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3rd Generation Partnership Project;

Technical Specification Group Radio Access Network;

E1 Application Protocol (E1AP)

(Release 18)

** 

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# Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

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z the third digit is incremented when editorial only changes have been incorporated in the document.

# 1 Scope

The present document specifies the 5G radio network layer signalling protocol for the E1 interface. The E1 interface provides means for interconnecting a gNB-CU-CP and a gNB-CU-UP of a gNB within an NG-RAN, or for interconnecting a gNB-CU-CP and a gNB-CU-UP of an en-gNB within an E-UTRAN, or for interconnecting an eNB-CP and an eNB-UP of an eNB within an E-UTRAN, or for interconnecting an ng-eNB-CU-CP and an ng-eNB-CU-UP of an ng-eNB within an NG-RAN. The E1 Application Protocol (E1AP) supports the functions of E1 interface by signalling procedures defined in the present document. E1AP is developed in accordance to the general principles stated in TS 38.401 [2] and TS 37.480 [3].

# 2 References

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

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

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

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

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 38.401: "NG-RAN; Architecture Description".

[3] 3GPP TS 37.480: "E1 general aspects and principles".

[4] 3GPP TS 38.300: "NR; Overall description; Stage-2".

[5] 3GPP TR 25.921 (version.7.0.0): "Guidelines and principles for protocol description and error".

[6] 3GPP TS 38.413: "NG-RAN; NG Application Protocol (NGAP)".

[7] ITU-T Recommendation X.691 (2002-07): "Information technology - ASN.1 encoding rules - Specification of Packed Encoding Rules (PER)".

[8] ITU-T Recommendation X.680 (07/2002): "Information technology – Abstract Syntax Notation One (ASN.1): Specification of basic notation".

[9] ITU-T Recommendation X.681 (07/2002): "Information technology – Abstract Syntax Notation One (ASN.1): Information object specification".

[10] 3GPP TS 38.331: "NR; Radio Resource Control (RRC); Protocol Specificaiton”.

[11] 3GPP TS 23.401: “General Packet Radio Service (GPRS) Enhancements for Evolved Universal Terrestrial Radio Access Network (E-UTRAN) access”.

[12] 3GPP TS 23.203: “Policy and Charging Control Architecture”.

[13] 3GPP TS 33.501: “Security Architecture and Procedures for 5G System”.

[14] IETF RFC 5905: “Network Time Protocol Version 4: Protocol and Algorithms Specification”.

[15] 3GPP TS 29.281: “General Packet Radio System (GPRS) Tunnelling Protocol User Plane (GTPv1-U)”.

[16] 3GPP TS 38.414: “NG-RAN; NG Data Transport”.

[17] 3GPP TS 38.323: "NR; Packet Data Convergence Protocol (PDCP) specification".

[18] 3GPP TS 37.482: "E1 Signalling Transport".

[19] 3GPP TS 37.340: "NR; Multi-connectivity; Overall description; Stage-2".

[20] 3GPP TS 23.501: "System Architecture for the 5G System".

[21] 3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC) protocol specification".

[22] 3GPP TS 28.552: "Management and orchestration; 5G performance measurements".

[23] 3GPP TS 23.003: "Numbering, addressing and identification".

[24] 3GPP TS 32.422: "Trace control and configuration management".

[25] 3GPP TS 36.300: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall description; Stage 2".

[26] 3GPP TS 32.425: "Performance measurements; Evolved Universal Terrestrial Radio Access Network (E-UTRAN)".

[27] 3GPP TS 37.320: "Universal Terrestrial Radio Access (UTRA) and Evolved Universal Terrestrial Radio Access (E-UTRA); Radio measurement collection for Minimization of Drive Tests (MDT);Overall description; Stage 2".

[28] 3GPP TS 38.474: "NG-RAN; F1 data transport".

[29] 3GPP TS 29.244: "Interface between the Control Plane and the User Plane Nodes; Stage 3".

[30] 3GPP TS 37.470: "W1 interface; General aspects and principles".

[31] 3GPP TS 36.401: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Architecture description".

[32] 3GPP TS 33.401: "3GPP System Architecture Evolution (SAE); Security architecture".

[33] 3GPP TS 36.331: "Radio Resource Control (RRC); Protocol specification".

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

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

# 3 Definitions and abbreviations

## 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, or between eNB-CP and eNB-UP, or between ng-eNB-CU-CP and ng-eNB-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 37.480 [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].

**Conditional PSCell Change:** as defined in TS 37.340 [19].

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

eNB-CP: as defined in TS 36.401 [31].

eNB-UP: as defined in TS 36.401 [31].

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].

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

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

**MBS session resource**: as defined in TS 38.401 [2].

**Multicast F1-U Context:** as defined in TS 38.401 [2].

ng-eNB-CU: as defined in TS 37.470 [30].

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

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

ng-eNB-DU: as defined in TS 37.470 [30].

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, or in eNB-CP and eNB-UP, or in ng-eNB-CU-CP and ng-eNB-CU-UP.

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 or eNB-CP or ng-eNB-CU-CP identifies the associated UE based on the *GNB-CU-CP UE E1AP ID* IE and the gNB-CU-UP or eNB-UP or ng-eNB-CU-UP identifies the associated UE based on the *GNB-CU-UP UE E1AP ID* IE.

Public Network Integrated NPN: as defined in TS 23.501 [20].

Stand-alone Non-Public Network: as defined in TS 23.501 [20].

U2N Remote UE:as defined in TS 38.300 [4].

Subsequent Conditional PSCell Addition or Change (subsequent CPAC): as defined in TS 37.340 [30]

## 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

CPA Conditional PSCell Addition

CPAC Conditional PSCell Addition or Change

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

MBS Multicast/Broadcast Service

MCG Master Cell Group

MT-SDT Mobile Terminated Small Data Transmission

NID Network Identifier

NPN Non-Public Network

PNI-NPN Public Network Integrated Non-Public Network

PTP Point to Point

PTM Point to Multipoint

NSSAI Network Slice Selection Assistance Information

RANAC RAN Area Code

SCG Secondary Cell Group

SDAP Service Data Adaptation Protocol

SDT Small Data Transmission

SNPN Stand-alone Non-Public Network

S-NSSAI Single Network Slice Selection Assistance Information

TNLA Transport Network Layer Association

U2N UE-to-Network

UDC Uplink Data Compression

# 4 General

## 4.1 Procedure specification principles

The principle for specifying the procedure logic is to specify the functional behaviour of the terminating node exactly and completely. Any rule that specifies the behaviour of the originating node shall be possible to be verified with information that is visible within the system.

The following specification principles have been applied for the procedure text in clause 8:

- The procedure text discriminates between:

1) Functionality which "shall" be executed.

The procedure text indicates that the receiving node "shall" perform a certain function Y under a certain condition. If the receiving node supports procedure X but cannot perform functionality Y requested in the REQUEST message of a Class 1 EP, the receiving node shall respond with the message used to report unsuccessful outcome for this procedure, containing an appropriate cause value.

2) Functionality which "shall, if supported" be executed.

The procedure text indicates that the receiving node "shall, if supported," perform a certain function Y under a certain condition. If the receiving node supports procedure X, but does not support functionality Y, the receiving node shall proceed with the execution of the EP, possibly informing the requesting node about the not supported functionality.

- Any required inclusion of an optional IE in a response message is explicitly indicated in the procedure text. If the procedure text does not explicitly indicate that an optional IE shall be included in a response message, the optional IE shall not be included. For requirements on including *Criticality Diagnostics* IE, see clause 10.

## 4.2 Forwards and backwards compatibility

The forwards and backwards compatibility of the protocol is assured by mechanism where all current and future messages, and IEs or groups of related IEs, include ID and criticality fields that are coded in a standard format that will not be changed in the future. These parts can always be decoded regardless of the standard version.

## 4.3 Specification notations

For the purposes of the present document, the following notations apply:

Procedure When referring to an elementary procedure in the specification the Procedure Name is written with the first letters in each word in upper case characters followed by the word "procedure", e.g. Handover Preparation procedure.

Message When referring to a message in the specification the MESSAGE NAME is written with all letters in upper case characters followed by the word "message", e.g. HANDOVER REQUEST message.

IE When referring to an information element (IE) in the specification the *Information Element Name* is written with the first letters in each word in upper case characters and all letters in Italic font followed by the abbreviation "IE", e.g. *E-RAB ID* IE.

Value of an IE When referring to the value of an information element (IE) in the specification the "Value" is written as it is specified in the specification enclosed by quotation marks, e.g. "Value".

# 5 E1AP services

E1AP provides the signalling service between the gNB-CU-CP and the gNB-CU-UP, or between the eNB-CP and the eNB-UP, or between the ng-eNB-CU-CP and the ng-eNB-CU-UP that is required to fulfil the E1AP functions described in clause 7. E1AP services are divided into three groups:

Non UE-associated services: They are related to the whole E1 interface instance between the gNB-CU-CP and gNB-CU-UP, or between the eNB-CP and eNB-UP, or between the ng-eNB-CU-CP and ng-eNB-CU-UP utilising a non UE-associated signalling connection.

UE-associated services: They are related to one UE. E1AP functions that provide these services are associated with a UE-associated signalling connection that is maintained for the UE in question.

MBS-associated services: They are related to one MBS session. E1AP functions that provide these services are associated with an MBS-associated signalling connection that is maintained for the MBS session in question.

Unless explicitly indicated in the procedure specification, at any instance in time one protocol endpoint shall have a maximum of one ongoing E1AP procedure related to a certain UE.

Unless explicitly indicated in the procedure specification, at any instance in time one protocol endpoint shall have a maximum of one ongoing E1AP procedure related to a certain MBS session.

# 6 Services expected from signalling transport

The signalling connection shall provide in sequence delivery of E1AP messages. E1AP shall be notified if the signalling connection breaks.

# 7 Functions of E1AP

The functions of E1AP are described in TS 37.480 [3].

# 8 E1AP procedures

NOTE: The procedures listed in this section should also be applied to CP/UP separation for eNB and ng-eNB, except for the IAB UP TNL Address Update procedure, if not stated otherwise. With this understanding, in this section each instance of gNB-CU-CP could be treated as eNB-CP or ng-eNB-CU-CP, and each gNB-CU-UP could be treated as eNB-UP or ng-eNB-CU-UP, for eNB or ng-eNB CP/UP separation respectively.

## 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 |  |
| Resource Status Reporting Initiation | RESOURCE STATUS REQUEST | RESOURCE STATUS RESPONSE | RESOURCE STATUS FAILURE |
| IAB UP TNL Address Update | IAB UP TNL ADDRESS UPDATE | IAB UP TNL ADDRESS UPDATE ACKNOWLEDGE | IAB UP TNL ADDRESS UPDATE FAILURE |
| BC Bearer Context Setup | BC BEARER CONTEXT SETUP REQUEST | BC BEARER CONTEXT SETUP RESPONSE | BC BEARER CONTEXT SETUP FAILURE |
| BC Bearer Context Modification (gNB-CU-CP initiated) | BC BEARER CONTEXT MODIFICATION REQUEST | BC BEARER CONTEXT MODIFICATION RESPONSE | BC BEARER CONTEXT MODIFICATION FAILURE |
| BC Bearer Context Modification Required (gNB-CU-UP initiated) | BC BEARER CONTEXT MODIFICATION REQUIRED | BC BEARER CONTEXT MODIFICATION CONFIRM |  |
| BC Bearer Context Release (gNB-CU-CP initiated) | BC BEARER CONTEXT RELEASE COMMAND | BC BEARER CONTEXT RELEASE COMPLETE |  |
| MC Bearer Context Setup | MC BEARER CONTEXT SETUP REQUEST | MC BEARER CONTEXT SETUP RESPONSE | MC BEARER CONTEXT SETUP FAILURE |
| MC Bearer Context Modification (gNB-CU-CP initiated) | MC BEARER CONTEXT MODIFICATION REQUEST | MC BEARER CONTEXT MODIFICATION RESPONSE | MC BEARER CONTEXT MODIFICATION FAILURE |
| MC Bearer Context Modification Required (gNB-CU-UP initiated) | MC BEARER CONTEXT MODIFICATION REQUIRED | MC BEARER CONTEXT MODIFICATION CONFIRM |  |
| MC Bearer Context Release (gNB-CU-CP initiated) | MC BEARER CONTEXT RELEASE COMMAND | MC 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 |
| Resource Status Reporting | RESOURCE STATUS UPDATE |
| Early Forwarding SN Transfer | EARLY FORWARDING SN TRANSFER |
| GNB-CU-CP Measurement Results Information | GNB-CU-CP MEASUREMENT RESULTS INFORMATION |
| IAB PSK Notification | IAB PSK NOTIFICATION |
| BC Bearer Context Release (gNB-CU-UP initiated) | BC BEARER CONTEXT RELEASE REQUEST |
| BC Bearer Context Release (gNB-CU-UP initiated) | BC BEARER CONTEXT RELEASE REQUEST |
| MC Bearer Notification | MC BEARER NOTIFICATION |

## 8.2 Interface Management procedures

### 8.2.1 Reset

#### 8.2.1.1 General

The purpose of the Reset procedure is to initialise or re-initialise the E1AP UE-related contexts, in the event of a failure in the gNB-CU-CP or gNB-CU-UP. This procedure does not affect the application level configuration data exchanged during, e.g., the E1 Setup procedure.

The procedure uses non-UE associated signalling.

#### 8.2.1.2 Successful Operation

##### 8.2.1.2.1 Reset Procedure Initiated from the gNB-CU-CP



Figure 8.2.1.2.1-1: Reset procedure initiated from the gNB-CU-CP. Successful operation.

