**3GPP TSG RAN WG2 #115-e** **R2-21XXXX**

**Electronic Meeting, August 16 – 27, 2021**

**Agenda Item:** 8.1.1

**Source:** CMCC

**Title:** Report from [Post115-e][069][MBS] 38300 Running CR (CMCC)

**Document for:** Discussion and decision

# Introduction

This report summarizes the email discussion below that took place after RAN2#115-e meeting:

* [Post115-e][069][MBS] 38300 Running CR (CMCC)

Scope: Update the Stage-2 running CR. Capture R2 115-e agreements.

Intended outcome: Endorsed CR

Deadline: Short 2 (not for RP)

# Reference

# Contact information

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# Discussion

## Comments on the definition of PTP/PTM transmission

Here companies may provide comments on the running CR.

**Question 1:** Do companies have comments on the current updated definition of PTP/PTM transmission included in the draft running CR?

* PTP Transmission: gNB utilizes UE-specific RLC entity, MAC entity and Physcial layer to individually generate and deliver separate copies of MBS data packets to each UEs independently, and uses PDCCH with CRC scrambled by UE-specific RNTI (e.g., C-RNTI) to schedule UE-specific PDSCH which is scrambled with the same UE-specific RNTI.
* PTM Transmission: gNB utilizes group RLC entity, MAC entity and Physcial layer to generate and deliver copies of MBS data packets to a set of UEs independently and uses group-common PDCCH with CRC scrambled by group-common RNTI to schedule group-common PDSCH which is scrambled with the same group-common RNTI.

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| **Company** | **Other comments** |
| Nokia | We do not see the need to update the definition. The previous ones were good enough for a Stage 2. The new text is also a bit confusing since on the receiver side, there’s always one dedicated RLC entity. |
| Samsung | The current text still has misalignment among RAN1 definition and RAN2 definition.   * In RAN1, PTP/PTM is distinguished by RNTI, i.e. UE-specific RNTI or group-common RNTI. * In RAN2, path switching is more related to RLC bearer. PTM means PTM RLC bearer and PTP means PTP RLC bearer. For instance, the current 38.300 uses RAN2 definition: “Split MRB: both PTM and PTP.” Here data for PTM RLC can be assigned by C-RNTI.   Our suggestion is to completely separate RAN1 definition and RAN2 definition, e.g. For RAN2 definition, use “PTM RLC/PTP RLC” or for RAN1 definition “PTP transmission/PTM transmission” to avoid the confusion. |
| Qualcomm | We don’t see need to delete “gNB individually delivers separate copies of MBS data packets to each UEs independently,” which aligns with SA2 definitions as well.  We can just uses PTP and PTM RLC entity from RAN2 perspective. |
| Kyocera | We agree with Nokia that the previous definition still works for Stage 2. |
| Lenovo, Motorola Mobility | We share the same view with Nokia. We may not need to mention the Layer 2 entities from gNB point of view which depends on gNB implementation. |
| MediaTek | We share the same view with Qualcomm. RLC entity can be used for PTM and PTP definition from RAN2 perspective. |
| OPPO | If PTP is only used for PTM retransmission, both RLC and MAC are not UE specific. |
| LGE | We are fine if there is no confusion. We tend to agree with Samsung.  Then, our understanding is that MAC PDU intended for PTM RLC is transmitted by PTM transmission, PTM re-transmission, or PTP re-transmission, and MAC PDU intended for PTP RLC is transmitted by PTP transmission or PTP re-transmission. |
| Huawei, HiSilicon | We think the definitions from the endorsed stage-2 CR are sufficient for stage-2 and there is no need to change them. It is true that they do not cover in detail the case of retransmission, but it is OK for stage-2 specifications not to go into such details. Also, if we define PTP/PTM based on RLC entity, then it would mean that a retransmission scheduling PTM logical channel using C-RNTI would be a PTM transmission, which is rather odd as such transmission is targeted at a single UE. |
| Ericsson | UE specific entity detail is not needed in stage 2. We are fine to separate L1 from L2 as it simplifies future updates. We think the text will be edited later also for finalization. |
| Intel | We think it is better to use RAN2 definition in stage-2, for example:   * PTP transmission: MBS data packets are delivered via DTCH. * PTM transmission: MBS data packets are delivered via MTCH. |

**Rapporteur’s summary:** There are mainly the two options from participants’ view:

1. There is no need to update the definition. The previous ones were good enough for a Stage 2. (Nokia, Kyocera, Lenovo, Motorola Mobility, Huawei, HiSilicon，Ericsson)
2. The clear way is to completely separate RAN1 definition and RAN2 definition(Samsung, Qualcomm, MediaTek, OPPO, LGE, Intel)

According to majority’s view, we prefer to keep the previous definition in the current Stage-2 running CR, and the details part can be descripted in Stage-3 specification.

