3GPP TSG RAN WG3 Meeting #127 R3-250875

**Athens, Greece, 17 – 21 Feb, 2025**

**Agenda Item: 13.2**

**Source: ZTE Corporation, NEC, China Telecom, Samsung, Nokia, Google, Huawei**

Title: TP to TS 38.401 on conditional intra-CU LTM

Document for: Discussions & Approval

# Introduction

**CB: # MobilityEnh\_ConditionalLTM**

**- discuss on whether intra-CU progress can be reused.**

**- which node to decide the conditional LTM.**

**- try to capture the further agreement and work on stage 2 and stage 3 TPs.**

(moderator-ZTE)

Offline summary in [R3-240808](file:///D:\3GPPmeeting\202502%20RAN3%20127\Inbox\R3-240808.zip)

Based on the progress of above CB, we provide the following 38.401TP.

# Text Proposal to TS38.401

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#### 8.2.1.x Conditional intra-CU LTM (Intra-gNB-DU)

This procedure is used for the case when the UE moves within the same gNB-DU during NR operation for conditional LTM. Figure 8.2.1.x-1 shows the intra-gNB-DU conditional LTM procedure for intra-NR.



Figure 8.2.1.x-1: Conditional intra-CU LTM (Intra-gNB-DU)

1. The UE sends a *MeasurementReport* message (L3 measurement result) to the gNB-DU containing measurements of neighbouring cells. The gNB-DU sends an UL RRC MESSAGE TRANSFER message conveying the received *MeasurementReport* message to the gNB-CU.

2. The gNB-CU determines to initiate conditional LTM configuration.

3. The gNB-CU sends a UE CONTEXT MODIFICATION REQUEST message to the gNB-DU for each candidate cell, containing one candidate cell ID and the CSI resource configuration for subsequent LTM. The gNB-CU may provide the LTM configuration ID mapping list to the gNB-DU. The gNB-CU may request PRACH resources from the gNB-DU. The gNB-CU may request the gNB-DU to provide the lower layer configuration for the purpose of generating the reference configuration or provide the lower layer reference configuration to the gNB-DU. The gNB-CU may inform the gNB-DU about intra-DU L2 reset configuration. If the gNB-CU determines to initiate the L1 event-triggered conditional LTM,itrequests the gNB-DU to generate the conditional LTM L1 execution condition(s).

4. If the gNB-DU accepts the request of LTM configuration, it responds with a UE CONTEXT MODIFICATION RESPONSE message including the generated lower layer RRC configurations for the accepted candidate cell.

NOTE 1: Steps 3 and 4 may be initiated multiple times for conditional LTM candidate cell preparation of multiple cells including the source cell.

*Editor’s Note: Details are FFS on step 3 and 4.*

5. The gNB-CU sends a UE CONTEXT MODIFICATION REQUEST message to the gNB-DU which may include the LTM configuration ID mapping list and/or the updated CSI resource configuration. The gNB-CU may inform the gNB-DU about intra-DU L2 reset configuration.

6. The gNB-DU responds with a UE CONTEXT MODIFICATION RESPONSE message which includes an updated lower layer configuration, e.g., containing the updated CSI report configuration of the source cell.

NOTE 2: In case of subsequent conditional LTM, the CU-initiated UE Context Modification procedure may be invoked per each candidate cell to transfer to the gNB-DU the updated CSI resource configuration.

7. The gNB-CU sends a DL RRC MESSAGE TRANSFER message to the gNB-DU, which includes the generated *RRCReconfiguration* message with the conditional LTM configuration.

8. The gNB-DU forwards the received *RRCReconfiguration* message to the UE.

9. The UE responds to the gNB-DU with an *RRCReconfigurationComplete* message.

10. The gNB-DU forwards the *RRCReconfigurationComplete* message to the gNB-CU via an UL RRC MESSAGE TRANSFER message.

11. Early TA acquisition to the candidate cell(s) may be performed as specified in TS 38.300 [2].

12. The gNB-DU sends the MAC CE to the UE .

13. The execution condition(s) to trigger initiation of conditional LTM is fulfilled.

14. Conditional LTM is executed.15. The UE sends an *RRCReconfigurationComplete* message to the gNB-DU.

16. The gNB-DU forwards the *RRCReconfigurationComplete* message to the gNB-CU via an UL RRC MESSAGE TRANSFER message.

17. The gNB-CU may send the UE CONTEXT MODIFICATION REQUEST message to the gNB-DU to release the resources of prepared cells.