In the event of a failure at the gNB-CU-CP, which has resulted in the loss of some or all transaction reference information, a RESET message shall be sent to the gNB-CU-UP.

At reception of the RESET message the gNB-CU-UP shall release all allocated resources on E1 related to the UE association(s) indicated explicitly or implicitly in the RESET message and remove the indicated bearer contexts including E1AP ID.

After the gNB-CU-UP has released all assigned E1 resources and the UE E1AP IDs for all indicated UE associations which can be used for new UE-associated logical E1-connections over the E1 interface, the gNB-CU-UP shall respond with the RESET ACKNOWLEDGE message. The gNB-CU-UP does not need to wait for the release of bearer resources to be completed before returning the RESET ACKNOWLEDGE message.

If the RESET message contains the *UE-associated logical E1-connection list* IE, then:

- The gNB-CU-UP shall use the *gNB-CU-CP UE E1AP ID* IE and/or the *gNB-CU-UP UE E1AP ID* IE to explicitly identify the UE association(s) to be reset.

- The gNB-CU-UP shall include in the RESET ACKNOWLEDGE message, for each UE association to be reset, the *UE-associated logical E1-connection Item* IE in the *UE-associated logical E1-connection list* IE. The *UE-associated logical E1-connection Item* IEs shall be in the same order as received in the RESET message and shall include also unknown UE-associated logical E1-connections. Empty *UE-associated logical E1-connection Item* IEs, received in the RESET message, may be omitted in the RESET ACKNOWLEDGE message.

- If the *gNB-CU-CP UE E1AP ID* IE is included in the *UE-associated logical E1-connection Item* IE for a UE association, the gNB-CU-UP shall include the *gNB-CU-CP UE E1AP ID* IE in the corresponding *UE-associated logical E1-connection Item* IE in the RESET ACKNOWLEDGE message.

- If the *gNB-CU-UP UE E1AP ID* IE is included in the *UE-associated logical E1-connection Item* IE for a UE association, the gNB-CU-UP shall include the *gNB-CU-UP UE E1AP ID* IE in the corresponding *UE-associated logical E1-connection Item* IE in the RESET ACKNOWLEDGE message.

**Interactions with other procedures:**

If the RESET message is received, any other ongoing procedure (except for another Reset procedure) on the same E1 interface related to a UE association, indicated explicitly or implicitly in the RESET message, shall be aborted.

##### 8.2.1.2.2 Reset Procedure Initiated from the gNB-CU-UP



Figure 8.2.1.2.2-1: Reset procedure initiated from the gNB-CU-UP. Successful operation.

In the event of a failure at the gNB-CU-UP, which has resulted in the loss of some or all transaction reference information, a RESET message shall be sent to the gNB-CU-CP.

At reception of the RESET message the gNB-CU-CP shall release all allocated resources on E1 related to the UE association(s) indicated explicitly or implicitly in the RESET message and remove the E1AP ID for the indicated UE associations.

After the gNB-CU-CP has released all assigned E1 resources and the UE E1AP IDs for all indicated UE associations which can be used for new UE-associated logical E1-connections over the E1 interface, the gNB-CU-CP shall respond with the RESET ACKNOWLEDGE message. The gNB-CU-CP does not need to wait for the release of bearer resources to be completed before returning the RESET ACKNOWLEDGE message.

If the RESET message contains the *UE-associated logical E1-connection list* IE, then:

- The gNB-CU-CP shall use the *gNB-CU-CP UE E1AP ID* IE and/or the *gNB-CU-UP UE E1AP ID* IE to explicitly identify the UE association(s) to be reset.

- The gNB-CU-CP shall in the RESET ACKNOWLEDGE message include, for each UE association to be reset, the *UE-associated logical E1-connection* Item IE in the *UE-associated logical E1-connection list* IE. The *UE-associated logical E1-connection Item* IEs shall be in the same order as received in the RESET message and shall include also unknown UE-associated logical E1-connections. Empty *UE-associated logical E1-connection Item* IEs, received in the RESET message, may be omitted in the RESET ACKNOWLEDGE message.

- If the *gNB-CU-CP UE E1AP ID* IE is included in the *UE-associated logical E1-connection Item* IE for a UE association, the gNB-CU-CP shall include the *gNB-CU-CP UE E1AP ID* IE in the corresponding *UE-associated logical E1-connection Item* IE in the RESET ACKNOWLEDGE message.

- If the *gNB-CU-UP UE E1AP ID* IE is included in a *UE-associated logical E1-connection Item* IE for a UE association, the gNB-CU-CP shall include the *gNB-CU-UP UE E1AP ID* IE in the corresponding *UE-associated logical E1-connection Item* IE in the RESET ACKNOWLEDGE message.

**Interactions with other procedures:**

If the RESET message is received, any other ongoing procedure (except for another Reset procedure) on the same E1 interface related to a UE association, indicated explicitly or implicitly in the RESET message, shall be aborted.

#### 8.2.1.3 Abnormal Conditions

Not applicable.

### 8.2.2 Error Indication

#### 8.2.2.1 General

The Error Indication procedure is initiated by a node in order to report detected errors in one incoming message, provided they cannot be reported by an appropriate failure message.

If the error situation arises due to reception of a message utilising UE associated signalling, then the Error Indication procedure uses UE associated signalling. Otherwise the procedure uses non-UE associated signalling.

#### 8.2.2.2 Successful Operation



Figure 8.2.2.2-1: Error Indication procedure, gNB-CU-CP originated. Successful operation.



Figure 8.2.2.2-2: Error Indication procedure, gNB-CU-UP originated. Successful operation.

When the conditions defined in clause 10 are fulfilled, the Error Indication procedure is initiated by an ERROR INDICATION message sent from the receiving node.

The ERROR INDICATION message shall contain at least either the *Cause* IE or the *Criticality Diagnostics* IE. In case the Error Indication procedure is triggered by utilising UE associated signalling the *gNB-CU-CP UE E1AP ID* IE and *gNB-CU-UP UE E1AP ID* IE shall be included in the ERROR INDICATION message. If one or both of the *gNB-CU-CP UE E1AP ID* IE and the *gNB-CU-UP UE E1AP ID* IE are not correct, the cause shall be set to appropriate value, e.g., "Unknown or already allocated gNB-CU-CP UE E1AP ID", "Unknown or already allocated gNB-CU-UP UE E1AP ID" or "Unknown or inconsistent pair of UE E1AP ID".

#### 8.2.2.3 Abnormal Conditions

Not applicable.

### 8.2.3 gNB-CU-UP E1 Setup

#### 8.2.3.1 General

The purpose of the gNB-CU-UP E1 Setup procedure is to exchange application level data needed for the gNB-CU-UP and the gNB-CU-CP to correctly interoperate on the E1 interface. If the gNB-CU-UP initiates the first TNL association, it shall also initiate the gNB-CU-UP E1 Setup procedure. The procedure uses non-UE associated signalling.

This procedure erases any existing application level configuration data in the two nodes and replaces it by the one received. This procedure also re-initialises the E1AP UE-related contexts (if any) and erases all related signalling connections in the two nodes like a Reset procedure would do.

#### 8.2.3.2 Successful Operation



Figure 8.2.3.2-1: gNB-CU-UP E1 Setup procedure: Successful Operation.

The gNB-CU-UP initiates the procedure by sending a GNB-CU-UP E1 SETUP REQUEST message including the appropriate data to the gNB-CU-CP. The gNB-CU-CP responds with a GNB-CU-UP E1 SETUP RESPONSE message including the appropriate data.

If the GNB-CU-UP E1 SETUP REQUEST message contains the *gNB-CU-UP Name* IE the gNB-CU-CP may use this IE as a human readable name of the gNB-CU-UP. If the GNB-CU-UP E1 SETUP REQUEST message contains the *Extended gNB-CU-UP Name* IE, the gNB-CU-CP may use this IE as a human readable name of the gNB-CU-UP and shall ignore the *gNB-CU-UP Name* IE if included.

If the GNB-CU-UP E1 SETUP RESPONSE message contains the *gNB-CU-CP Name* IE, the gNB-CU-UP may use this IE as a human readable name of the gNB-CU-CP. If the GNB-CU-UP E1 SETUP RESPONSE message contains the *Extended gNB-CU-CP Name* IE, the GNB-CU-UP may use this IE as a human readable name of the gNB-CU-CP and shall ignore the *gNB-CU-CP Name* IE if included.

If the *Slice Support List* IE is contained in the GNB-CU-UP E1 SETUP REQUEST message, the gNB-CU-CP shall store the corresponding information and it may take it into account for bearer context establishment.

If the *NR CGI Support List* or the *Extended NR CGI Support List* IE is contained in the GNB-CU-UP E1 SETUP REQUEST message, the gNB-CU-CP shall store the corresponding information and it may take it into account for bearer context establishment.

If the *ECGI Support List* IE is contained in the GNB-CU-UP E1 SETUP REQUEST message, the gNB-CU-CP shall store the corresponding information and it may take it into account for bearer context establishment.

If the *QoS Parameters Support List* IE is contained in the GNB-CU-UP E1 SETUP REQUEST message, the gNB-CU-CP shall store the corresponding information and it may take it into account for bearer context establishment.

If the *NPN Support Information* IE is contained in the GNB-CU-UP E1 SETUP REQUEST message, the gNB-CU-CP shall store the corresponding information and it may take it into account for bearer context establishment.

The exchanged data shall be stored in respective node and used as long as there is an operational TNL association. When this procedure is finished, the E1 interface is operational and other E1 messages can be exchanged.

If the *gNB-CU-UP Capacity* IE is contained in the GNB-CU-UP E1 SETUP REQUEST message, the gNB-CU-CP shall take this IE into account.

If the GNB-CU-UP E1 SETUP REQUEST message includes the *Transport Network Layer Address Info* IE, the gNB-CU-CP shall, if supported, take this IE into account for IPSec tunnel establishment.

If the GNB-CU-UP E1 SETUP RESPONSE message includes the *Transport Network Layer Address Info* IE, the gNB-CU-UP shall, if supported, take this IE into account for IPSec tunnel establishment.

#### 8.2.3.3 Unsuccessful Operation



Figure 8.2.3.3-1: gNB-CU-UP E1 Setup procedure: Unsuccessful Operation.

If the gNB-CU-CP cannot accept the setup, it shall respond with a GNB-CU-UP E1 SETUP FAILURE and appropriate cause value.

If the GNB-CU-UP E1 SETUP FAILURE message includes the *Time To Wait* IE, the gNB-CU-UP shall wait at least for the indicated time before reinitiating the E1 setup towards the same gNB-CU-CP.

#### 8.2.3.4 Abnormal Conditions

If the first message received for a specific TNL association is not a GNB-CU-CP E1 SETUP REQUEST, GNB-CU-UP E1 SETUP RESPONSE, or GNB-CU-UP E1 SETUP FAILURE message then this shall be treated as a logical error.

If the gNB-CU-UP does not receive either GNB-CU-UP E1 SETUP RESPONSE message or GNB-CU-UP E1 SETUP FAILURE message, the gNB-CU-UP may reinitiate the gNB-CU-UP E1 Setup procedure towards the same gNB-CU-CP, provided that the content of the new GNB-CU-UP E1 SETUP REQUEST message is identical to the content of the previously unacknowledged GNB-CU-UP E1 SETUP REQUEST message.

If the gNB-CU-UP receives a GNB-CU-CP E1 SETUP REQUEST message from the peer entity on the same E1 interface:

- In case the gNB-CU-UP answers with a GNB-CU-CP E1 SETUP RESPONSE message and receives a subsequent GNB-CU-UP E1 SETUP FAILURE message, the gNB-CU-UP shall consider the E1 interface as non operational and the procedure as unsuccessfully terminated according to sub clause 8.2.3.3.

- In case the gNB-CU-UP answers with a GNB-CU-CP E1 SETUP FAILURE message and receives a subsequent GNB-CU-UP E1 SETUP RESPONSE message, the gNB-CU-UP shall ignore the GNB-CU-UP E1 SETUP RESPONSE message and consider the E1 interface as non operational.

### 8.2.4 gNB-CU-CP E1 Setup

#### 8.2.4.1 General

The purpose of the gNB-CU-CP E1 Setup procedure is to exchange application level data needed for the gNB-CU-CP and the gNB-CU-UP to correctly interoperate on the E1 interface. If the gNB-CU-CP initiates the first TNL association, it shall also initiate the gNB-CU-CP E1 Setup procedure.The procedure uses non-UE associated signalling.

This procedure erases any existing application level configuration data in the two nodes and replaces it by the one received. This procedure also re-initialises the E1AP UE-related contexts (if any) and erases all related signalling connections in the two nodes like a Reset procedure would do.

#### 8.2.4.2 Successful Operation



Figure 8.2.4.2-1: gNB-CU-CP E1 Setup procedure: Successful Operation.

The gNB-CU-CP initiates the procedure by sending a GNB-CU-CP E1 SETUP REQUEST message including the appropriate data to the gNB-CU-UP. The gNB-CU-UP responds with a GNB-CU-CP E1 SETUP RESPONSE message including the appropriate data.

If the GNB-CU-CP E1 SETUP REQUEST message contains the *gNB-CU-CP Name* IE the gNB-CU-UP may use this IE as a human readable name of the gNB-CU-CP. If the GNB-CU-CP E1 SETUP REQUEST message contains the *Extended gNB-CU-CP Name* IE, the gNB-CU-UP may use this IE as a human readable name of the gNB-CU-CP and shall ignore the *gNB-CU-CP Name* IE if included.

