3GPP TSG-RAN WG3 Meeting #129 R3-255836

Bengaluru, India, 25th ~29th Aug, 2025

Title: (TP for LTM BLCR for TS38.473): Intra-CU conditional LTM

Agenda Item: 13.3

Source: Huawei, China Telecom, Nokia

Document for: Other

# 1 Introduction

This contribution contains a TP for LTM BLCR for TS38.473 for conditional LTM.

# 2 TP for LTM BLCR for TS38.473

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Start of changes\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

### 8.3.4 UE Context Modification (gNB-CU initiated)

#### 8.3.4.1 General

The purpose of the UE Context Modification procedure is to modify the established UE Context, e.g., establishing, modifying and releasing radio resources or sidelink resources. This procedure is also used to command the gNB-DU to stop data transmission for the UE for mobility (see TS 38.401 [4]). The procedure uses UE-associated signalling.

#### 8.3.4.2 Successful Operation



Figure 8.3.4.2-1: UE Context Modification procedure. Successful operation

The UE CONTEXT MODIFICATION REQUEST message is initiated by the gNB-CU.

<skip unchanged part>

**Interaction with UE Context Setup or UE Context Modification (gNB-CU initiated) procedures**

If the UE CONTEXT MODIFICATION REQUEST message is sent for a UE context set up for S-CPAC and contains the *Transmission Action Indicator* IE set to "stop", the gNB-DU shall, if supported, reset the UE context for the included *SpCell ID* IE, prepare for subsequent CPAC. The gNB-DU shall include the *SpCell ID* IE as the *Requested Target Cell ID* IE in the UE CONTEXT MODIFICATION RESPONSE message.

If the UE CONTEXT MODIFICATION REQUEST message is sent for a UE context set up for conditional LTM and contains the *Transmission Action Indicator* IE set to "stop", the gNB-DU shall, if supported, reset the UE context for the included *SpCell ID* IE, prepare for conditional LTM. The gNB-DU shall include the *SpCell ID* IE as the *Requested Target Cell ID* IE and the *TA Information List* IE in the UE CONTEXT MODIFICATION RESPONSE message.

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Next change\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

### 8.3.11 CU-DU Mobility Initiation

#### 8.3.11.1 General

The purpose of the CU-DU Mobility Initiation procedure is to trigger cell switch command and/or early synchronization for the UE. The procedure uses UE-associated signalling.

For the case of conditional LTM, this procedure is used to trigger the early synchronization for the UE.

#### 8.3.11.2 Successful Operation



Figure 8.3.11.2-1: CU-DU Mobility Initiation procedure. Successful operation.

The procedure is initiated with the CU-DU MOBILITY INITIATION REQUEST message sent from the gNB-CU to the gNB-DU. Upon receipt of this message,

- if the CU-DU MOBILITY INITIATION REQUEST message indicates Mobility Trigger, the gNB-DUshall trigger LTM procedure(s) accordingly.

- if the CU-DU MOBILITY INITIATION REQUEST message indicates Assistance Information, the gNB-DU shall take this information into account for triggering LTM procedure(s).

#### 8.3.11.3 Unsuccessful Operation

Not applicable.

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Next change\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

#### 9.2.2.2 UE CONTEXT SETUP RESPONSE

This message is sent by the gNB-DU to confirm the setup of a UE context.