18. The gNB-DU responds with a UE CONTEXT MODIFICATION RESPONSE message.

#### 8.2.1.y Conditional intra-CU LTM (Inter-gNB-DU)

This procedure is used for the case when the UE moves from one gNB-DU to another gNB-DU within the same gNB-CU during NR operation for Conditional LTM. Figure 8.2.1.y-1 shows the inter-gNB-DU Conditional LTM procedure for intra-NR.



Figure 8.2.1.y-1: Conditional intra-CU LTM (Inter gNB-DU)

1. 1. The UE sends a *MeasurementReport* message (L3 measurement result) to the source gNB-DU containing measurements of neighbouring cells. The source gNB-DU sends an UL RRC MESSAGE TRANSFER message conveying the received *MeasurementReport* message to the gNB-CU.

2. The gNB-CU determines to initiate conditional LTM configuration.

3. The gNB-CU sends a UE CONTEXT SETUP REQUEST message to the candidate gNB-DU(s) for each candidate cell, containing one candidate cell ID and the CSI resource configuration for subsequent conditional LTM. The gNB-CU may provide the LTM configuration ID mapping list to the candidate gNB-DU(s). The gNB-CU may request PRACH resources from the candidate gNB-DU(s). The gNB-CU may request the candidate gNB-DU(s) to provide the lower layer configuration for the purpose of generating the reference configuration or provide the lower layer part of the reference configuration to the candidate gNB-DU(s). If the gNB-CU determines to initiate the L1 event-triggered conditional LTM,it request the candidate gNB-DU(s) to generate the conditional L1 execution condition(s).

4. If the candidate gNB-DU accepts the request of LTM configuration, it responds with a UE CONTEXT SETUP RESPONSE message including the generated lower layer RRC configurations for the accepted target candidate cell.

NOTE 1: The CU-initiated UE Context Modification procedure may be initiated for preparing candidate cells in the source gNB-DU as specified in step 3 and 4 in 8.2.1.4 Intra-gNB-DU conditional LTM.

5. The gNB-CU sends a UE CONTEXT MODIFICATION REQUEST message to the source gNB-DU including the information related to early sync and the LTM configuration ID mapping list for the accepted target candidate cell(s). The gNB-CU may send the updated CSI resource configuration to the source gNB-DU. The gNB-CU may inform the source gNB-DU about intra-DU L2 reset configuration.

6. The source gNB-DU responds with a UE CONTEXT MODIFICATION RESPONSE message which includes an updated lower layer configuration, e.g., containing the updated CSI report configuration of the source cell.

7. The gNB-CU may send a UE CONTEXT MODIFICATION REQUEST message for each candidate cell accepted in the candidate gNB-DU(s), containing the information for subsequent conditiona LTM or for updating the configurations of candidate cells. The gNB-CU may also provide the lower layer part of the reference configuration to the candidate gNB-DU(s). The gNB-CU may inform the candidate gNB-DU(s) about intra-DU L2 reset configuration.

8. The candidate gNB-DU responds with a UE CONTEXT MODIFICATION RESPONSE message including the updated lower layer configuration, e.g., containing the updated CSI report configuration of the requested candidate cell.

NOTE 2: Step 7 may also be triggered after step 18 for subsequent conditional LTM.

9. The gNB-CU sends a DL RRC MESSAGE TRANSFER message to the source gNB-DU, which includes the generated *RRCReconfiguration* message with the conditional LTM configuration.

10. The source gNB-DU forwards the received *RRCReconfiguration* message to the UE.

11. The UE responds to the source gNB-DU with an *RRCReconfigurationComplete* message.

12. The source gNB-DU forwards the *RRCReconfigurationComplete* message to the gNB-CU via an UL RRC MESSAGE TRANSFER message.

13. Early TA acquisition to the candidate cell(s) may be performed as specified in TS 38.300 [2].

14. The candidate gNB-DU sends a DU-CU TA INFORMATION TRANSFER message to the gNB-CU, which includes the TA values, and the associated PRACH resource information.

15. The gNB-CU forwards the TA value and the associated PRACH resource information to the source gNB-DU in the CU-DU TA INFORMATION TRANSFER message.

16. The source gNB-DU sends the MAC CE to the UE.

17. The execution condition(s) to trigger initiation of conditional LTM is fulfilled.

18. Conditional LTM is executed.

*Editor’s note: RAN3 to discuss possible solutions on how to inform source DU that UE has left the source cell.*

19. The UE sends an *RRCReconfigurationComplete* message to the target gNB-DU.

20. The target gNB-DU forwards the *RRCReconfigurationComplete* message to the gNB-CU via an UL RRC MESSAGE TRANSFER message.

21. The gNB-CU may send the UE CONTEXT RELEASE COMMAND message to the source gNB-DU to release the resources of prepared cells.

22. The source gNB-DU responds with a UE CONTEXT RELEASE COMPLETE message.

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