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

**Fukuoka, Japan, 20 – 24 May, 2024**

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| --- |
| *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 |  |

|  |
| --- |
|  |
| ***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 canbe 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%3A%5CUsers%5Cz00274494%5CAppData%5CLocal%5CTemp%5CRar%24DIa2984.40473%5CInbox%5CR3-243527.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 CGI9.3.1.12 |  | 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 CGI9.3.1.12 |  | 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 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 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 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 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\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/