**3GPP TSG-RAN WG3 Meeting #108-e *R3-204512***

**1-12 June 2020**

**Online**

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **38.463** | **CR** | **0490** | **rev** | **5** | **Current version:** | **16.1.1** |  |
|  |
| *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:***  | Baseline CR for introducing Rel-16 NR mobility enhancement |
|  |  |
| ***Source to WG:*** | Ericsson, Intel Corporation, NEC |
| ***Source to TSG:*** | R3 |
|  |  |
| ***Work item code:*** | NR\_Mob\_enh-Core |  | ***Date:*** | 2020-06-23 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-16 |
|  | *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-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
|  |  |
| ***Reason for change:*** | To capture agreements for Rel-16 NR mobility enhancement impact on E1AP |
|  |  |
| ***Summary of change:*** | * **RAN3#108:**
	+ Introduce a new class 2 procedure, intermediate EARLY FORWARDING TRANSFER to transfer the COUNT of the last PDCP SDU successfully received at the UE from source CU-UP to source CU-CP during Conditional Handover.
	+ **From R3-204332:** Add definitions and abbreviations for DAPS HO. Add the *DAPS Request Information* IE in PDU Session Resource To Setup List
	+ **From R3-204333:** Add definitions and abbreviations for CHO. Add the *CHO Initiation* IE in BEARER CONTEXT SETUP REQUEST message
	+ **From R3-204334:** Add new *Early Forwarding COUNT Request* IE to PDU Session Resource To Modify List. Add new *Early Forwarding COUNT Information* IE to PDU Session Resource To Modify List and PDU Session Resource Modified List
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|  |  |
| ***Consequences if not approved:*** | Rel-16 NR mobility enhancements are not supported on E1AP |
|  |  |
| ***Clauses affected:*** | 3.1, 3.2, 8.1, 8.3.1.2, 8.3.2.2, 8.3.x (new), 9.2.2.1, 9.2.2.x (new), 9.3.1.XX (new), 9.3.1.YY (new), 9.3.3.2, 9.3.3.11, 9.3.3.19, 9.4.3, 9.4.4, 9.4.5 and 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:*** | **Rev.5:** Capture agreements of RAN3#108-e:* R3-204332
* R3-204333
* R3-204334

**Rev.4:** Removing the target CU-CP -> target CU-UP part. Change PDU to SDU. Various minor corrections**Rev.3:** Change CR to BL CR. Add co-signer**Rev.2:** Resumission to RAN3#108-e. Only the autonoous reporting with class-2 procedure is kept**Rev.1:** Resumission to RAN3#107bis-e |

<<<<<<<<<<<<<<<<<<<< 1st Change >>>>>>>>>>>>>>>>>>>>

## 3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

Elementary Procedure**:** E1AP consists of Elementary Procedures (EPs). An Elementary Procedure is a unit of interaction between gNB-CU-CP and gNB-CU-UP. These Elementary Procedures are defined separately and are intended to be used to build up complete sequences in a flexible manner. If the independence between some EPs is restricted, it is described under the relevant EP description. Unless otherwise stated by the restrictions, the EPs may be invoked independently of each other as standalone procedures, which can be active in parallel. The usage of several E1AP EPs together is specified in stage 2 specifications (e.g., TS 38.460 [3]).

An EP consists of an initiating message and possibly a response message. Two kinds of EPs are used:

- **Class 1:** Elementary Procedures with response (success and/or failure).

- **Class 2:** Elementary Procedures without response.

For Class 1 EPs, the types of responses can be as follows:

Successful:

- A signalling message explicitly indicates that the elementary procedure successfully completed with the receipt of the response.

Unsuccessful:

- A signalling message explicitly indicates that the EP failed.

- On time supervision expiry (i.e., absence of expected response).

Successful and Unsuccessful:

- One signalling message reports both successful and unsuccessful outcome for the different included requests. The response message used is the one defined for successful outcome.

Class 2 EPs are considered always successful.

**Conditional handover:** as defined in TS 38.300 [4].

gNB: as defined in TS 38.300 [4].

gNB-CU: as defined in TS 38.401 [2].

gNB-DU: as defined in TS 38.401 [2].

gNB-CU-CP: as defined in TS 38.401 [2].

gNB-CU-UP: as defined in TS 38.401 [2].

PDU Session Resource: as defined in TS 38.401 [2].

UE-associated signalling: When E1AP messages associated to one UE uses the UE-associated logical E1-connection for association of the message to the UE in gNB-CU-UP and gNB-CU-CP.

UE-associated logical E1-connection:The UE-associated logical E1-connection uses the identities *GNB-CU-CP UE E1AP ID* and *GNB-CU-UP UE E1AP ID* according to the definition in TS 38.401 [2]. For a received UE associated E1AP message thegNB-CU-CP identifies the associated UE based on the *GNB-CU-CP UE E1AP ID* IE and the gNB-CU-UP identifies the associated UE based on the *GNB-CU-UP UE E1AP ID* IE.

DAPS Handover: as defined in TS 38.300 [4].

## 3.2 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [1] and the following apply.
An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [1].

5GC 5G Core Network

5QI 5G QoS Identifier

CGI Cell Global Identifier

CHO Conditional Handover

CN Core Network

CP Control Plane

DAPS Dual Active Protocol Stack

DL Downlink

EN-DC E-UTRA-NR Dual Connectivity

EPC Evolved Packet Core

MCG Master Cell Group

NSSAI Network Slice Selection Assistance Information

RANAC RAN Area Code

SCG Secondary Cell Group

SDAP Service Data Adaptation Protocol

S-NSSAI Single Network Slice Selection Assistance Information

TNLA Transport Network Layer Association

<<<<<<<<<<<<<<<<<<<< End of 1st Change >>>>>>>>>>>>>>>>>>>>

**-- TEXT OMITTED –**

<<<<<<<<<<<<<<<<<<<< 2nd Change >>>>>>>>>>>>>>>>>>>>

## 8.1 List of E1AP Elementary Procedures

In the following tables, all EPs are divided into Class 1 and Class 2 EPs (see subclause 3.1 for explanation of the different classes):

Table 1: Class 1 procedures

|  |  |  |  |
| --- | --- | --- | --- |
| **Elementary Procedure** | **Initiating Message** | **Successful Outcome** | **Unsuccessful Outcome** |
| **Response message** | **Response message** |
| Reset | RESET | RESET ACKNOWLEDGE |  |
| gNB-CU-UP E1 Setup | GNB-CU-UP E1 SETUP REQUEST | GNB-CU-UP E1 SETUP RESPONSE | GNB-CU-UP E1 SETUP FAILURE |
| gNB-CU-CP E1 Setup | GNB-CU-CP E1 SETUP REQUEST | GNB-CU-CP E1 SETUP RESPONSE | GNB-CU-CP E1 SETUP FAILURE |
| gNB-CU-UP Configuration Update | GNB-CU-UP CONFIGURATION UPDATE | GNB-CU-UP CONFIGURATION UPDATE ACKNOWLEDGE | GNB-CU-UP CONFIGURATION UPDATE FAILURE |
| gNB-CU-CP Configuration Update | GNB-CU-CP CONFIGURATION UPDATE | GNB-CU-CP CONFIGURATION UPDATE ACKNOWLEDGE | GNB-CU-CP CONFIGURATION UPDATE FAILURE |
| E1 Release  | E1 RELEASE REQUEST | E1 RELEASE RESPONSE |  |
| Bearer Context Setup | BEARER CONTEXT SETUP REQUEST | BEARER CONTEXT SETUP RESPONSE | BEARER CONTEXT SETUP FAILURE |
| Bearer Context Modification (gNB-CU-CP initiated) | BEARER CONTEXT MODIFICATION REQUEST | BEARER CONTEXT MODIFICATION RESPONSE | BEARER CONTEXT MODIFICATION FAILURE |
| Bearer Context Modification Required (gNB-CU-UP initiated) | BEARER CONTEXT MODIFICATION REQUIRED | BEARER CONTEXT MODIFICATION CONFIRM |  |
| Bearer Context Release (gNB-CU-CP initiated) | BEARER CONTEXT RELEASE COMMAND | BEARER CONTEXT RELEASE COMPLETE |  |

Table 2: Class 2 procedures

|  |  |
| --- | --- |
| **Elementary Procedure** | **Message** |
| Error Indication | ERROR INDICATION |
| Bearer Context Release Request (gNB-CU-UP initiated) | BEARER CONTEXT RELEASE REQUEST |
| Bearer Context Inactivity Notification  | BEARER CONTEXT INACTIVITY NOTIFICATION |
| DL Data Notification | DL DATA NOTIFICATION |
| UL Data Notification | UL DATA NOTIFICATION |
| Data Usage Report | DATA USAGE REPORT |
| gNB-CU-UP Counter Check | GNB-CU-UP COUNTER CHECK |
| gNB-CU-UP Status Indication | GNB-CU-UP STATUS INDICATION |
| MR-DC Data Usage Report | MR-DC DATA USAGE REPORT |
| Trace Start | TRACE START |
| Deactivate Trace | DEACTIVATE TRACE |
| Early Forwarding SN Transfer | EARLY FORWARDING SN TRANSFER |

<<<<<<<<<<<<<<<<<<<< End of 2nd Change >>>>>>>>>>>>>>>>>>>>

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<<<<<<<<<<<<<<<<<<<< 3rd Change >>>>>>>>>>>>>>>>>>>>

### 8.3.1 Bearer Context Setup

#### 8.3.1.1 General

The purpose of the Bearer Context Setup procedure is to allow the gNB-CU-CP to establish a bearer context in the gNB-CU-UP. The procedure uses UE-associated signalling.

#### 8.3.1.2 Successful Operation



Figure 8.3.1.2-1: Bearer Context Setup procedure: Successful Operation.

The gNB-CU-CP initiates the procedure by sending the BEARER CONTEXT SETUP REQUEST message to the gNB-CU-UP. If the gNB-CU-UP succeeds to establish the requested resources, it replies to the gNB-CU-CP with the BEARER CONTEXT SETUP RESPONSE message.

The gNB-CU-UP shall report to the gNB-CU-CP, in the BEARER CONTEXT SETUP RESPONSE message, the result for all the requested resources in the following way:

For E-UTRAN:

- A list of DRBs which are successfully established shall be included in the *DRB Setup List* IE;

- A list of DRBs which failed to be established shall be included in the *DRB Failed List* IE;

For NG-RAN:

- A list of PDU Session Resources which are successfully established shall be included in the *PDU Session Resource Setup List* IE;

- A list of PDU Session Resources which failed to be established shall be included in the *PDU Session Resource Failed List* IE;

- For each established PDU Session Resource, a list of DRBs which are successfully established shall be included in the *DRB Setup List* IE;

- For each established PDU Session Resource, a list of DRBs which failed to be established shall be included in the *DRB Failed List* IE;

- For each established DRB, a list of QoS Flows which are successfully established shall be included in the *Flow Setup List* IE;

- For each established DRB, a list of QoS Flows which failed to be established shall be included in the *Flow Failed List* IE;

When the gNB-CU-UP reports the unsuccessful establishment of a PDU Session Resource, DRB or QoS Flow the cause value should be precise enough to enable the gNB-CU-CP to know the reason for the unsuccessful establishment.

If the *Existing Allocated S1 DL UP Transport Layer Information* IE or the *Existing Allocated NG DL UP Transport Layer Information* IE is contained in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP may re-use the indicated resources already allocated for this bearer context. If the gNB-CU-UP decides to re-use the indicated resources, it shall include the *S1 DL UP Unchanged* IE or the *NG DL UP Unchanged* IE in the BEARER CONTEXT SETUP RESPONSE message.

