**3GPP TSG-RAN WG3 Meeting #123bis *R3-242184***

**Changsha, China, 15 – 19 April, 2024**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **37.483** | **CR** | **0111** | **rev** | **2** | **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:***  | Correction of handling GTP-U Error Indication |
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| ***Source to WG:*** | Huawei, Nokia, Ericsson, ZTE |
| ***Source to TSG:*** | R3 |
|  |  |
| ***Work item code:*** | NR\_newRAT-Core, TEI18 |  | ***Date:*** | 2024-04-18 |
|  |  |  |  |  |
| ***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-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* *Rel-20 (Release 20)* |
|  |  |
| ***Reason for change:*** | Per C4-235602, it was agreed that when the 5G-AN receives a GTP-U Error Indication over a NG-U tunnel that is not an indirect forwarding tunnel, the 5G-AN shall initiate a PDU Session Resource Notify procedure, and indicate the release is due to receiving a GTP-U Error Indication (also see the agreed CR in R3-241117). In the CU-CP/CU-UP split architecture, it is the gNB-CU-UP that receives a GTP-U Error Indication over a NG-U tunnel. Then the gNB-CU-UP should report to the gNB-CU-CP so that the gNB-CU CP can inform the SMF.  |
|  |  |
| ***Summary of change:*** | Introduce the User Plane Error Indicator when the gNB-CP-UP receives a GTP-U Error Indication over a NG-U tunnel.Impact Analysis:Impact assessment towards the previous version of the specification (same release):This CR has an isolated impact towards the previous version of the specification (same release) because it has an impact on the PDU Session Resource To Remove List initiated by the gNB-CU UP when the gNB-CU-UP receives a GTP-UE error indication over a NG-U tunnel. |
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| ***Consequences if not approved:*** | The gNB-CU CP cannot inform the SMF that the PDU session release is requested due to receiving a GTP-U Error Indication over NG-U.  |
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| ***Clauses affected:*** | 2, 8.3.3.2, 9.3.3.12, 9.4.5, 9.4.7 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specification  | TS 38.423 CR 1249 |
| ***affected:*** |  | **x** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **x** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** | Initial version: [R3-240379](file:///D%3A%5CMy_work%5CTSGR1-116-Meeting-20240220-Athens%5CRAN3-123-Athens%5CDocs%5CR3-240379.zip)Rev1: R3-241666 Make updates to introduce an explicit indicator IE, instead of cause value.  Update the cover page e.g., title, other specs affected etc. Rev2: R3-242184 Update the co-source.  |

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| **Change Begins** |

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

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[34] 3GPP TS 36.323: " Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Packet Data Convergence Protocol (PDCP) specification".

[35] 3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces; Stage 3".

[xx] 3GPP TS 23.527: "5G System; Restoration procedures”.

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### 8.3.3 Bearer Context Modification Required (gNB-CU-UP initiated)

#### 8.3.3.1 General

The purpose of the Bearer Context Modification Required procedure is to allow the gNB-CU-UP to modify a bearer context (e.g., due to local problems) and inform the gNB-CU-CP. The procedure uses UE-associated signalling.

#### 8.3.3.2 Successful Operation



Figure 8.3.3.2-1: Bearer Context Modification Required procedure: Successful Operation.

The gNB-CU-UP initiates the procedure by sending the BEARER CONTEXT MODIFICATION REQUIRED message to the gNB-CU-CP. The gNB-CU-CP replies with the BEARER CONTEXT MODIFICATION CONFIRM message.

If the *S1 DL UP Transport Layer Information* IE or the *NG DL UP Transport Layer Information* IE or the *Redundant NG DL UP Transport Layer Information* IE is contained in the BEARER CONTEXT MODIFICATION REQUIRED message, the gNB-CU-CP shall update the corresponding information.

If the *gNB-CU-UP Cell Group Related Configuration* IE is contained in the *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUIRED message, the gNB-CU-CP shall try to change the cell group related configuration accordingly. If the gNB-CU-CP is not able to update the requested cell group related configuration, it shall include the *Cell Group Information* IE with the current cell group configuration in the *DRB Modified List* IE in the BEARER CONTEXT MODIFICATION CONFIRM message.

If the *User Plane Error Indicator* IE is included in the *PDU Session Resource To Remove List* IE and is set to “GTP-U Error Indication Received” in the BEARER CONTEXT MODIFICATION REQUIRED message, the gNB-CU-CP shall, if supported, consider that the PDU session resource is released due to GTP-U Error Indication received over the NG-U tunnel and inform the SMF as specified in TS 23.527 [xx].

<<<<<<<<<<<<<<<<<<<< For Information Only >>>>>>>>>>>>>>>>>>>>

#### 9.2.2.7 BEARER CONTEXT MODIFICATION REQUIRED

This message is sent by the gNB-CU-UP to inform the gNB-CU-CP that a modification of a bearer context is required (e.g., due to local problems at the gNB-CU-UP).