If the GNB-CU-CP E1 SETUP RESPONSE message contains the *gNB-CU-UP Name* IE, the gNB-CU-CP may use this IE as a human readable name of the gNB-CU-UP. If the GNB-CU-CP E1 SETUP RESPONSE message contains the *Extended gNB-CU-UP Name* IE, the GNB-CU-CP may use this IE as a human readable name of the gNB-CU-UP and shall ignore the *gNB-CU-UP Name* IE if included.

The exchanged data shall be stored in respective node and used as long as there is an operational TNL association. When this procedure is finished, the E1 interface is operational and other E1 messages can be exchanged.

If the *gNB-CU-UP Capacity* IE is contained in the GNB-CU-CP E1 SETUP RESPONSE message, the gNB-CU-CP shall take this IE into account.

If the GNB-CU-CP E1 SETUP REQUEST message includes the *Transport Network Layer Address Info* IE, the gNB-CU-UP shall, if supported, take this IE into account for IPSec tunnel establishment.

If the GNB-CU-CP E1 SETUP RESPONSE message includes the *Transport Network Layer Address Info* IE, the gNB-CU-CP shall, if supported, take this IE into account for IPSec tunnel establishment.

If the NPN Support Information IE is contained in the GNB-CU-CP E1 SETUP RESPONSE message, the gNB-CU-CP shall store the corresponding information and it may take it into account for bearer context establishment.

If the *NR CGI Support List* or the *Extended NR CGI Support List* IE is contained in the GNB-CU-CP E1 SETUP RESPONSE message, the gNB-CU-CP shall store the corresponding information and it may take it into account for bearer context establishment.

If the *ECGI Support List* IE is contained in the GNB-CU-CP E1 SETUP RESPONSE message, the gNB-CU-CP shall store the corresponding information and it may take it into account for bearer context establishment.

#### 8.2.4.3 Unsuccessful Operation



Figure 8.2.4.3-1: gNB-CU-CP E1 Setup procedure: Unsuccessful Operation.

If the gNB-CU-UP cannot accept the setup, it shall respond with a GNB-CU-CP E1 SETUP FAILURE and appropriate cause value.

If the GNB-CU-CP E1 SETUP FAILURE message includes the *Time To Wait* IE, the gNB-CU-CP shall wait at least for the indicated time before reinitiating the E1 setup towards the same gNB-CU-UP.

#### 8.2.4.4 Abnormal Conditions

If the first message received for a specific TNL association is not a GNB-CU-UP E1 SETUP REQUEST, GNB-CU-CP E1 SETUP RESPONSE, or GNB-CU-CP E1 SETUP FAILURE message then this shall be treated as a logical error.

If the gNB-CU-CP does not receive either GNB-CU-CP E1 SETUP RESPONSE message or GNB-CU-CP E1 SETUP FAILURE message, the gNB-CU-CP may reinitiate the gNB-CU-CP E1 Setup procedure towards the same gNB-CU-UP, provided that the content of the new GNB-CU-CP E1 SETUP REQUEST message is identical to the content of the previously unacknowledged GNB-CU-CP E1 SETUP REQUEST message.

If the gNB-CU-CP receives a GNB-CU-UP E1 SETUP REQUEST message from the peer entity on the same E1 interface:

- In case the gNB-CU-CP answers with a GNB-CU-UP E1 SETUP RESPONSE message and receives a subsequent GNB-CU-CP E1 SETUP FAILURE message, the gNB-CU-CP shall consider the E1 interface as non operational and the procedure as unsuccessfully terminated according to sub clause 8.2.4.3.

- In case the gNB-CU-CP answers with a GNB-CU-UP E1 SETUP FAILURE message and receives a subsequent GNB-CU-CP E1 SETUP RESPONSE message, the gNB-CU-CP shall ignore the GNB-CU-CP E1 SETUP RESPONSE message and consider the E1 interface as non operational.

### 8.2.5 gNB-CU-UP Configuration Update

#### 8.2.5.1 General

The purpose of the gNB-CU-UP Configuration Update procedure is to update application level configuration data needed for the gNB-CU-UP and the gNB-CU-CP to interoperate correctly on the E1 interface. This procedure does not affect existing UE-related contexts, if any. The procedure uses non-UE associated signalling.

#### 8.2.5.2 Successful Operation



Figure 8.2.5.2-1: gNB-CU-UP Configuration Update procedure: Successful Operation.

The gNB-CU-UP initiates the procedure by sending a GNB-CU-UP CONFIGURATION UPDATE message to the gNB-CU-CP including an appropriate set of updated configuration data that it has just taken into operational use. The gNB-CU-CP responds with GNB-CU-UP CONFIGURATION UPDATE ACKNOWLEDGE message to acknowledge that it successfully updated the configuration data. If an information element is not included in the GNB-CU-UP CONFIGURATION UPDATE message, the gNB-CU-CP shall interpret that the corresponding configuration data is not changed and shall continue to operate with the existing related configuration data.

If the *Supported PLMNs* IE is included in the GNB-CU-UP CONFIGURATION UPDATE message, the gNB-CU-CP shall overwrite the whole list of information and store the corresponding information.

- If the *Slice Support List* IE is contained in the GNB-CU-UP CONFIGURATION UPDATE message, the gNB-CU-CP shall store the corresponding information and replace any existing information.

- If the *NR CGI Support List* or the *Extended NR CGI Extended Support List* IE is contained in the GNB-CU-UP CONFIGURATION UPDATE message, the gNB-CU-CP shall store the corresponding information and replace any existing information.

- If the *ECGI Support List* IE is contained in the GNB-CU-UP CONFIGURATION UPDATE message, the gNB-CU-CP shall store the corresponding information and replace any existing information.

- If the *QoS Parameters Support List* IE is contained in the GNB-CU-UP CONFIGURATION UPDATE message, the gNB-CU-CP shall store the corresponding information and replace any existing information.

- If the *NPN Support Information* IE is contained in the GNB-CU-UP CONFIGURATION UPDATE message, the gNB-CU-CP shall store the corresponding information and replace any existing information.

The updated configuration data shall be stored in both nodes and used as long as there is an operational TNL association or until any further update is performed.

If the *gNB-CU-UP Capacity* IE is contained in the GNB-CU-UP CONFIGURATION UPDATE message, the gNB-CU-CP shall take this IE into account.

If the *gNB-CU-UP ID* IE is included in the GNB-CU-UP CONFIGURATION UPDATE message, the gNB-CU-CP shall associate the TNLA to the E1 interface instance using the gNB-CU-UP ID.

If the *gNB-CU-UP Name* IE is included in the GNB-CU-UP CONFIGURATION UPDATE message, the gNB-CU-CP may store it or update this IE value if already stored, and use it as a human readable name of the gNB-CU-UP. If the *Extended gNB-CU-UP Name* IE is included in the GNB-CU-UP CONFIGURATION UPDATE message, the gNB-CU-CP may store it or update this IE value if already stored, and use it as a human readable name of the gNB-CU-UP and shall ignore the *gNB-CU-UP Name* IE if also included.

If the GNB-CU-UP CONFIGURATION UPDATE message includes *gNB-CU-UP TNLA To Remove List* IE, the gNB-CU-CP shall, if supported, initiate removal of the TNL association(s) indicated by gNB-CU-CP TNL endpoint(s) and gNB-CU-UP TNL endpoint(s) if the *TNLA Transport Layer Address gNB-CU-CP* IE is present, or the TNL association(s) indicated by gNB-CU-UP TNL endpoint(s) if the *TNLA Transport Layer Address gNB-CU-CP* IE is absent:

- if the received *TNLA Transport Layer Address* IE includes the *Port Number* IE, the gNB-CU-UP TNL endpoint is identified by the *Endpoint IP Address* IE and the *Port Number* IE. Otherwise, the gNB-CU-UP TNL endpoints correspond to all gNB-CU-UP TNL endpoints identified by the *Endpoint IP Address* IE and any Port Number(s).

- if the received *TNLA Transport Layer Address gNB-CU-CP* IE includes the *Port Number* IE, the gNB-CU-CP TNL endpoint is identified by the *Endpoint IP Address* IE and the *Port Number* IE. Otherwise, the gNB-CU-CP TNL endpoints correspond to all gNB-CU-CP TNL endpoints identified by the *Endpoint IP Address* IE and any Port Number(s).

If the GNB-CU-UP CONFIGURATION UPDATE message includes the *Transport Network Layer Address Info* IE, the gNB-CU-CP shall, if supported, take this IE into account for IPSec tunnel establishment.

If the GNB-CU-UP CONFIGURATION UPDATE ACKNOWLEDGE message includes the *Transport Network Layer Address Info* IE, the gNB-CU-UP shall, if supported, take this IE into account for IPSec tunnel establishment.

#### 8.2.5.3 Unsuccessful Operation



Figure 8.2.5.3-1: gNB-CU-UP Configuration Update procedure: Unsuccessful Operation.

If the gNB-CU-CP cannot accept the update, it shall respond with a GNB-CU-UP CONFIGURATION UPDATE FAILURE message and appropriate cause value.

If the GNB-CU-UP CONFIGURATION UPDATE FAILURE message includes the *Time To Wait* IE, the gNB-CU-UP shall wait at least for the indicated time before reinitiating the GNB-CU-UP CONFIGURATION UPDATE message towards the same gNB-CU-CP.

#### 8.2.5.4 Abnormal Conditions

Not applicable.

### 8.2.6 gNB-CU-CP Configuration Update

#### 8.2.6.1 General

The purpose of the gNB-CU-CP Configuration Update procedure is to update application level configuration data needed for the gNB-CU-CP and the gNB-CU-UP to interoperate correctly on the E1 interface. This procedure does not affect existing UE-related contexts, if any. The procedure uses non-UE associated signalling.

#### 8.2.6.2 Successful Operation



Figure 8.2.6.2-1: gNB-CU-CP Configuration Update procedure: Successful Operation.

The gNB-CU-CP initiates the procedure by sending a GNB-CU-CP CONFIGURATION UPDATE message to the gNB-CU-UP including an appropriate set of updated configuration data that it has just taken into operational use. The gNB-CU-UP responds with GNB-CU-CP CONFIGURATION UPDATE ACKNOWLEDGE message to acknowledge that it successfully updated the configuration data. If an information element is not included in the GNB-CU-CP CONFIGURATION UPDATE message, the gNB-CU-UP shall interpret that the corresponding configuration data is not changed and shall continue to operate with the existing related configuration data.

The updated configuration data shall be stored in both nodes and used as long as there is an operational TNL association or until any further update is performed.

If the *gNB-CU-CP Name* IE is included in the GNB-CU-CP CONFIGURATION UPDATE message, the gNB-CU-UP may store it or update this IE value if already stored, and use it as a human readable name of the gNB-CU-CP. If the *Extended gNB-CU-CP Name* IE is included in the GNB-CU-CP CONFIGURATION UPDATE message, the gNB-CU-UP may store it or update this IE value if already stored, and use it as a human readable name of the gNB-CU-CP and shall ignore the *gNB-CU-CP Name* IE if also included.

If the *gNB-CU-CP TNLA To Add List* IE is contained in the gNB-CU-CP CONFIGURATION UPDATE message, the gNB-CU-UP shall, if supported, use it to establish the TNL association(s) with the gNB-CU-CP. If the *gNB-CU-CP TNLA To Add List* IE is included in the gNB-CU-CP CONFIGURATION UPDATE message, and if the *gNB-CU-CP TNLA To Add List* IE does not include the *Port Number* IE, the gNB-CU-UP shall assume that port number value 38462 is used for the endpoint. The gNB-CU-UP shall report to the gNB-CU-CP, in the gNB-CU-CP CONFIGURATION UPDATE ACKNOWLEDGE message, the successful establishment of the TNL association(s) with the gNB-CU-CP as follows:

- A list of TNL address(es) with which the gNB-CU-UP successfully established the TNL association shall be included in the *gNB-CU-CP TNLA Setup List* IE;

- A list of TNL address(es) with which the gNB-CU-UP failed to establish the TNL association shall be included in the *gNB-CU-CP TNLA Failed To Setup List* IE.

If the GNB-CU-CP CONFIGURATION UPDATE message includes *gNB-CU-CP TNLA To Remove List* IE, the gNB-CU-UP shall, if supported, initiate removal of the TNL association(s) indicated by gNB-CU-UP TNL endpoint(s) and gNB-CU-CP TNL endpoint(s) if the *TNLA Transport Layer Address gNB-CU-UP* IE is present, or the TNL association(s) indicated by gNB-CU-CP TNL endpoint(s) if the *TNLA Transport Layer Address gNB-CU-UP IE* is absent:

- if the received *TNLA Transport Layer Address* IE includes the *Port Number* IE, the gNB-CU-CP TNL endpoint is identified by the *Endpoint IP Address* IE and the *Port Number* IE. Otherwise, the gNB-CU-CP TNL endpoints correspond to all gNB-CU-CP TNL endpoints identified by the *Endpoint IP Address* IE and any Port Number(s).

- if the received *TNLA Transport Layer Address gNB-CU-UP* IE includes the *Port Number* IE, the gNB-CU-UP TNL endpoint is identified by the *Endpoint IP Address* IE and the *Port Number* IE. Otherwise, the gNB-CU-UP TNL endpoints correspond to all gNB-CU-UP TNL endpoints identified by the *Endpoint IP Address* IE and any Port Number(s).If the *gNB-CU-CP TNLA To Update List* IE is contained in the gNB-CU-CP CONFIGURATION UPDATE message the gNB-CU-UP shall, if supported, overwrite the previously stored information for the related TNL association.

