**3GPP TSG-RAN2 #113bis-e R2-210xxxx**

**Electronic meeting, April 12 – April 20, 2021**

**Agenda item:**5.3.2

**Source:** LG Electronics (Rapporteur)

**Title:** Report of [AT113bis-e][004][NR15] PDCP SDAP

**Document for:** Discussion and Decision

# 1. Introduction

This document is to report the result of the following email discussion in RAN2#113bis-e Meeting.

* [AT113bis-e][004][NR15] PDCP SDAP (LGE)

Scope: Treat R2-2103301, R2-2103302, R2-2103303, R2-2104201, R2-2104202, R2-2104293

Phase 1, determine agreeable parts, Phase 2, for agreeable parts Work on CRs.

Intended outcome: Report and Agreed-in-principle CRs.

Deadline: Schedule A

# 2 Contact Information

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| --- | --- |
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# 3. Discussion

## 3.1 PDCP re-establishment after RRC re-establishment

[R2-2103301](file:///D:\3GPP\RAN2\TSGR2_113bis-e\docs\R2-2103301.zip) Discussion on the issue of PDCP re-establishment after RRC re-establishment NEC discussion Rel-15 NR\_newRAT-Core

[R2-2103302](file:///D:\3GPP\RAN2\TSGR2_113bis-e\docs\R2-2103302.zip) Correction on PDCP re-establishment after RRC re-establishment NEC CR Rel-15 38.323 15.7.0 0066 - F NR\_newRAT-Core

[R2-2103303](file:///D:\3GPP\RAN2\TSGR2_113bis-e\docs\R2-2103303.zip) Correction on PDCP re-establishment after RRC re-establishment NEC CR Rel-16 38.323 16.3.0 0067 - A NR\_newRAT-Core

**Reason for change**

According to the current spec, the DRBs are suspended when the NW configure the UE to re-establish PDCP after RRC re-establishment, thus the unconfirmed PDCP SDUs of AM DRBs before re-establishment will be treated as new packets from upper layer for transmission.

However, to support lossless transmission and in-order delivery at RAN side, the COUNT of the unconfirmed PDCP SDUs before PDCP re-establishment should be reused for retransmission or transmission in the new cell after successful RRC re-establishment (corresponding to the behavior of AM DRBs which are not suppsended).

**Q1: Do you agree to the CR?**

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| --- | --- | --- |
| Company | Agree/Disagree/  Agree with modification | Detailed Comments |
| LG | Disagree | DRB suspend and PDCP suspend are different events. The text “for suspended AM DRBs” in PDCP specification is referring to the case when “PDCP suspend” was performed before. Thus, the unconfirmed PDCP SDUs of AM DRBs are treated as new packets only when the PDCP suspend was performed before.  Note that, in RRC specification, “PDCP suspend” is performed only when the UE receives RRCRelease message. |
| vivo | Disagree | Agree with LG’s understanding. UE additionally indicate PDCP suspend to lower layers of all DRBs when RRCRelease message with *suspendConfig.* When upper layers request a PDCP entity suspend, the receiving PDCP entity shall set TX\_NEXT to the initial value*.* This is why unconfirmed PDCP SDUs of AM DRBs are treated as new packets when RRC resume successfully.  For RRC reestablishment case, no PDCP suspend is indicated to PDCP layer. For all DRBs, the corresponding transmitting PDCP entity will maintain the transmitting status when the RRC re-establishment procedure is initiated. Thus, PDCP can re-transmit unconfirmed PDCP SDUs of AM DRBs with PDCP SN which are allocated before. |
| OPPO | Disagree | Agree previous comments |
| Futurewei | Disagree | Agree with LG. |
| Google | Disagree | Agree with previous comments |
| Qcom | Disagree | Agree with above comments |
| NEC | Agree | We should capture clearly in the spec that in case of PDCP re-establishment after RRC re-establishment, for AM DRBs, the UE shall perform transmission and retransmission of the unconfirmed SDU using the COUNT value used before PDCP reestablishment.  With regarding to comments from LG, yes, suspended DRB and PDCP suspend are different events, but why use suspended DRB to refer to PDCP suspend (and there no such definition in the PDCP spec stating that suspended DRBs actually means DRBs that have performed PDCP suspend before)? We should avoid having different definitions in different specifications regarding to the same terminology, as it will cause ambiguity.  The straight forward way is to specify it clearly in the PDCP spec as "for suspended AM DRBs, and the PDCP entity has performed suspend before". |
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## 3.2 Integrity check for interspersed ROHC feedback

