**3GPP TSG-RAN WG3 Meeting #124R3-243800**

**Fukuoka, Japan, 20 – 24 May, 2024**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.473** | **CR** | **1385** | **rev** | **5** | **Current version:** | **18.1.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
|  | | | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **x** | Core Network |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | LTM corrections to F1AP | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, China Telecom, CATT, Google, Inc., Ericsson, Nokia, LG Electronics, ZTE, Lenovo | | | | | | | | | |
| ***Source to TSG:*** | R3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_Mob\_enh2-Core | | | | |  | ***Date:*** | | | 2024-05-24 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-18 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19) Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Some errors in LTM related content still exist in the specification, including:   * The IE type of Joint or DL TCI State ID IE and UL TCI State ID IE in the tabular of DU-CU CELL SWITCH NOTIFICATION and CU-DU CELL SWITCH NOTIFICATION should be OCTET STRING, rather than Integer. * To provide the necessary SSB information from the gNB-DU for the gNB-CU to generate the ltm-CSI-ResourceConfig, since a candidate cell can have one or more SSBs, to allow this flexibility, it is better to refer to the SSB information in the section 9.3.1.202 which can include a list of SSB Information Item. * The value of CompleteConfigurationIndicator IE in ASN.1 should be complete, rather than true. * The asn.1 for LTMCells-ToBeReleased-List is not optimal. There is no need to use single container for a ordinary list IE, the LTMCells-ToBeReleased-Item IE can be used directly. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | * Change the type of Joint or DL TCI State ID IE and UL TCI State ID IE from integer to octet string. * the SSB Information Item is changed to SSB Information and refers it to the 9.3.1.202 * Change the value of CompleteConfigurationIndicator IE in ASN.1 to “complete”. * Simplify the ASN.1 of the IE LTMCells-ToBeReleased-List. * Reword the semantics for the TCI sate ID related IEs.   Impact Analysis:  Impact assessment towards the previous version of the specification (same release):  This CR has no impact isolated impact with the previous version of the specification.  This CR has an impact under protocol point of view.  The impact can be considered isolated. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Errors exist in the specification. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 9.2.2.15, 9.2.2.16, 9.2.2.2, 9.2.2.8, 9.4.5, 9.4.7 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **x** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | Rev1, update based on the discusion in the meeing.  Rev2, add more co-souces and revision history in cover page.  Rev3, resubmit to RAN3 #124 meeting.  Rev4, merge changes from [R3-243527](file:///C:\Users\z00274494\AppData\Local\Temp\Rar$DIa2984.40473\Inbox\R3-243527.zip).  Rev5, updated based on the correct way of removing a protocol IE-ID. | | | | | | | | |

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

#### 9.2.2.15 DU-CU CELL SWITCH NOTIFICATION

This message is sent by the gNB-DU to inform the gNB-CU about the initiation of the cell switch command to the UE.

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 | ignore |
| gNB-CU UE F1AP ID | M |  | 9.3.1.4 |  | YES | reject |
| gNB-DU UE F1AP ID | M |  | 9.3.1.5 |  | YES | reject |
| Cell ID | M |  | NR CGI  9.3.1.12 |  | YES | reject |
| **LTM Cell Switch Information** |  | *0..1* |  |  | YES | ignore |
| >Joint or DL TCI State ID | O |  | OCTET STRING | Includes the *TCI-StateId* IE, as defined in TS 38.331 [8]. | - |  |
| >UL TCI State ID | O |  | OCTET STRING | Includes the *TCI-UL-StateId* IE, as defined in TS 38.331 [8]. |  |  |

#### 9.2.2.16 CU-DU CELL SWITCH NOTIFICATION

This message is sent by the gNB-CU to inform the gNB-DU about the initiation of the cell switch command to the UE.