- If the received *TNLA Transport Layer Address* IE includes the *Port Number* IE, the gNB-CU-CP TNL endpoint is identified by the *Endpoint IP Address* IE and the *Port Number* IE. Otherwise, the gNB-CU-CP TNL endpoints correspond to all gNB-CU-CP TNL endpoints identified by the *Endpoint IP Address* IE and any Port Number(s).

If the *TNLA* *Usage* IE is included in the *gNB-CU-CP TNLA To Add List* IE or the *gNB-CU-CP TNLA To Update List* IE in the gNB-CU-CP CONFIGURATION UPDATE message, the gNB-CU-UP shall, if supported, use it as described in TS 38.462 [18].

If the GNB-CU-CP CONFIGURATION UPDATE message includes the *Transport Network Layer Address Info* IE, the gNB-CU-UP shall, if supported, take this IE into account for IPSec tunnel establishment.

If the GNB-CU-CP CONFIGURATION UPDATE ACKNOWLEDGE message includes the *Transport Network Layer Address Info* IE, the gNB-CU-CP shall, if supported, take this IE into account for IPSec tunnel establishment.

#### 8.2.6.3 Unsuccessful Operation



Figure 8.2.6.3-1: gNB-CU-CP Configuration Update procedure: Unsuccessful Operation.

If the gNB-CU-UP cannot accept the update, it shall respond with a GNB-CU-CP CONFIGURATION UPDATE FAILURE message and appropriate cause value.

If the GNB-CU-CP CONFIGURATION UPDATE FAILURE message includes the *Time To Wait* IE, the gNB-CU-CP shall wait at least for the indicated time before reinitiating the GNB-CU-CP CONFIGURATION UPDATE message towards the same gNB-CU-UP.

#### 8.2.6.4 Abnormal Conditions

Not applicable.

### 8.2.7 E1 Release

#### 8.2.7.1 General

The purpose of the E1 Release procedure is to release all existing signalling connections and related application level data. This procedure does not affect existing UE-related contexts, if any. The procedure uses non-UE associated signalling.

#### 8.2.7.2 Successful Operation

##### 8.2.7.2.1 E1 Release Procedure Initiated from the gNB-CU-CP



Figure 8.2.7.2.1-1: E1 Release procedure initiated from the gNB-CU-CP. Successful operation.

The gNB-CU-CP initiates the procedure by sending the E1 RELEASE REQUEST message to the gNB-CU-UP.

Upon reception of the E1 RELEASE REQUEST message, the gNB-CU-UP shall release any existing resources related to the E1 interface. The gNB-CU-UP shall respond with a E1 RELEASE RESPONSE message to confirm that it has initiated the release of the resources, if existing, and that the signalling connection for the E1AP application protocol is released.

##### 8.2.7.2.2 E1 Release Procedure Initiated from the gNB-CU-UP



Figure 8.2.7.2.2-1: E1 Release procedure initiated from the gNB-CU-UP. Successful operation.

The gNB-CU-UP initiates the procedure by sending the E1 RELEASE REQUEST message to the gNB-CU-CP.

Upon reception of the E1 RELEASE REQUEST message, the gNB-CU-CP shall release any existing resources related to the E1 interface. The gNB-CU-CP shall respond with a E1 RELEASE RESPONSE message to confirm that it has initiated the release of the resources, if existing, and that the signalling connection for the E1AP application protocol is released.

#### 8.2.7.3 Abnormal Conditions

Not applicable.

### 8.2.8 gNB-CU-UP Status Indication

#### 8.2.8.1 General

The purpose of the gNB-CU-UP Status Indication procedure is to inform the gNB-CU-CP that the gNB-CU-UP is overloaded so that overload reduction actions can be applied. The procedure uses non-UE associated signalling.

#### 8.2.8.2 Successful Operation



**Figure 8.3.7.2-1: DL Data Notification procedure: Successful Operation.**

The gNB-CU-UP initiates the procedure by sending the GNB-CU-UP STATUS INDICATION message to the gNB-CU-CP.

If the *gNB-CU-UP* *Overload Information* IE in the GNB-CU-UP STATUS INDICATION message indicates that the gNB-CU-UP is overloaded, the gNB-CU-CP shall apply overload reduction actions until informed, with a new GNB-CU-UP STATUS INDICATION message, that the overload situation has ceased.

The detailed overload reduction policy is up to gNB-CU-CP implementation.

#### 8.2.8.3 Abnormal Conditions

Not applicable.

### 8.2.9 Resource Status Reporting Initiation

#### 8.2.9.1 General

This procedure is used by an gNB-CU-CP to request the reporting of load measurements to gNB-CU-UP.

The procedure uses non UE-associated signalling.

#### 8.2.9.2 Successful Operation



Figure 8.2.9.2-1: Resource Status Reporting Initiation, successful operation

The procedure is initiated with a RESOURCE STATUS REQUEST message sent from gNB-CU-CP to gNB-CU-UP to start a measurement or stop a measurements.

If gNB-CU-UP is capable to provide all requested resource status information, it shall initiate the measurement as requested by gNB-CU-CP, and respond with the RESOURCE STATUS RESPONSE message.

**Interaction with other procedures**

When starting a measurement, the *Report Characteristics* IE in the RESOURCE STATUS REQUEST indicates the type of objects gNB-CU-UP shall perform measurements on. The gNB-CU-UP shall include in the RESOURCE STATUS UPDATE message:

- the *HW Capacity Indicator* IE, if the second bit, "HW Capacity Ind Periodic" of the *Report Characteristics* IE included in the RESOURCE STATUS REQUEST message is set to 1;

- the *TNL Available Capacity Indicator* IE, if the first bit, " TNL Available Capacity Ind Periodic " of the *Report Characteristics* IE included in the RESOURCE STATUS REQUEST message is set to 1;

If the *Reporting Periodicity* IE is included in the RESOURCE STATUS REQUEST message, this indicates the periodicity for the reporting of periodic measurements. The gNB-CU-UP shall report only once, unless otherwise requested within the *Reporting Periodicity* IE.

#### 8.2.9.3 Unsuccessful Operation



Figure 8.2.9.3-1: Resource Status Reporting Initiation, unsuccessful operation

If any of the requested measurements cannot be initiated, gNB-CU-UP shall send a RESOURCE STATUS FAILURE message with an appropriate cause value.

#### 8.2.9.4 Abnormal Conditions

If the initiating gNB-CU-CP does not receive either RESOURCE STATUS RESPONSE message or RESOURCE STATUS FAILURE message, the gNB-CU-CP may reinitiate the Resource Status Reporting Initiation procedure towards the same gNB-CU-UP, provided that the content of the new RESOURCE STATUS REQUEST message is identical to the content of the previously unacknowledged RESOURCE STATUS REQUEST message with the same Transaction ID.

If the *Report Characteristics* IE bitmap is set to "0" (all bits are set to "0") in the RESOURCE STATUS REQUEST message then gNB-CU-UP shall initiate a RESOURCE STATUS FAILURE message with an appropriate cause value.

If the gNB-CU-UP receives a RESOURCE STATUS REQUEST message which includes the *Registration Request* IE set to "start" and the *gNB-CU-CP Measurement ID* IE corresponding to an existing on-going load measurement reporting, for which a different Transaction ID is used, then gNB-CU-UP shall initiate a RESOURCE STATUS FAILURE message with an appropriate cause value.

### 8.2.10 Resource Status Reporting

#### 8.2.10.1 General

This procedure is initiated by gNB-CU-UP to report the result of measurements admitted by gNB-CU-UP following a successful Resource Status Reporting Initiation procedure.

The procedure uses non UE-associated signalling.

#### 8.2.10.2 Successful Operation



Figure 8.2.10.2-1: Resource Status Reporting, successful operation

The gNB-CU-UP shall report the results of the admitted measurements in RESOURCE STATUS UPDATE message. The admitted measurements are the measurements that were successfully initiated during the preceding Resource Status Reporting Initiation procedure.

#### 8.2.10.3 Unsuccessful Operation

Not applicable.

#### 8.2.10.4 Abnormal Conditions

Void.

## 8.3 Bearer Context Management procedures

### 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 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 *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.

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

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

- For each DRB for which the *Security Indication* IE is included in the *DRB To Setup List* IE of the BEARER CONTEXT SETUP REQUEST message, and 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 DRB.

For each PDU session, if the *Data Forwarding to E-UTRAN Information List* IE is included in the *PDU Session Resource To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, use it for inter-system data forwarding from 5GS to EPS as specified in TS38.300 [8].

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]. 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.

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

For each requested DRB, if the *Additional PDCP duplication Information* IE is included in the *PDCP Configuration* IE contained in the BEARER CONTEXT SETUP REQUEST message, then the gNB-CU-UP shall, if supported, include the same number of *UP Transport Layer Information* IEs indicated by the *Additional PDCP duplication Information* IE in the BEARER CONTEXT SETUP RESPONSE message to support packet duplication. If only one cell group is included in the *Cell Group Information* IE for the concerned DRB, then the gNB-CU-UP shall consider that the first *UP Transport Layer Information* IE of these *UP Transport Layer Information* IEs is for the primary path. If more than one cell group is included in the *Cell Group Information* IE, then the gNB-CU-UP shall consider that the number of duplication tunnels for each cell group is indicated by the *Number of tunnels* IE, and that the first *UP Transport Layer Information* IE for each cell group is for the primary path or the split secondary 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.

If the *QoS Flows Remapping* IE is contained within the *DRB To Setup List* IE in the BEARER CONTEXT SETUP REQUEST message for a DRB and set to "update", the gNB-CU-UP shall, if supported, consider that QoS flows mapped for the DRB is updated to the QoS flow(s) included in the *QoS Flows Information To Be Setup* IE after finishing handling forwarded PDCP SDUs during an intra-system handover procedure. If the *QoS Flows Remapping* IE is contained within the *DRB To Setup List* IE in the BEARER CONTEXT SETUP REQUEST message for a DRB and set to "source configuration", the gNB-CU-UP shall, if supported, consider that no QoS flow is mapped to the DRB after finishing handling forwarded PDCP SDUs over that DRB during an intra-system handover procedure and ignore the information included in the *QoS Flows Information To Be Setup* IE for the concerned 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].

For each PDU session, if the *Redundant NG UL UP Transport Layer Information* 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 as the uplink termination point of the redundant tunnel for the user plane data of those QoS flows in this PDU session which need redundant transmission as described in TS 23.501 [20], and it shall include the *Redundant NG DL UP Transport Layer Information* IE in the *PDU Session Resource Setup List IE* in the BEARER CONTEXT SETUP RESPONSE message.

For each PDU Session Resource, if the *Redundant 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 for the redundant transmission as specified in TS 23.501 [20].

For each PDU session, if the *Redundant QoS Flow Indicator* IE is included in the *QoS Flow QoS Parameters List* IE in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall, if supported, consider it for the redundant transmission.

For each PDU session, if the *Redundant PDU Session Information* IE is included in the *PDU Session Resource To Setup List* IE contained in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall, if supported, set up the redundant user plane resources, as specified in TS 23.501 [20] and include, if supported, the *Used Redundant PDU Session Information* IE in the *PDU Session Resource Setup List* IE in the BEARER CONTEXT SETUP RESPONSE message. If the *PDU Session Pair ID* IE is included in the *Redundant PDU Session Information* IE, the gNB-CU-UP may use it to identify the paired PDU Sessions.

If the*SpecialTriggeringPurpose* IEis included in *PDU Session Resource To Setup List* IE contained in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP may consider that the setup of the DRB or the PDU session for which the IE is included is for the purpose of indirect data forwarding.

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]. In particular, the gNB-CU-UP shall, if supported:

- if the *MDT Activation* IE is set to "Immediate MDT Only", initiate the requested MDT session as described in TS 32.422 [24] and the gNB-CU-UP shall ignore *Interfaces To Trace* IE, and *Trace Depth* IE;

- if the *MDT Activation* IE is set to "Immediate MDT and Trace", initiate the requested trace session and MDT session as described in TS 32.422 [24];

If the *Management Based MDT PLMN List* IE is contained in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall, if supported, store the received information, and use this information to allow subsequent selection of the UE for management based MDT defined in TS 32.422 [24].

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

If the *TSC Traffic Characteristics* IE is included in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall, if supported, take into account the corresponding information received in the *TSC Traffic Characteristics* IE.

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 *QoS Monitoring Reporting Frequency* 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, use it for RAN part delay reporting.

For each QoS flow whose DRB has been successfully established in the gNB-CU-UP, if the *ECN Marking or Congestion Information Request* IE is included in the *PDU Session Resource To Setup List* IE contained in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall, if supported, use it accordingly for the specific QoS flow. If the *ECN Marking or Congestion Information Reporting Status* IE is included in the *Flow Setup List* IE contained in the the *PDU Session Resource Setup List* IE of the BEARER CONTEXT SETUP RESPONSE message, the gNB-CU-CP shall, if supported, use it to deduce if ECN marking at NG-RAN or ECN marking at UPF or congestion information reporting is active or not active.

If the BEARER CONTEXT SETUP REQUEST message contains the *NPN Context Information* IE the gNB-CU-UP shall, if supported, take it into account when allocating UP resources for the bearer context.

For each requested DRB, if the *EHC Parameters* IE is included in the *PDCP Configuration* IE, the gNB-CU-CP shall, if supported, also include *ROHC Parameters* IE in the *PDCP Configuration* IE in the BEARER CONTEXT SETUP REQUEST message, to enable the gNB-CU-UP to perform appropriate header compression.

