3GPP TSG RAN WG3 Meeting #127 R3-250875

**Athens, Greece, 17 – 21 Feb, 2025**

**Agenda Item: 13.2**

**Source: ZTE Corporation, NEC**

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%3A%5C3GPPmeeting%5C202502%20RAN3%20127%5CInbox%5CR3-240808.zip)

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

# Text Proposal to TS38.401

=======================<Start of change>=================================

#### 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 intra-CU LTM. Figure 8.2.1.x-1 shows the intra-gNB-DU conditional intra-CU 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 intra-CU LTM configuration. The gNB-CU also determines to initiate either L1 event-triggered conditional intra-CU LTM or L3 event-triggered conditional intra-CU LTM.

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. The gNB-CU provides an indicator for conditional intra-CU LTM and an indicator for gNB-DU to generate conditional intra-CU LTM L1 execution condition.

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 intra-CU 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 intra-CU 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 including the TA value(s) and TAT value(s) related information of the candidate cell(s). (FFS, detail is to be refined by RAN2 progress)

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

14. Conditional intra-CU 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 intra-CU LTM. Figure 8.2.1.y-1 shows the inter-gNB-DU Conditional intra-CU LTM procedure for intra-NR.



Figure 8.2.1.y-1: Conditional intra-CU LTM (Intra-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 intra-CU LTM configuration. The gNB-CU also determines to initiate either L1 event-triggered conditional intra-CU LTM or L3 event-triggered conditional intra-CU LTM.

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 intra-CU 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). The gNB-CU provides an indicator for conditional intra-CU LTM and an indicator for gNB to generate conditional intra-CU LTM L1 execution condition.

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 intra-CU 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 conditional intra-CU 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 intra-CU 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 intra-CU 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 including the TA value(s) and TAT values information of the candidate cell(s) (FFS, detail is to be refined by RAN2 progress)

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

18. Conditional intra-CU 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.

======================<End of change>=================================