3GPP TSG-RAN WG3 #115 R3-222959

**21th Feb – 3rd Mar 2022**

Online

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **38.463** | **CR** | **0681** | **rev** | **2** | **Current version:** | **16.8.0** |  |
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| *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:***  | RA-SDT BLCR to TS 38.463 |
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| ***Source to WG:*** | China Telecom, Nokia, Nokia Shanghai Bell, Intel Corporation, Samsung |
| ***Source to TSG:*** | RAN3 |
|  |  |
| ***Work item code:*** | NR\_SmallData\_INACTIVE-Core |  | ***Date:*** | 2022-01-04 |
|  |  |  |  |  |
| ***Category:*** | B |  | ***Release:*** | Rel-17 |
|  | *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:*** | Support Rel-17 SDT for E1 interface |
|  |  |
| ***Summary of change:*** | RAN3#114bis:* Included the agreed TP in R3-221250

RAN3#115:* Included the agreed TP in R3-222846
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| ***Consequences if not approved:*** | SDT cannot be supported in CP/UP split architerure. |
|  |  |
| ***Clauses affected:*** | 3.2, 8.3.1.2, 8.3.2.2, 9.2.2.1, 9.2.2.4,9.3.3.2,9.3.3.10,9.3.3.11, 9.4.4, 9.4.5,9.4.7 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR  |
| ***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 1: Capture the agreed TP R3-221250
* Rev 2: Capture the agreed TP R3-222846
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////////////////////////////////////////////////////////////////////////start of change ////////////////////////////////////////////////////////////////////////

## 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

CAG Closed Access Group

CGI Cell Global Identifier

CHO Conditional Handover

CN Core Network

CP Control Plane

CPC Conditional PSCell Change

DAPS Dual Active Protocol Stack

DL Downlink

EHC Ethernet Header Compression

EN-DC E-UTRA-NR Dual Connectivity

EPC Evolved Packet Core

IAB Integrated Access and Backhaul

MCG Master Cell Group

NID Network Identifier

NPN Non-Public Network

PNI-NPN Public Network Integrated Non-Public Network

NSSAI Network Slice Selection Assistance Information

RANAC RAN Area Code

SCG Secondary Cell Group

SDAP Service Data Adaptation Protocol

SDT Small Data Transmisson

SNPN Stand-alone Non-Public Network

S-NSSAI Single Network Slice Selection Assistance Information

TNLA Transport Network Layer Association

//////////////////////////////////////////////////////////////irrelevant operations skipped/////////////////////////////////////////////////////////////////////

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

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**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.

//////////////////////////////////////////////////////////////irrelevant operations skipped/////////////////////////////////////////////////////////////////////

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]. If the *Bearer Context Status Change* IE is set to "ResumeforSDT", the gNB-CU-UP shall, if supported, consider that DRBs not configured with SDT are suspended after being established.

//////////////////////////////////////////////////////////////irrelevant operations skipped/////////////////////////////////////////////////////////////////////

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

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**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.

//////////////////////////////////////////////////////////////irrelevant operations skipped/////////////////////////////////////////////////////////////////////

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 *Bearer Context Status Change* IE is set to "ResumeforSDT", the gNB-CU-UP shall consider that DRBs configured with SDT are resumed only and the other DRBs remain suspended.

If *SDT Continue ROHC* IE is contained in the BEARER CONTEXT MODIFICATION REQUEST message and the value is set to “true”, the gNB-CU-UP shall, if supported, continue the ROHC for the SDT bearers for the UE.

//////////////////////////////////////////////////////////////irrelevant operations skipped/////////////////////////////////////////////////////////////////////

#### 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, …, ResumeforSDT) | 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 |
| NPN Context Information | O |  | 9.3.1.84 |  | YES | reject |
| Management Based MDT PLMN List | O |  | MDT PLMN List9.3.1.89 |  | YES | ignore |
| CHO Initiation | O |  | ENUMERATED (True, …) |  | YES | reject |
| Additional Handover Information | O |  | ENUMERATED(Discard PDCP SN, …) | If set to “Discard PDCP SN”, indicates that the forwarded PDCP SNs have to be removed | YES | ignore |
| Direct Forwarding Path Availability | O |  | 9.3.1.98 |  | YES | ignore |
| gNB-CU-UP UE E1AP ID | O |  | 9.3.1.5 |  | YES | ignore |

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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. |

//////////////////////////////////////////////////////////////irrelevant operations skipped/////////////////////////////////////////////////////////////////////