If the *EHC parameters* IE is included in the *PDCP Configuration* IE contained in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP may take these parameters into account to perform appropriate header compression for the concerned DRB. If the *EHC Downlink* IE is included in the *EHC parameters* IE and the value of *drb-ContinueEHC-DL* IE is set to ‘true’, the gNB-CU-UP shall, if supported, configure Ethernet header compression for downlink and continue the downlink EHC header compression protocol as specified in TS 38.331 [10]. If the *EHC Downlink* IE is included in the *EHC parameters* IE and the value of *drb-ContinueEHC-DL* IE is set to ‘false’, the gNB-CU-UP shall, if supported, configure Ethernet header compression for downlink and reset the downlink EHC header compression protocol during PDCP re-establishment as specified in TS 38.331 [10]. If the *EHC Uplink* IE is included in the *EHC parameters* IE and the value of *drb-ContinueEHC-UL* IE is set to ‘true’, the gNB-CU-UP shall, if supported, configure Ethernet header compression for uplink and continue the uplink EHC header compression protocol as specified in TS 38.331 [10]. If the *EHC Uplink* IE is included in the *EHC parameters* IE and the value of *drb-ContinueEHC-UL* IE is set to ‘false’, the gNB-CU-UP shall, if supported, configure Ethernet header compression for uplink and resets the uplink EHC header compression protocol during PDCP re-establishment as specified in TS 38.331 [10].

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 or conditional PSCell change or conditional PSCell addition or subsequent CPAC and act as specified in TS 38.401 [2].

If the *MCG Offered GBR QoS Flow Information* 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 when two cell groups are served by the gNB-CU-UP.

If the *Additional Handover Information* IE is included in the BEARER CONTEXT SETUP REQUEST message and set to “Discard PDCP SN”, the gNB-CU-UP shall, if supported, remove the forwarded PDCP SNs if received in the forwarded GTP-U packets, and deliver the forwarded PDCP SDUs to the UE, as specified in TS 38.300 [8].

If the *Ignore Mapping Rule Indication* IE is contained within the *DRB To Setup List* IE for a DRB in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall, if supported, ignore the QoS flow mapping information indicated by the *QoS Flows Information To Be Setup* IE for the concerned DRB.

If the *Direct Forwarding Path Availability* IE set to "inter-system direct path available" is included in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall, if supported, assign the UP Transport Layer Information for inter-system direct data forwarding from the appropriate address space, if applicable.

If the *Direct Forwarding Path Availability* IE set to “intra-system direct path available” is included in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall, if supported, assign the UP Transport Layer Information for intra-system direct data forwarding from the appropriate address space, if applicable.

If the *gNB-CU-UP UE E1AP ID* IE is contained in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP may use it to identify the UE context as specified in TS 38.401 [2].

If the *Data Forwarding* *Source IP Address* IE is included in the *DRB To Setup List E-UTRAN* IE or in the *QoS Flow Level QoS Parameters* IE contained in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall, if supported, store this information in the UE context and use it as part of its ACL functionality configuration actions, if such ACL functionality is deployed.

If the *Data Forwarding* *Source IP Address* IE is included in the *DRB Setup List E-UTRAN* IE or in the *Flow Setup List* IE within the *DRB Setup List* IE in the *PDU Session Resource Setup List* IE of the BEARER CONTEXT SETUP RESPONSE message, the gNB-CU-CP shall, if supported, store this information in the UE context and use it as part of its ACL functionality configuration actions, if such ACL functionality is deployed.

If the *MDT* *Polluted Measurement Indicator* IE is included in the BEARER CONTEXT SETUP REQUEST, the gNB-CU-UP shall take this information into account as specified in TS 38.401 [2].

If the *UE Slice Maximum Bit Rate List* IE is included in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall, if supported, store and use the information for the downlink traffic policing for each concerned slice as specified in TS 23.501 [20].

If the *UDC parameters* IE is included in the *PDCP Configuration* IE in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall, if supported, take these parameters into account to perform appropriate uplink data compression for the concerned DRB.

If the *SCG Activation Status* IE is contained in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall take it into account when handling DL data transfer as specified in TS 37.340 [19].

If the *PDU Set QoS Parameters* IE is contained in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall, if supported, store it and use the information as specified in TS 23.501 [20].

**Interactions with DL Data Notification procedure:**

If the *MT-SDT Information Request* IE is included in the BEARER CONTEXT SETUP REQUEST message and the value is set to 'true', the gNB-CU-UP shall, if supported, store it and report the *MT-SDT Information* IE in the DL DATA NOTIFICATION message as specified in TS 38.401 [2].

If the *SDT Data Size Threshold* IE is included in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall, if supported, store it 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, or cannot handle SCG with the indicated activated or deactivated status 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 *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.

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 *PDU Session Data Forwarding Information* IE is included in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, consider that data forwarding is applicable for the indicated QoS flows for the concerned PDU session.

If the *Secondary* *PDU Session Data Forwarding Information* IE is included in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, consider that data forwarding is applicable for the indicated QoS flows for the concerned PDU session.

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 *Indirect Path Indication* IE is contained in the *DL UP Parameters* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, act as specified in TS 38.401 [2].

If the *PDCP COUNT Reset* IE is contained within the *DRB To Modify List* IE for a DRB of the *PDU Session Resource To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, reset the PDCP COUNT value for this DRB (i.e. its HFN and PDCP-SN to value “0”).

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 or *Additional PDCP duplication Information* IE is included in the *PDCP Configuration* IE contained in the BEARER CONTEXT MODIFICATION REQUEST message, then the gNB-CU-CP shall include two or more *UP Transport Layer Information* IEs in the BEARER CONTEXT MODIFICATION REQUEST message, and the gNB-CU-UP shall, if supported, also include two or more *UP Transport Layer Information* IEs in the BEARER CONTEXT MODIFICATION RESPONSE message to support packet duplication. If only one cell group is included in the *Cell Group Information* IE for the concerned DRB, then the gNB-CU-UP shall consider that the first *UP Transport Layer Information* IE of these *UP Transport Layer Information* IEs is for the primary path. If more than one cell group is included in the *Cell Group Information* IE, then the gNB-CU-UP shall consider that the number of duplication tunnels for each cell group is indicated by the *Numbe*r *of tunnels* IE, and that the first *UP Transport Layer Information* IE for each cell group is for the primary path or the split secondary path.

For a certain DRB which was allocated with two or more 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 or the *Security Indication Modify* IE is included in the *PDU Session Resource To Modify 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 or the *PDU Session Resource Modified 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 or the *Security Indication Modify* IE is included in the *PDU Session Resource To Modify 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* IE or the *Security Indication Modify* IE is included in the *PDU Session Resource To Modify List* IE 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 E-UTRAN:

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

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

- For each DRB for which the *Security Indication* IE is included in the *DRB To Setup List* IE of the BEARER CONTEXT MODIFICATION REQUEST message and 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 DRB.

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].

For each PDU session, if the *Redundant NG UL UP Transport Layer Information* 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, include the *Redundant NG DL UP Transport Layer Information* IE in the *PDU Session Resource Setup List* IE or the *PDU Session Resource Modified List* IE in the BEARER CONTEXT MODIFICATION RESPONSE message.

If the *Redundant 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 for the redundant transmission as specified in TS 23.501 [20].

For each PDU session for which the *Redundant QoS Flow Indicator* IE is included in *QoS Flows Information To Be Setup* IE contained in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if support, shall store and use it as specified in TS 23.501 [20].

For each PDU session, if the *Redundant QoS Flow Indicator* IE is set to false for all QoS flows, the gNB-CU-UP shall, if supported, stop the redundant transmission and release the redundant tunnel for the concerned PDU session as specified in TS 23.501 [20].

If the*SpecialTriggeringPurpose* IEis included in *PDU Session Resource To Setup Modification List* IE contained in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP may consider that the setup of the DRB or the PDU session for which the IE is included is for the purpose of indirect data forwarding.

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 BEARER 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 BEARER 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].

If the *TSC Traffic Characteristics* IE is included in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, take into account the corresponding information received in the *TSC Traffic Characteristics* IE.

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 *QoS Monitoring Reporting Frequency* 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, use it for RAN part delay reporting.

For each QoS flow whose DRB has been successfully established or modified in the gNB-CU-UP, if the *ECN Marking or Congestion Information Request* IE is included in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, use it accordingly for the specific QoS flow. If the *ECN Marking or Congestion Information Reporting Status* IE is included in the *Flow Setup List* IE contained in the the *PDU Session Resource Setup List* IE or the *PDU Session Resource Modified List* IE of the BEARER CONTEXT MODIFICATION RESPONSE message, the gNB-CU-CP shall, if supported, use it to deduce if ECN marking at NG-RAN or ECN marking at UPF or congestion information reporting is active or not active.

For each requested DRB, if the *QoS Mapping Information* IE is contained in the *DL UP Parameters* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall use it to set DSCP and/or flow label fields in the downlink IP packets which are transmitted through the GTP tunnels indicated by the *UP Transport Layer Information* IE. The Diffserv code point (DSCP) marking is performed as specified in TS 38.474 [28].

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].

If the *Ignore Mapping Rule Indication* IE is contained within the *DRB To Setup List* IE for a DRB in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, ignore the QoS flow mapping information indicated by the *QoS Flows Information To Be Setup* IE for the concerned DRB.

If the *DAPS Request Information* IE is included for a DRB to be modified in the BEARER CONTEXT MODIFICATION 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 *Early Data Forwarding Indicator* IE set to “stop” is contained in the *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported and if already initiated, stop the early data forwarding for the concerned DRB. If the *DRB Data forwarding information* IE containing the *DL Data Forwarding* IE is included together in the *DRB To Modify List* IE, the gNB-CU-UP shall consider that the stop is only for the early data forwarding initiated toward that forwarding TNL.

If the *MDT Polluted Measurement Indicator* IE is included in the BEARER CONTEXT MODIFICATION REQUEST, the gNB-CU-UP shall take this information into account as specified in TS 38.401 [2].

If the *UE Slice Maximum Bit Rate List* IE is contained in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, store and replace the previously provided UE Slice Maximum Bit Rate List by the received UE Slice Maximum Bit Rate List in the UE context, and use the received UE Slice Maximum Bit Rate List for the downlink traffic policing for each concerned slice as specified in TS 23.501 [20].

If the *SCG Activation Status* IE is contained in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall take it into account when handling DL data transfer as specified in TS 37.340 [19].

If the *UDC parameters* IE is included in the *PDCP Configuration* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, take these parameters into account to perform appropriate uplink data compression for the concerned DRB.

If the *Data Forwarding* *Source IP Address* IE is included in the *DRB To Setup Modification List E-UTRAN* IE or in the *QoS Flow Level QoS Parameters* IE within the *PDU Session Resource To Setup Modification List* IE and the *PDU Session Resource To Modify List* IE contained in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, store this information in the UE context and use it as part of its ACL functionality configuration actions, if such ACL functionality is deployed.

If the *Data Forwarding* *Source IP Address* IE is included in the *DRB Setup Modification List E-UTRAN* IE or in the *Flow Setup List* IE within the *PDU Session Resource Setup Modification List* IE and the *PDU Session Resource Modified List* IE of the BEARER CONTEXT MODIFICATION RESPONSE message, the gNB-CU-CP shall, if supported, store this information in the UE context and use it as part of its ACL functionality configuration actions, if such ACL functionality is deployed.

If the *Management Based MDT PLMN Modification List* IE is contained in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, overwrite any previously stored Management Based MDT PLMN List information in the UE context and use the received information to determine subsequent selection of the UE for management based MDT defined in TS 32.422 [24].

If the *Inactivity Information Request* IE is contained in the BEARER CONTEXT MODIFICATION REQUEST, the gNB-CU-UP shall, if supported, include the *UE Inactivity Information* IE in the BEARER CONTEXT MODIFICATION RESPONSE message.

If the *PDU Set QoS Parameters* IE is contained in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, store it and use the information as specified in TS 23.501 [20].

For a QoS flow established with PDU Set QoS parameters, if the *PDU Set based Handling Indicator* IE is included in the *PDU Session Data Forwarding Information* IE within the BEARER CONTEXT MODIFICATION REQUEST message and the value of the *PDU Set based Handling Indicator* IE is set to "supported", the gNB-CU-UP shall, if supported, include the PDU Set information in the data to be forwarded. Otherwise, the gNB-CU-UP may not include the PDU Set identification and marking for the data to be forwarded.

**Interactions with DL Data Notification procedure:**

If the *MT-SDT Information Request* IE is included in the BEARER CONTEXT MODIFICATION REQUEST message and the value is set to 'true', the gNB-CU-UP shall, if supported, store it and report the *MT-SDT Information* IE in the DL DATA NOTIFICATION message as specified in TS 38.401 [2].

If the *SDT Data Size Threshold* IE is included in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, store it and act as specified in TS 38.401 [2].

**Interaction with the Bearer Context Modification (gNB-CU-CP initiated)**

If the BEARER CONTEXT MODIFICATION REQUEST message includes for a DRB in the *DRB To Modify List* IE the *PDCP SN Status Request IE* set to “requested” and if the gNB-CU-UP has not yet received a SDAP end marker packet for a QoS flow which has been previously re-configured to another DRB by means of a gNB-CU-CP initiated Bearer Context Modification procedure, the gNB-CU-UP shall includes the QoS Flow Identifier of that QoS flow in the *Old QoS Flow List - UL End Marker expected* IE in the *PDU Session Resource Modified List* IE in the BEARER CONTEXT MODIFICATION RESPONSE message.