If the *PDU Session Resource DL Aggregate Maximum Bit Rate* IE is contained in the *PDU Session Resource To Setup List* IE in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall store and use the information for the down link traffic policing for the Non-GBR QoS flows for the concerned UE as specified in TS 23.501 [20].

If the *Data Forwarding Information Request* IE, *PDU Session Data Forwarding Information Request* IE or the *DRB Data Forwarding Information Request* IE are included in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall include the requested forwarding information in the *Data Forwarding Information Response* IE, *PDU Session Data Forwarding Information Response* IE or the *DRB Data Forwarding Information Response* IE in the BEARER CONTEXT SETUP RESPONSE message.

If the *DL UP Parameters* IE is contained in the *DRB To Setup List* IE in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall configure the corresponding information.

For each PDU session for which the *Security Indication* IE is included in the *PDU Session Resource To Setup List* IE of the BEARER CONTEXT SETUP REQUEST message, and the *Integrity Protection Indication* IE or *Confidentiality Protection Indication* IE is set to "preferred", then the gNB-CU-UP should, if supported, perform user plane integrity protection or ciphering, respectively, for the concerned PDU session and shall notify whether it performed the user plane integrity protection or ciphering by including the *Integrity Protection Result* IE or *Confidentiality Protection Result* IE, respectively, in the *PDU Session Resource Setup List* IE of the BEARER CONTEXT SETUP RESPONSE message.

For each PDU session for which the *Security Indication* IE is included in the *PDU Session Resource To Setup List* IE of the BEARER CONTEXT SETUP REQUEST message, and the *Integrity Protection Indication* IE or *Confidentiality Protection Indication* IE is set to "required", then the gNB-CU-UP shall perform user plane integrity protection or ciphering, respectively, for the concerned PDU Session. If the gNB-CU-UP cannot perform the user plane integrity protection or ciphering, it shall reject the setup of the PDU Session Resources with an appropriate cause value.

For each PDU session for which the *Security Indication* IE is included in the *PDU Session Resource To Setup List* IE of the BEARER CONTEXT SETUP REQUEST message:

- if the *Integrity Protection Indication* IE is set to "not needed", then the gNB-CU-UP shall not perform user plane integrity protection for the concerned PDU session;

-if the *Confidentiality Protection Indication* IE is set to "not needed", then the gNB-CU-UP shall not perform user plane ciphering for the concerned PDU session.

If the *UE DL Maximum Integrity Protected Data Rate* IE is contained in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall use this value when enforcing the maximum integrity protected data rate for the UE.

If the *Bearer Context Status Change* IE is contained in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall consider the UE RRC state and act as specified in TS 38.401 [2].

For each requested DRB, if the *PDCP Duplication* IE is included in the *PDCP Configuration* IE contained in the BEARER CONTEXT SETUP REQUEST message, and one cell group is included in *Cell Group Information* IE, then the gNB-CU-UP shall include two *UP Transport Layer Information* IEs in the BEARER CONTEXT SETUP RESPONSE message to support packet duplication for intra-gNB-DU CA. The first *UP Transport Layer Information* IE of the two *UP Transport Layer Information* IEs is for the primary path.

If the *PDCP SN Status Information* IE is contained within the *DRB To Setup List* IE in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall take it into account and act as specified in TS 38.401 [2].

If the *QoS Flow Mapping Indication* IE is contained in the *QoS Flows Information To Be Setup* IE within the *DRB To Setup List* IE in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP may take it into account that only the uplink or downlink QoS flow is mapped to the DRB.

For each PDU Session Resource, if the *Network Instance* IE is included in the *PDU Session Resource To Setup List* IE in the BEARER CONTEXT SETUP REQUEST message and the *Common Network Instance* IE is not included, the gNB-CU-UP shall, if supported, use it when selecting transport network resource as specified in TS 23.501 [20].

For each PDU session, if the *Common Network Instance* IE is included in the *PDU Session Resource To Setup List* IE in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall, if supported, use it when selecting transport network resource as specified in TS 23.501 [20].

If *UE Inactivity Timer* IE or *PDU session Inactivity Timer* IE or *DRB Inactivity Timer* IE is contained in BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall take it into account when perform inactivity monitoring.

If the *DRB QoS* IE is contained within the *DRB To Setup List* IE in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall, if supported, take it into account as specified in TS 28.552 [22].

If the *gNB-DU-ID* IE is contained in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall store the information received.

If the *RAN UE ID* IE is contained in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall store the information received.

For each successfully established DRB, the gNB-CU-UP shall provide, in the respective *UL UP Parameters* IE of the BEARER CONTEXT SETUP RESPONSE, one UL UP Transport Layer Information Item per cell group entry contained in the respective *Cell Group Information* IE of the BEARER CONTEXT SETUP REQUEST message.

If the *Trace Activation* IE is included in the BEARER CONTEXT SETUP REQUEST message the gNB-CU-UP shall, if supported, initiate the requested trace function as described in TS 32.422 [24].

For EN-DC, if the *Subscriber Profile ID for RAT/Frequency priority* IE is included in the UE CONTEXT SETUP REQUEST, the gNB-CU-UP may use it to apply specific RRM policies as specified in TS 36.300 [25]. If the *Additional RRM Policy Index* IE is included in the UE CONTEXT SETUP REQUEST, the gNB-CU-UP may use it to apply specific RRM policies as specified in TS 36.300 [25].

For each QoS flow whose DRB has been successfully established and the *QoS Monitoring Request* IE was included in the *QoS Flow Level QoS Parameters* IE contained in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall store this information, and, if supported, perform delay measurement and QoS monitoring, as specified in TS 23.501 [20].

If the *DAPS Request Information* IE is included for a DRB to be setup in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall consider that the request concerns a DAPS handover for that DRB and, if admitted, act as specified in TS 38.300 [4].

If the *CHO Initiation* IE is contained in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall consider that the request concerns conditional handover and act as specified in TS 38.401 [2].

#### 8.3.1.3 Unsuccessful Operation



Figure 8.3.1.3-1: Bearer Context Setup procedure: Unsuccessful Operation.

If the gNB-CU-UP cannot establish the requested bearer context, or cannot even establish one bearer it shall consider the procedure as failed and respond with a BEARER CONTEXT SETUP FAILURE message and appropriate cause value.

#### 8.3.1.4 Abnormal Conditions

If the gNB-CU-UP receives a BEARER CONTEXT SETUP REQUEST message containing a *E-UTRAN QoS* IE in the *DRB To Setup List* IE for a GBR QoS DRB but where the *GBR QoS Information* IE is not present, the gNB-CU-UP shall report the establishment of the corresponding DRB as failed in the *DRB Failed List* IE of the BEARER CONTEXT SETUP RESPONSE message with an appropriate cause value.

If the gNB-CU-UP receives a BEARER CONTEXT SETUP REQUEST message containing a *QoS Flow Level QoS Parameters* IE in the *PDU Session Resource To Setup List* IE for a GBR QoS Flow but where the *GBR QoS Flow Information* IE is not present, the gNB-CU-UP shall report the establishment of the corresponding QoS Flow as failed in the corresponding *Flow Failed List* IE of the BEARER CONTEXT SETUP RESPONSE message with an appropriate cause value.

### 8.3.2 Bearer Context Modification (gNB-CU-CP initiated)

#### 8.3.2.1 General

The purpose of the Bearer Context Modification procedure is to allow the gNB-CU-CP to modify a bearer context in the gNB-CU-UP. The procedure uses UE-associated signalling.

#### 8.3.2.2 Successful Operation



Figure 8.3.2.2-1: Bearer Context Modification procedure: Successful Operation.

The gNB-CU-CP initiates the procedure by sending the BEARER CONTEXT MODIFICATION REQUEST message to the gNB-CU-UP. If the gNB-CU-UP succeeds to modify the bearer context, it replies to the gNB-CU-CP with the BEARER CONTEXT MODIFICATION RESPONSE message.

The gNB-CU-UP shall report to the gNB-CU-CP, in the BEARER CONTEXT MODIFICATION RESPONSE message, the result for all the requested resources in the following way:

For E-UTRAN:

- A list of DRBs which are successfully established shall be included in the *DRB Setup List* IE;

- A list of DRBs which failed to be established shall be included in the *DRB Failed List* IE;

- A list of DRBs which are successfully modified shall be included in the *DRB Modified List* IE;

- A list of DRBs which failed to be modified shall be included in the *DRB Failed To Modify List* IE;

For NG-RAN:

- A list of PDU Session Resources which are successfully established shall be included in the *PDU Session Resource Setup List* IE;

- A list of PDU Session Resources which failed to be established shall be included in the *PDU Session Resource Failed List* IE;

- A list of PDU Session Resources which are successfully modified shall be included in the *PDU Session Resource Modified List* IE;

- A list of PDU Session Resources which failed to be modified shall be included in the *PDU Session Resource Failed To Modify List* IE;

- For each successfully established or modified PDU Session Resource, a list of DRBs which are successfully established shall be included in the *DRB Setup List* IE;

- For each successfully established or modified PDU Session Resource, a list of DRBs which failed to be established shall be included in the *DRB Failed List* IE;

- For each successfully modified PDU Session Resource, a list of DRBs which are successfully modified shall be included in the *DRB Modified List* IE;

- For each successfully modified PDU Session Resource, a list of DRBs which failed to be modified shall be included in the *DRB Failed To Modify List* IE;

- For each successfully established or modified DRB, a list of QoS Flows which are successfully established shall be included in the *Flow Setup List* IE;

- For each successfully established or modified DRB, a list of QoS Flows which failed to be established shall be included in the *Flow Failed List* IE;

When the gNB-CU-UP reports the unsuccessful establishment of a PDU Session Resource, DRB or QoS Flow the cause value should be precise enough to enable the gNB-CU-CP to know the reason for the unsuccessful establishment.

If the *Security Information* IE is contained in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall update the corresponding information.

If the *UE DL Aggregate Maximum Bit Rate* IE is contained in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall update the corresponding information.

If the *UE DL Maximum Integrity Protected Data Rate* IE is contained in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall update the corresponding information.

If the *Bearer Context Status Change* IE is contained in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall consider the UE RRC state and act as specified in TS 38.401 [2].

If the *Data Forwarding Information Request* IE, *PDU Session Data Forwarding Information Request* IE or the *DRB Data Forwarding Information Request* IE are included in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall include the requested forwarding information in the *Data Forwarding Information Response* IE, *PDU Session Data Forwarding Information Response* IE or the *DRB Data Forwarding Information Response* IE in the BEARER CONTEXT MODIFICATION RESPONSE message.

If the *PDCP Configuration* IE is contained in the *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall update the corresponding information, except for the *PDCP SN UL Size* IE, the *PDCP SN DL Size* IE and the *RLC mode* IE which shall be ignored.

If the *E-UTRAN QoS* IE is contained in the *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall update the corresponding information.

If the *PDCP SN Status Request* IE is contained in the *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall act as specified in TS 38.401 [2] and include the *UL COUNT Value* IE and the *DL COUNT Value* IE in the BEARER CONTEXT MODIFICATION RESPONSE message.

If the *PDCP SN Status Information* IE is contained in the *DRB To Setup List* IE or the *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall take it into account and act as specified in TS 38.401 [2].

If the *DL UP Parameters* IE is contained in the *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall update the corresponding information.

If the *Cell Group To Add* IE or the *Cell Group To Modify* IE or the *Cell Group To Remove* IE is contained in the *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall add or modify or remove the corresponding cell group.

If the *PDU Session Resource DL Aggregate Maximum Bit Rate* IE is contained in the *PDU Session Resource To Setup List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall replace the information in the UE context and use it when enforcing downlink traffic policing for the non GBR QoS flows for the concerned UE, as specified in TS 23.501 [20].