#### 9.2.2.4 BEARER CONTEXT MODIFICATION REQUEST

This message is sent by the gNB-CU-CP to request the gNB-CU-UP to modify 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 |
| gNB-CU-UP UE E1AP ID | M |  | 9.3.1.5 |  | YES | reject |
| Security Information | O |  | 9.3.1.10 |  | YES | reject |
| UE DL Aggregate Maximum Bit Rate | O |  | 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 |
| Bearer Context Status Change | O |  | ENUMERATED (Suspend, Resume, …, ResumeforSDT) | Indicates the status of the Bearer Context | YES | reject |
| New UL TNL Information Required | O |  | ENUMERATED (required, …) | Indicates that new UL TNL information has been requested to be provided. | YES | reject |
| UE Inactivity Timer | O |  | Inactivity Timer 9.3.1.54 | Included if the Activity Notification Level is set to UE. | - | - |
| Data Discard Required | O |  | ENUMERATED (required, …) | Indicate to discard the DL user data in case of RAN paging failure. | YES | ignore |
| CHOICE *System* | O |  |  |  | YES | reject |
| *>E-UTRAN* |  |  |  |  |  |  |
| >>DRB To Setup List | O |  | DRB To Setup Modification List E-UTRAN 9.3.3.7 |  | YES | reject |
| >>DRB To Modify List | O |  | DRB To Modify List E-UTRAN9.3.3.8 |  | YES | reject |
| >>DRB To Remove List | O |  | DRB To Remove List E-UTRAN 9.3.3.9 |  | 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 | O |  | PDU Session Resource To Setup Modification List9.3.3.10 |  | YES | reject |
| >>PDU Session Resource To Modify List | O |  | 9.3.3.11 |  | YES | reject |
| >>PDU Session Resource To Remove List | O |  | 9.3.3.12 |  | YES | reject |
| RAN UE ID | O |  | OCTET STRING (SIZE(8)) |  | YES | ignore |
| gNB-DU ID | O |  | 9.3.1.65 |  | YES | ignore |
| Activity Notification Level | O |  | 9.3.1.67 |  | YES | ignore |
| SDT Continue ROHC | O |  | ENUMERATED (true, …) | Indicates ROHC should be continued for SDT DRBs. See description of *sdt-DRB-ContinueROHC-r17* in TS 38.331 [10]. | 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. |

//////////////////////////////////////////////////////////////irrelevant operations skipped/////////////////////////////////////////////////////////////////////

#### 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 |  | 9.3.1.91 |  | YES | ignore |
| >>>Ignore Mapping Rule Indication | O |  | ENUMERATED (True, …) | Included if the QoS flow mapping rule for the DRB has not been decided by gNB-CU-CP. | YES | reject |
| >>>QoS Flows Remapping | O |  | ENUMERATED (update, source configuration, …) | Indicates that the target gNB-CU-CP requests QoS flow remapping during an intra-system lossless handover as specified in TS 38.300 [4].  | YES | reject |
| >>>SDT Indicator Setup | O |  | ENUMERATED (true, …) | Indicates that the DRB is for SDT. | YES | reject |
| >Redundant NG UL UP Transport Layer Information | O |  | UP Transport Layer Information9.3.2.1 |  | YES | ignore |
| >Redundant Common Network Instance | O |  | Common Network Instance9.3.1.66 |  | YES | ignore |
| >Redundant PDU Session Information | O |  | 9.3.1.80 |  | YES | ignore |

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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. |

//////////////////////////////////////////////////////////////irrelevant operations skipped/////////////////////////////////////////////////////////////////////

#### 9.3.3.10 PDU Session Resource To Setup Modification List

This IE contains PDU session resource to setup 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 Setup Modification 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 Rate 9.3.1.20 | This IE shall be present when Non-GBR QoS Flows are setting up. | - | - |
| >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 | Requesting forwarding info from the target 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 |  | - | - |
| >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 | 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 |
| >>>Ignore Mapping Rule Indication | O |  | ENUMERATED (True, …) | Included if the QoS flow mapping rule for the DRB has not been decided by gNB-CU-CP. | YES | reject |
| >>>DAPS Request Information | O |  | 9.3.1.91 | This IE is not used in this version of the specification. | YES | ignore |
| >>>SDT Indicator Setup | O |  | ENUMERATED (true, …) | Indicates that the DRB is for SDT. | YES | reject |
| >Redundant NG UL UP Transport Layer Information | O |  | UP Transport Layer Information9.3.2.1 |  | YES | ignore |
| >Redundant Common Network Instance | O |  | Common Network Instance9.3.1.66 |  | 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. |

#### 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 |
| >>>Ignore Mapping Rule Indication | O |  | ENUMERATED (True, …) | Included if the QoS flow mapping rule for the DRB has not been decided by gNB-CU-CP. | YES | reject |
| >>>DAPS Request Information | O |  | 9.3.1.91 | Used to request intra-gNB-CU-UP DAPS HO | YES | ignore |
| >>>QoS Flows Remapping | O |  | ENUMERATED (update, source configuration, …) | This IE is not used in this version of the specification. | YES | reject |
| >>>SDT Indicator Setup | O |  | ENUMERATED (true, …) | Indicates that the DRB is for SDT.  | YES | reject |
| **>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 |  | 9.3.1.92 | Provides early data forwarding information to the target gNB-CU-UP. | YES | reject |
| >>>DAPS Request Information | O |  | 9.3.1.91 | Used to request intra-gNB-CU-UP DAPS HO | YES | ignore |
| >>>Early Data Forwarding Indicator | O |  | ENUMERATED (stop, …) |  | YES | ignore |
| >>>SDT Indicator Modify | O |  | ENUMERATED (true, false, …) | Indicates that the DRB is for SDT or not. | 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 |
| >Redundant NG UL UP Transport Layer Information | O |  | UP Transport Layer Information9.3.2.1 |  | YES | ignore |
| >Redundant Common Network Instance | O |  | Common Network Instance9.3.1.66 |  | YES | ignore |
| **>Data Forwarding to E-UTRAN Information List** |  | *0.. 1* |  | Contains a list of DL Data Forwarding tunnels and the associated QoS Flows to be forwarded on each tunnel | YES | ignore |
| **>>Data Forwarding to E-UTRAN Information List Item** |  | *1..<maxnoofDataForwardingTunneltoE-UTRAN>* |  |  | - | - |
| >>>Data forwarding tunnel information | M |  | UP Transport Layer Information 9.3.2.1 |  | - | - |
| >>>QoS Flows to be forwarded List |  | *1* |  |   | - | - |
| >>>>QoS Flows to be forwarded Item |  | *1..<maxnoofQoSflows>* |  |  | - | - |
| >>>>>QoS Flow Identifier | M |  | QoS Flow Identifier9.3.1.24 |  | - | - |

|  |  |
| --- | --- |
| 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. |
| maxnoofDataForwardingTunneltoE-UTRAN | Maximum no. of Data Forwarding Tunnels to E-UTRAN for a UE. Value is 256. |
| maxnoofQoSflows | Maximum no. of QoS flows in a PDU Session. Value is 64. |