#### 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, or cannot handle SCG with the indicated activated or deactivated status, it shall respond with a BEARER CONTEXT MODIFICATION FAILURE message and appropriate cause value.

If the gNB-CU-UP receives a BEARER CONTEXT MODIFICATION REQUEST message containing the *Security Indication Modify* IE in the *PDU Session Resource To Modify List* IE for a PDU session that may result in the change of security status that has been applied but the DRBs that have been established for that PDU session are not requested to be released via the *DRB To Remove List* IEs as specified in TS 38.331 [10], then the gNB-CU-UP shall respond with a BEARER CONTEXT MODIFICATION FAILURE message and appropriate cause value.

If the gNB-CU-UP receives a BEARER CONTEXT MODIFICATION REQUEST message containing the *PDCP COUNT Reset* IE in the *DRB To Modify List* IE of the *PDU Session Resource To Modify List* IE but if the *Security Information* IE is not present, then the gNB-CU-UP 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.

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

#### 8.3.3.1 General

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

#### 8.3.3.2 Successful Operation



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

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

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

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

#### 8.3.3.3 Abnormal Conditions

Not applicable.

### 8.3.4 Bearer Context Release (gNB-CU-CP initiated)

#### 8.3.4.1 General

The purpose of the Bearer Context Release procedure is to allow the gNB-CU-CP to command the release of an UE-associated logical E1 connection. The procedure uses UE-associated signalling.

#### 8.3.4.2 Successful Operation



Figure 8.3.4.2-1: Bearer Context Release procedure: Successful Operation.

The gNB-CU-CP initiates the procedure by sending the BEARER CONTEXT RELEASE COMMAND message to the gNB-CU-UP. The gNB-CU-UP replies with the BEARER CONTEXT RELEASE COMPLETE message.

Upon reception of the BEARER CONTEXT RELEASE COMMAND message, the gNB-CU-UP shall release all related signalling and user data transport resources and reply with the BEARER CONTEXT RELEASE COMPLETE message.

The gNB-CU-UP shall, if supported, include the *Retainability Measurements Information* IE in the BEARER CONTEXT RELEASE COMPLETE 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].

#### 8.3.4.3 Abnormal Conditions

Not applicable.

### 8.3.5 Bearer Context Release Request (gNB-CU-UP initiated)

#### 8.3.5.1 General

The purpose of the Bearer Context Release Request procedure is to allow the gNB-CU-UP to request the gNB-CU-CP to release an UE-associated logical E1 connection. The procedure uses UE-associated signalling.

#### 8.3.5.2 Successful Operation



Figure 8.3.5.2-1: Bearer Context Release Requset procedure: Successful Operation.

The gNB-CU-UP initiates the procedure by sending the BEARER CONTEXT RELEASE REQUEST message to the gNB-CU-CP.

If the *DRB Status List* IE is included in the BEARER CONTEXT RELEASE REQUEST message, the gNB-CU-CP shall act as specified in TS 38.401 [2].

**Interactions with Bearer Context Release procedure:**

The Bearer Context Release (gNB-CU-CP initiated) procedure may be initiated upon reception of a BEARER CONTEXT RELEASE REQUEST message.

**Interaction with Bearer Context Modification (gNB-CU-CP initiated) procedure:**

If applicable, as specified in TS 38.401 [2], the gNB-CU-UP may receive, after having performed the Bearer Context Release Request (gNB-CU-UP initiated) procedure, the BEARER CONTEXT MODIFICATION REQUEST message including the *Data Forwarding Information Request* IE within the *DRBs To Modify List* IE.

#### 8.3.5.3 Abnormal Conditions

Not applicable.

### 8.3.6 Bearer Context Inactivity Notification

#### 8.3.6.1 General

This procedure is initiated by the gNB-CU-UP to indicate the inactivity/resumption of activity related to the UE. The procedure uses UE-associated signalling.

#### 8.3.6.2 Successful Operation



Figure 8.3.6.2-1: Bearer Context Inactivity Notification procedure: Successful Operation.

The gNB-CU-UP initiates the procedure by sending the BEARER CONTEXT INACTIVITY NOTIFICATION message to the gNB-CU-CP.

If the Activity Notification Level was set to “DRB” during the Bearer Context establishment, the gNB-CU-UP shall include the *DRB Activity List* IE in the BEARER CONTEXT INACTIVITY NOTIFICATION message.

If the Activity Notification Level was set to “PDU Session” during the Bearer Context establishment, the gNB-CU-UP shall include the *PDU Session Resource Activity List* IE in the BEARER CONTEXT INACTIVITY NOTIFICATION message.

If the Activity Notification Level was set to “UE” during the Bearer Context establishment, the gNB-CU-UP shall include the *UE Activity* IE in the BEARER CONTEXT INACTIVITY NOTIFICATION message.

#### 8.3.6.3 Abnormal Conditions

Not applicable.

### 8.3.7 DL Data Notification

#### 8.3.7.1 General

This procedure is initiated by the gNB-CU-UP to indicate the detection of DL data arrival for the UE, or indicate that a DL packet including a QFI value in the NG-U header not configured by the *QoS Flows Information To Be Setup* IE or the *Flow Mapping Information* IE is received for the first time. The procedure uses UE-associated signalling.

#### 8.3.7.2 Successful Operation



Figure 8.3.7.2-1: DL Data Notification procedure: Successful Operation.

The gNB-CU-UP initiates the procedure by sending the DL DATA NOTIFICATION message to the gNB-CU-CP.

If the *PPI* IE is included in the DL DATA NOTIFICATION message, the gNB-CU-CP shall use it for paging policy differentiation.

If the *PDU Session To Notify List* IE is included in the DL DATA NOTIFICATION message, the gNB-CU-CP shall, if supported, either map the flow(s) included in *PDU Session To Notify List* IE to the existing DRB or establish a new DRB for the flow(s).

If the *MT-SDT Information* IE is included in the DL DATA NOTIFICATION message, the gNB-CU-CP shall, if supported, take it into account for MT-SDT paging.

If the *SDT Data Size Threshold Crossed* IE is included in the DL DATA NOTIFICATION message, the gNB-CU-CP shall, if supported, act as specified in TS 38.401 [2].

NOTE: If a DL packet including a QFI value in the NG-U header not configured by the *QoS Flows Information To Be Setup* IE or the *Flow Mapping Information* IE is received, the gNB-CU-UP may deliver the DL packet via any existing configured DRB before it initiates DL Data Notification procedure.

#### 8.3.7.3 Abnormal Conditions

Not applicable.

### 8.3.8 Data Usage Report

#### 8.3.8.1 General

This procedure is initiated by the gNB-CU-UP to report data volume served at the gNB-CU-UP. The procedure uses UE-associated signalling.

#### 8.3.8.2 Successful Operation



Figure 8.3.8.2-1: Data Usage Report procedure: Successful Operation.

The gNB-CU-UP initiates the procedure by sending the DATA USAGE REPORT message to the gNB-CU-CP.

#### 8.3.8.3 Abnormal Conditions

Not applicable.

### 8.3.9 gNB-CU-UP Counter Check

#### 8.3.9.1 General

This procedure is initiated by the gNB-CU-UP to request the gNB-CU-CP to execute a counter check procedure to verify the value of the PDCP COUNTs associated with DRBs established in the gNB-CU-UP.

The procedure uses UE-associated signalling.

#### 8.3.9.2 Successful Operation



Figure 8.3.9.2-1: gNB-CU-UP Counter Check procedure, successful operation.

The gNB-CU-UP initiates the procedure by sending the gNB-CU-UP COUNTER CHECK REQUEST message to the gNB-CU-CP.

Upon reception of the gNB-CU-UP COUNTER CHECK REQUEST message, the gNB-CU-CP may perform the RRC counter check procedure as defined in TS 33.501 [13].

#### 8.3.9.3 Unsuccessful Operation

Not applicable.

#### 8.3.9.4 Abnormal Conditions

Not applicable.

### 8.3.10 UL Data Notification

#### 8.3.10.1 General

This procedure is initiated by the gNB-CU-UP to notify the gNB-CU-CP that an UL packet including a QFI value in the SDAP header not configured by the *QoS Flows Information To Be Setup* IE or the *Flow Mapping Information* IE is received for the first time at the default DRB. The procedure uses UE-associated signalling.

#### 8.3.10.2 Successful Operation



Figure 8.3.10.2-1: UL Data Notification procedure: Successful Operation.

The gNB-CU-UP initiates the procedure by sending the UL DATA NOTIFICATION message to the gNB-CU-CP.

#### 8.3.10.3 Abnormal Conditions

Not applicable.

### 8.3.11 MR-DC Data Usage Report

#### 8.3.11.1 General

This procedure is initiated by the gNB-CU-UP to report data volume served at the gNB-CU-UP, where the UE is connected to the 5GC. The procedure uses UE-associated signalling.

#### 8.3.11.2 Successful Operation



Figure 8.3.11.2-1: MR-DC Data Usage Report procedure: Successful Operation.

The gNB-CU-UP initiates the procedure by sending the MR-DC DATA USAGE REPORT message to the gNB-CU-CP.

#### 8.3.11.3 Abnormal Conditions

Not applicable.

### 8.3.12 Early Forwarding SN Transfer

#### 8.3.12.1 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 or conditional PSCell change or conditional PSCell addition.

The procedure uses UE-associated signalling.

#### 8.3.12.2 Successful Operation



Figure 8.3.12.2-1: 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 or conditional PSCell change or conditional PSCell addition or subsequent CPAC.

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.

#### 8.3.12.3 Unsuccessful Operation

Not applicable.

#### 8.3.12.4 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.

### 8.3.13 GNB-CU-CP Measurement Results Information

#### 8.3.13.1 General

This procedure is initiated by the gNB-CU-CP to inform the measurement results received from the UE to the gNB-CU-UP.

The procedure uses UE-associated signalling.

#### 8.3.13.2 Successful Operation



Figure 8.3.13.2-1: GNB-CU-CP Measurement Results Information procedure. Successful operation.

The gNB-CU-CP initiates the procedure by sending a GNB-CU-CP MEASUREMENT RESULTS INFORMATION message.

#### 8.3.13.3 Abnormal Conditions

Not applicable.

## 8.4 Trace Procedures

### 8.4.1 Trace Start

#### 8.4.1.1 General

The purpose of the Trace Start procedure is to allow the gNB-CU-CP to request the gNB-CU-UP to initiate a trace session for a UE. The procedure uses UE-associated signalling.

#### 8.4.1.2 Successful Operation



Figure 8.4.1.2-1: Trace start procedure: Successful Operation.

Upon reception of the TRACE START message, the gNB-CU-UP shall initiate the requested trace session for the requested UE, as described in TS 32.422 [24]. In particular, the gNB-CU-UP shall, if supported:

- if the *MDT Activation* IE is set to "Immediate MDT Only", initiate the requested MDT session as described in TS 32.422 [24] and the gNB-CU-UP shall ignore *Interfaces To Trace* IE, and *Trace Depth* IE.

#### 8.4.1.3 Abnormal Conditions

Void.

### 8.4.2 Deactivate Trace

#### 8.4.2.1 General

The purpose of the Deactivate Trace procedure is to allow the gNB-CU-CP to request the gNB-CU-UP to stop the trace session for the indicated trace reference. The procedure uses UE-associated signalling.

#### 8.4.2.2 Successful Operation



Figure 8.4.2.2-1: Deactivate trace procedure: Successful Operation.

Upon reception of the DEACTIVATE TRACE message, the gNB-CU-UP shall stop the trace session for the indicated trace reference contained in the *Trace ID* IE, as described in TS 32.422 [24].

#### 8.4.2.3 Abnormal Conditions

Void.

### 8.4.3 Cell Traffic Trace

#### 8.4.3.1 General

The purpose of the Cell Traffic Trace procedure is to send the allocated Trace Recording Session Reference and the Trace Reference to the gNB-CU-CP. The procedure uses UE-associated signalling.

#### 8.4.3.2 Successful Operation



Figure 8.4.3.2-1: Cell Traffic Trace procedure. Successful operation.

The procedure is initiated with a CELL TRAFFIC TRACE message sent from the gNB-CU-UP to the gNB-CU-CP.

If the *Privacy Indicator* IE is included in the message, the gNB-CU-CP shall store the information so that it can be transferred towards the AMF.

#### 8.4.3.3 Abnormal Conditions

Void.

## 8.5 IAB Procedures

### 8.5.1 IAB UP TNL Address Update

#### 8.5.1.1 General

The purpose of the IAB UP TNL Address Update procedure is to allow the gNB-CU-CP to request the gNB-CU-UP to update the TNL Address(es) for all the DL F1-U GTP-U tunnels related to this (these) TNL address(es), and to allow the gNB-CU-UP to inform the gNB-CU-CP about the updated TNL Address(es) for all the UL F1-U GTP-U tunnels. The procedure uses non-UE associated signalling.

NOTE: This procedure is applicable for IAB-nodes, where the term "gNB-CU-CP" applies to IAB-donor-CU-CP, and the term “gNB-CU-UP” applies to IAB-donor-CU-UP.

NOTE: Implementation shall ensure the avoidance of potential race conditions, i.e. it must ensure that the UP configuration (e.g., UL/DL UP TNL address) update is not concurrently performed using the non-UE-associated IAB UP TNL Address Update procedure and the UE-associated procedures for Bearer Context Management.

#### 8.5.1.2 Successful Operation



Figure 8.5.1.2-1: IAB UP TNL Address Update procedure: Successful Operation.