Direction: gNB-CU-UP → gNB-CU-CP

| 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-CP UE E1AP ID | M |  | 9.3.1.4 |  | YES | reject |
| gNB-CU-UP UE E1AP ID | M |  | 9.3.1.5 |  | YES | reject |
| CHOICE *System* | M |  |  |  | YES | reject |
| *>E-UTRAN* |  |  |  |  |  |  |
| >>DRB To Modify List | O |  | DRB Required To Modify List E-UTRAN9.3.3.21 |  | YES | reject |
| >>DRB To Remove List | O |  | DRB Required To Remove List E-UTRAN9.3.3.22 |  | YES | reject |
| *>NG-RAN* |  |  |  |  |  |  |
| >>PDU Session Resource Required To Modify List | O |  | 9.3.3.23 |  | YES | reject |
| >>PDU Session Resource To Remove List | O |  | 9.3.3.12 |  | YES | reject |

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| --- | --- |
| Range bound | Explanation |
| maxnoofDRBs | Maximum no. of DRBs for a UE. Value is 32. |
| maxnoofPDUSessionResource  | Maximum no. of PDU Sessions for a UE. Value is 256. |

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#### 9.3.3.12 PDU Session Resource To Remove List

This IE contains PDU session resource to remove related information

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| **PDU Session Resource To Remove Item** |  | *1..<maxnoofPDUSessionResource>* |  |  | - | - |
| >PDU Session ID  | M |  | 9.3.1.21 |  | - | - |
| >Cause | O |  | 9.3.1.2 |  | YES | ignore |
| >User Plane Error Indicator | O |  | ENUMERATED(GTP-U Error Indication Received, …) |  | YES | ignore |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofPDUSessionResource  | Maximum no. of PDU Sessions for a UE. Value is 256. |

### 9.4.5 Information Element Definitions

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-- Information Element Definitions

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

E1AP-IEs {

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

ngran-access (22) modules (3) e1ap (5) version1 (1) e1ap-IEs (2) }

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 id-F1U-TNL-InfoAdded-List,

 id-F1U-TNL-InfoToAddOrModify-List,

 id-F1U-TNL-InfoAddedOrModified-List,

 id-F1U-TNL-InfoToRelease-List,

 id-BroadcastF1U-ContextReferenceE1,

 id-PSIbasedDiscardTimer,

 id-UserPlaneErrorIndicator,

 maxnoofMBSAreaSessionIDs,

 maxnoofSharedNG-UTerminations,

 maxnoofMRBs,

 maxnoofMBSSessionIDs,

 maxnoofQoSParaSets,

 maxnoofErrors,

 maxnoofSliceItems,

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PDU-Session-Resource-To-Modify-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 {ID id-SNSSAI CRITICALITY reject EXTENSION SNSSAI PRESENCE optional}|

 {ID id-CommonNetworkInstance CRITICALITY ignore EXTENSION CommonNetworkInstance PRESENCE optional }|

 {ID id-redundant-nG-UL-UP-TNL-Information CRITICALITY ignore EXTENSION UP-TNL-Information PRESENCE optional }|

 {ID id-RedundantCommonNetworkInstance CRITICALITY ignore EXTENSION CommonNetworkInstance PRESENCE optional }|

 {ID id-DataForwardingtoE-UTRANInformationList CRITICALITY ignore EXTENSION DataForwardingtoE-UTRANInformationList PRESENCE optional }|

 {ID id-SecurityIndicationModify CRITICALITY ignore EXTENSION SecurityIndication PRESENCE optional }|

 {ID id-Secondary-PDU-Session-Data-Forwarding-Information CRITICALITY ignore EXTENSION Data-Forwarding-Information PRESENCE optional },

 ...

}

PDU-Session-Resource-To-Remove-List ::= SEQUENCE (SIZE(1.. maxnoofPDUSessionResource)) OF PDU-Session-Resource-To-Remove-Item

PDU-Session-Resource-To-Remove-Item ::= SEQUENCE {

 pDU-Session-ID PDU-Session-ID,

 iE-Extensions ProtocolExtensionContainer { { PDU-Session-Resource-To-Remove-Item-ExtIEs } } OPTIONAL,

 ...

}

PDU-Session-Resource-To-Remove-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 {ID id-Cause CRITICALITY ignore EXTENSION Cause PRESENCE optional}|

 {ID id-UserPlaneErrorIndicator CRITICALITY ignore EXTENSION UserPlaneErrorIndicator PRESENCE optional},

 ...

}

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UplinkOnlyROHC ::= SEQUENCE {

 maxCID INTEGER (0..16383, ...),

 rOHC-Profiles INTEGER (0..511, ...),

 continueROHC ENUMERATED {true, ...} OPTIONAL,

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

}

UplinkOnlyROHC-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

URIaddress ::= VisibleString

UserPlaneErrorIndicator ::= ENUMERATED {

 gTP-U-error-indication-received,

 ...

}

UEInactivityInformation ::= INTEGER (1..7200, ...)

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### 9.4.7 Constant Definitions

-- ASN1START

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

--

-- Constant definitions

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

E1AP-Constants {

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

ngran-access (22) modules (3) e1ap (5) version1 (1) e1ap-Constants (4) }

<<<<<<<<<<<<<<<<<<<< Unmodified Text Omitted >>>>>>>>>>>>>>>>>>>>

id-F1U-TNL-InfoToAddOrModify-List ProtocolIE-ID ::= 210

id-F1U-TNL-InfoAddedOrModified-List ProtocolIE-ID ::= 211

id-F1U-TNL-InfoToRelease-List ProtocolIE-ID ::= 212

id-BroadcastF1U-ContextReferenceE1 ProtocolIE-ID ::= 213

id-PSIbasedDiscardTimer ProtocolIE-ID ::= 214

id-UserPlaneErrorIndicator ProtocolIE-ID ::= aaa

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| **Change Ends** |