//////////////////////////////////////////////////////////////irrelevant operations skipped/////////////////////////////////////////////////////////////////////

## 9.4 Message and Information Element Abstract Syntax (with ASN.1)

//////////////////////////////////////////////////////////////irrelevant operations skipped/////////////////////////////////////////////////////////////////////

### 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,

 Extended-GNB-CU-UP-Name,

 GNB-CU-CP-Name,

 Extended-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-Measurement-Results-Information-List,

 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,

 ExtendedSliceSupportList,

 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,

 HW-CapacityIndicator,

 RegistrationRequest,

 ReportCharacteristics,

 ReportingPeriodicity,

 TNL-AvailableCapacityIndicator,

 DLUPTNLAddressToUpdateItem,

 ULUPTNLAddressToUpdateItem,

 NPNContextInfo,

 NPNSupportInfo,

 MDTPLMNList,

 PrivacyIndicator,

 URIaddress,

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

 CHOInitiation,

 ExtendedSliceSupportList,

 TransportLayerAddress,

 AdditionalHandoverInfo,

 Extended-NR-CGI-Support-List,

 DirectForwardingPathAvailability,

 SDTContinueROHC

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-Extended-GNB-CU-UP-Name,

 id-gNB-CU-CP-Name,

 id-Extended-GNB-CU-CP-Name,

 id-CNSupport,

 id-SupportedPLMNs,

 id-NPNSupportInfo,

 id-NPNContextInfo,

 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-Measurement-Results-Information-List,

 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-gNB-CU-CP-Measurement-ID,

 id-gNB-CU-UP-Measurement-ID,

 id-RegistrationRequest,

 id-ReportCharacteristics,

 id-ReportingPeriodicity,

 id-TNL-AvailableCapacityIndicator,

 id-HW-CapacityIndicator,

 id-DLUPTNLAddressToUpdateList,

 id-ULUPTNLAddressToUpdateList,

 id-ManagementBasedMDTPLMNList,

 id-TraceCollectionEntityIPAddress,

 id-PrivacyIndicator,

 id-URIaddress,

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

 id-CHOInitiation,

 id-ExtendedSliceSupportList,

 id-AdditionalHandoverInfo,

 id-Extended-NR-CGI-Support-List,

 id-DirectForwardingPathAvailability,

 id-SDTContinueROHC,

 maxnoofErrors,

 maxnoofSPLMNs,

 maxnoofDRBs,

 maxnoofTNLAssociations,

 maxnoofIndividualE1ConnectionsToReset,

 maxnoofTNLAddresses

//////////////////////////////////////////////////////////////irrelevant operations skipped/////////////////////////////////////////////////////////////////////

-- BEARER CONTEXT MODIFICATION

--

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

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

--

-- Bearer Context Modification Request

--

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

BearerContextModificationRequest ::= SEQUENCE {

 protocolIEs ProtocolIE-Container { { BearerContextModificationRequestIEs} },

 ...

}

BearerContextModificationRequestIEs 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-SecurityInformation CRITICALITY reject TYPE SecurityInformation PRESENCE optional }|

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

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

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

 { ID id-New-UL-TNL-Information-Required CRITICALITY reject TYPE New-UL-TNL-Information-Required PRESENCE optional }|

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

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

 { ID id-System-BearerContextModificationRequest CRITICALITY reject TYPE System-BearerContextModificationRequest PRESENCE optional }|

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

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

 { ID id-ActivityNotificationLevel CRITICALITY ignore TYPE ActivityNotificationLevel PRESENCE optional },|

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

 ...

}

//////////////////////////////////////////////////////////////irrelevant operations skipped/////////////////////////////////////////////////////////////////////

