discard\_Trigger, so that’s why we added “if any” at the end. In this case, we think the SR is not needed to be triggered, i.e., the SR shall be triggered when at least one AMD PDU is discarded when *t-RxDiscard* expires. 5.3.4 Status reporting… “Detection of obsolescence of an AMD PDU” should also need to be fixed based on the outcome of the 1st issue.We suggest the following changes:Detection of discarded AMD PDU(s) when *t-RxDiscard* expires: …* The receiving side of an AM RLC entity shall trigger a STATUS report when the AMD PDU(s) is discarded when *t-RxDiscard* expires.
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**Open issue RLC-3 (essential): whether use the terminology of “autonomous retransmission” or others.**

In the current RLC running CR, there is an EN for autonomous retransmission procedure in clause 5.x as below:

Editor’s Note: FFS on the terminology of “autonomous retransmission”, as it was already used for NR-U.

During the discussion, some companies mentioned that we have existing “autonomous retransmission” procedure in Rel-16 NR-U. TS 38.300 uses “autonomous retransmission” terminology for the NR-U feature. RAN2 may need to consider to use a new terminology for this Rel-19 feature, and “autnomous retranmsision” for Rel-19 XR is a working teminology, a standardized terminology should be discussed later.

With this, rapporteur suggests to change it to another name, e.g. timer-based retransmission, etc.

**Companies are invited to provide comments on whether to change the “autonomous retransmission” to another term in the specification, if “yes”, please provide your suggestion.**

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| **Company** | **Yes/No to change** | **Suggestion on the term, e.g. timer-based retransmission** |
| Ofinno | Yes | timer-based may not be ideal as this retransmission relies on the PDCP timer rather than the RLC timer. We suggest using “**delay-based retransmission**”, as the retransmission is based on the remaining time of an RLC SDU, which is the delay information of the RLC SDU.If the term of the procedure is changed, the term of the parameter *autonomousReTxThreshold* should also be changed accordingly.  |
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**Open issue RLC-4 (essential): whether merge the autonomous retransmission procedure in clause 5.x into 5.3.2 or capture it separately.**

In the current RLC running CR, there is an EN for autonomous retransmission procedure in clause 5.x as below:

Editor’s Note: FFS on whether to merge this section into 5.3.2 or capture it separately.

During the discussion, some companies prefer to merge the whole autonomous retransmission procedure in 5.x into section 5.3.2 “retransmission”, noticing large portion of behaviour/content are same, and we can treat the autonomous retransmission trigger as same as receiving a NACK feedback. While some companies prefer to keep the autonomous retransmission procedure in 5.x as a separate section as autonomous retransmission does not rely on feedback or request, and it is a little odd to add autonomous retransmission to the ARQ section.

**Companies are invited to provide comments on whether to merge autonomous retransmission procedure in 5.x into section 5.3.2 “retransmission” or keep it as a separate section.**

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| **Company** | **Merge or separate section** | **Comments, if any** |
| Ofinno | separate sections | UE behaviors differ for these two types of retransmission. Creating separate sections would improve understanding. |
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* 1. Open issue list

**Rapporteur provides the list of open issues as below, and the corresponding suggestions on how to address them. Some of them could be further discussed based on contributions or resoved based on further progress. Companies are invited to provide comments on whether it is open issue and whether the suggestions from reapporteur is accuracy enough.**

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| **Company** | **Comments, if any** |
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### DSR enhancements

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| **Index** | **Issue description** | **Rapporteur suggestion** |
| RLC-5 | Editor’s Note: Same as PDCP open issue: it is FFS which delay-reporting RLC data volume shall consider RLC data PDUs to be retransmitted.Editor’s Note: It is FFS which delay-reporting RLC data volume shall consider STATUS PDU to be transmitted. | **Issue Type:** Essential**How to address it:** based on companies’ contribution |

### Avoid unnecessary RLC retransmissions

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| **Index** | **Issue description** | **Rapporteur suggestion** |
| RLC-6 | Editor’s Note: FFS whether there are any RLF detection impacts when avoiding unnecessary retransmissions is introduced.  | **Issue Type:** Not essential but important**How to address it:** based on companies’ contribution |

### Ensure timely RLC retransmissions

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| **Index** | **Issue description** | **Rapporteur suggestion** |
| RLC-7 | Editor’s Note: It is still open how Autonomous Retransmission coexists with ARQ procedures, i.e. whether/how to increment the RETX\_COUNT for Autonomous Retransmission. | **Issue Type:** Not essential but important**How to address it:** based on companies’ contribution |
| RLC-8 | Editor’s Note: It is still open on how to avoid excessive polling for the polling enhancement, e.g. only one polling or multiple.  | **Issue Type:** Not essential but important**How to address it:** based on companies’ contribution |
| RLC-9 | Editor’s Note: FFS whether/what additional conditions are needed to prevent too early and/or unnecessary retransmission due to polling enhancement. | **Issue Type:** Not essential but important**How to address it:** based on companies’ contribution |

* 1. Others, please specify

Companies are invited to describe any other identified open issues not currently included within this document.

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| **Company** | **Other identified open issues? (please describe) or other comments** |
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# Conclusion

In this contribution, we collect the open issues for XR enhancements in RLC as below:

***DSR enhancements***

***Avoid unnecessary RLC retransmissions***

***Ensure timely RLC retransmissions***

# References

1. R2-25xxx, RLC running CR for XR, vivo.