If the *PDU Session Resource DL Aggregate Maximum Bit Rate* IE is contained in the *PDU Session Resource To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall update the corresponding information.

If the *SDAP Configuration* IE is contained in the *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall update the corresponding information.

If the *Flow Mapping Information* IE is contained in the *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall update the corresponding information.

For each requested DRB, if the *PDCP Duplication* IE is included in the *PDCP Configuration* IE contained in the BEARER CONTEXT MODIFICATION REQUEST message, and one cell group is included in *Cell Group Information* IE, then the gNB-CU-CP shall include two *UP Transport Layer Information* IEs in the BEARER CONTEXT MODIFICATION REQUEST message, and the gNB-CU-UP shall also include two *UP Transport Layer Information* IEs in the BEARER CONTEXT MODIFICATION RESPONSE message to support packet duplication for intra-gNB-DU CA. The first *UP Transport Layer Information* IE of the two *UP Transport Layer Information* IEs is for the primary path.

For a certain DRB which was allocated with two GTP-U tunnels, if such DRB is modified and given one GTP-U tunnel via the Bearer Context Modification (gNB-CU-CP initiated) procedure, i.e. only one UP Transport Layer Information per Cell Group ID is present in *DL UP Parameters* IE for the concerned DRB, then the gNB-CU-UP shall consider that PDCP duplication is deconfigured for this DRB. If such Bearer Context Modification (gNB-CU-CP initiated) procedure occurs, the *Duplication Activation* IE shall not be included for the concerned DRB.

If the *New UL TNL Information Required* IE is contained in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall include the new UP Transport Layer Information in the BEARER CONTEXT MODIFICATION RESPONSE message.

For each PDU session for which the *Security Indication* IE is included in the *PDU Session Resource To Setup List* IE of the BEARER CONTEXT MODIFICATION REQUEST message, and the *Integrity Protection Indication* IE or *Confidentiality Protection Indication* IE is set to "preferred", then the gNB-CU-UP should, if supported, perform user plane integrity protection or ciphering, respectively, for the concerned PDU session and shall notify whether it performed the user plane integrity protection or ciphering by including the *Integrity Protection Result* IE or *Confidentiality Protection Result* IE, respectively, in the *PDU Session Resource Setup List* IE of the BEARER CONTEXT MODIFICATION RESPONSE message.

For each PDU session for which the *Security Indication* IE is included in the *PDU Session Resource To Setup List* IE of the BEARER CONTEXT MODIFICATION REQUEST message, and the *Integrity Protection Indication* IE or *Confidentiality Protection Indication* IE is set to "required", then the gNB-CU-UP shall perform user plane integrity protection or ciphering, respectively, for the concerned PDU Session. If the gNB-CU-UP cannot perform the user plane integrity protection or ciphering, it shall reject the setup of the PDU Session Resources with an appropriate cause value.

For each PDU session for which the Security Indication IE is included in the *PDU Session Resource To Setup List* of the BEARER CONTEXT MODIFICATION REQUEST message:

- if the *Integrity Protection Indication* IE is set to "not needed", then the gNB-CU-UP shall not perform user plane integrity protection for the concerned PDU session;

-if the *Confidentiality Protection Indication* IE is set to "not needed", then the gNB-CU-UP shall not perform user plane ciphering for the concerned PDU session.

For each PDU Session Resource, if the *Network Instance* IE is included in the *PDU Session Resource To Setup List* IE or the *PDU Session Resource To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message and the *Common Network Instance* IE is not included, the gNB-CU-UP shall, if supported, use it when selecting transport network resource as specified in TS 23.501 [20].

For each PDU session, if the *Common Network Instance* IE is included in the *PDU Session Resource To Setup List* IE or the *PDU Session Resource To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, use it when selecting transport network resource as specified in TS 23.501 [20].

If the *QoS Flow Mapping Indication* IE is contained in the *QoS Flow QoS Parameters List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, replace any previously received value and take it into account that only the uplink or downlink QoS flow is mapped to the DRB.

If the *Data Discard Required* IE is contained in the BEARER CONTEXT MODIFICATION REQUEST message and the value is set to “Required”, the gNB-CU-UP shall consider that a RAN Paging Failure occurred for that UE. The gNB-CU-UP shall discard the user plane data for that UE and consider that the bearer context is still suspended.

If *UE Inactivity Timer* IE or *PDU session Inactivity Timer* IE or *DRB Inactivity Timer* IE is contained in BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall take it into account when perform inactivity monitoring.

If the *S-NSSAI* IE is contained in the *PDU Session Resource To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall store the corresponding information and replace any existing information.

If the *DRB QoS* IE is contained within the *DRB To Setup List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, take it into account for each DRB, as specified in TS 28.552 [22].

If the *DRB QoS* IE is contained within the *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, replace any previously received value and take it into account for each DRB, as specifed in TS 28.552 [22].

If the *gNB-DU-ID* IE is contained in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall store and replace any previous information received.

If the *RAN UE ID* IE is contained in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall store and replace any previous information received.

If the gNB-CU-UP receives a BEARER CONTEXT MODIFICATION REQUEST message including *Activity Notification Level* IE and its value does not match the current bearer context, the gNB-CU-UP shall ignore the *Activity Notification Level* IE and also the requested modification of inactivity timer.

For each successfully established DRB, the gNB-CU-UP shall provide, in the respective *UL UP Parameters* IE of the BEARER CONTEXT MODIFICATION RESPONSE, one UL UP Transport Layer Information Item per cell group entry contained in the respective *Cell Group Information* IE of the BEARER CONTEXT MODIFICATION REQUEST message.

If the *Old QoS Flow List - UL End Marker expected* IE is included in the *PDU Session Resource To Modify List* IE of the BEARER CONTEXT MODIFICATION REQUEST message for a DRB to be modified, the gNB-CU-UP shall consider that the source NG-RAN node has initiated QoS flow re-mapping and has not yet received SDAP end markers, as described in TS 38.300 [8]. The gNB-CU-UP shall consider that the *Old QoS Flow List - UL End Marker expected* IE only contains UL QoS flow information for QoS flows for which no SDAP end marker has been yet received on the source side.

For EN-DC, if the *Subscriber Profile ID for RAT/Frequency priority* IE is included in the UE CONTEXT MODIFICATION REQUEST, the gNB-CU-UP may use it to apply specific RRM policies as specified in TS 36.300 [25]. If the *Additional RRM Policy Index* IE is included in the UE CONTEXT MODIFICATION REQUEST, the gNB-CU-UP may use it to apply specific RRM policies as specified in TS 36.300 [25].

If there is at least one DRB removed by the gNB-CU-UP, the gNB-CU-UP shall, if supported, include the *Retainability Measurements Information* IE in the BEARER CONTEXT MODIFICATION RESPONSE message, providing information on the removed DRB(s) for retainability measurements in the gNB-CU-CP, as described in TS 32.425 [26] and TS 28.552 [22].

For each QoS flow whose DRB has been successfully established or modified and the *QoS Monitoring Request* IE was included in the *QoS Flow Level QoS Parameters* IE contained in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall store this information, and, if supported, perform delay measurement and QoS monitoring, as specified in TS 23.501 [20].

If the *Early Forwarding COUNT Request* IE is contained in the *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall act as specified in TS 38.401 [2] and include the requested *FIRST DL COUNT Value* IE or *DISCARD DL COUNT Value* IE in the BEARER CONTEXT MODIFICATION RESPONSE message.

If the *Early Forwarding COUNT Information* IE is contained in the *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall take it into account and act as specified in TS 38.401 [2].

#### 8.3.2.3 Unsuccessful Operation



Figure 8.3.2.3-1: Bearer Context Modification procedure: Unsuccessful Operation.

If the gNB-CU-UP cannot successfully perform any of the requested bearer context modifications, it shall respond with a BEARER CONTEXT MODIFICATION FAILURE message and appropriate cause value.

#### 8.3.2.4 Abnormal Conditions

If the gNB-CU-UP receives a BEARER CONTEXT MODIFICATION REQUEST message containing a *E-UTRAN QoS* IE in the *DRB To Setup List* or the *DRB To Modify List* IE for a GBR QoS DRB but where the *GBR QoS Information* IE is not present, the gNB-CU-UP shall report the addition or the modification of the corresponding DRB as failed in the *DRB Failed List* IE or the *DRB Failed To Modify List* IE of the BEARER CONTEXT MODIFICATION RESPONSE message with an appropriate cause value.

If the gNB-CU-UP receives a BEARER CONTEXT MODIFICATION REQUEST message containing a *QoS Flow Level QoS Parameters* IE in the *PDU Session Resource To Setup List* IE or the *PDU Session Resource To Modify List* IE for a GBR QoS Flow but where the *GBR QoS Flow Information* IE is not present, the gNB-CU-UP shall report the addition or the modification of the corresponding QoS Flow as failed in the corresponding *Flow Failed List* IE of the BEARER CONTEXT MODIFICATION RESPONSE message with an appropriate cause value.

<<<<<<<<<<<<<<<<<<<< End of 3rd Change >>>>>>>>>>>>>>>>>>>>

**-- TEXT OMITTED –**

<<<<<<<<<<<<<<<<<<<< 4th Change >>>>>>>>>>>>>>>>>>>>

### 8.3.x Early Forwarding SN Transfer

#### 8.3.x.1 General

The purpose of the Early Forwarding SN Transfer procedure is to transfer, from the source gNB-CU-UP to the source gNB-CU-CP, DL COUNT of the last PDCP SDU successfully delivered or transmitted to the UE, for the purpose of discarding early forwarded downlink PDCP SDUs during Conditional Handover.

The procedure uses UE-associated signalling.

#### 8.3.x.2 Successful Operation



Figure 8.3.7.x-1: Early Forwarding SN Transfer procedure: Successful Operation.

The source gNB-CU-UP initiates the procedure by sending the EARLY FORWARDING SN TRANSFER message.

The *DRBs Subject To Early Forwarding List* IE included in the EARLY FORWARDING SN TRANSFER message contains the DRB ID(s) corresponding to the DRB(s) subject to early data forwarding during Conditional Handover.

For each DRB in the *DRBs Subject To Early Forwarding List* IE, the value of the *DL COUNT Value* IE indicates the DL COUNT of the last PDCP SDU successfully delivered in-sequence to the UE, if RLC-AM, and successfully transmitted, if RLC-UM.

#### 8.3.x.3 Unsuccessful Operation

Not applicable.

#### 8.3.x.4 Abnormal Conditions

If the source gNB-CU-CP receives this message for a UE for which no prepared Conditional Handover exists, the source gNB-CU-CP shall ignore the message.

<<<<<<<<<<<<<<<<<<<< End of 4th Change >>>>>>>>>>>>>>>>>>>>

**-- TEXT OMITTED –**

<<<<<<<<<<<<<<<<<<<< 5th Change >>>>>>>>>>>>>>>>>>>>

#### 9.2.2.1 BEARER CONTEXT SETUP REQUEST

This message is sent by the gNB-CU-CP to request the gNB-CU-UP to setup a bearer context.