### 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-QosMonitoringReportingFrequency,

 id-QoSMonitoringDisabled,

 id-PDCP-StatusReportIndication,

 id-RedundantCommonNetworkInstance,

 id-redundant-nG-UL-UP-TNL-Information,

 id-redundant-nG-DL-UP-TNL-Information,

 id-RedundantQosFlowIndicator,

 id-TSCTrafficCharacteristics,

 id-ExtendedPacketDelayBudget,

 id-CNPacketDelayBudgetDownlink,

 id-CNPacketDelayBudgetUplink,

 id-AdditionalPDCPduplicationInformation,

 id-RedundantPDUSessionInformation,

 id-RedundantPDUSessionInformation-used,

 id-QoS-Mapping-Information,

 id-MDTConfiguration,

 id-TraceCollectionEntityURI,

 id-EHC-Parameters,

 id-DAPSRequestInfo,

 id-EarlyForwardingCOUNTReq,

 id-EarlyForwardingCOUNTInfo,

 id-AlternativeQoSParaSetList,

 id-MCG-OfferedGBRQoSFlowInfo,

 id-Number-of-tunnels,

 id-DataForwardingtoE-UTRANInformationList,

 id-DataForwardingtoNG-RANQoSFlowInformationList,

 id-MaxCIDEHCDL,

 id-ignoreMappingRuleIndication,

 id-EarlyDataForwardingIndicator,

 id-QoSFlowsDRBRemapping,

 id-SDTindicatorSetup,

 id-SDTindicatorMod,

 maxnoofQoSParaSets,

 maxnoofErrors,

 maxnoofSliceItems,

 maxnoofEUTRANQOSParameters,

 maxnoofNGRANQOSParameters,

 maxnoofDRBs,

 maxnoofPDUSessionResource,

 maxnoofQoSFlows,

 maxnoofUPParameters,

 maxnoofCellGroups,

 maxnooftimeperiods,

 maxnoofNRCGI,

 maxnoofTLAs,

 maxnoofGTPTLAs,

 maxnoofSPLMNs,

 maxnoofMDTPLMNs,

 maxnoofExtSliceItems,

 maxnoofDataForwardingTunneltoE-UTRAN,

 maxnoofExtNRCGI

//////////////////////////////////////////////////////////////irrelevant operations skipped/////////////////////////////////////////////////////////////////////

-- B

BearerContextStatusChange ::= ENUMERATED {

 suspend,

 resume,

 ...,

 resumeforSDT

}

BitRate ::= INTEGER (0..4000000000000,...)

//////////////////////////////////////////////////////////////irrelevant operations skipped/////////////////////////////////////////////////////////////////////

-- D

DAPSRequestInfo ::= SEQUENCE {

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

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

 ...

}

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

 ...

}

Data-Forwarding-Information-Request ::= SEQUENCE {

 data-Forwarding-Request Data-Forwarding-Request,

 qoS-Flows-Forwarded-On-Fwd-Tunnels QoS-Flow-Mapping-List OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { { Data-Forwarding-Information-Request-ExtIEs } } OPTIONAL,

 ...

}

Data-Forwarding-Information-Request-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

Data-Forwarding-Information ::= SEQUENCE {

 uL-Data-Forwarding UP-TNL-Information OPTIONAL,

 dL-Data-Forwarding UP-TNL-Information OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { { Data-Forwarding-Information-ExtIEs } } OPTIONAL,

 ...

}

Data-Forwarding-Information-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 {ID id-DataForwardingtoNG-RANQoSFlowInformationList CRITICALITY ignore EXTENSION DataForwardingtoNG-RANQoSFlowInformationList PRESENCE optional},

 ...

}

Data-Forwarding-Request ::= ENUMERATED {

 uL,

 dL,

 both,

 ...

}

DataForwardingtoE-UTRANInformationList ::= SEQUENCE (SIZE(1.. maxnoofDataForwardingTunneltoE-UTRAN)) OF DataForwardingtoE-UTRANInformationListItem

DataForwardingtoE-UTRANInformationListItem ::= SEQUENCE {

 data-forwarding-tunnel-information  UP-TNL-Information,

 qoS-Flows-to-be-forwarded-List QoS-Flows-to-be-forwarded-List,

 iE-Extensions ProtocolExtensionContainer { { DataForwardingtoE-UTRANInformationListItem-ExtIEs} } OPTIONAL,

 ...

}

DataForwardingtoE-UTRANInformationListItem-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

Data-Usage-per-PDU-Session-Report ::= SEQUENCE {

 secondaryRATType ENUMERATED {nR, e-UTRA, ...},

 pDU-session-Timed-Report-List SEQUENCE (SIZE(1..maxnooftimeperiods)) OF MRDC-Data-Usage-Report-Item,

 iE-Extensions ProtocolExtensionContainer { { Data-Usage-per-PDU-Session-Report-ExtIEs} } OPTIONAL,

...

}

Data-Usage-per-PDU-Session-Report-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

Data-Usage-per-QoS-Flow-List ::= SEQUENCE (SIZE(1..maxnoofQoSFlows)) OF Data-Usage-per-QoS-Flow-Item

Data-Usage-per-QoS-Flow-Item ::= SEQUENCE {

 qoS-Flow-Identifier QoS-Flow-Identifier,

 secondaryRATType ENUMERATED {nR, e-UTRA, ...},

 qoS-Flow-Timed-Report-List SEQUENCE (SIZE(1..maxnooftimeperiods)) OF MRDC-Data-Usage-Report-Item,

 iE-Extensions ProtocolExtensionContainer { { Data-Usage-per-QoS-Flow-Item-ExtIEs} } OPTIONAL,

...

}

Data-Usage-per-QoS-Flow-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

Data-Usage-Report-List ::= SEQUENCE (SIZE(1.. maxnoofDRBs)) OF Data-Usage-Report-Item

Data-Usage-Report-Item ::= SEQUENCE {

 dRB-ID DRB-ID,

 rAT-Type RAT-Type,

 dRB-Usage-Report-List DRB-Usage-Report-List,

 iE-Extensions ProtocolExtensionContainer { { Data-Usage-Report-ItemExtIEs } } OPTIONAL,

 ...

}

Data-Usage-Report-ItemExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

DefaultDRB ::= ENUMERATED {

 true,

 false,

 ...