**Question 2:** Do companies have other comments on this draft running CR?

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| **Company** | **Other comments** |
| Nokia | We have a few comments:   1. We don’t understand why SDAP text was removed. This is still performed in DL. 2. Some agreements have been captured that do not belong to the Stage 2 (they should be captured in Stage 3 only):    1. Bearer ID details    2. LCID details    3. List of DRX parameters    4. State variables details 3. DRX-related details deserve its own subclause instead of being described in protocol architecture (or perhaps within 16.x.5.2). 4. Service continuity : we would prefer finishing the ongoing discussion on 304 before trying to capture something to gather the discussion in one place only. |
| Samsung | # 3.1  🡪 In the definition of PTM/PTP, “-“ can be removed. Other running CRs do not have “-“ for definition of PTM/PTP. i.e.:  PTM: Point to Point, PTP: Point to Multipoint  #16.x.3 SDAP functionality  🡪 We should keep SDAP functions. RAN2#115-e agreement is not to have SDAP configuration from RRC perspective. There is still an SDAP function of QF to MRB mapping and data transfer.  #16.x.3 PDCP functionality  - Header compression and decompression using the ROHC protocol, where; ROHC O/R-mode can be used for MRB, for cases when UL feedback path in RLC layer is available;  🡪 We already agreed ROHC U-mode (RAN2#112-e agreement). In RAN2#115-e, ROHC O/R-mode was further agreed. It means no restriction on ROHC configuration. Thus, this newly added part can be removed. Suggestion: remove “where ROHC O/R-mode can be used for MRB, for cases when UL feedback path in RLC layer is available;”  #16.x.3 MRB configuration(s)  MRB with one DL RLC-UM or Bi-directional RLC-AM entity for PTP transmission;  🡪 AM is always bi-directional. No need to specify this. Suggestion: remove “Bi-directional”  #16.x.3 MRB configuration(s)  MRB with two RLC-UM entities, one RLC-UM entity for PTP transmission and the other RLC-UM entity for PTM transmission as described in section 16.x.5.4;  🡪 “Two RLC-UM entities” looks duplicate. We suggest to remove.  #16.x.3 MRB configuration(s)  MRB with two RLC-UM entities, one RLC-AM entity for PTP transmission and the other RLC-UM entity for PTM transmission as described in section 16.x.5.4;  🡪 Looks like an error. “two RLC UM entities,” should be deleted.  [Rap] Yes, it is an error. To make it clear, we prefer to change “two RLC UM entities,” to “two RLC entities,”.  #16.x.3 MRB configuration(s)  - For PTP transmission, legacy UE-specific DRX pattern for unicast is reused for PTP transmission of NR MBS, which means the UE specific DRX pattern are for both unicast services and the MBS PTP bearer of UE.  🡪 We shouldn’t use ‘legacy …” We propose to use “unicast DRX is used for PTP transmission of MRB, which means..”  #16.x.3 MRB configuration(s)  o drx-HARQ-RTT-TimerDLPTM, needed if the HARQ feedback is enabled  o drx-RetransmissionTimerDLPTM, needed if the HARQ feedback is enabled  🡪 UE can still receive HARQ retransmission when HARQ feedback is not configured or HARQ feedback is disabled. UE would be required these timers in these cases in order to track the timings for HARQ retransmission. We think there is no need to put such conditioning on RTT and ReTx timers. RAN2 agreement also not included any conditioning.  #16.x.3 EN  Editor’s Note: FFS both DL and UL UM RLC configuiration for PTP.  🡪 Change to “configuration”  #16.x.4  - DTCH : A point-to-point channel defined in section 6.2.2 for transmitting traffic data of multicast ;  🡪 This logical channel is also needed to carry PDCP SR in the uplink.  [Rap] The current description is as it is defined in 36.300; “A Dedicated Traffic Channel (DTCH) is a point-to-point channel, dedicated to one UE, for the transfer of user information. “ And for regular unicast service, DTCH is also need transfer PDCP SR in the uplink, I think.  Hence, I prefer to keep current statement in Stage-2 specification. What’s your view?  #16.x.4 EN  🡪 Six ENs at the end of 16.x.4 should be updated according to the latest agreement.  # 16.x.5.2  MBS supporting gNBs notify the UEs in RRC IDLE/INACTIVE state about a multicast session activation using a group notification mechanism  🡪 Following agreement needs to be captured: It is up to network implementation (e.g. paging repetitions) for addressing scenario of potential notification loss for UEs.  Suggestion: to add “gNBs may use paging repetition to avoid potential notification loss for UEs” in 16.x.5.2.  #16.x.5.3  For an MRB configured PTM, PDCP state variables for PTM is setting while configured, and the SN part of COUNT values of these variables are set according to the SN of the first received packet by the UE and the HFN indicated by the gNB, if needed.  🡪 This is what PDCP spec should capture in state variable section. 38.300 does not have this stage-3 detail. We suggest to remove this.  #16.x.5.3  For an MRB configured PTM, during the initialize the PTM RLC entity for the MRB configuration, the value of RX\_Next\_Highest and RX\_Next\_Reassembly are set according to the SN of the first received packet containing an SN;  🡪 This is what RLC spec should capture in state variable section. 38.300 does not have this stage-3 detail. We suggest to remove this.  #16.x.5.3  F or an MRB configured PTP, RLC state variables of PTP RLC reception window can be set to initial value, i.e. 0, due to MRB configuration.  🡪 This is what RLC spec may capture in state variable section. 38.300 does not have this stage-3 detail. We suggest to remove this  #16.x.5.3  Editor’s Note: When two RLC entities are configured for a MRB for PTP delivery and PTM delivery respectively by RRC, it is FFS whether the state of RLC entity for PTM delivery can be active or deactive and can be dynamically controlled.  🡪 This EN can be deleted, since we agreed in RAN2#115-e  :Will not support PTM deactivation/activation beyond RRC reconfiguration acc to first agreement above (and whatever R1 decides).  #16.x.6.2  Editor’s Note: FFS that RAN1 inputs are needed for to decide about the RNTI and DCI format used for MCCH change notifications.  🡪 Please update as 115e RAN2 agreement: RAN2 waits for RAN1’s final decision on which RNTI/DCI (i.e. Alt1 and/or Alt 2 as identified by RAN1) for MCCH change notification to be adopted.  #16.x.6.2  Editor’s note: FFS whether the possibility of UE missing an MCCH change notification needs to be addressed or can be left to UE implementation.  🡪 Please remove as per 115e RAN2 agreement: Do not specify any mechanism to address the possibility of UE missing an MCCH change notification and it is left to UE implementation. |
| Qualcomm | QC suggested edits added directly in draft CR.  1:TS 23.247 specified Broadcast Service Area and Multicast Service Area separately and same can be used in RAN specifications.  [Rap]I failed to find :"Multicast service area" defintion in the section 3 Definitions of terms and abbreviations (23.247). Hence, **MBS service area is still there.** |
| Kyocera | We have a general comment below. We assume the detailed wording improvements will be discussed later.  Section 16.x.3:  We think the description of SDAP layer is still needed, since it provides transfer of data, and QoS flow handling (at the gNB side). In fact, Figure 16.x.3-1 and Figure 16.x.3-2 still show SDAP layer. |
| Lenovo, Motorola Mobility | 1. The SDAP function should be kept for DL. The SDAP header is not needed but the function is still performed for DL data transmission. 2. 16.x.6.3.2: we may need some text to describe how MII is used for connected mode mobility   [Rap] There is no corresponding agreement is RAN2. |
| MediaTek | #16.x.6.2  When the UE receives a notification, it acquires the updated MCCH in the same MCCH modification period where the change notification is sent;  🡪 We think further discussion is needed after UE receives a notification. In LTE MBMS, when the UE receives a notification (for session start or MBMS counting request), it acquires the MCCH at the next modification period boundary. In SC-PTM, UE acquires the SC-MCCH in the same modification period only when UE is in enhanced coverage(e.g. NB-IoT UE) and the notification(for session start) is sent in the DCI with SC-RNTI scheduling SC-MCCH.  Hence we think it should be kept open and suggest to add a corresponding Editor’s Note: FFS UE behavior under different situations (e.g. session start or modification for other information).  [Rap] Whether the existing EN, “Editor’s note: FFS on whether this notification can be reused for modification of other information carried by MCCH, if any” can meet your purpose?  - |