The gNB-CU-CP initiates the procedure by sending the IAB UP TNL ADDRESS UPDATE message to the gNB-CU-UP. If the gNB-CU-UP succeeds to update the TNL Address(es), it replies to the gNB-CU-CP with the IAB UP TNL ADDRESS UPDATE ACKNOWLEDGE message.

Upon reception of the IAB UP TNL ADDRESS UPDATE message, if the *DL UP TNL Address to Update List* IE is included therein, the gNB-CU-UP shall replace the old TNL Address(es) by the new TNL Address(es) for all the maintained DL F1-U GTP tunnels corresponding to the old TNL Address(es).

If the *UL UP TNL Address to Update List* IE is contained in the IAB UP TNL ADDRESS UPDATE ACKNOWLEDGE message, the gNB-CU-CP shall consider the new TNL address(es) as replacement for the corresponding old TNL address(es).

#### 8.5.1.3 Unsuccessful Operation



Figure 8.5.1.3-1: IAB UP TNL Address Update procedure: Unsuccessful Operation.

If the gNB-CU-UP receives an IAB UP TNL ADDRESS UPDATE message, but cannot perform the update accordingly, it shall consider the update procedure as failed and respond with an IAB UP TNL ADDRESS UPDATE FAILURE message and appropriate cause value.

If the IAB UP TNL ADDRESS UPDATE FAILURE message includes the *Time To Wait* IE, the gNB-CU-CP shall wait at least for the indicated amount of time before reinitiating the IAB UP TNL Address Update procedure towards the same gNB-CU-UP.

#### 8.5.1.4 Abnormal Conditions

Not Applicable.

### 8.5.2 IAB PSK Notification

#### 8.5.2.1 General

The purpose of the IAB PSK Notification procedure is to allow the gNB-CU-CP to send the security key info to the gNB-CU-UP, which will be used for the IKEv2 Pre-shared Secret Key (PSK) authentication to protect the F1-U interface of the IAB-node(s) as specified in TS 33.501 [13]. The procedure uses non-UE associated signalling.

NOTE: This procedure is applicable for IAB-nodes, where the term "gNB-CU-CP" applies to IAB-donor-CU-CP, and the term “gNB-CU-UP” applies to IAB-donor-CU-UP.

NOTE: Implementation should ensure that the IAB PSK Notification procedure be performed after the IAB-donor-CU-CP obtains the IP address of the IAB-DU and of the IAB-donor-CU-UP.

#### 8.5.2.2 Successful Operation

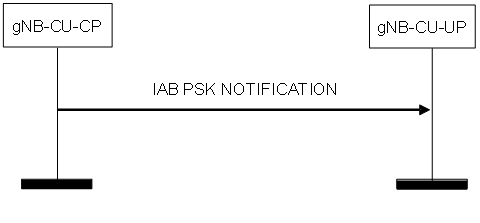


Figure 8.5.2.2-1: IAB PSK Notification procedure: Successful Operation.

The gNB-CU-CP initiates the procedure by sending the IAB PSK NOTIFICATION message to the gNB-CU-UP.

The gNB-CU-UP uses the *IAB-Donor-CU-UP PSK Info* IE included in the IAB PSK NOTIFICATION message as specified in TS 33.501 [13].

#### 8.5.2.3 Abnormal Conditions

Not applicable.

## 8.6 MBS Procedures

### 8.6.1 MBS Procedures for Broadcast

#### 8.6.1.1 BC Bearer Context Setup

##### 8.6.1.1.1 General

The purpose of the BC Bearer Context Setup procedure is to allow the gNB-CU-CP to establish MBS session resources for a broadcast MBS session in the gNB-CU-UP. The procedure uses MBS-associated signalling.

##### 8.6.1.1.2 Successful Operation



Figure 8.6.1.1.2-1: BC Bearer Context Setup procedure: Successful Operation.

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

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

- A list of BC MRBs which are successfully established shall be included in the *BC MRB Setup Response List* IE;

- A list of BC MRBs which failed to be established shall be included in the *BC MRB Failed List* IE;

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

- For each established BC MRB, a list of MBS QoS Flows which failed to be established shall be included in the *MBS QoS Flow Failed List* IE.

When the gNB-CU-UP reports the unsuccessful establishment of a BC MRB or MBS 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 *Requested Action for Available Shared NG-U Termination* IE in the *BC Bearer Context To Setup* IE in the BC BEARER CONTEXT SETUP REQUEST message is set to

- "apply available configuration" and an appropriate Shared NG-U Termination is available, the gNB-CU-UP shall apply the radio bearer configuration of the Shared NG-U Termination, and indicate in the BC BEARER CONTEXT SETUP RESPONSE message within the *Available BC MRB Configuration* IE in the *BC Bearer Context To Setup Response* IE the radio bearer configuration of the Shared NG-U Termination, if the radio bearer configuration of the Shared NG-U Termination is different than the one requested by the gNB-CU-CP.

- "apply requested configuration" the gNB-CU-UP shall make use of an available appropriate Shared NG-U Termination if the radio bearer configuration of the Shared NG-U Termination, is the same as the one requested by the gNB-CU-CP, otherwise allocate separate resources as requested by the gNB-CU-CP and indicate in the BC BEARER CONTEXT SETUP RESPONSE message within the *Available BC MRB Configuration* IE in the *BC Bearer Context To Setup Response* IE the radio bearer configuration of the Shared NG-U Termination.

- "apply available configuration if same as requested" the gNB-CU-UP shall make use of an available appropriate Shared NG-U Termination only if the radio bearer configuration of the Shared NG-U Termination is the same as the one requested by the gNB-CU-CP and reply with BC BEARER CONTEXT SETUP RESPONSE message.

If the *Associated Session ID* IE is contained in the BC BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall, if supported, take this information into account to determine the appropriate resources, as specified in TS 38.401 [2].

If the *MBS Service Area* IE is contained in the BC BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall, if supported, take this information into account to determine the appropriate resources, as specified in TS 38.401 [2].

##### 8.6.1.1.3 Unsuccessful Operation



Figure 8.6.1.1.3-1: BC Bearer Context Setup procedure: Unsuccessful Operation.

If the gNB-CU-UP cannot establish the requested resources for the MBS session, it shall consider the procedure as failed and respond with the BC BEARER CONTEXT SETUP FAILURE message and an appropriate cause value.

If the *Requested Action for Available Shared NG-U Termination* IE in the *BC Bearer Context To Setup* IE in the BC BEARER CONTEXT SETUP REQUEST message is set to "apply available configuration if same as requested" and the requested configuration does not match the available shared NG-U termination, the gNB-CU UP shall reply with BC BEARER CONTEXT SETUP FAILURE message.

##### 8.6.1.1.4 Abnormal Conditions

void.

#### 8.6.1.2 BC Bearer Context Modification (gNB-CU-CP initiated)

##### 8.6.1.2.1 General

The purpose of the gNB-CU-CP initiated BC Bearer Context Modification procedure is to allow the gNB-CU-CP to modify MBS session resources for a broadcast MBS session. The procedure uses MBS-associated signalling.

##### 8.6.1.2.2 Successful Operation



Figure 8.6.1.2.2-1: BC Bearer Context Modification procedure, gNB-CU-CP initiated: Successful Operation.

The gNB-CU-CP initiates the procedure by sending the BC BEARER CONTEXT MODIFICATION REQUEST message to the gNB-CU-UP. If the gNB-CU-UP succeeds to perform at least partially the requested modifications it replies to the gNB-CU-CP with the BC BEARER CONTEXT MODIFICATION RESPONSE message.

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

- A list of BC MRBs which are successfully established or modified shall be included in the *BC MRB Setup or Modify Response List* IE;

- A list of BC MRBs which failed to be established or modified shall be included in the *BC MRB Failed List* IE;

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

- For each newly established or modified BC MRB, a list of MBS QoS Flows which failed to be established or modified shall be included in the *MBS QoS Flow Failed List* IE.

When the gNB-CU-UP reports the unsuccessful establishment of a BC MRB or MBS 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 *BC Bearer Context NG-U TNL Info at 5GC To Setup or Modify* IE is contained in the BC BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall update the previously received BC Bearer Context NG-U TNL Info at 5GC.

##### 8.6.1.2.3 Unsuccessful Operation



Figure 8.6.1.2.3-1: BC Bearer Context Modification procedure, gNB-CU-CP intiated: Unsuccessful Operation.

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

##### 8.6.1.2.4 Abnormal Conditions

void.

#### 8.6.1.3 BC Bearer Context Modification Required

##### 8.6.1.3.1 General

The purpose of the gNB-CU-UP initiated BC Bearer Context Modification Required procedure is to allow the gNB-CU-UP to request the gNB-CU-CP to initiate the modification MBS session resources for a broadcast MBS session and inform the gNB-CU-CP. The procedure uses MBS-associated signalling.

##### 8.6.1.3.2 Successful Operation



Figure 8.6.1.3.2-1: BC Bearer Context Modification Required procedure, gNB-CU-UP initiated: Successful Operation.

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

##### 8.6.1.3.3 Abnormal Conditions

void.

#### 8.6.1.4 BC Bearer Context Release (gNB-CU-CP initiated)

##### 8.6.1.4.1 General

The purpose of the gNB-CU-CP initiated BC Bearer Context Release procedure is to allow the gNB-CU-CP to command the release of MBS session resources for a broadcast MBS Session. The procedure uses MBS-associated signalling.

##### 8.6.1.4.2 Successful Operation



Figure 8.6.1.4.2-1: MC Bearer Context Release procedure: Successful Operation.

The gNB-CU-CP initiates the procedure by sending the BC BEARER CONTEXT RELEASE COMMAND message to the gNB-CU-UP.

Upon reception of the BC BEARER CONTEXT RELEASE COMMAND message, the gNB-CU-UP shall release all related signalling and user data transport resources and reply with the BC BEARER CONTEXT RELEASE COMPLETE message.

##### 8.6.1.4.3 Abnormal Conditions

Not applicable.

#### 8.6.1.5 BC Bearer Context Release Request (gNB-CU-UP initiated)

##### 8.6.1.5.1 General

The purpose of the BC Bearer Context Release Request procedure is to allow the gNB-CU-UP to request the gNB-CU-CP to trigger the release of MBS session resources for a broadcast MBS Session. The procedure uses MBS-associated signalling.

##### 8.6.1.5.2 Successful Operation



Figure 8.6.1.5.2-1: BC Bearer Context Release Request procedure: Successful Operation.

The gNB-CU-UP initiates the procedure by sending the BC BEARER CONTEXT RELEASE REQUEST message to the gNB-CU-CP.

**Interactions with gNB-CU-CP intitiated BC Bearer Context Release procedure:**

Upon reception of the BC BEARER CONTEXT RELEASE REQUEST message the gNB-CU-CP should initiate the BC Bearer Context Context Release procedure.

##### 8.6.1.5.3 Abnormal Conditions

Not applicable.

### 8.6.2 MBS Procedures for Multicast

#### 8.6.2.1 MC Bearer Context Setup

##### 8.6.2.1.1 General

The purpose of the MC Bearer Context Setup procedure is to allow the gNB-CU-CP to establish MBS session resources for a multicast MBS session in the gNB-CU-UP. The procedure uses MBS-associated signalling.

##### 8.6.2.1.2 Successful Operation



Figure 8.6.2.1.2-1: MC Bearer Context Setup procedure: Successful Operation.

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

If MRB resources are requested to be setup by the gNB-CU-CP the gNB-CU-UP shall report to the gNB-CU-CP, in the MC BEARER CONTEXT SETUP RESPONSE message, the result of all the requested resources in the following way:

- A list of MC MRBs which are successfully established shall be included in the *MC MRB Setup Response List* IE;

- A list of MC MRBs which failed to be established shall be included in the M*C MRB Failed List* IE;

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

- For each established MC MRB, a list of MBS QoS Flows which failed to be established shall be included in the *MBS QoS Flow Failed List* IE.

When the gNB-CU-UP reports the unsuccessful establishment of a MC MRB or MBS QoS Flow the cause value should be precise enough to enable the gNB-CU-CP to know the reason for the unsuccessful establishment.

If MRB resources are requested to be setup by the gNB-CU-CP and if the *Requested Action for Available Shared NG-U Termination* IE in the *MC Bearer Context To Setup* IE in the MC BEARER CONTEXT SETUP REQUEST message is set to

- "apply available configuration" and an appropriate Shared NG-U Termination is available, the gNB-CU-UP shall apply the radio bearer configuration of the Shared NG-U Termination, and indicate in the MC BEARER CONTEXT SETUP RESPONSE message within the *Available MC MRB Configuration* IE in the *MC Bearer Context To Setup Response* IE the radio bearer configuration of the Shared NG-U Termination, if the radio bearer configuration of the Shared NG-U Termination is different than the one requested by the gNB-CU-CP.

- "apply requested configuration" the gNB-CU-UP shall make use of an available appropriate Shared NG-U Termination if the radio bearer configuration of the Shared NG-U Termination, is the same as the one requested by the gNB-CU-CP, otherwise allocate separate resources as requested by the gNB-CU-CP and indicate in the MC BEARER CONTEXT SETUP RESPONSE message within the *Available MC MRB Configuration* IE in the *MC Bearer Context To Setup Response* IE the radio bearer configuration of the Shared NG-U Termination.

- "apply available configuration if same as requested" the gNB-CU-UP shall make use of an available appropriate Shared NG-U Termination only if the radio bearer configuration of the Shared NG-U Termination is the same as the one requested by the gNB-CU-CP and reply with MC BEARER CONTEXT SETUP RESPONSE message.

