3GPP TSG-RAN WG3 #122 R3-237804

Chicago, USA, 13-17 November 2023

Agenda Item: 26.2

Source: Nokia (moderator)

Title: Summary of Offline Discussion for CB # R18URLLC

Document for: Approval

# Introduction

**CB: # R18URLLC**

**- Discuss open issues left**

**- Provide TPs if agreeable**

(moderator - Nok)

Summary of offline disc [R3-237804](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_122%5CInbox%5CR3-237804.zip)

# For the Chairman’s Notes

**Propose the following: (TBD)**

R3-23xxxx – agreed (TP for TS 38.413)

R3-23xxxx – agreed (TP for TS 38.473)

R3-23xxxx – agreed (TP for TS 38.423)

R3-23xxxx – agreed (LSout)

**Propose to capture the following: (TBD)**

# Discussion

## 5GS network timing synchronization status and reporting

TRS Issue #1: Granularity of clock accuracy in RAN TSS and Clock Quality Acceptance Criteria

Agreed online:

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| --- |
| **Remove the FFS on the 25ns granularity for the Clock Accuracy Value IE within the RAN Timing Synchronisation Status Information (NGAP, F1AP), and for the Clock Accuracy IE within the Clock Quality Acceptance Criteria (NGAP).**  |

**Moderator summary**: Update NGAP, F1AP, and XnAP as agreed online.

TRS Issue #2: F1AP impacts of Clock Quality Acceptance Criteria

Agreed online:

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| **RAN3 agrees to work on how the DU triggers TSS reporting in stage2 as shown in R3-237196 as the starting point.** |

**Moderator summary**: Continue discussion of TP for TS 38.401 (Nokia to make draft available in CB folder).

TRS Issue #3: Use MT-SDT to deliver clock quality information to UE

RAN2 agreement: If the UE is in RRC\_INACTIVE, the UE can acquire clock quality information using the SDT procedure, if it supports and/is configured with SDT procedure.

Consequences to RAN3:

|  |  |  |
| --- | --- | --- |
| *#* | *Description* | *Specification Impact* |
| 1 | Last serving gNB performs full context relocation if UE context includes clock quality reporting control information and receiving gNB supports clock quality reporting to the UE. See 7502 (Ericsson, CATT). | XnAP: Add *TSS Capability* IE in the RETRIEVE UE CONTEXT REQUEST |
|  | In addition, if last serving gNB decides to perform only partial context relocation, it provides clock quality reporting control information to receiving gNB. | XnAP: Add *Clock Quality Reporting Control Information* IE in the *Partial UE Context Information for SDT* IE. |
| 2 | Last serving gNB performs full context relocation if UE context includes clock quality reporting control information. See 7195 (Nokia). | None. |
| 3 | Wait further progress from RAN2 on the delivery of clock quality using SDT. See 7663 (ZTE). | TBD. |

**Moderator summary**: No conclusion during online discussion. Further check company views.

TRS Issue #4: TS 38.401

1. Clarify in TS 38.401 (step 0 of Figure 8.x.1-1) that the gNB-DU does not report RAN TSS attribute values better than the pre-configured thresholds. See 7196 (Nokia).
2. Based on the TSS Report sent from NG-RAN to AMF immediately after the Timing Synchronization Status Response message, the AMF and TSCTF can know the gNB-DUs supporting the TSS reporting. See 7259 (Qualcomm).

**Moderator summary**: Discuss as time allows.

### Miscellaneous stage 3 details

TRS Issue #5: Miscellaneous stage 3

1. XnAP: Resolve the FFS for the *Clock Quality Acceptance Criteria* IE in Chapter 9.2.3.x2 and ASN.1 (copy from NGAP)
2. XnAP: Resolve the FFS for *clockQualityMetrics* in ASN.1 (copy from NGAP)

**Moderator summary**: Can be agreed (non-controversial)?

## TSN integration

TSN Issue #1: NG-RAN node supports AN-TL

Agreed online:

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| **At PDU session level, add a new Downlink TL Container IE and Uplink TL Container IE in the PDU Session Resource Setup Request Transfer IE and PDU Session Resource Setup Response Transfer IE respectively.****At QoS flow level, add a new Downlink TL Container IE and Uplink TL Container IE in the PDU Session Resource Modify Request Transfer IE and PDU Session Resource Modify Response Transfer IE respectively.****At QoS flow level, add a new Downlink TL Container IE and Uplink TL Container IE in the PDU Session Resource Release Command Transfer IE and PDU Session Resource Release Response Transfer IE respectively.****The TL Container IEs are encoded as OCTET STRING with semantics description “Containing the <message name> message specified in TS 29.585 [x]”.****Further check on R3-237249** |

**Moderator summary**: Agreeable, pending further checking of the NGAP TP (Nokia to make draft available in CB folder).

TSN Issue #2: Distinct N3 tunnel per QoS flow

Agreed online:

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| **A new UL NG-U UP TNL information can be added to the QoS flow Add or Modify Request Item in the PDU Session Resource Modify Request Transfer IE, which is used to instruct the RAN node to assign a distinct N3 tunnel end point for the QoS flow.****A new DL NG-U UP TNL Information can be added to the QoS Flow Add or Modify Response List in the PDU Session Resource Modify Response Transfer IE.** |

**Moderator summary**: Agreeable, pending further checking of the NGAP TP (Huawei to make draft available in CB folder).

TSN Issue #3: Dynamic Uplink PDB

If the *Burst Arrival Time* IE is included in the *TSC Assistance Information Uplink* IE of the *TSC Traffic Characteristics* IE, the NG-RAN node may include the *AN Packet Delay Budget Uplink* IE for the same QoS flow within the PDU SESSION RESOURCE SETUP RESPONSE message as specified in TS 23.501 [9].

**Option 2**: from 7663 (ZTE)

Proposal 9: Add the dynamic uplink 5G-AN PDB in the QoS Flow TSC Feedback List of PDU Session Resource Setup Response Transfer IE and extend the usage of QoS Flow TSC Feedback List IE.

Proposal 10: Change the presence of the TSC Traffic Characteristics Feedback IE in the QoS Flow TSC Feedback List of PDU Session Resource Setup Response Transfer IE into ‘Optional’.

Proposal 11: Add the dynamic uplink 5G-AN PDB in the QoS Flow Add or Modify Response List of PDU Session Resource Modify Response Transfer IE.

**Agreed online:**

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| --- |
| A new AN Packet Delay Budget Uplink is added to the PDU SESSION RESOURCE SETUP RESPONSE, PDU SESSION RESOURCE MODIFY RESPONSE, and INITIAL CONTEXT SETUP RESPONSE messages. |

**Moderator summary**: Discuss stage 3 details based on 7233 and 7663.

## RAN feedback for low latency communication

RANF Issue #1: Proactive Feedback during handover

Agreed online:

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| **Turn WA to agreement:*****WA: TSC Traffic Characteristics Feedback is not provided during handover (i.e., not included in HANDOVER REQUEST ACKNOWLEDGE or PATH SWITCH REQUEST).*****LS to SA2?** |

**Moderator summary**: Check BL CRs for any impact of turning WA to agreement (perhaps none?). Discuss potential LS.

### Miscellaneous stage 3 details

RANF Issue #2: Miscellaneous stage 3

1. NGAP, F1AP: Remove the FFS on the value of 8 for *maxnoofPeriodicities*
2. NGAP, F1AP: Avoid encoding the *Allowed Periodicity List* IE as an extensible SEQUENCE (see 7195, Nokia)
3. NGAP, F1AP: Add procedural text for optional IEs (see 7232, Huawei)
4. XnAP: Remove the Editor’s Note in Chapter 9.2.3.115

**Moderator summary**: Can be agreed (non-controversial)?

## General: Stage 2 (TS 38.300)

General: TS 38.300

1. 7598 CATT, Qualcomm, Nokia
2. Clarify impacts of TRS Issue #3, see 7502 (Ericsson, CATT)

**Moderator summary**: Discuss as time allows.

# Conclusions

# References

1. R3-237195 (TP for TS 38.413 BL CR) Resolution of open issues for TRS and URLLC (Nokia, Nokia Shanghai Bell)
2. R3-237196 (TP for TS 38.473 BL CR) RAN TSS reporting over F1 (Nokia, Nokia Shanghai Bell)
3. R3-237249 (TP for TS 38.413 BL CR) Interworking with TSN network (Nokia, Nokia Shanghai Bell, Huawei, CATT, ZTE, Ericsson)
4. R3-237231 (TP to BLCR for TS 38.413, 38.423, 38.473 and 38.401) Support of 5G Timing Resiliency enhancements (Huawei, China Unicom)
5. R3-237232 (TP to BLCR for TS 38.413) Support of RAN feedback enhancements (Huawei, China Unicom)
6. R3-237233 (TP to BLCR for TS 38.413) Support of TSN enabled transport network (Huawei, China Unicom, Ericsson, China Telecommunication)
7. R3-237259 Discussion on remaining open issues in TSS (Qualcomm Incorporated)
8. R3-237501 Text Proposal to [BL CR for TS 38.423]: Introduction of 5G Timing Resiliency and URLLC enhancements (Ericsson)
9. R3-237502 Further discussion on Support NR Timing Resiliency and URLLC enhancements (Ericsson, CATT)
10. R3-237598 TP for 38.300 on Introduction of 5G Timing Resiliency and URLLC enhancements (CATT, Qualcomm Incorporated, Nokia, Nokia Shanghai Bell)
11. R3-237599 Discussion on Adapting downstream and upstream scheduling (CATT)
12. R3-237663 Discussion on remaining issues of NR Timing Resiliency and uRLLC (ZTE)
13. R3-237664 TPs to BLCR of 38.473 and 38.413 on NR Timing Resiliency and uRLLC (ZTE)