[R2-2104201](file:///D:\3GPP\RAN2\TSGR2_113bis-e\docs\R2-2104201.zip) Integrity check for interspersed ROHC feedback LG Electronics Inc. (PDCP rapporteur) CR Rel-15 38.323 15.7.0 0068 - F NR\_newRAT-Core Late

[R2-2104202](file:///D:\3GPP\RAN2\TSGR2_113bis-e\docs\R2-2104202.zip) Integrity check for interspersed ROHC feedback LG Electronics Inc. (PDCP rapporteur) CR Rel-16 38.323 16.3.0 0069 - A NR\_newRAT-Core Late

**Reason for change**

The interspersed ROHC feedback is transmitted via PDCP Control PDU, and the PDCP Control PDU is neither ciphered nor integrity protected. However, in the current PDCP specification, it is specified that ciphering is not applied but not specified that integrity protection is not applied. It could be misled that integrity protection is applied to PDCP Control PDU including interspersed ROHC feedback.

**Q2: Do you agree to the CR?**

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| --- | --- | --- |
| Company | Agree/Disagree/  Agree with modification | Detailed Comments |
| LG | Agree | This is rapporteur CR. Note that similar change is proposed for EHC in Rel-16. |
| vivo | Disagree | In TS 38.323 clause 5.9, it is specified clearly that “The integrity protection is not applicable to PDCP Control PDUs.” Thus, we think the change is not necessary. |
| OPPO | Disagree | Agree with vivo the spec is already clear. |
| Futurewei | Disagree | Agree with Vivo that Clause 5.9 clearly specifies that “The integrity protection is not applicable to PDCP Control PDUs.”  Regarding the sentence being questioned in clause 5.7.5, the intention of that sentence is not to specify the processing sequence, but to specify that decompression is performed on a non-ciphered compressed header, otherwise the decompression won’t be done correctly. If it were meant to specify the processing sequence, it would have, instead, said “after performing re-ordering and duplicate discarding”, which is the last step before header decompression.  Therefore, these changes and those being proposed for EHC are unnecessary. |
| Google | Disagree |  |
| QCOM | Disagree | CR is adding clarification that ROHC feedback is not integrity protected. It is already there in spec, so strictly speaking there is no need for it |
| NEC | Disagree | Agree with vivo that integrity protection is not applicable to PDCP control PDU, so there is no need for the change. |
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## 3.3 Change of PDU session ID

[R2-2104293](file:///D:\3GPP\RAN2\TSGR2_113bis-e\docs\R2-2104293.zip) Clarification on the change of PDU session ID Samsung CR Rel-15 38.313 15.13.0 2568 - F NR\_newRAT-Core Late

**Reason for change**

From the current specification, it is unclear whether PDU session ID (i.e. pdu-Session under SDAP-Config in DRB-ToAddMod) can be changed using DRB modification procedure.

Even though the latest specification does not restrict such configuration, such scenario was never discussed in RAN2, and thus it should not be allowed to avoid any malfunction.

Note that TS 37.324 (only) defines QoS flow remapping scenario based on the RRC reconfiguration, but from our understanding, the scenario assumes that it can occur within the same PDU session.

**Q3: Do you agree to the CR?**

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| Company | Agree/Disagree/  Agree with modification | Detailed Comments |
| LG | Agree | We have the same understanding that PDU session ID can be changed only by release/addition of the DRB. |
| OPPO | Disagree | We don’t see any issue, however we are open to clarify it, maybe in stage 2 specification. |
| Google | Disagree | It is unclear what the problem is. If the network chooses to invoke DRB modification to change the PDU session of a DRB, then it should ensure there is no problem in the configuration. |
| Qcom | Agree | We carry the same understanding |
| NEC | Agree with modification | We are OK the intention of the change, but we want to align with the wording in ***sdap-HeaderUL*** and ***sdap-HeaderDL,*** i.e. by using“The field cannot be changed after a DRB is established.” |
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# 4. Conclusions

To be filled later..