Direction: gNB-CU-CP → gNB-CU-UP

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **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 |
| Security Information | M |  | 9.3.1.10 |  | YES | reject |
| UE DL Aggregate Maximum Bit Rate | M |  | Bit Rate 9.3.1.20 |  | YES | reject |
| UE DL Maximum Integrity Protected Data Rate | O |  | Bit Rate 9.3.1.20 | The Bit Rate is a portion of the UE’s Maximum Integrity Protected Data Rate, and is enforced by the gNB-CU-UP node. | YES | reject |
| Serving PLMN | M |  | PLMN Identity 9.3.1.7 |  | YES | ignore |
| Activity Notification Level | M |  | 9.3.1.67 |  | YES | reject |
| UE Inactivity Timer | O |  | Inactivity Timer 9.3.1.54 | Included if the Activity Notification Level is set to UE.  | - | - |
| Bearer Context Status Change | O |  | ENUMERATED (Suspend, Resume, …) | Indicates the status of the Bearer Context | YES | reject |
| CHOICE *System* | M |  |  |  | YES | reject |
| *>E-UTRAN* |  |  |  |  |  |  |
| >>DRB To Setup List | M |  | DRB To Setup List E-UTRAN 9.3.3.1 |  | YES | reject |
| >>Subscriber Profile ID for RAT/Frequency priority | O |  | 9.3.1.69 |  | YES | ignore |
| >>Additional RRM Policy Index | O |  | 9.3.1.70 |  | YES | Ignore |
| *>NG-RAN* |  |  |  |  |  |  |
| >>PDU Session Resource To Setup List | M |  | 9.3.3.2 |  | YES | reject |
| RAN UE ID | O |  | OCTET STRING (SIZE(8)) |  | YES | ignore |
| gNB-DU ID | O |  | 9.3.1.65 | Included whenever it is known by the gNB-CU-CP  | YES | ignore |
| Trace Activation | O |  | 9.3.1.68 |  | YES | ignore |
| CHO Initiation | O |  | ENUMERATED (True, …) |  | YES | reject |

|  |  |
| --- | --- |
| **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. |

<<<<<<<<<<<<<<<<<<<< End of 5th Change >>>>>>>>>>>>>>>>>>>>

**-- TEXT OMITTED –**

<<<<<<<<<<<<<<<<<<<< 6th Change >>>>>>>>>>>>>>>>>>>>

#### 9.2.2.x EARLY FORWARDING SN TRANSFER

This message is sent by the source gNB-CU-UP to the source gNB-CU-CP to transfer the COUNT value(s) related to early forwarded downlink PDCP SDUs during Conditional Handover.

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 |
| DRBs Subject To Early Forwarding List | M | *1* |  |  | YES | reject |
| >DRBs Subject To Early Forwarding Item |  | *1 .. <maxnoofDRBs>* |  |  | - | - |
| >>DRB ID | M |  | 9.3.1.16 |  | - | - |
| >>DL COUNT Value | M |  | PDCP Count9.3.1.35 | PDCP-SN and Hyper frame number of the last DL SDU successfully delivered in sequence to the UE, if RLC-AM, and successfully transmitted, if RLC-UM. | - | - |

<<<<<<<<<<<<<<<<<<<< End of 6th Change >>>>>>>>>>>>>>>>>>>>

**-- TEXT OMITTED –**

<<<<<<<<<<<<<<<<<<<< 7th Change >>>>>>>>>>>>>>>>>>>>

### 9.3.1.XX DAPS Request Information

The *DAPS Indicator* IE indicates that DAPS HO is requested for the concerned DRB.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| DAPS Indicator | M |  | ENUMERATED (DAPS HO required, …) | Indicates that DAPS HO is requested |

#### 9.3.1.YY Early Forwarding COUNT Information

This IE contains DL COUNT value related to early data forwarding during DAPS Handover or Conditional Handover.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| CHOICE *Early Forwarding* | M |  |  |  |
| *>First DL COUNT* |  |  |  |  |
| >> FIRST DL COUNT Value | M |  | PDCP Count9.3.1.35 | PDCP-SN and Hyper frame number of the first DL SDU that the source NG-RAN node forwards to the target NG-RAN node |
| *>DL Discarding* |  |  |  |  |
| >>DISCARD DL COUNT Value | M |  | PDCP Count9.3.1.35 | PDCP-SN and Hyper frame number for which the target NG-RAN node should discard forwarded DL SDUs associated with lower values. |

<<<<<<<<<<<<<<<<<<<< End of 7th Change >>>>>>>>>>>>>>>>>>>>

**-- TEXT OMITTED –**

<<<<<<<<<<<<<<<<<<<< 8th Change >>>>>>>>>>>>>>>>>>>>

#### 9.3.3.2 PDU Session Resource To Setup List

This IE contains PDU session resource related information used at Bearer Context Setup Request

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| **PDU Session Resource To Setup Item** |  | *1..<maxnoofPDUSessionResource>* |  |  | - | - |
| >PDU Session ID  | M |  | 9.3.1.21 |  | - | - |
| >PDU Session Type  | M |  | 9.3.1.22 |  | - | - |
| >S-NSSAI  | M |  | 9.3.1.9 |  | - | - |
| >Security Indication  | M |  | 9.3.1.23 |  | - | - |
| >PDU Session Resource DL Aggregate Maximum Bit Rate | O |  | Bit Rate9.3.1.20 | This IE shall be present when at least one Non-GBR QoS Flows is being setup. | - | - |
| >NG UL UP Transport Layer Information | M |  | UP Transport Layer Information9.3.2.1 |  | - | - |
| >PDU Session Data Forwarding Information Request | O |  | Data Forwarding Information Request 9.3.2.5 |  | - | - |
| >PDU Session Inactivity Timer | O |  | Inactivity Timer 9.3.1.54 | Included if the Activity Notification Level is set to PDU Session. | - | - |
| >Existing Allocated NG DL UP Transport Layer Information | O |  | UP Transport Layer Information9.3.2.1 |  | - | - |
| >Network Instance | O |  | 9.3.1.62 | This IE is ignored if the *Common Network Instance* IE is included. | YES | ignore |
| >Common Network Instance | O |  | 9.3.1.66 |  | YES | ignore |
| **>DRB To Setup List** |  | *1* |  |  | - | - |
| **>>DRB To Setup Item**  |  | *1..<maxnoofDRBs>* |  |  | - | - |
| >>>DRB ID | M |  | 9.3.1.16 |  | - | - |
| >>>SDAP Configuration | M  |  | 9.3.1.39 |  | - | - |
| >>>PDCP Configuration | M |  | 9.3.1.38 |  | - | - |
| >>>Cell Group Information | M |  | 9.3.1.11 |  | - | - |
| >>>QoS Flows Information To Be Setup | M |  | QoS Flow QoS Parameters List9.3.1.25 |  | - | - |
| >>>DRB Data forwarding information Request | O |  | Data Forwarding Information Request 9.3.2.5 | Requesting forwarding info from the target gNB-CU-UP. | - | - |
| >>>DRB Inactivity Timer | O |  | Inactivity Timer 9.3.1.54 | Included if the Activity Notification Level is set to DRB. | - | - |
| >>>PDCP SN Status Information | O |  | 9.3.1.58 | Contains the PDCP SN Status at setup after Resume. | - | - |
| >>>DRB QoS | O |  | 9.3.1.26 | Indicates the DRB QoS when more than one QoS Flow is mapped to the DRB. | YES | ignore |
| >>>DAPS Request Information | O |  | 9.3.1.XX |  | YES | ignore |

|  |  |
| --- | --- |
| 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. |

<<<<<<<<<<<<<<<<<<<< End of 8th Change >>>>>>>>>>>>>>>>>>>>

**-- TEXT OMITTED –**

<<<<<<<<<<<<<<<<<<<< 9th Change >>>>>>>>>>>>>>>>>>>>

#### 9.3.3.11 PDU Session Resource To Modify List

This IE contains PDU session resource to modify related information used at Bearer Context Modification Request

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| **PDU Session Resource To Modify Item** |  | *1..<maxnoofPDUSessionResource>* |  |  | - | - |
| >PDU Session ID  | M |  | 9.3.1.21 |  | - | - |
| >Security Indication  | O |  | 9.3.1.23 | This IE is not used in this release. | - | - |
| >PDU Session Resource DL Aggregate Maximum Bit Rate | O |  | Bit Rate 9.3.1.20 |  | - | - |
| >NG UL UP Transport Layer Information | O |  | UP Transport Layer Information9.3.2.1 |  | - | - |
| >PDU Session Data Forwarding Information Request | O |  | Data Forwarding Information Request 9.3.2.5 | Requesting forwarding information from the target gNB-CU-UP. | - | - |
| >PDU Session Data Forwarding Information | O |  | Data Forwarding Information 9.3.2.6 | Providing forwarding information to the source gNB-CU-UP. | - | - |
| >PDU Session Inactivity Timer | O |  | Inactivity Timer 9.3.1.54 | Included if the Activity Notification Level is set to PDU Session. | - | - |
| >Network Instance | O |  | 9.3.1.62 | This IE is ignored if the *Common Network Instance* IE is included. | YES | ignore |
| >Common Network Instance | O |  | 9.3.1.66 |  | YES | ignore |
| **>DRB To Setup List** |  | *0..1* |  |  | - | - |
| **>>DRB To Setup Item**  |  | *1..<maxnoofDRBs>* |  |  | - | - |
| >>>DRB ID | M |  | 9.3.1.16 |  | - | - |
| >>>SDAP Configuration | M |  | 9.3.1.39 |  | - | - |
| >>>PDCP Configuration | M |  | 9.3.1.38 |  | - | - |
| >>>Cell Group Information | M |  | 9.3.1.11 |  | - | - |
| >>>QoS Flow Information To Be Setup  | M |  | QoS Flow QoS Parameters List9.3.1.25 |  | - | - |
| >>>DRB Data Forwarding Information Request | O |  | Data Forwarding Information Request 9.3.2.5 | Requesting forwarding information from the target gNB-CU-UP. | - | - |
| >>>DRB Inactivity Timer | O |  | Inactivity Timer 9.3.1.54 | Included if the Activity Notification Level is set to DRB. | - | - |
| >>>PDCP SN Status Information | O |  | 9.3.1.58 | Provides the PDCP SN Status at setup after Resume to the target gNB-CU-UP. | - | - |
| >>>DRB QoS  | O |  | 9.3.1.26 | Indicates the DRB QoS when more than one QoS Flow is mapped to the DRB  | YES | ignore |
| **>DRB To Modify List** |  | *0.. 1* |  |  | - | - |
| **>>DRB To Modify Item**  |  | *1..<maxnoofDRBs>* |  |  | - | - |
| >>>DRB ID  | M |  | 9.3.1.16 |  | - | - |
| >>>SDAP Configuration | O |  | 9.3.1.39 |  | - | - |
| >>>PDCP Configuration  | O |  | 9.3.1.38 |  | - | - |
| >>>DRB Data forwarding information | O |  | Data Forwarding Information 9.3.2.6 | Providing forwarding information to the source gNB-CU-UP. | - | - |
| >>>PDCP SN Status Request | O |  | ENUMERATED (requested, …) | The gNB-CU-CP requests the gNB-CU-UP to provide the PDCP SN Status in the response message. | - | - |
| >>>PDCP SN Status Information | O |  | 9.3.1.58 | Provides the PDCP SN Status to the target gNB-CU-UP. | - | - |
| >>>DL UP Parameters | O |  | UP Parameters 9.3.1.13 |  | - | - |
| >>>Cell Group To Add | O |  | Cell Group Information 9.3.1.11 |  | - | - |
| >>>Cell Group To Modify  | O |  | Cell Group Information 9.3.1.11 |  | - | - |
| >>>Cell Group To Remove  | O |  | Cell Group Information 9.3.1.11 |  | - | - |
| >>>Flow Mapping Information  | O |  | QoS Flow QoS Parameters List9.3.1.25 | Overrides previous mapping information.  | - | - |
| >>>DRB Inactivity Timer | O |  | Inactivity Timer 9.3.1.54 | Included if the Activity Notification Level is set to DRB. | - | - |
| >>>Old QoS Flow List - UL End Marker expected | O |  | QoS Flow List9.3.1.12 | Indicates that the source NG-RAN node has initiated QoS flow re-mapping and has not yet received SDAP end markers, as described in TS 38.300 [8]. | YES | reject |
| >>>DRB QoS | O |  | 9.3.1.26 | Indicates the DRB QoS when more than one QoS Flow is mapped to the DRB | YES | ignore |
| >>>Early Forwarding COUNT Request | O |  | ENUMERATED (First DL count, DL discarding, …) | Requests early data forwarding information from the source gNB-CU-UP | YES | reject |
| >>>Early Forwarding COUNT Information | O |  | 9.3.1.YY | Provides early data forwarding information to the target gNB-CU-UP. | YES | reject |
| **>DRB To Remove List** |  | *0.. 1* |  |  | - | - |
| **>>DRB To Remove Item**  |  | *1..<maxnoofDRBs>* |  |  | - | - |
| >>>DRB ID  | M |  | 9.3.1.16 |  | - | - |
| >S-NSSAI | O |  | 9.3.1.9 |  | YES | reject |

|  |  |
| --- | --- |
| 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. |

<<<<<<<<<<<<<<<<<<<< End of 9th Change >>>>>>>>>>>>>>>>>>>>

**-- TEXT OMITTED –**

<<<<<<<<<<<<<<<<<<<< 10th Change >>>>>>>>>>>>>>>>>>>>

#### 9.3.3.19 PDU Session Resource Modified List

This IE contains modified PDU session resource related information used at Bearer Context Modification Response