Direction: gNB-DU → gNB-CU.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| gNB-CU UE F1AP ID | M |  | 9.3.1.4 |  | YES | reject |
| gNB-DU UE F1AP ID | M |  | 9.3.1.5 |  | YES | reject |
| DU To CU RRC Information | M |  | 9.3.1.26 |  | YES | reject |
| <skip unchanged part> |
| **Early Sync Information** |  | *0..1* |  |  | YES | ignore |
| >TCI States Configurations List | M |  | OCTET STRING | Includes the *LTM-TCI-Info*IE, as defined in TS 38.331 [8]. | - |  |
| >Early UL Sync Configuration | O |  | 9.3.1.328 |  | - |  |
| >Early UL Sync Configuration for SUL | O |  | Early UL Sync Configuration9.3.1.328 | This IE applies for SUL carrier. | - |  |
| **LTM Configuration** |  | *0..1* |  |  | YES | ignore |
| **>**SSB Information | M |  | 9.3.1.202 | Includes the SSB Information for the requested target cell. | - |  |
| >Reference Configuration Information | O |  | OCTET STRING | Includes the *CellGroupConfig* IE, as defined in TS 38.331 [8]. | - |  |
| >Complete Candidate Configuration Indicator | O |  | ENUMERATED (complete, ...) |  | - |  |
| >LTM CFRA Resource Configuration | O |  | OCTET STRING | Includes the *RACH-ConfigDedicated* IE, as defined in TS 38.331 [8]. | - |  |
| >LTM CFRA Resource Configuration for SUL | O |  | OCTET STRING | Includes the *RACH-ConfigDedicated* IE, as defined in TS 38.331 [8]. This IE applies for SUL carrier. | - |  |
| >L1 Execution Condition List | O |  | 9.3.1.XXX |  | - |  |
| >CSI-RS Resource Configuration | O |  | 9.3.1.x1 |  | - |  |
|  |  |  |  |  |  |  |
| **S-CPAC Configuration** |  | *0..1* |  |  | YES | ignore |
| >Reference Configuration Information | O |  | OCTET STRING | Includes the *CellGroupConfig* IE, as defined in TS 38.331 [8]. | - |  |
| >Complete Candidate Configuration Indicator | O |  | ENUMERATED (complete, ...) |  | - |  |

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#### 9.2.2.7 UE CONTEXT MODIFICATION REQUEST

This message is sent by the gNB-CU to provide UE Context information changes to the gNB-DU.