| OPPO | It is better to have two separate section for multicast and broadcast, e.g. 16.x for multicast and 16.y for broadcast. Anyway, no strong opinion.  [Rap] the original structure is 16.x for multicast and 16.y for broadcast, then some companies commented to extract common part in the beginning of the CR discussion. |
| TD Tech, Chengdu TD Tech | 1. Which mode is used for the multicast session with low QOS requirement is left as an implementation question and can be decided according to the operator’s requirement. Therefore, “broadcast session” can be replaced with ‘MBS session with delivery mode 2”. 2. Other related modification   Group activation notification is sent in the related POs with each related PO for a UE in RRC\_IDLE/RRC\_INACTIVE joining the related multicast session. The related PO of a UE is the PO calculated with UE-ID.  For non-MBS supporting gNB, the unicast paging is used to make the UE enter into RRC\_CONNECTED where 5G-S-TMGI is used to paging the UE and UE-ID is used to calculate the PO. |
| Huawei, HiSilicon | In general, we agree with other companies that there are some stage-3 details captured in the satge-2 unnecessarily.  For our detailed comments, please see the draft CR. |
| Ericsson | SDAP should remain. It is useful to convey the mapping to MRBs.  We would like to wait until the 38.304 discussion has concluded for updating text in stage 2.  We also think an Editor’s note to Service Continuity is good to add since solutions in which way SN and possibly data forwarding impacts involved entities is still under discussion in RAN3.  “Editor’s Note: Lossless mobility and data forwarding to be updated along the progress of respective discussions in RAN2 and RAN3.” |
| Intel | 1. Clause 16.x.3: removal of the description for SDAP layer is not needed. 2. Clause 16.x.3: the change regarding ROHC O/R mode: in RAN2#112-e meeting, following was agreed: “RoHC (at least U-mode) can be configured for NR MBS bearers.” The current wording might give impression that “U-mode” is not supported for MRB. We’re OK o either remove the introduced changes regarding O/R mode, or modify the bullet as “Header compression and decompression using the ROHC protocol using U/O/R-modes, with ROHC O/R-mode used for MRB only when UL feedback path in RLC layer is available;” 3. Clause 16.x.3: in MRB configurations for multicast and broadcast, our understanding is that the intention is to list related RLC entity(ies) configuration. Therefore it is preferred to not list LCID and DRX configuration details. 4. Clause 16.x.5.4: the details for PDCP and RLC state variable settings can be left to stage-3. 5. Clause 16.x.5.4: *“Editor’s Note: When two RLC entities are configured for a MRB for PTP delivery and PTM delivery respectively by RRC, it is FFS whether the state of RLC entity for PTM delivery can be active or deactive and can be dynamically controlled.”* can be removed as RAN2 agreed that dynamic PTM activation/deactivation is not supported. |

**Rapporteur’s summary:** if there is no inline reply following the comment, it means the comment has been reflected in the revised draft CR. And please note and reply the replied comments following your comments.

# Summary

**Rapporteur’s summary-Q1:** There are mainly the two options from participants’ view:

1. There is no need to update the definition. The previous ones were good enough for a Stage 2. (Nokia, Kyocera, Lenovo, Motorola Mobility, Huawei, HiSilicon，Ericsson)
2. The clear way is to completely separate RAN1 definition and RAN2 definition(Samsung, Qualcomm, MediaTek, OPPO, LGE, Intel)

According to majority’s view, we prefer to keep the previous definition in the current Stage-2 running CR, and the details part can be descripted in Stage-3 specification.

**Rapporteur’s summary-Q2:** if there is no inline reply following the comment, it means the comment has been reflected in the revised draft CR. And please note and reply the replied comments following your comments.