}

DirectForwardingPathAvailability ::= ENUMERATED {

 inter-system-direct-path-available,

 ...,

 intra-system-direct-path-available

}

DiscardTimer ::= ENUMERATED {ms10, ms20, ms30, ms40, ms50, ms60, ms75, ms100, ms150, ms200, ms250, ms300, ms500, ms750, ms1500, infinity}

DLDiscarding ::= SEQUENCE {

 dLDiscardingCountVal PDCP-Count,

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

}

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

 ...

}

DLUPTNLAddressToUpdateItem ::= SEQUENCE {

 oldTNLAdress TransportLayerAddress,

 newTNLAdress TransportLayerAddress,

 iE-Extensions ProtocolExtensionContainer { { DLUPTNLAddressToUpdateItemExtIEs } } OPTIONAL,

 ...

}

DLUPTNLAddressToUpdateItemExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

DL-TX-Stop ::= ENUMERATED {

 stop,

 resume,

 ...

}

DRB-Activity ::= ENUMERATED {

 active,

 not-active,

 ...

}

DRB-Activity-List ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF DRB-Activity-Item

DRB-Activity-Item ::= SEQUENCE {

 dRB-ID DRB-ID,

 dRB-Activity DRB-Activity,

 iE-Extensions ProtocolExtensionContainer { { DRB-Activity-ItemExtIEs } } OPTIONAL,

 ...

}

DRB-Activity-ItemExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

DRB-Confirm-Modified-List-EUTRAN ::= SEQUENCE (SIZE(1.. maxnoofDRBs)) OF DRB-Confirm-Modified-Item-EUTRAN

DRB-Confirm-Modified-Item-EUTRAN ::= SEQUENCE {

 dRB-ID DRB-ID,

 cell-Group-Information Cell-Group-Information OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { { DRB-Confirm-Modified-Item-EUTRAN-ExtIEs } } OPTIONAL,

 ...

}

DRB-Confirm-Modified-Item-EUTRAN-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

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

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

 dRB-ID DRB-ID,

 cell-Group-Information Cell-Group-Information OPTIONAL,

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

 ...

}

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

 ...

}

DRB-Failed-List-EUTRAN ::= SEQUENCE (SIZE(1.. maxnoofDRBs)) OF DRB-Failed-Item-EUTRAN

DRB-Failed-Item-EUTRAN ::= SEQUENCE {

 dRB-ID DRB-ID,

 cause Cause,

 iE-Extensions ProtocolExtensionContainer { { DRB-Failed-Item-EUTRAN-ExtIEs } } OPTIONAL,

 ...

}

DRB-Failed-Item-EUTRAN-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

DRB-Failed-Mod-List-EUTRAN ::= SEQUENCE (SIZE(1.. maxnoofDRBs)) OF DRB-Failed-Mod-Item-EUTRAN

DRB-Failed-Mod-Item-EUTRAN ::= SEQUENCE {

 dRB-ID DRB-ID,

 cause Cause,

 iE-Extensions ProtocolExtensionContainer { { DRB-Failed-Mod-Item-EUTRAN-ExtIEs } } OPTIONAL,

 ...

}

DRB-Failed-Mod-Item-EUTRAN-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

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

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

 dRB-ID DRB-ID,

 cause Cause,

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

 ...

}

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

 ...

}

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

DRB-Failed-Mod-Item-NG-RAN ::= SEQUENCE {

 dRB-ID DRB-ID,

 cause Cause,

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

 ...

}

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

 ...

}

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

DRB-Failed-To-Modify-Item-EUTRAN ::= SEQUENCE {

 dRB-ID DRB-ID,

 cause Cause,

 iE-Extensions ProtocolExtensionContainer { { DRB-Failed-To-Modify-Item-EUTRAN-ExtIEs } } OPTIONAL,

 ...

}

DRB-Failed-To-Modify-Item-EUTRAN-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

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

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

 dRB-ID DRB-ID,

 cause Cause,

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

 ...

}

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

 ...

}

DRB-ID ::= INTEGER (1..32, ...)

DRB-Measurement-Results-Information-List ::= SEQUENCE (SIZE(1.. maxnoofDRBs)) OF DRB-Measurement-Results-Information-Item

DRB-Measurement-Results-Information-Item ::= SEQUENCE {

 dRB-ID DRB-ID,

 uL-D1-Result INTEGER (0..10000, ...) OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { { DRB-Measurement-Results-Information-Item-ExtIEs } } OPTIONAL,

 ...

}

DRB-Measurement-Results-Information-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

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

DRB-Modified-Item-EUTRAN ::= SEQUENCE {

 dRB-ID DRB-ID,

 s1-DL-UP-TNL-Information UP-TNL-Information OPTIONAL,

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

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

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

 ...

}

DRB-Modified-Item-EUTRAN-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

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}|

 {ID id-OldQoSFlowMap-ULendmarkerexpected CRITICALITY ignore EXTENSION QoS-Flow-List PRESENCE optional},

 ...

}

DRB-Removed-Item ::= SEQUENCE {

 dRB-ID DRB-ID,

 dRB-Released-In-Session ENUMERATED {released-in-session, not-released-in-session, ...} OPTIONAL,

 dRB-Accumulated-Session-Time OCTET STRING (SIZE(5)) OPTIONAL,

 qoS-Flow-Removed-List SEQUENCE (SIZE(1.. maxnoofQoSFlows)) OF QoS-Flow-Removed-Item OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { { DRB-Removed-Item-ExtIEs } } OPTIONAL,

 ...

