3GPP TSG-RAN WG3#126 R3-247818

Orlando, USA, 18-22Nov 2024

Agenda Item: 9.2

Source: Huawei (Moderator)

Title: CB: # 26\_PDCPSN

Document for: Discussions &Approval

# Introduction

This is to kick off the following CB

**CB: # 26\_PDCPSN**

**- Check all the solutions in the table**

**- if no consensus, stop the discussion in R18**

(moderator - HW)

Summary of offline disc [R3-247818](file:///C%3A%5CUsers%5Cezlyamo%5CAppData%5CLocal%5CTemp%5Cfz3temp-2%5CInbox%5CR3-247818.zip)

# For Chairman’s notes

Summary for Chair Notes:

Send LS to RAN 2 in R3-247869 to check feasibility of Alternative 3.

# 3 Discussion

## 3.1 How to proceed with the discussion?

There are 3 solutions on the table, for solving the PDCP SN gap report in case of UE handover.

* **Alternative 1: The source gNB forwards the SN gap report to the target gNB.**
* **Alternative 2: The source gNB indicates the discarded SDUs as received in the SN STATUS TRANSFER.**
* **Alternative 3: The UE sends the PDCP SN gap report again after connecting to the target gNB.**

Alternative 1 and 2 are network-based solutions, while Alternative 3 requires UE behaviour change. Since different companies have different understanding on whether the alternative 3 can be supported by existing R18 UE without any change, we may need to confirm with RAN2 on the feasibility of Alt 3 in R18 first, and then decides whether to continue discuss this issue in RAN3.

Companies are invited to provide feedback on how to proceed with the solutions.

**Question 1**: **Which way do you prefer to move on?**

**Option 1: Discuss Alternative 1 and 2 in RAN3 directly.**

**Option 2: Ask RAN2 to check the feasibility of Alternative 3 in R18 first, and continue the discussion in RAN3 about Alternative 1 and 2 if RAN2 provides negative feedback.**

|  |  |  |
| --- | --- | --- |
| Company | Preferred Option | Comments |
| Huawei | Option 1 | We can accept option 2 if companies con not converge on option 1. |
| China Telecom | Option 1/2 | We prefer a network-based solution. Both Option 1 and Option2 are feasibile. We slightly prefer Option 2. |
| LGE | Option 1 | The scenario under dsicussions involves a UE who successfully delievered a SN gap report for an AM DRB to the source before HO occurs. From UE point of view, the uplink PDCP SN gap info has already been successfully delivered to the NW. So, it would be the NW’s responsibility (both source and target) to handle the missing data properly. For that, the target just needs to be aware of the discarded status (informed by the source) to ensure in-order uplink delivery to CN from the target, which is under RAN3 domain. And such XnAP impact should be clear and should not amend the existing data forwarding behaviors from Rel-15. This case doesn’t require RAN2 consultations.However, the scenario considered in Nokia's RAN2 contribution R2-2410613 focuses on the case where the SN gap report was NOT successfully delivered to the source due to HO (i.e. its RLC transmission was NOT successfully completed before flushed by HO CMD). This is a different scenario, and retransmission to the target (post-HO) makes sense in this case.  |
| Ericsson | Option 2 | We prefer to avoid Xn impact, as that would create duplicate solution with RAN2 enhancement for R19, which is being currently discussed. I.e., we run the risk of having a RAN3 R18 solution and a duplicate RAN3 Rel18 and RAN2 Rel-19 solutions. We prefer to wait for RAN2 before agreeing on Alt1/2. Therefore the proposed LS form Hw is acceptable to us.We think that Alt 3 can cover all cases and whether to do it in Rel-18 or Rel-19 can be up to RAN2. we should also mention that R19 solution is acceptable for RAN3 in the LS. |
| Samsung | Option1 | The network-based solution is preferred, and option 1 seems simpler. |
| Xiaomi  | Option 1/2 | We prefer alternative 2, but we’re ok to send the LS to RAN2 to have more information, otherwise it may be hard to progress.  |
| Nokia | Option 2 | Similar view as Ericsson. We need to get RAN2 feedback before continues the discussion on XnAP enhancements. It is up to RAN2 to decide whether change or no change in Rel-18 or Rel-19.  |
| CATT | Option 1 | Network solution is preferred, Alt2 specifically. If RAN3 can solve this by ourselves, no need to disturb RAN2. RAN2 will not trigger such discussion in R19 if no LS received from RAN3 so no duplication issue. |
| ZTE | Option2 | Same view with Nokia and Ericsson. To me, we do not analysis how much delay will be introduced without Alt1 and Alt2. Without this information, do not really think this is a critical issue. |
| Qualcomm | Option 1 | We don’t want Option3 in any case as it is ineffiecnt for UE to send same info again to tragte node after HO and it adds unwanted OTA overhead signaling and it must be handled within Xn only. We prefer Option 1 . |

**Question 2** : If you are ok with sending LS to RAN2, please review the content in next page for the draft LS and share your comments directly.

**Summary:**

**Option 1:** Huawei,LGE, Samsung, CATT, Qualcomm

**Option 2:** Ericsson, Nokia, ZTE

**Prefer Option 1 but also acceptable for option 2**: China Telecom, Xiaomi, Huawei

**Considering it is hard to reach consensus in RAN3 now, the moderator would like to suggest that we send the LS to RAN2 first, and continue to discuss the network-based solution if Alt 3 is not supported by RAN3.**

# Annex. LS out for Alternative 3

**3GPP TSG-RAN WG3 Meeting #126 R3-24xxxx**

**Orlando, USA, 18-22 November, 2024**

**Title: [Draft] LS on PDCP SN gap report handling during UE mobility**

**Response to:**

**Release: Rel-18**

**Work Item: NR\_XR\_enh-Core**

**Source: Huawei (to be RAN3)**

**To: RAN2**

**Cc:**

**Contact Person:**

 **Name:** Yuanping Zhu

 **Email:** zhuyuanping@huawei.com

**Send any reply LS to: 3GPP Liaisons Coordinator,** mailto:3GPPLiaison@etsi.org

**Attachments:** **-**

**1. Overall Description:**

For Rel-18 XR, it is unclear how to handle the PDCP SN gap report during UE’s inter-gNB mobility. If a UE discarded some UL packets before handover, the UE reports the PDCP SN gap report to the source gNB, but the target gNB may not be aware of those discarded packets if no PDCP SN gap is reported to target gNB. This may result in unnecessary delay in the target gNB.

RAN3 discussed this issue and considers the following solutions:

* Alternative 1: The source gNB forwards the PDCP SN gap report information to the target gNB.
* Alternative 2: The source gNB indicates the discarded SDUs as successfully received via the UL received status in the SN STATUS TRANSFER sent to the target gNB.
* Alternative 3: The UE sends the PDCP SN gap report again after connecting to the target gNB.

RAN3 would like to ask RAN2 to evaluate the feasibility and usefulness of using Alternative 3. If RAN2 cannot support Alternative 3, RAN3 will discuss the network-based solutions, i.e., Alternative 1 and Alternative 2.

**2. Actions:**

**To RAN2:**

**ACTION:** RAN3 kindly asks RAN2 to provide feedback onwhether Alternative 3can be supported.

**3. Date of Next RAN3 Meetings:**

RAN3#127 17th Feb – 21st Feb 2025 Athens, GR

RAN3#127bis 07th April – 11th April 2025 China, CN