Direction: gNB-CU → gNB-DU

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| gNB-CU UE F1AP ID | M |  | 9.3.1.4 |  | YES | reject |
| gNB-DU UE F1AP ID | M |  | 9.3.1.5 |  | YES | reject |
| SpCell ID | O |  | NR CGI 9.3.1.12 | Special Cell as defined in TS 38.321 [16]. For handover case, this IE is considered as target cell. | YES | ignore |
| <skip unchanged part> |
| **LTM Information Modify** |  | *0..1* |  |  | YES | reject |
| >LTM Indicator | M |  | ENUMERATED (true, …, C-LTM) |  | - |  |
| >Reference Configuration | O |  | 9.3.1.292 |  | - |  |
| >CSI Resource Configuration | O |  | 9.3.1.330 |  | - |  |
| >Request for CSI-RS Resource Configuration | O |  | ENUMERATED (true, …) |  | - |  |
| >Request for L1 Execution Condition  | O |  | 9.3.1.x |  |  |  |
| **LTM CFRA Resource Config List** |  | *0..1* |  |  | YES | ignore |
| **>LTM CFRA Resource Config Item IEs** |  | *1 .. <maxnoofLTMCells>* |  |  | EACH | ignore |
| >>Cell ID | M |  | NR CGI9.3.1.12 |  | - |  |
| >>LTM CFRA Resource Configuration | O |  | OCTET STRING | Includes the *RACH-ConfigDedicated* IE, as defined in TS 38.331 [8]. | - |  |
| >>LTM CFRA Resource Configuration for SUL | O |  | OCTET STRING | Includes the *RACH-ConfigDedicated* IE, as defined in TS 38.331 [8]. This IE applies for SUL carrier. | - |  |
| LTM Configuration ID Mapping List | O |  | 9.3.1.294 |  | YES | reject |
| **Early Sync Information Request** |  | *0..1* |  |  | YES | ignore |
| >Request for RACH Configuration | M |  | ENUMERATED (true, …) |  | - |  |
| **>LTM gNB-DUs ID List** |  | *1* |  | This IE contains the IDs of the source gNB-DU and candidate gNB-DU(s). | YES | reject |
| **>>LTM gNB-DUs Item IEs** |  | *1..< maxnoofLTMgNBDUs>* |  |  | - |  |
| >>>LTM gNB-DU ID | M |  | gNB-DU ID9.3.1.9 |  | - |  |
| >>>LTM gNB ID | O |  | Global gNB ID 9.3.1.305 |  | - |  |
| **Early Sync Candidate Cell Information List** |  | *0..1* |  |  | YES | ignore |
| **>Early Sync Candidate Cell Information Item IEs** |  | *1 .. <maxnoofLTMCells>* |  |  | EACH | ignore |
| >>Cell ID | M |  | NR CGI9.3.1.12 |  | - |  |
| >>TCI States Configurations List | O |  | OCTET STRING | Includes the *LTM-TCI-Info*IE, as defined in TS 38.331 [8]. | - |  |
| >>Early UL Sync Configuration | O |  | 9.3.1.328 |  | - |  |
| >>Early UL Sync Configuration for SUL | O |  | Early UL Sync Configuration9.3.1.328 | This IE applies for SUL carrier. | - |  |
| >>TA Assistance Information | O |  | ENUMERATED (zero, …) | The value "zero" corresponds to TA value of the cell being equal to zero. | - |  |
| >>UE Based TA Measurement Configuration | O |  | OCTET STRING | Includes the *ltm-UE-MeasuredTA-ID* contained in the *LTM-Candidate* IE, as defined in TS 38.331 [8], for the LTM candidate cell identified by the *Cell ID* IE.  | - |  |
| >>SSB Positions In Burst | C-ifEarlyUL |  | 9.3.1.138 | This IE applies to early TA acquisition. | YES | ignore |
| **>>**TAT **Value List** |  | *0..1* |  | This IE indicates the TA timers of the cell. | YES | ignore |
| **>>>TAT Value Item IEs** |  | *1 .. <maxnoofTATValues>* |  |  | EACH | ignore |
| >>>>TA Value | M |  | INTEGER (0..4095) | Indicates the TA value as defined in TS 38.213 [31]. | - |  |
| >>>>TAT Value Remaining Time | M |  | ENUMERATED {ms500, ms750, ms1280, ms1920, ms2560, ms5120, ms10240, infinity} |  | - |  |
| >>>>Tag ID Pointer | M |  | OCTET STRING | Includes the *tag-Id-ptr* contained in the *TCI-UL-State* IE or the *TCI-State* IE, as defined in TS 38.331 [8]. |  |  |
| **Early Sync Serving Cell Information** |  | *0..1* |  |  | YES | ignore |
| >UE Based TA Measurement Configuration | O |  | OCTET STRING | Includes the *ltm-ServingCellUE-MeasuredTA-ID* contained in the *LTM-Config* IE, as defined in TS 38.331 [8], for the current serving cell.  | - |  |
| LTM Cells To Be Released List | O |  | 9.3.1.291 |  | YES | reject |
| Path Addition Information | O |  | 9.3.1.296 |  | YES | reject |
| NR A2X Services Authorized | O |  | 9.3.1.323 |  | YES | ignore |
| LTE A2X Services Authorized | O |  | 9.3.1.324 |  | YES | ignore |
| NR UE Sidelink Aggregate Maximum Bit Rate for A2X | O |  | NR UE Sidelink Aggregate Maximum Bit Rate9.3.1.119 | This IE applies only if the UE is authorized for NR A2X services. | YES | ignore |
| LTE UE Sidelink Aggregate Maximum Bit Rate for A2X | O |  | LTE UE Sidelink Aggregate Maximum Bit Rate9.3.1.118 | This IE applies only if the UE is authorized for LTE A2X services. | YES | ignore |
| DL LBT Failure Information Request | O |  | ENUMERATED (inquiry, …) |  | YES | ignore |
| Ranging and Sidelink Positioning Service Information | O |  | 9.3.1.331 | This IE applies only if the UE is authorized for NR V2X services and/or 5G ProSe services. | YES | ignore |
| Non-Integer DRX Cycle | O |  | 9.3.1.344 |  | YES | ignore |
| LTM Reset Information | O |  | 9.3.1.346 |  | YES | ignore |
| LTM Security Information | O |  | 9.3.1.XX |  | YES | reject |

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#### 9.2.2.8 UE CONTEXT MODIFICATION RESPONSE

This message is sent by the gNB-DU to confirm the modification of a UE context.