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **PDU Session Resource Modified Item** |  | *1..<maxnoofPDUSessionResource>* |  |  |
| >PDU Session ID  | M |  | 9.3.1.21 |  |
| >NG DL UP Transport Layer Information | O |  | UP Transport Layer Information 9.3.2.1 |  |
| >Security Result | O |  | 9.3.1.52 |  |
| >PDU Session Data Forwarding Information Response | O |  | Data Forwarding Information9.3.2.6 |  |
| **>DRB Setup List** |  | *0.. 1* |  |  |
| **>>DRB Setup Item**  |  | *1..<maxnoofDRBs>* |  |  |
| >>>DRB ID  | M |  | 9.3.1.16 |  |
| >>>DRB Data forwarding information Response | O |  | Data Forwarding Information 9.3.2.6 |  |
| >>>UL UP Parameters | M |  | UP Parameters9.3.1.13 |  |
| >>>Flow Setup List | M |  | QoS Flow List9.3.1.12 |  |
| >>>Flow Failed List  | O |  | Flow Failed List 9.3.1.45 |  |
| **>DRB Failed List** |  | *0.. 1* |  |  |
| **>>DRB Failed Item**  |  | *1..<maxnoofDRBs>* |  |  |
| >>>DRB ID  | M |  | 9.3.1.16 |  |
| >>>Cause  | M |  | 9.3.1.2 |  |
| **>DRB Modified List** |  | *0.. 1* |  |  |
| **>>DRB Modified Item**  |  | *1..<maxnoofDRBs>* |  |  |
| >>>DRB ID  | M |  | 9.3.1.16 |  |
| >>>UL UP Parameters | O |  | UP Parameters 9.3.1.13 | Carries the UL UP parameters. |
| >>>PDCP SN Status Information | O |  | 9.3.1.58 | Provides PDCP SN Status to the target gNB-CU-UP. |
| >>>Flow Setup List | O |  | QoS Flow List9.3.1.12 |  |
| >>>Flow Failed List  | O |  | Flow Failed List 9.3.1.45 |  |
| >>>Early Forwarding COUNT Information | O |  | 9.3.1.YY | Provides early data forwarding information from the source gNB-CU-UP. |
| **>DRB Failed To Modify List** |  | *0.. 1* |  |  |
| **>>DRB Failed To Modify Item**  |  | *1..<maxnoofDRBs>* |  |  |
| >>>DRB ID  | M |  | 9.3.1.16 |  |
| >>>Cause  | M |  | 9.3.1.2 |  |

|  |  |
| --- | --- |
| 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. |

<<<<<<<<<<<<<<<<<<<< End of 10th Change >>>>>>>>>>>>>>>>>>>>

**-- TEXT OMITTED –**

<<<<<<<<<<<<<<<<<<<< 11th Change >>>>>>>>>>>>>>>>>>>>

9.4.3 Elementary Procedure Definitions

-- ASN1START

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

--

-- Elementary Procedure definitions

--

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

E1AP-PDU-Descriptions {

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

ngran-access (22) modules (3) e1ap (5) version1 (1) e1ap-PDU-Descriptions (0) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

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

--

-- IE parameter types from other modules

--

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

IMPORTS

 Criticality,

 ProcedureCode

FROM E1AP-CommonDataTypes

 Reset,

 ResetAcknowledge,

 ErrorIndication,

 GNB-CU-UP-E1SetupRequest,

 GNB-CU-UP-E1SetupResponse,

 GNB-CU-UP-E1SetupFailure,

 GNB-CU-CP-E1SetupRequest,

 GNB-CU-CP-E1SetupResponse,

 GNB-CU-CP-E1SetupFailure,

 GNB-CU-UP-ConfigurationUpdate,

 GNB-CU-UP-ConfigurationUpdateAcknowledge,

 GNB-CU-UP-ConfigurationUpdateFailure,

 GNB-CU-CP-ConfigurationUpdate,

 GNB-CU-CP-ConfigurationUpdateAcknowledge,

 GNB-CU-CP-ConfigurationUpdateFailure,

 BearerContextSetupRequest,

 BearerContextSetupResponse,

 BearerContextSetupFailure,

 BearerContextModificationRequest,

 BearerContextModificationResponse,

 BearerContextModificationFailure,

 BearerContextModificationRequired,

 BearerContextModificationConfirm,

 BearerContextReleaseCommand,

 BearerContextReleaseComplete,

 BearerContextReleaseRequest,

 BearerContextInactivityNotification,

 DLDataNotification,

 ULDataNotification,

 DataUsageReport,

 E1ReleaseRequest,

 E1ReleaseResponse,

 GNB-CU-UP-CounterCheckRequest,

 GNB-CU-UP-StatusIndication,

 MRDC-DataUsageReport,

 DeactivateTrace,

 TraceStart,

 EarlyForwardingSNTransfer,

 PrivateMessage

FROM E1AP-PDU-Contents

 id-reset,

 id-errorIndication,

 id-gNB-CU-UP-E1Setup,

 id-gNB-CU-CP-E1Setup,

 id-gNB-CU-UP-ConfigurationUpdate,

 id-gNB-CU-CP-ConfigurationUpdate,

 id-e1Release,

 id-bearerContextSetup,

 id-bearerContextModification,

 id-bearerContextModificationRequired,

 id-bearerContextRelease,

 id-bearerContextReleaseRequest,

 id-bearerContextInactivityNotification,

 id-dLDataNotification,

 id-uLDataNotification,

 id-dataUsageReport,

 id-gNB-CU-UP-CounterCheck,

 id-gNB-CU-UP-StatusIndication,

 id-mRDC-DataUsageReport,

 id-DeactivateTrace,

 id-TraceStart,

 id-earlyForwardingSNTransfer,

 id-privateMessage

FROM E1AP-Constants;

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

--

-- Interface Elementary Procedure Class

--

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

E1AP-ELEMENTARY-PROCEDURE ::= CLASS {

 &InitiatingMessage ,

 &SuccessfulOutcome OPTIONAL,

&UnsuccessfulOutcome OPTIONAL,

 &procedureCode ProcedureCode UNIQUE,

 &criticality Criticality DEFAULT ignore

}

WITH SYNTAX {

 INITIATING MESSAGE &InitiatingMessage

 [SUCCESSFUL OUTCOME &SuccessfulOutcome]

 [UNSUCCESSFUL OUTCOME &UnsuccessfulOutcome]

 PROCEDURE CODE &procedureCode

 [CRITICALITY &criticality]

}

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

--

-- Interface PDU Definition

--

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

E1AP-PDU ::= CHOICE {

 initiatingMessage InitiatingMessage,

 successfulOutcome SuccessfulOutcome,

 unsuccessfulOutcome UnsuccessfulOutcome,

 ...

}

InitiatingMessage ::= SEQUENCE {

 procedureCode E1AP-ELEMENTARY-PROCEDURE.&procedureCode ({E1AP-ELEMENTARY-PROCEDURES}),

 criticality E1AP-ELEMENTARY-PROCEDURE.&criticality ({E1AP-ELEMENTARY-PROCEDURES}{@procedureCode}),

 value E1AP-ELEMENTARY-PROCEDURE.&InitiatingMessage ({E1AP-ELEMENTARY-PROCEDURES}{@procedureCode})

}

SuccessfulOutcome ::= SEQUENCE {

 procedureCode E1AP-ELEMENTARY-PROCEDURE.&procedureCode ({E1AP-ELEMENTARY-PROCEDURES}),

 criticality E1AP-ELEMENTARY-PROCEDURE.&criticality ({E1AP-ELEMENTARY-PROCEDURES}{@procedureCode}),

 value E1AP-ELEMENTARY-PROCEDURE.&SuccessfulOutcome ({E1AP-ELEMENTARY-PROCEDURES}{@procedureCode})

}

UnsuccessfulOutcome ::= SEQUENCE {

 procedureCode E1AP-ELEMENTARY-PROCEDURE.&procedureCode ({E1AP-ELEMENTARY-PROCEDURES}),

 criticality E1AP-ELEMENTARY-PROCEDURE.&criticality ({E1AP-ELEMENTARY-PROCEDURES}{@procedureCode}),

 value E1AP-ELEMENTARY-PROCEDURE.&UnsuccessfulOutcome ({E1AP-ELEMENTARY-PROCEDURES}{@procedureCode})

}

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

--

-- Interface Elementary Procedure List

--

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

E1AP-ELEMENTARY-PROCEDURES E1AP-ELEMENTARY-PROCEDURE ::= {

 E1AP-ELEMENTARY-PROCEDURES-CLASS-1 |

 E1AP-ELEMENTARY-PROCEDURES-CLASS-2 ,

 ...

}

E1AP-ELEMENTARY-PROCEDURES-CLASS-1 E1AP-ELEMENTARY-PROCEDURE ::= {

 reset |

 gNB-CU-UP-E1Setup |

 gNB-CU-CP-E1Setup |

 gNB-CU-UP-ConfigurationUpdate |

 gNB-CU-CP-ConfigurationUpdate |

 e1Release |

 bearerContextSetup |

 bearerContextModification |

 bearerContextModificationRequired |

 bearerContextRelease ,

 ...

}

E1AP-ELEMENTARY-PROCEDURES-CLASS-2 E1AP-ELEMENTARY-PROCEDURE ::= {

 errorIndication |

 bearerContextReleaseRequest |

 bearerContextInactivityNotification |

 dLDataNotification |

 uLDataNotification |

 dataUsageReport |

 gNB-CU-UP-CounterCheck |

 gNB-CU-UP-StatusIndication |

 mRDC-DataUsageReport |

 deactivateTrace |

 traceStart |

 privateMessage |

 earlyForwardingSNTransfer ,

 ...