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 | ignore |
| gNB-CU UE F1AP ID | M |  | 9.3.1.4 |  | YES | reject |
| gNB-DU UE F1AP ID | M |  | 9.3.1.5 |  | YES | reject |
| Cell ID | M |  | NR CGI  9.3.1.12 |  | YES | reject |
| **LTM Cell Switch Information** |  | *0..1* |  |  | YES | ignore |
| >Joint or DLTCI State ID | O |  | OCTET STRING | Includes the *TCI-StateId* IE, as defined in TS 38.331 [8]. | - | - |
| >UL TCI State ID | O |  | OCTET STRING | Includes the *TCI-UL-StateId* IE, as defined in TS 38.331 [8]. | - | - |

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*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 |
| <unchanged part skipped> | | | | | | |
| **Early Sync Information** |  | *0..1* |  |  | YES | ignore |
| >TCI States Configurations List | M |  | 9.3.1.293 |  | - |  |
| >Early UL Sync Configuration | O |  | 9.3.1.328 |  | - |  |
| >Early UL Sync Configuration for SUL | O |  | Early UL Sync Configuration  9.3.1.328 | 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 Configuration Indicator | O |  | ENUMERATED (complete, ...) |  | - |  |
| **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 Configuration Indicator | O |  | ENUMERATED (complete, ...) |  | - |  |

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

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 |
| <skipped unchanged part> | | | | | | |
| **Early Sync Information** |  | *0..1* |  |  | YES | ignore |
| >TCI States Configurations List | M |  | 9.3.1.293 |  | - |  |
| >Early UL Sync Configuration | O |  | 9.3.1.328 |  | - |  |
| >Early UL Sync Configuration for SUL | O |  | Early UL Sync Configuration  9.3.1.328 | 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 Configuration Indicator | O |  | ENUMERATED (complete, ...) |  | - |  |
| **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 Configuration Indicator | O |  | ENUMERATED (complete, ...) |  | - |  |

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

### 9.4.5 Information Element Definitions

-- ASN1START

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

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-- Information Element Definitions

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-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

F1AP-IEs {

itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)

ngran-access (22) modules (3) f1ap (3) version1 (1) f1ap-IEs (2) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

<skip unchanged part>

id-MobileAccessPointLocation,

id-SIB24-message,

id-PDUSetQoSParameters,

id-N6JitterInformation,

id-ECNMarkingorCongestionInformationReportingRequest,

id-ECNMarkingorCongestionInformationReportingStatus,

id-ERedcap-Bcast-Information,

id-NeedForInterruptionInfoNR,

id-SCPAC-Request,

id-MobileIAB-Barred,

id-F1UTunnelNotEstablished,

id-S-CPACLowerLayerReferenceConfigRequest,

id-MusimCandidateBandList,

id-PSIbasedSDUdiscardUL,

id-SIB22-message,

id-U2URLCChannelQoS,

id-SL-PHY-MAC-RLC-ConfigExt,

id-UL-RSCP,

id-BW-Aggregation-Request-Indication,

id-ReportingGranularitykminus1,

id-ReportingGranularitykminus1additionalpath,

id-ReportingGranularitykminus2,

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

CompleteConfigurationIndicator ::= ENUMERATED {complete, ...}

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

LTMConfiguration ::= SEQUENCE {

sSBInformation SSBInformation,

referenceConfigurationInformation ReferenceConfigurationInformation OPTIONAL,

completeConfigurationIndicator CompleteConfigurationIndicator OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { LTMConfiguration-ExtIEs } } OPTIONAL,

...

}

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

...

}

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

LTMCells-ToBeReleased-List ::= SEQUENCE (SIZE(1..maxnoofLTMCells)) OF LTMCells-ToBeReleased-Item

LTMCells-ToBeReleased-Item ::= SEQUENCE {

nRCGI NRCGI,

iE-Extensions ProtocolExtensionContainer { { LTMCells-ToBeReleased-ItemExtIEs } } OPTIONAL,

...

}

LTMCells-ToBeReleased-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {

...

}

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

### 9.4.7 Constant Definitions

<skip unchanged part>

id-LTMCells-ToBeReleased-List ProtocolIE-ID ::= 723

id-ProtocolIE-ID-724-not-to-be-used ProtocolIE-ID ::= 724

id-LTMConfiguration ProtocolIE-ID ::= 725

id-EarlySyncInformation-Request ProtocolIE-ID ::= 726

id-EarlySyncInformation ProtocolIE-ID ::= 727

<skip unchanged part>

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*End of changes\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/