}

DRB-Removed-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

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

DRB-Required-To-Modify-Item-EUTRAN ::= SEQUENCE {

 dRB-ID DRB-ID,

 s1-DL-UP-TNL-Information UP-TNL-Information OPTIONAL,

 gNB-CU-UP-CellGroupRelatedConfiguration GNB-CU-UP-CellGroupRelatedConfiguration OPTIONAL,

 cause Cause OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { { DRB-Required-To-Modify-Item-EUTRAN-ExtIEs } } OPTIONAL,

 ...

}

DRB-Required-To-Modify-Item-EUTRAN-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

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

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

 dRB-ID DRB-ID,

 gNB-CU-UP-CellGroupRelatedConfiguration GNB-CU-UP-CellGroupRelatedConfiguration OPTIONAL,

 flow-To-Remove QoS-Flow-List OPTIONAL,

 cause Cause OPTIONAL,

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

 ...

}

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

 ...

}

DRB-Setup-List-EUTRAN ::= SEQUENCE (SIZE(1.. maxnoofDRBs)) OF DRB-Setup-Item-EUTRAN

DRB-Setup-Item-EUTRAN ::= SEQUENCE {

 dRB-ID DRB-ID,

 s1-DL-UP-TNL-Information UP-TNL-Information,

 data-Forwarding-Information-Response Data-Forwarding-Information OPTIONAL,

 uL-UP-Transport-Parameters UP-Parameters,

 s1-DL-UP-Unchanged ENUMERATED {true, ...} OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { { DRB-Setup-Item-EUTRAN-ExtIEs } } OPTIONAL,

 ...

}

DRB-Setup-Item-EUTRAN-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

DRB-Setup-Mod-List-EUTRAN ::= SEQUENCE (SIZE(1.. maxnoofDRBs)) OF DRB-Setup-Mod-Item-EUTRAN

DRB-Setup-Mod-Item-EUTRAN ::= SEQUENCE {

 dRB-ID DRB-ID,

 s1-DL-UP-TNL-Information UP-TNL-Information,

 data-Forwarding-Information-Response Data-Forwarding-Information OPTIONAL,

 uL-UP-Transport-Parameters UP-Parameters,

 iE-Extensions ProtocolExtensionContainer { { DRB-Setup-Mod-Item-EUTRAN-ExtIEs } } OPTIONAL,

 ...

}

DRB-Setup-Mod-Item-EUTRAN-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

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

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

 dRB-ID DRB-ID,

 dRB-data-Forwarding-Information-Response Data-Forwarding-Information OPTIONAL,

 uL-UP-Transport-Parameters UP-Parameters,

 flow-Setup-List QoS-Flow-List,

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

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

 ...

}

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

 ...

}

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

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

 dRB-ID DRB-ID,

 dRB-data-Forwarding-Information-Response Data-Forwarding-Information OPTIONAL,

 uL-UP-Transport-Parameters UP-Parameters,

 flow-Setup-List QoS-Flow-List,

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

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

 ...

}

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

 ...

}

DRB-Status-Item ::= SEQUENCE {

 dRB-ID DRB-ID,

 pDCP-DL-Count PDCP-Count OPTIONAL,

 pDCP-UL-Count PDCP-Count OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { { DRB-Status-ItemExtIEs } } OPTIONAL,

 ...

}

DRB-Status-ItemExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

DRBs-Subject-To-Counter-Check-List-EUTRAN ::= SEQUENCE (SIZE(1.. maxnoofDRBs)) OF DRBs-Subject-To-Counter-Check-Item-EUTRAN

DRBs-Subject-To-Counter-Check-Item-EUTRAN ::= SEQUENCE {

 dRB-ID DRB-ID,

 pDCP-UL-Count PDCP-Count,

 pDCP-DL-Count PDCP-Count,

 iE-Extensions ProtocolExtensionContainer { { DRBs-Subject-To-Counter-Check-Item-EUTRAN-ExtIEs } } OPTIONAL,

 ...

}

DRBs-Subject-To-Counter-Check-Item-EUTRAN-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

DRBs-Subject-To-Counter-Check-List-NG-RAN ::= SEQUENCE (SIZE(1.. maxnoofDRBs)) OF DRBs-Subject-To-Counter-Check-Item-NG-RAN

DRBs-Subject-To-Counter-Check-Item-NG-RAN ::= SEQUENCE {

 pDU-Session-ID PDU-Session-ID,

 dRB-ID DRB-ID,

 pDCP-UL-Count PDCP-Count,

 pDCP-DL-Count PDCP-Count,

 iE-Extensions ProtocolExtensionContainer { { DRBs-Subject-To-Counter-Check-Item-NG-RAN-ExtIEs } } OPTIONAL,

 ...

}

DRBs-Subject-To-Counter-Check-Item-NG-RAN-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

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

DRB-To-Modify-Item-EUTRAN ::= SEQUENCE {

 dRB-ID DRB-ID,

 pDCP-Configuration PDCP-Configuration OPTIONAL,

 eUTRAN-QoS EUTRAN-QoS OPTIONAL,

 s1-UL-UP-TNL-Information UP-TNL-Information OPTIONAL,

 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,

 dRB-Inactivity-Timer Inactivity-Timer OPTIONAL,

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

 ...

}

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

 ...

}

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}|

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

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

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

 ...