}

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

--

-- Interface Elementary Procedures

--

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

reset E1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE Reset

 SUCCESSFUL OUTCOME ResetAcknowledge

 PROCEDURE CODE id-reset

 CRITICALITY reject

}

errorIndication E1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE ErrorIndication

 PROCEDURE CODE id-errorIndication

 CRITICALITY ignore

}

gNB-CU-UP-E1Setup E1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE GNB-CU-UP-E1SetupRequest

 SUCCESSFUL OUTCOME GNB-CU-UP-E1SetupResponse

 UNSUCCESSFUL OUTCOME GNB-CU-UP-E1SetupFailure

 PROCEDURE CODE id-gNB-CU-UP-E1Setup

 CRITICALITY reject

}

gNB-CU-CP-E1Setup E1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE GNB-CU-CP-E1SetupRequest

 SUCCESSFUL OUTCOME GNB-CU-CP-E1SetupResponse

 UNSUCCESSFUL OUTCOME GNB-CU-CP-E1SetupFailure

 PROCEDURE CODE id-gNB-CU-CP-E1Setup

 CRITICALITY reject

}

gNB-CU-UP-ConfigurationUpdate E1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE GNB-CU-UP-ConfigurationUpdate

 SUCCESSFUL OUTCOME GNB-CU-UP-ConfigurationUpdateAcknowledge

 UNSUCCESSFUL OUTCOME GNB-CU-UP-ConfigurationUpdateFailure

 PROCEDURE CODE id-gNB-CU-UP-ConfigurationUpdate

 CRITICALITY reject

}

gNB-CU-CP-ConfigurationUpdate E1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE GNB-CU-CP-ConfigurationUpdate

 SUCCESSFUL OUTCOME GNB-CU-CP-ConfigurationUpdateAcknowledge

 UNSUCCESSFUL OUTCOME GNB-CU-CP-ConfigurationUpdateFailure

 PROCEDURE CODE id-gNB-CU-CP-ConfigurationUpdate

 CRITICALITY reject

}

e1Release E1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE E1ReleaseRequest

 SUCCESSFUL OUTCOME E1ReleaseResponse

 PROCEDURE CODE id-e1Release

 CRITICALITY reject

}

bearerContextSetup E1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE BearerContextSetupRequest

 SUCCESSFUL OUTCOME BearerContextSetupResponse

 UNSUCCESSFUL OUTCOME BearerContextSetupFailure

 PROCEDURE CODE id-bearerContextSetup

 CRITICALITY reject

}

bearerContextModification E1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE BearerContextModificationRequest

 SUCCESSFUL OUTCOME BearerContextModificationResponse

 UNSUCCESSFUL OUTCOME BearerContextModificationFailure

 PROCEDURE CODE id-bearerContextModification

 CRITICALITY reject

}

bearerContextModificationRequired E1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE BearerContextModificationRequired

 SUCCESSFUL OUTCOME BearerContextModificationConfirm

 PROCEDURE CODE id-bearerContextModificationRequired

 CRITICALITY reject

}

bearerContextRelease E1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE BearerContextReleaseCommand

 SUCCESSFUL OUTCOME BearerContextReleaseComplete

 PROCEDURE CODE id-bearerContextRelease

 CRITICALITY reject

}

bearerContextReleaseRequest E1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE BearerContextReleaseRequest

 PROCEDURE CODE id-bearerContextReleaseRequest

 CRITICALITY ignore

}

bearerContextInactivityNotification E1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE BearerContextInactivityNotification

 PROCEDURE CODE id-bearerContextInactivityNotification

 CRITICALITY ignore

}

dLDataNotification E1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE DLDataNotification

 PROCEDURE CODE id-dLDataNotification

 CRITICALITY ignore

}

uLDataNotification E1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE ULDataNotification

 PROCEDURE CODE id-uLDataNotification

 CRITICALITY ignore

}

dataUsageReport E1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE DataUsageReport

 PROCEDURE CODE id-dataUsageReport

 CRITICALITY ignore

}

gNB-CU-UP-CounterCheck E1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE GNB-CU-UP-CounterCheckRequest

 PROCEDURE CODE id-gNB-CU-UP-CounterCheck

 CRITICALITY ignore

}

gNB-CU-UP-StatusIndication E1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE GNB-CU-UP-StatusIndication

 PROCEDURE CODE id-gNB-CU-UP-StatusIndication

 CRITICALITY ignore

}

privateMessage E1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE PrivateMessage

 PROCEDURE CODE id-privateMessage

 CRITICALITY ignore

}

mRDC-DataUsageReport E1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE MRDC-DataUsageReport

 PROCEDURE CODE id-mRDC-DataUsageReport

 CRITICALITY ignore

}

deactivateTrace E1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE DeactivateTrace

 PROCEDURE CODE id-DeactivateTrace

 CRITICALITY ignore

}

traceStart E1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE TraceStart

 PROCEDURE CODE id-TraceStart

 CRITICALITY ignore

}

earlyForwardingSNTransfer E1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE EarlyForwardingSNTransfer

 PROCEDURE CODE id-earlyForwardingSNTransfer

 CRITICALITY ignore

}

END

-- ASN1STOP

### 9.4.4 PDU Definitions

-- ASN1START

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

--

-- PDU definitions for E1AP

--

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

E1AP-PDU-Contents {

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

ngran-access (22) modules (3) e1ap (5) version1 (1) e1ap-PDU-Contents (1) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

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

--

-- IE parameter types from other modules

--

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

IMPORTS

 Cause,

 CriticalityDiagnostics,

 GNB-CU-CP-UE-E1AP-ID,

 GNB-CU-UP-UE-E1AP-ID,

 UE-associatedLogicalE1-ConnectionItem,

 GNB-CU-UP-ID,

 GNB-CU-UP-Name,

 GNB-CU-CP-Name,

 CNSupport,

 PLMN-Identity,

 Slice-Support-List,

 NR-CGI-Support-List,

 QoS-Parameters-Support-List,

 SecurityInformation,

 BitRate,

 BearerContextStatusChange,

 DRB-To-Setup-List-EUTRAN,

 DRB-Setup-List-EUTRAN,

 DRB-Failed-List-EUTRAN,

 DRB-To-Modify-List-EUTRAN,

 DRB-Modified-List-EUTRAN,

 DRB-Failed-To-Modify-List-EUTRAN,

 DRB-To-Remove-List-EUTRAN,

 DRB-Required-To-Remove-List-EUTRAN,

 DRB-Required-To-Modify-List-EUTRAN,

 DRB-Confirm-Modified-List-EUTRAN,

 DRB-To-Setup-Mod-List-EUTRAN,

 DRB-Setup-Mod-List-EUTRAN,

 DRB-Failed-Mod-List-EUTRAN,

 PDU-Session-Resource-To-Setup-List,

 PDU-Session-Resource-Setup-List,

 PDU-Session-Resource-Failed-List,

 PDU-Session-Resource-To-Modify-List,

 PDU-Session-Resource-Modified-List,

 PDU-Session-Resource-Failed-To-Modify-List,

 PDU-Session-Resource-To-Remove-List,

 PDU-Session-Resource-Required-To-Modify-List,

 PDU-Session-Resource-Confirm-Modified-List,

 PDU-Session-Resource-To-Setup-Mod-List,

 PDU-Session-Resource-Setup-Mod-List,

 PDU-Session-Resource-Failed-Mod-List,

 PDU-Session-To-Notify-List,

 DRB-Status-Item,

 DRB-Activity-Item,

 Data-Usage-Report-List,

 TimeToWait,

 ActivityNotificationLevel,

 ActivityInformation,

 New-UL-TNL-Information-Required,

 GNB-CU-CP-TNLA-Setup-Item,

 GNB-CU-CP-TNLA-Failed-To-Setup-Item,

 GNB-CU-CP-TNLA-To-Add-Item,

 GNB-CU-CP-TNLA-To-Remove-Item,

 GNB-CU-CP-TNLA-To-Update-Item,

 GNB-CU-UP-TNLA-To-Remove-Item,

 TransactionID,

 Inactivity-Timer,

 DRBs-Subject-To-Counter-Check-List-EUTRAN,

 DRBs-Subject-To-Counter-Check-List-NG-RAN,

 PPI,

 GNB-CU-UP-Capacity,

 GNB-CU-UP-OverloadInformation,

 DataDiscardRequired,

 PDU-Session-Resource-Data-Usage-List,

 RANUEID,

 GNB-DU-ID,

 TraceID,

 TraceActivation,

 SubscriberProfileIDforRFP,

 AdditionalRRMPriorityIndex,

 RetainabilityMeasurementsInfo,

 Transport-Layer-Address-Info,

 DRBs-Subject-To-Early-Forwarding-List,

 CHOInitiation

FROM E1AP-IEs

 PrivateIE-Container{},

 ProtocolExtensionContainer{},

 ProtocolIE-Container{},

 ProtocolIE-ContainerList{},

 ProtocolIE-SingleContainer{},

 E1AP-PRIVATE-IES,

 E1AP-PROTOCOL-EXTENSION,

 E1AP-PROTOCOL-IES

FROM E1AP-Containers

 id-Cause,

 id-CriticalityDiagnostics,

 id-gNB-CU-CP-UE-E1AP-ID,

 id-gNB-CU-UP-UE-E1AP-ID,

 id-ResetType,

 id-UE-associatedLogicalE1-ConnectionItem,

 id-UE-associatedLogicalE1-ConnectionListResAck,

 id-gNB-CU-UP-ID,

 id-gNB-CU-UP-Name,

 id-gNB-CU-CP-Name,

 id-CNSupport,

 id-SupportedPLMNs,

 id-SecurityInformation,

 id-UEDLAggregateMaximumBitRate,

 id-BearerContextStatusChange,

 id-System-BearerContextSetupRequest,

 id-System-BearerContextSetupResponse,

 id-System-BearerContextModificationRequest,

 id-System-BearerContextModificationResponse,

 id-System-BearerContextModificationConfirm,

 id-System-BearerContextModificationRequired,

 id-DRB-Status-List,

 id-Data-Usage-Report-List,

 id-TimeToWait,

 id-ActivityNotificationLevel,

 id-ActivityInformation,

 id-New-UL-TNL-Information-Required,

 id-GNB-CU-CP-TNLA-Setup-List,

 id-GNB-CU-CP-TNLA-Failed-To-Setup-List,

 id-GNB-CU-CP-TNLA-To-Add-List,

 id-GNB-CU-CP-TNLA-To-Remove-List,

 id-GNB-CU-CP-TNLA-To-Update-List,

 id-GNB-CU-UP-TNLA-To-Remove-List,

 id-DRB-To-Setup-List-EUTRAN,

 id-DRB-To-Modify-List-EUTRAN,

 id-DRB-To-Remove-List-EUTRAN,

 id-DRB-Required-To-Modify-List-EUTRAN,

 id-DRB-Required-To-Remove-List-EUTRAN,

 id-DRB-Setup-List-EUTRAN,

 id-DRB-Failed-List-EUTRAN,

 id-DRB-Modified-List-EUTRAN,

 id-DRB-Failed-To-Modify-List-EUTRAN,

 id-DRB-Confirm-Modified-List-EUTRAN,

 id-DRB-To-Setup-Mod-List-EUTRAN,

 id-DRB-Setup-Mod-List-EUTRAN,

 id-DRB-Failed-Mod-List-EUTRAN,

 id-PDU-Session-Resource-To-Setup-List,

 id-PDU-Session-Resource-To-Modify-List,

 id-PDU-Session-Resource-To-Remove-List,

 id-PDU-Session-Resource-Required-To-Modify-List,

 id-PDU-Session-Resource-Setup-List,

 id-PDU-Session-Resource-Failed-List,

 id-PDU-Session-Resource-Modified-List,

 id-PDU-Session-Resource-Failed-To-Modify-List,

 id-PDU-Session-Resource-Confirm-Modified-List,

 id-PDU-Session-Resource-Setup-Mod-List,

 id-PDU-Session-Resource-Failed-Mod-List,

 id-PDU-Session-Resource-To-Setup-Mod-List,

 id-PDU-Session-To-Notify-List,

 id-TransactionID,

 id-Serving-PLMN,

 id-UE-Inactivity-Timer,

 id-System-GNB-CU-UP-CounterCheckRequest,

 id-DRBs-Subject-To-Counter-Check-List-EUTRAN,

 id-DRBs-Subject-To-Counter-Check-List-NG-RAN,

 id-PPI,

 id-gNB-CU-UP-Capacity,

 id-GNB-CU-UP-OverloadInformation,

 id-UEDLMaximumIntegrityProtectedDataRate,

 id-DataDiscardRequired,

 id-PDU-Session-Resource-Data-Usage-List,

 id-RANUEID,

 id-GNB-DU-ID,

 id-TraceID,

 id-TraceActivation,

 id-SubscriberProfileIDforRFP,

 id-AdditionalRRMPriorityIndex,

 id-RetainabilityMeasurementsInfo,

 id-Transport-Layer-Address-Info,

 id-DRBs-Subject-To-Early-Forwarding-List,

 id-CHOInitiation,

 maxnoofErrors,

 maxnoofSPLMNs,

 maxnoofDRBs,

 maxnoofTNLAssociations,

 maxnoofIndividualE1ConnectionsToReset

FROM E1AP-Constants;

**-- TEXT OMITTED –**

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

--

-- Bearer Context Setup Request

--

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

BearerContextSetupRequest ::= SEQUENCE {

 protocolIEs ProtocolIE-Container { { BearerContextSetupRequestIEs} },

 ...