Direction: gNB-DU → gNB-CU.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| gNB-CU UE F1AP ID | M |  | 9.3.1.4 |  | YES | reject |
| gNB-DU UE F1AP ID | M |  | 9.3.1.5 |  | YES | reject |
|  <skip unchanged part> |
| **Early Sync Information** |  | *0..1* |  |  | YES | ignore |
| >TCI States Configurations List | M |  | OCTET STRING | Includes the *LTM-TCI-Info*IE, as defined in TS 38.331 [8]. | - |  |
| >Early UL Sync Configuration | O |  | 9.3.1.328 |  | - |  |
| >Early UL Sync Configuration for SUL | O |  | Early UL Sync Configuration9.3.1.328 | This IE applies for SUL carrier. | - |  |
| **LTM Configuration** |  | *0..1* |  |  | YES | ignore |
| >SSB Information | M |  | 9.3.1.202 | Includes the SSB Information for the requested target cell | - |  |
| >Reference Configuration Information | O |  | OCTET STRING | Includes the *CellGroupConfig* IE, as defined in TS 38.331 [8].  | - |  |
| >Complete Candidate Configuration Indicator | O |  | ENUMERATED (complete, ...) |  | - |  |
| >LTM CFRA Resource Configuration | O |  | OCTET STRING | Includes the *RACH-ConfigDedicated* IE, as defined in TS 38.331 [8]. | - |  |
| >LTM CFRA Resource Configuration for SUL | O |  | OCTET STRING | Includes the *RACH-ConfigDedicated* IE, as defined in TS 38.331 [8]. This IE applies for SUL carrier. | - |  |
| >L1 Execution Condition List | O |  | 9.3.1.XXX |  | - |  |
| >CSI-RS Resource Configuration | O |  | 9.3.1.x1 |  | - |  |
| **S-CPAC Configuration** |  | *0..1* |  |  | YES | ignore |
| >Reference Configuration Information | O |  | OCTET STRING | Includes the *CellGroupConfig* IE, as defined in TS 38.331 [8].  | - |  |
| >Complete Candidate Configuration Indicator | O |  | ENUMERATED (complete, ...) |  | - |  |
| **TA Information List** |  | *0..1* |  |  | YES | ignore |
| **>TA Information Item IEs** |  | *1 .. <maxnoofLTMCells>* |  |  | EACH | ignore |
| >>Cell ID | M |  | NR CGI9.3.1.12 |  | - |  |
| **>>TAT Value List** |  | *0..1* |  | This IE indicates the TA timers of the cell. | YES | ignore |
| **>>>TAT Value Item IEs** |  | *1 .. <maxnoofTATValues>* |  |  | EACH | ignore |
| >>>TA Value | M |  | INTEGER (0..4095) | Indicates the TA value as defined in TS 38.213 [31]. | - |  |
| >>>TAT Remaining Time | M |  | INTEGER (0..10240) | Unit: ms. | - |  |
| >>Tag ID Pointer | M |  | OCTET STRING | Includes the *tag-Id-ptr* contained in the *TCI-UL-State* IE or the *TCI-State* IE, as defined in TS 38.331 [8]. |  |  |

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#### 9.3.1.XXX L1 Execution Condition List

This IE indicates the list of conditional LTM L1 execution conditions to be used by the UE.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| **L1 Execution Condition Item IEs** |  | *1..< maxnoofLTMCells>* |  |  | - |  |
| >LTM Cell ID | M |  | NR CGI 9.3.1.12 |  | - |  |
| >Execution Condition | M |  | OCTET STRING | Includes the *LTM-CSI-ReportConfigId-r18* IE as defined in subclause 6.3.2 in TS 38.331 [8]. | - |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofLTMCells | Maximum no. of Cells configured LTM allowed towards one UE, the maximum value is 8. |

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LTMSecurityInformation ::= SEQUENCE{

 nextHopChainingCount INTEGER (0..7),

 securityChangeServCellConfig OCTET STRING OPTIONAL,

 securityChangeCandidateCellInfoList SecurityChangeCandidateCellInfoList OPTIONAL,

 iE-Extensions ProtocolExtensionContainer {{ LTMSecurityInformation-ExtIEs}} OPTIONAL

}

LTMSecurityInformation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {

 ...

}

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