}

DRB-To-Remove-List-EUTRAN ::= SEQUENCE (SIZE(1.. maxnoofDRBs)) OF DRB-To-Remove-Item-EUTRAN

DRB-To-Remove-Item-EUTRAN ::= SEQUENCE {

 dRB-ID DRB-ID,

 iE-Extensions ProtocolExtensionContainer { { DRB-To-Remove-Item-EUTRAN-ExtIEs } } OPTIONAL,

 ...

}

DRB-To-Remove-Item-EUTRAN-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

DRB-Required-To-Remove-List-EUTRAN ::= SEQUENCE (SIZE(1.. maxnoofDRBs)) OF DRB-Required-To-Remove-Item-EUTRAN

DRB-Required-To-Remove-Item-EUTRAN ::= SEQUENCE {

 dRB-ID DRB-ID,

 cause Cause,

 iE-Extensions ProtocolExtensionContainer { { DRB-Required-To-Remove-Item-EUTRAN-ExtIEs } } OPTIONAL,

 ...

}

DRB-Required-To-Remove-Item-EUTRAN-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

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

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

 dRB-ID DRB-ID,

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

 ...

}

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

 ...

}

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

DRB-Required-To-Remove-Item-NG-RAN ::= SEQUENCE {

 dRB-ID DRB-ID,

 cause Cause,

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

 ...

}

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

 ...

}

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

DRB-To-Setup-Item-EUTRAN ::= SEQUENCE {

 dRB-ID DRB-ID,

 pDCP-Configuration PDCP-Configuration,

 eUTRAN-QoS EUTRAN-QoS,

 s1-UL-UP-TNL-Information UP-TNL-Information,

 data-Forwarding-Information-Request Data-Forwarding-Information-Request OPTIONAL,

 cell-Group-Information Cell-Group-Information,

 dL-UP-Parameters UP-Parameters OPTIONAL,

 dRB-Inactivity-Timer Inactivity-Timer OPTIONAL,

 existing-Allocated-S1-DL-UP-TNL-Info UP-TNL-Information OPTIONAL,

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

 ...

}

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

 ...

}

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

DRB-To-Setup-Mod-Item-EUTRAN ::= SEQUENCE {

 dRB-ID DRB-ID,

 pDCP-Configuration PDCP-Configuration,

 eUTRAN-QoS EUTRAN-QoS,

 s1-UL-UP-TNL-Information UP-TNL-Information,

 data-Forwarding-Information-Request Data-Forwarding-Information-Request OPTIONAL,

 cell-Group-Information Cell-Group-Information,

 dL-UP-Parameters UP-Parameters OPTIONAL,

 dRB-Inactivity-Timer Inactivity-Timer OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { { DRB-To-Setup-Mod-Item-EUTRAN-ExtIEs } } OPTIONAL,

 ...

}

DRB-To-Setup-Mod-Item-EUTRAN-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

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}|

 {ID id-ignoreMappingRuleIndication CRITICALITY reject EXTENSION IgnoreMappingRuleIndication PRESENCE optional}|

 {ID id-QoSFlowsDRBRemapping CRITICALITY reject EXTENSION QoS-Flows-DRB-Remapping PRESENCE optional}|

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

 ...

}

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

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

 dRB-ID DRB-ID,

 sDAP-Configuration SDAP-Configuration,

 pDCP-Configuration PDCP-Configuration,

 cell-Group-Information Cell-Group-Information,

 flow-Mapping-Information 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-Mod-Item-NG-RAN-ExtIEs } } OPTIONAL,

 ...

}

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

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

 {ID id-ignoreMappingRuleIndication CRITICALITY reject EXTENSION IgnoreMappingRuleIndication PRESENCE optional}|

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

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

 ...

}

//////////////////////////////////////////////////////////////irrelevant operations skipped/////////////////////////////////////////////////////////////////////

-- S

SecurityAlgorithm ::= SEQUENCE {

 cipheringAlgorithm CipheringAlgorithm,

 integrityProtectionAlgorithm IntegrityProtectionAlgorithm OPTIONAL,

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

 ...

}

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

 ...

}

SecurityIndication ::= SEQUENCE {

 integrityProtectionIndication IntegrityProtectionIndication,

 confidentialityProtectionIndication ConfidentialityProtectionIndication,

 maximumIPdatarate MaximumIPdatarate OPTIONAL,

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

 ...

}

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

 ...

}

SecurityInformation ::= SEQUENCE {

 securityAlgorithm SecurityAlgorithm,

 uPSecuritykey UPSecuritykey,

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

 ...

}

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

 ...

}

SecurityResult ::= SEQUENCE {

 integrityProtectionResult IntegrityProtectionResult,

 confidentialityProtectionResult ConfidentialityProtectionResult,

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

 ...

}

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

 ...

}

Slice-Support-List ::= SEQUENCE (SIZE(1.. maxnoofSliceItems)) OF Slice-Support-Item

Slice-Support-Item ::= SEQUENCE {

 sNSSAI SNSSAI,

 iE-Extensions ProtocolExtensionContainer { { Slice-Support-Item-ExtIEs } } OPTIONAL

}

Slice-Support-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

SNSSAI ::= SEQUENCE {

 sST OCTET STRING (SIZE(1)),

 sD OCTET STRING (SIZE(3)) OPTIONAL,

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

 ...

}

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

 ...