}

BearerContextSetupRequestIEs E1AP-PROTOCOL-IES ::= {

 { ID id-gNB-CU-CP-UE-E1AP-ID CRITICALITY reject TYPE GNB-CU-CP-UE-E1AP-ID PRESENCE mandatory }|

 { ID id-SecurityInformation CRITICALITY reject TYPE SecurityInformation PRESENCE mandatory }|

 { ID id-UEDLAggregateMaximumBitRate CRITICALITY reject TYPE BitRate PRESENCE mandatory }|

 { ID id-UEDLMaximumIntegrityProtectedDataRate CRITICALITY reject TYPE BitRate PRESENCE optional }|

 { ID id-Serving-PLMN CRITICALITY ignore TYPE PLMN-Identity PRESENCE mandatory }|

 { ID id-ActivityNotificationLevel CRITICALITY reject TYPE ActivityNotificationLevel PRESENCE mandatory }|

 { ID id-UE-Inactivity-Timer CRITICALITY reject TYPE Inactivity-Timer PRESENCE optional }|

 { ID id-BearerContextStatusChange CRITICALITY reject TYPE BearerContextStatusChange PRESENCE optional }|

 { ID id-System-BearerContextSetupRequest CRITICALITY reject TYPE System-BearerContextSetupRequest PRESENCE mandatory }|

 { ID id-RANUEID CRITICALITY ignore TYPE RANUEID PRESENCE optional }|

 { ID id-GNB-DU-ID CRITICALITY ignore TYPE GNB-DU-ID PRESENCE optional }|

 { ID id-TraceActivation CRITICALITY ignore TYPE TraceActivation PRESENCE optional }|

 { ID id-CHOInitiation CRITICALITY reject TYPE CHOInitiation PRESENCE optional },

 ...

}

System-BearerContextSetupRequest ::= CHOICE {

 e-UTRAN-BearerContextSetupRequest ProtocolIE-Container {{EUTRAN-BearerContextSetupRequest}},

 nG-RAN-BearerContextSetupRequest ProtocolIE-Container {{NG-RAN-BearerContextSetupRequest}},

 choice-extension ProtocolIE-SingleContainer {{System-BearerContextSetupRequest-ExtIEs}}

}

System-BearerContextSetupRequest-ExtIEs E1AP-PROTOCOL-IES::= {

 ...

}

EUTRAN-BearerContextSetupRequest E1AP-PROTOCOL-IES ::= {

 { ID id-DRB-To-Setup-List-EUTRAN CRITICALITY reject TYPE DRB-To-Setup-List-EUTRAN PRESENCE mandatory }|

 { ID id-SubscriberProfileIDforRFP CRITICALITY ignore TYPE SubscriberProfileIDforRFP PRESENCE optional }|

 { ID id-AdditionalRRMPriorityIndex CRITICALITY ignore TYPE AdditionalRRMPriorityIndex PRESENCE optional },

 ...

}

NG-RAN-BearerContextSetupRequest E1AP-PROTOCOL-IES ::= {

 { ID id-PDU-Session-Resource-To-Setup-List CRITICALITY reject TYPE PDU-Session-Resource-To-Setup-List PRESENCE mandatory },

 ...

}

**-- TEXT OMITTED –**

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

--

-- EARLY FORWARDING SN TRANSFER

--

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

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

--

-- Early Forwarding SN Transfer

--

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

EarlyForwardingSNTransfer ::= SEQUENCE {

 protocolIEs ProtocolIE-Container { { EarlyForwardingSNTransferIEs } },

 ...

}

**-- TEXT OMITTED –**

### 9.4.5 Information Element Definitions

-- ASN1START

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

--

-- Information Element Definitions

--

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

E1AP-IEs {

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

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

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

 id-CommonNetworkInstance,

 id-SNSSAI,

 id-OldQoSFlowMap-ULendmarkerexpected,

 id-DRB-QoS,

 id-endpoint-IP-Address-and-Port,

 id-NetworkInstance,

 id-QoSFlowMappingIndication,

 id-TNLAssociationTransportLayerAddressgNBCUUP,

 id-Cause,

 id-QoSMonitoringRequest,

 id-DAPSRequestInfo,

 id-EarlyForwardingCOUNTReq,

 id-EarlyForwardingCOUNTInfo,

 maxnoofErrors,

 maxnoofSliceItems,

 maxnoofEUTRANQOSParameters,

 maxnoofNGRANQOSParameters,

 maxnoofDRBs,

 maxnoofPDUSessionResource,

 maxnoofQoSFlows,

 maxnoofUPParameters,

 maxnoofCellGroups,

 maxnooftimeperiods,

 maxnoofNRCGI,

 maxnoofTLAs,

 maxnoofGTPTLAs

FROM E1AP-Constants

 Criticality,

 ProcedureCode,

 ProtocolIE-ID,

 TriggeringMessage

FROM E1AP-CommonDataTypes

 ProtocolExtensionContainer{},

 ProtocolIE-SingleContainer{},

 E1AP-PROTOCOL-EXTENSION,

 E1AP-PROTOCOL-IES

FROM E1AP-Containers;

**-- TEXT OMITTED –**

Cell-Group-ID ::= INTEGER (0..3, ...)

CHOInitiation ::= ENUMERATED {true, ...}

CipheringAlgorithm ::= ENUMERATED {

 nEA0,

 c-128-NEA1,

 c-128-NEA2,

 c-128-NEA3,

 ...

}

**-- TEXT OMITTED –**

-- D

DAPSRequestInfo ::= SEQUENCE {

 dapsIndicator ENUMERATED {daps-HO-required, ...},

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

 ...

}

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

 ...

}

**-- TEXT OMITTED –**

DL-TX-Stop ::= ENUMERATED {

 stop,

 resume,

 ...

}

EarlyForwardingSNTransferIEs E1AP-PROTOCOL-IES ::= {

 { ID id-gNB-CU-CP-UE-E1AP-ID CRITICALITY reject TYPE GNB-CU-CP-UE-E1AP-ID PRESENCE mandatory }|

 { ID id-gNB-CU-UP-UE-E1AP-ID CRITICALITY reject TYPE GNB-CU-UP-UE-E1AP-ID PRESENCE mandatory }|

 { ID id-DRBs-Subject-To-Early-Forwarding-List CRITICALITY reject TYPE DRBs-Subject-To-Early-Forwarding-List PRESENCE mandatory },

 ...

}

DRBs-Subject-To-Early-Forwarding-List ::= SEQUENCE (SIZE(1.. maxnoofDRBs)) OF DRBs-Subject-To-Early-Forwarding-Item

DRBs-Subject-To-Early-Forwarding-Item ::= SEQUENCE {

 dRB-ID DRB-ID,

 dLCountValue PDCP-Count,

 iE-Extensions ProtocolExtensionContainer { { DRBs-Subject-To-Early-Forwarding-Item-ExtIEs } } OPTIONAL,

 ...

}

DRBs-Subject-To-Early-Forwarding-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

DRB-Activity ::= ENUMERATED {

 active,

 not-active,

 ...

}

**-- TEXT OMITTED –**

DRB-Modified-List-NG-RAN ::= SEQUENCE (SIZE(1.. maxnoofDRBs)) OF DRB-Modified-Item-NG-RAN

DRB-Modified-Item-NG-RAN ::= SEQUENCE {

 dRB-ID DRB-ID,

 uL-UP-Transport-Parameters UP-Parameters OPTIONAL,

 pDCP-SN-Status-Information PDCP-SN-Status-Information OPTIONAL,

 flow-Setup-List QoS-Flow-List OPTIONAL,

 flow-Failed-List QoS-Flow-Failed-List OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { { DRB-Modified-Item-NG-RAN-ExtIEs } } OPTIONAL,

 ...

}

DRB-Modified-Item-NG-RAN-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 {ID id-EarlyForwardingCOUNTInfo CRITICALITY reject EXTENSION EarlyForwardingCOUNTInfo PRESENCE optional},

 ...

}

EarlyForwardingCOUNTInfo ::= CHOICE {

 firstDLCount FirstDLCount,

 dLDiscardingCount DLDiscarding,

 choice-Extension ProtocolIE-SingleContainer { { EarlyForwardingCOUNTInfo-ExtIEs} }

}

EarlyForwardingCOUNTInfo-ExtIEs E1AP-PROTOCOL-IES ::= {

 ...

}

FirstDLCount ::= SEQUENCE {

 firstDLCountVal PDCP-Count,

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

}

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

 ...

}

DLDiscarding ::= SEQUENCE {

 dLDiscardingCountVal PDCP-Count,

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

}

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

 ...

}

**-- TEXT OMITTED –**

DRB-To-Modify-List-NG-RAN ::= SEQUENCE (SIZE(1.. maxnoofDRBs)) OF DRB-To-Modify-Item-NG-RAN

DRB-To-Modify-Item-NG-RAN ::= SEQUENCE {

 dRB-ID DRB-ID,

 sDAP-Configuration SDAP-Configuration OPTIONAL,

 pDCP-Configuration PDCP-Configuration OPTIONAL,

 dRB-Data-Forwarding-Information Data-Forwarding-Information OPTIONAL,

 pDCP-SN-Status-Request PDCP-SN-Status-Request OPTIONAL,

 pdcp-SN-Status-Information PDCP-SN-Status-Information OPTIONAL,

 dL-UP-Parameters UP-Parameters OPTIONAL,

 cell-Group-To-Add Cell-Group-Information OPTIONAL,

 cell-Group-To-Modify Cell-Group-Information OPTIONAL,

 cell-Group-To-Remove Cell-Group-Information OPTIONAL,

 flow-Mapping-Information QoS-Flow-QoS-Parameter-List OPTIONAL,

 dRB-Inactivity-Timer Inactivity-Timer OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { { DRB-To-Modify-Item-NG-RAN-ExtIEs } } OPTIONAL,

 ...

}

DRB-To-Modify-Item-NG-RAN-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 {ID id-OldQoSFlowMap-ULendmarkerexpected CRITICALITY reject EXTENSION QoS-Flow-List PRESENCE optional}|

 {ID id-DRB-QoS CRITICALITY ignore EXTENSION QoSFlowLevelQoSParameters PRESENCE optional}|

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

 {ID id-EarlyForwardingCOUNTInfo CRITICALITY reject EXTENSION EarlyForwardingCOUNTInfo PRESENCE optional},

 ...

}

EarlyForwardingCOUNTReq ::= ENUMERATED { first-dl-count, dl-discarding, ...}

**-- TEXT OMITTED –**

DRB-To-Setup-List-NG-RAN ::= SEQUENCE (SIZE(1.. maxnoofDRBs)) OF DRB-To-Setup-Item-NG-RAN

DRB-To-Setup-Item-NG-RAN ::= SEQUENCE {

 dRB-ID DRB-ID,

 sDAP-Configuration SDAP-Configuration,

 pDCP-Configuration PDCP-Configuration,

 cell-Group-Information Cell-Group-Information,

 qos-flow-Information-To-Be-Setup QoS-Flow-QoS-Parameter-List,

 dRB-Data-Forwarding-Information-Request Data-Forwarding-Information-Request OPTIONAL,

 dRB-Inactivity-Timer Inactivity-Timer OPTIONAL,

 pDCP-SN-Status-Information PDCP-SN-Status-Information OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { { DRB-To-Setup-Item-NG-RAN-ExtIEs } } OPTIONAL,

 ...

}

DRB-To-Setup-Item-NG-RAN-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 {ID id-DRB-QoS CRITICALITY ignore EXTENSION QoSFlowLevelQoSParameters PRESENCE optional}|

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

 ...

}

**-- TEXT OMITTED –**

### 9.4.7 Constant Definitions

-- ASN1START

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

--

-- Constant definitions

--

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

E1AP-Constants {

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

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

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

 ProcedureCode,

 ProtocolIE-ID

FROM E1AP-CommonDataTypes;

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

--

-- Elementary Procedures

--

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

id-reset ProcedureCode ::= 0

id-errorIndication ProcedureCode ::= 1

id-privateMessage ProcedureCode ::= 2

id-gNB-CU-UP-E1Setup ProcedureCode ::= 3

id-gNB-CU-CP-E1Setup ProcedureCode ::= 4

id-gNB-CU-UP-ConfigurationUpdate ProcedureCode ::= 5

id-gNB-CU-CP-ConfigurationUpdate ProcedureCode ::= 6

id-e1Release ProcedureCode ::= 7

id-bearerContextSetup ProcedureCode ::= 8

id-bearerContextModification ProcedureCode ::= 9

id-bearerContextModificationRequired ProcedureCode ::= 10

id-bearerContextRelease ProcedureCode ::= 11

id-bearerContextReleaseRequest ProcedureCode ::= 12

id-bearerContextInactivityNotification ProcedureCode ::= 13

id-dLDataNotification ProcedureCode ::= 14

id-dataUsageReport ProcedureCode ::= 15

id-gNB-CU-UP-CounterCheck ProcedureCode ::= 16

id-gNB-CU-UP-StatusIndication ProcedureCode ::= 17

id-uLDataNotification ProcedureCode ::= 18

id-mRDC-DataUsageReport ProcedureCode ::= 19

id-TraceStart ProcedureCode ::= 20

id-DeactivateTrace ProcedureCode ::= 21

id-earlyForwardingSNTransfer ProcedureCode ::= yy

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

--

-- Lists

--

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

maxnoofErrors INTEGER ::= 256

maxnoofSPLMNs INTEGER ::= 12

maxnoofSliceItems INTEGER ::= 1024

maxnoofIndividualE1ConnectionsToReset INTEGER ::= 65536

maxnoofEUTRANQOSParameters INTEGER ::= 256

maxnoofNGRANQOSParameters INTEGER ::= 256

maxnoofDRBs INTEGER ::= 32

maxnoofNRCGI INTEGER ::= 512

maxnoofPDUSessionResource INTEGER ::= 256

maxnoofQoSFlows INTEGER ::= 64

maxnoofUPParameters INTEGER ::= 8

maxnoofCellGroups INTEGER ::= 4

maxnooftimeperiods INTEGER ::= 2

maxnoofTNLAssociations INTEGER ::= 32

maxnoofTLAs INTEGER ::= 16

maxnoofGTPTLAs INTEGER ::= 16

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

--

-- IEs

--

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

id-Cause ProtocolIE-ID ::= 0

id-CriticalityDiagnostics ProtocolIE-ID ::= 1

id-gNB-CU-CP-UE-E1AP-ID ProtocolIE-ID ::= 2

id-gNB-CU-UP-UE-E1AP-ID ProtocolIE-ID ::= 3

id-ResetType ProtocolIE-ID ::= 4

id-UE-associatedLogicalE1-ConnectionItem ProtocolIE-ID ::= 5

id-UE-associatedLogicalE1-ConnectionListResAck ProtocolIE-ID ::= 6

id-gNB-CU-UP-ID ProtocolIE-ID ::= 7

id-gNB-CU-UP-Name ProtocolIE-ID ::= 8

id-gNB-CU-CP-Name ProtocolIE-ID ::= 9

id-CNSupport ProtocolIE-ID ::= 10

id-SupportedPLMNs ProtocolIE-ID ::= 11

id-TimeToWait ProtocolIE-ID ::= 12

id-SecurityInformation ProtocolIE-ID ::= 13

id-UEDLAggregateMaximumBitRate ProtocolIE-ID ::= 14

id-System-BearerContextSetupRequest ProtocolIE-ID ::= 15

id-System-BearerContextSetupResponse ProtocolIE-ID ::= 16

id-BearerContextStatusChange ProtocolIE-ID ::= 17

id-System-BearerContextModificationRequest ProtocolIE-ID ::= 18

id-System-BearerContextModificationResponse ProtocolIE-ID ::= 19

id-System-BearerContextModificationConfirm ProtocolIE-ID ::= 20

id-System-BearerContextModificationRequired ProtocolIE-ID ::= 21

id-DRB-Status-List ProtocolIE-ID ::= 22

id-ActivityNotificationLevel ProtocolIE-ID ::= 23

id-ActivityInformation ProtocolIE-ID ::= 24

id-Data-Usage-Report-List ProtocolIE-ID ::= 25

id-New-UL-TNL-Information-Required ProtocolIE-ID ::= 26

id-GNB-CU-CP-TNLA-To-Add-List ProtocolIE-ID ::= 27

id-GNB-CU-CP-TNLA-To-Remove-List ProtocolIE-ID ::= 28

id-GNB-CU-CP-TNLA-To-Update-List ProtocolIE-ID ::= 29

id-GNB-CU-CP-TNLA-Setup-List ProtocolIE-ID ::= 30

id-GNB-CU-CP-TNLA-Failed-To-Setup-List ProtocolIE-ID ::= 31

id-DRB-To-Setup-List-EUTRAN ProtocolIE-ID ::= 32

id-DRB-To-Modify-List-EUTRAN ProtocolIE-ID ::= 33

id-DRB-To-Remove-List-EUTRAN ProtocolIE-ID ::= 34

id-DRB-Required-To-Modify-List-EUTRAN ProtocolIE-ID ::= 35

id-DRB-Required-To-Remove-List-EUTRAN ProtocolIE-ID ::= 36

id-DRB-Setup-List-EUTRAN ProtocolIE-ID ::= 37

id-DRB-Failed-List-EUTRAN ProtocolIE-ID ::= 38

id-DRB-Modified-List-EUTRAN ProtocolIE-ID ::= 39

id-DRB-Failed-To-Modify-List-EUTRAN ProtocolIE-ID ::= 40

id-DRB-Confirm-Modified-List-EUTRAN ProtocolIE-ID ::= 41

id-PDU-Session-Resource-To-Setup-List ProtocolIE-ID ::= 42

id-PDU-Session-Resource-To-Modify-List ProtocolIE-ID ::= 43

id-PDU-Session-Resource-To-Remove-List ProtocolIE-ID ::= 44

id-PDU-Session-Resource-Required-To-Modify-List ProtocolIE-ID ::= 45

id-PDU-Session-Resource-Setup-List ProtocolIE-ID ::= 46

id-PDU-Session-Resource-Failed-List ProtocolIE-ID ::= 47

id-PDU-Session-Resource-Modified-List ProtocolIE-ID ::= 48

id-PDU-Session-Resource-Failed-To-Modify-List ProtocolIE-ID ::= 49

id-PDU-Session-Resource-Confirm-Modified-List ProtocolIE-ID ::= 50

id-DRB-To-Setup-Mod-List-EUTRAN ProtocolIE-ID ::= 51

id-DRB-Setup-Mod-List-EUTRAN ProtocolIE-ID ::= 52

id-DRB-Failed-Mod-List-EUTRAN ProtocolIE-ID ::= 53

id-PDU-Session-Resource-Setup-Mod-List ProtocolIE-ID ::= 54

id-PDU-Session-Resource-Failed-Mod-List ProtocolIE-ID ::= 55

id-PDU-Session-Resource-To-Setup-Mod-List ProtocolIE-ID ::= 56

id-TransactionID ProtocolIE-ID ::= 57

id-Serving-PLMN ProtocolIE-ID ::= 58

id-UE-Inactivity-Timer ProtocolIE-ID ::= 59

id-System-GNB-CU-UP-CounterCheckRequest ProtocolIE-ID ::= 60

id-DRBs-Subject-To-Counter-Check-List-EUTRAN ProtocolIE-ID ::= 61

id-DRBs-Subject-To-Counter-Check-List-NG-RAN ProtocolIE-ID ::= 62

id-PPI ProtocolIE-ID ::= 63

id-gNB-CU-UP-Capacity ProtocolIE-ID ::= 64

id-GNB-CU-UP-OverloadInformation ProtocolIE-ID ::= 65

id-UEDLMaximumIntegrityProtectedDataRate ProtocolIE-ID ::= 66

id-PDU-Session-To-Notify-List ProtocolIE-ID ::= 67

id-PDU-Session-Resource-Data-Usage-List ProtocolIE-ID ::= 68

id-SNSSAI ProtocolIE-ID ::= 69

id-DataDiscardRequired ProtocolIE-ID ::= 70

id-OldQoSFlowMap-ULendmarkerexpected ProtocolIE-ID ::= 71

id-DRB-QoS ProtocolIE-ID ::= 72

id-GNB-CU-UP-TNLA-To-Remove-List ProtocolIE-ID ::= 73

id-endpoint-IP-Address-and-Port ProtocolIE-ID ::= 74

id-TNLAssociationTransportLayerAddressgNBCUUP ProtocolIE-ID ::= 75

id-RANUEID ProtocolIE-ID ::= 76

id-GNB-DU-ID ProtocolIE-ID ::= 77

id-CommonNetworkInstance ProtocolIE-ID ::= 78

id-NetworkInstance ProtocolIE-ID ::= 79

id-QoSFlowMappingIndication ProtocolIE-ID ::= 80

id-TraceActivation ProtocolIE-ID ::= 81

id-TraceID ProtocolIE-ID ::= 82

id-SubscriberProfileIDforRFP ProtocolIE-ID ::= 83

id-AdditionalRRMPriorityIndex ProtocolIE-ID ::= 84

id-RetainabilityMeasurementsInfo ProtocolIE-ID ::= 85

id-Transport-Layer-Address-Info ProtocolIE-ID ::= 86

id-QoSMonitoringRequest ProtocolIE-ID ::= 87

id-DRBs-Subject-To-Early-Forwarding-List ProtocolIE-ID ::= xx

id-DAPSRequestInfo ProtocolIE-ID ::= AA

id-CHOInitiation ProtocolIE-ID ::= XX

id-EarlyForwardingCOUNTReq ProtocolIE-ID ::= YY

id-EarlyForwardingCOUNTInfo ProtocolIE-ID ::= ZZ

END

-- ASN1STOP

<<<<<<<<<<<<<<<<<<<< End of Changes >>>>>>>>>>>>>>>>>>>>