}

SDAP-Configuration ::= SEQUENCE {

 defaultDRB DefaultDRB,

 sDAP-Header-UL SDAP-Header-UL,

 sDAP-Header-DL SDAP-Header-DL,

 iE-Extensions ProtocolExtensionContainer { { SDAP-Configuration-ExtIEs } } OPTIONAL,

 ...

}

SDAP-Configuration-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

SDAP-Header-DL ::= ENUMERATED {

 present,

 absent,

 ...

}

SDAP-Header-UL ::= ENUMERATED {

 present,

 absent,

 ...

}

SubscriberProfileIDforRFP ::= INTEGER (1..256, ...)

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

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

SDTindicatorMod ::= ENUMERATED {true, false, ...}

//////////////////////////////////////////////////////////////irrelevant operations skipped/////////////////////////////////////////////////////////////////////

### 9.4.7 Constant Definitions

//////////////////////////////////////////////////////////////irrelevant operations skipped/////////////////////////////////////////////////////////////////////

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

--

-- 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-PDCP-StatusReportIndication ProtocolIE-ID ::= 88

id-gNB-CU-CP-Measurement-ID ProtocolIE-ID ::= 89

id-gNB-CU-UP-Measurement-ID ProtocolIE-ID ::= 90

id-RegistrationRequest ProtocolIE-ID ::= 91

id-ReportCharacteristics ProtocolIE-ID ::= 92

id-ReportingPeriodicity ProtocolIE-ID ::= 93

id-TNL-AvailableCapacityIndicator ProtocolIE-ID ::= 94

id-HW-CapacityIndicator ProtocolIE-ID ::= 95

id-RedundantCommonNetworkInstance ProtocolIE-ID ::= 96

id-redundant-nG-UL-UP-TNL-Information ProtocolIE-ID ::= 97

id-redundant-nG-DL-UP-TNL-Information ProtocolIE-ID ::= 98

id-RedundantQosFlowIndicator ProtocolIE-ID ::= 99

id-TSCTrafficCharacteristics ProtocolIE-ID ::= 100

id-CNPacketDelayBudgetDownlink ProtocolIE-ID ::= 101

id-CNPacketDelayBudgetUplink ProtocolIE-ID ::= 102

id-ExtendedPacketDelayBudget ProtocolIE-ID ::= 103

id-AdditionalPDCPduplicationInformation ProtocolIE-ID ::= 104

id-RedundantPDUSessionInformation ProtocolIE-ID ::= 105

id-RedundantPDUSessionInformation-used ProtocolIE-ID ::= 106

id-QoS-Mapping-Information ProtocolIE-ID ::= 107

id-DLUPTNLAddressToUpdateList ProtocolIE-ID ::= 108

id-ULUPTNLAddressToUpdateList ProtocolIE-ID ::= 109

id-NPNSupportInfo ProtocolIE-ID ::= 110

id-NPNContextInfo ProtocolIE-ID ::= 111

id-MDTConfiguration ProtocolIE-ID ::= 112

id-ManagementBasedMDTPLMNList ProtocolIE-ID ::= 113

id-TraceCollectionEntityIPAddress ProtocolIE-ID ::= 114

id-PrivacyIndicator ProtocolIE-ID ::= 115

id-TraceCollectionEntityURI ProtocolIE-ID ::= 116

id-URIaddress ProtocolIE-ID ::= 117

id-EHC-Parameters ProtocolIE-ID ::= 118

id-DRBs-Subject-To-Early-Forwarding-List ProtocolIE-ID ::= 119

id-DAPSRequestInfo ProtocolIE-ID ::= 120

id-CHOInitiation ProtocolIE-ID ::= 121

id-EarlyForwardingCOUNTReq ProtocolIE-ID ::= 122

id-EarlyForwardingCOUNTInfo ProtocolIE-ID ::= 123

id-AlternativeQoSParaSetList ProtocolIE-ID ::= 124

 id-ExtendedSliceSupportList ProtocolIE-ID ::= 125

id-MCG-OfferedGBRQoSFlowInfo ProtocolIE-ID ::= 126

id-Number-of-tunnels ProtocolIE-ID ::= 127

id-DRB-Measurement-Results-Information-List ProtocolIE-ID ::= 128

id-Extended-GNB-CU-CP-Name ProtocolIE-ID ::= 129

id-Extended-GNB-CU-UP-Name ProtocolIE-ID ::= 130

id-DataForwardingtoE-UTRANInformationList ProtocolIE-ID ::= 131

id-QosMonitoringReportingFrequency ProtocolIE-ID ::= 132

id-QoSMonitoringDisabled ProtocolIE-ID ::= 133

id-AdditionalHandoverInfo ProtocolIE-ID ::= 134

id-Extended-NR-CGI-Support-List ProtocolIE-ID ::= 135

id-DataForwardingtoNG-RANQoSFlowInformationList ProtocolIE-ID ::= 136

id-MaxCIDEHCDL ProtocolIE-ID ::= 137

id-ignoreMappingRuleIndication ProtocolIE-ID ::= 138

id-DirectForwardingPathAvailability ProtocolIE-ID ::= 139

id-EarlyDataForwardingIndicator ProtocolIE-ID ::= 140

id-SDTContinueROHC ProtocolIE-ID ::= xxx

id-SDTindicatorSetup ProtocolIE-ID ::= yyy

id-SDTindicatorMod ProtocolIE-ID ::= zzz

////////////////////////////////////////////////////////////////////////end of change////////////////////////////////////////////////////////////////////////