If the *MBS Session Associated Information Non-Support-to-Support* IE is contained in the MC BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall, if supported, perform duplication elimination between the packets delivered through the individual NG-U tunnel and the shared NG-U tunnel.

If the *MBS Area Session ID* IE is received in the MC BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall, if supported, store it and use it to establish the shared NG-U tunnel.

If the *MC Bearer Context Status Change* IE set to "Resume" is contained in the MC BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall, if supported, resume transmitting DL data.

**Interaction with other procedures**

If the *MC Bearer Context Status Change* IE is contained in the MC BEARER CONTEXT SETUP REQUEST message and set to “Suspend”, the gNB-CU-UP shall, if supported,

- suspend transmitting DL data to the gNB-DU.

- upon DL data arrival, buffer the received DL data and trigger the MC Bearer Notification procedure to indicate DL Data Arrival to the gNB-CU-CP.

If the *MC Bearer Context Inactivity Timer* IE is contained in MC BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall take it into account when performing inactivity monitoring, and if applicable, trigger MC Bearer Notification procedure to indicate inactivity of the MC Bearer context to the gNB-CU-CP.

##### 8.6.2.1.3 Unsuccessful Operation



Figure 8.6.2.1.3-1: MC Bearer Context Setup procedure: Unsuccessful Operation.

If the gNB-CU-UP cannot establish the requested MBS session resources for the multicast MBS session, it shall consider the procedure as failed and respond with the MC BEARER CONTEXT SETUP FAILURE message and an appropriate cause value.

If the *Requested Action for Available Shared NG-U Termination* IE in the *MC Bearer Context To Setup* IE in the MC BEARER CONTEXT SETUP REQUEST message is set to "apply available configuration if same as requested" and the requested configuration does not match the available shared NG-U termination, the gNB-CU UP shall reply with MC BEARER CONTEXT SETUP FAILURE message.

##### 8.6.2.1.4 Abnormal Conditions

void.

#### 8.6.2.2 MC Bearer Context Modification (gNB-CU-CP initiated)

##### 8.6.2.2.1 General

The purpose of the gNB-CU-CP initiated MC Bearer Context Modification procedure is to allow the gNB-CU-CP to modify MBS session resources for a multicast MBS session. The procedure uses MBS-associated signalling.

##### 8.6.2.2.2 Successful Operation



Figure 8.6.2.2.2-1: MC Bearer Context Modification procedure, gNB-CU-CP initiated: Successful Operation.

The gNB-CU-CP initiates the procedure by sending the MC BEARER CONTEXT MODIFICATION REQUEST message to the gNB-CU-UP. If the gNB-CU-UP succeeds to perform at least partially the requested modifications it replies to the gNB-CU-CP with the MC BEARER CONTEXT MODIFICATION RESPONSE message.

If MRB resources are requested to be setup or modified by the gNB-CU-CP, the gNB-CU-UP shall report to the gNB-CU-CP, in the MC BEARER CONTEXT MODIFICATION RESPONSE message, the result of all the requested resources in the following way:

- A list of MC MRBs which are successfully established or modified shall be included in the *MC MRB Setup or Modify Response List* IE;

- A list of MC MRBs which failed to be established or modified shall be included in the M*C MRB Failed List* IE;

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

- For each newly established or modified MC MRB, a list of MBS QoS Flows which failed to be established or modified shall be included in the *MBS QoS Flow Failed List* IE.

When the gNB-CU-UP reports the unsuccessful establishment of a MC MRB or MBS QoS Flow the cause value should be precise enough to enable the gNB-CU-CP to know the reason for the unsuccessful establishment.

If MRB resources are requested to be setup by the gNB-CU-CP and if the *Requested Action for Available Shared NG-U Termination* IE in the *MC Bearer Context To Modify* IE in the MC BEARER CONTEXT MODIFICATION REQUEST message is set to

- "apply available configuration" and an appropriate Shared NG-U Termination is available, the gNB-CU-UP shall apply the radio bearer configuration of the Shared NG-U Termination, and indicate in the MC BEARER CONTEXT MODIFICATION RESPONSE message within the *Available MC MRB Configuration* IE in the *MC Bearer Context To Modify Response* IE the radio bearer configuration of the Shared NG-U Termination, if the radio bearer configuration of the Shared NG-U Termination is different than the one requested by the gNB-CU-CP.

- "apply requested configuration" the gNB-CU-UP shall make use of an available appropriate Shared NG-U Termination if the radio bearer configuration of the Shared NG-U Termination, is the same as the one requested by the gNB-CU-CP, otherwise allocate separate resources as requested by the gNB-CU-CP and indicate in the MC BEARER CONTEXT MODIFICATION RESPONSE message within the *Available MC MRB Configuration* IE in the *MC Bearer Context To Modify Response* IE the radio bearer configuration of the Shared NG-U Termination.

- "apply available configuration if same as requested" the gNB-CU-UP shall make use of an available appropriate Shared NG-U Termination only if the radio bearer configuration of the Shared NG-U Termination is the same as the one requested by the gNB-CU-CP and reply with MC BEARER CONTEXT MODIFICATION RESPONSE message.

If the M*C Bearer Context NG-U TNL Info at 5GC* IE is contained in the MC BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall update the previously received MC Bearer Context NG-U TNL Info at 5GC.

If the *MC Bearer Context NG-U TNL Info at NG-RAN Request* IE is contained in the MC BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall include the *MC Bearer Context NG-U TNL Info at NG-RAN Modify Response* IE in the MC BEARER CONTEXT MODIFICATION RESPONSE message.

If the *MRB Progress Information Request Type* IE is contained within the *MC Forwarding Resource Request* IE in the MC BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, include the requested information in the *MRB Progress Information* IE within the *MC Forwarding Resource Response* IE in the MC BEARER CONTEXT MODIFICATION RESPONSE message. If the *MRB Forwarding Address Request* IE set to "true" is contained in the *MC Forwarding Resource Request* IE in the MC BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, include the *MRB Forwarding Address* IE within the *MC Forwarding Resource Response* IE in the MC BEARER CONTEXT MODIFICATION RESPONSE message.

If the *MC Forwarding Resource Indication* IE is contained in the MC BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, take the included information into account.

If the *MC Forwarding Resource Release* IE is contained in the MC BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, release the indicated MC Forwarding Resource.

If the *MBS Session Associated Information Non-Support-to-Support* IE is contained in the MC BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, perform duplication elimination between the packets delivered through the individual NG-U tunnel and the shared NG-U tunnel.

If the *MC Bearer Context Status Change* IE set to "Resume" is contained in the MC BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, resume transmitting DL data.

**Interaction with other procedures**

If the *MC Bearer Context Status Change* IE is contained in MC BEARER CONTEXT MODIFICATION REQUEST message and set to "Suspend", the gNB-CU-UP shall, if supported,

- suspend transmitting DL data to the gNB-DU.

- upon DL data arrival, buffer the received DL data and trigger the MC Bearer Notification procedure to indicate DL Data Arrival to the gNB-CU-CP.

If the *MC Bearer Context Inactivity Timer* IE is contained in MC BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall take it into account when perform inactivity monitoring, and if applicable, trigger MC Bearer Notification procedure to indicate inactivity of the MC Bearer context to the gNB-CU-CP.

##### 8.6.2.2.3 Unsuccessful Operation



Figure 8.6.2.2.3-1: MC Bearer Context Modification procedure, gNB-CU-CP intiated: Unsuccessful Operation.

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

If the *Requested Action for Available Shared NG-U Termination* IE in the *MC Bearer Context To Setup* IE in the MC BEARER CONTEXT MODIFICATION REQUEST message is set to "apply available configuration if same as requested" and the requested configuration does not match the available shared NG-U termination, the gNB-CU UP shall reply with MC BEARER CONTEXT MODIFICATION FAILURE message.

##### 8.6.2.2.4 Abnormal Conditions

void.

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

##### 8.6.2.3.1 General

The purpose of the gNB-CU-UP initiated MC Bearer Context Modification Required procedure is to allow the gNB-CU-UP to request the gNB-CU-CP to initiate the modification of MBS session resources for a multicast MBS session and inform the gNB-CU-CP. The procedure uses MBS-associated signalling.

##### 8.6.2.3.2 Successful Operation



Figure 8.6.2.3.2-1: MC Bearer Context Modification Required procedure, gNB-CU-UP initiated: Successful Operation.

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

If the *MC Forwarding Resource Release Indication* IE is contained in the MC BEARER CONTEXT MODIFICATION REQUIRED message, the gNB-CU-CP shall, if supported, assume that the indicated MC Forwarding Resource was released by the gNB-CU-UP.

##### 8.6.2.3.3 Abnormal Conditions

void

#### 8.6.2.4 MC Bearer Context Release (gNB-CU-CP initiated)

##### 8.6.2.4.1 General

The purpose of the gNB-CU-CP initiated MC Bearer Context Release procedure is to allow the gNB-CU-CP to command the release of MBS session resources for a multicast MBS Session. The procedure uses MBS-associated signalling.

##### 8.6.2.4.2 Successful Operation



Figure 8.6.2.4.2-1: MC Bearer Context Release procedure: Successful Operation.

The gNB-CU-CP initiates the procedure by sending the MC BEARER CONTEXT RELEASE COMMAND message to the gNB-CU-UP.

Upon reception of the MC BEARER CONTEXT RELEASE COMMAND message, the gNB-CU-UP shall release all related signalling and user data transport resources and reply with the MC BEARER CONTEXT RELEASE COMPLETE message.

##### 8.6.2.4.3 Abnormal Conditions

Not applicable.

#### 8.6.2.5 MC Bearer Context Release Request (gNB-CU-UP initiated)

##### 8.6.2.5.1 General

The purpose of the MC Bearer Context Release Request procedure is to allow the gNB-CU-UP to request the gNB-CU-CP to trigger the release of MBS session resources for a multicast MBS Session. The procedure uses MBS-associated signalling.

##### 8.6.2.5.2 Successful Operation



Figure 8.6.2.5.2-1: MC Bearer Context Release Request procedure: Successful Operation.

The gNB-CU-UP initiates the procedure by sending the MC BEARER CONTEXT RELEASE REQUEST message to the gNB-CU-CP.

**Interactions with gNB-CU-CP intitiated MC Bearer Context Release procedure:**

Upon reception of the MC BEARER CONTEXT RELEASE REQUEST message the gNB-CU-CP should initiate the MC Bearer Context Context Release procedure.

##### 8.6.2.5.3 Abnormal Conditions

Not applicable.

#### 8.6.2.6 MC Bearer Notification

##### 8.6.2.6.1 General

The purpose of MC Bearer Notification procedure is initiated by the gNB-CU-UP to indicate DL data arrival or inactivity of the MC Bearer context.

The procedure uses MBS-associated signalling.

##### 8.6.2.6.2 Successful Operation



Figure 8.6.2.6.2-1: MC Bearer Notification procedure: Successful Operation.

The gNB-CU-UP initiates the procedure by sending the MC BEARER NOTIFICATION message to the gNB-CU-CP.

##### 8.6.2.6.3 Abnormal Conditions

Not applicable.

# 9 Elements for E1AP communication

NOTE: In this section, each occurance of gNB-CU-CP could be replaced by eNB-CP or ng-eNB-CU-CP, and each occurance of gNB-CU-UP could be replaced by eNB-UP or ng-eNB-CU-UP, for eNB CP-UP separation and ng-eNB CP-UP separation respectively.

## 9.1 General

Subclauses 9.2 and 9.3 present the E1AP message and IE definitions in tabular format. The corresponding ASN.1 definition is presented in subclause 9.4. In case there is contradiction between the tabular format and the ASN.1 definition, the ASN.1 shall take precedence, except for the definition of conditions for the presence of conditional IEs, where the tabular format shall take precedence.

The messages have been defined in accordance to the guidelines specified in TR 25.921 [5].

When specifying IEs which are to be represented by bitstrings, if not otherwise specifically stated in the semantics description of the concerned IE or elsewhere, the following principle applies with regards to the ordering of bits:

- The first bit (leftmost bit) contains the most significant bit (MSB);

- The last bit (rightmost bit) contains the least significant bit (LSB);

- When importing bitstrings from other specifications, the first bit of the bitstring contains the first bit of the concerned information;

The following attributes are used for the tabular description of the messages and information elements: Presence, Range Criticality and Assigned Criticality. Their definition and use can be found in TS 38.413 [6].

## 9.2 Message Functional Definition and Content

### 9.2.1 Interface Management messages

#### 9.2.1.1 RESET

This message is sent by both the gNB-CU-CP and the gNB-CU-UP and is used to request that the E1 interface, or parts of the E1 interface, to be reset.

Direction: gNB-CU-CP → gNB-CU-UP and 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 |
| Transaction ID | M |  | 9.3.1.53 |  | YES | reject |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |
| CHOICE *Reset Type* | M |  |  |  | YES | reject |
| >*E1 interface* |  |  |  |  |  |  |
| >>Reset All | M |  | ENUMERATED (Reset all,…) |  | - |  |
| >*Part of E1 interface* |  |  |  |  |  |  |
| **>>UE-associated logical E1-connection list** |  | *1* |  |  | - |  |
| **>>>UE-associated logical E1-connection Item** |  | *1 .. <maxnoofIndividualE1ConnectionsToReset>* |  |  | EACH | reject |
| >>>>gNB-CU-CP UE E1AP ID | O |  | 9.3.1.4 |  | - |  |
| >>>>gNB-CU-UP UE E1AP ID | O |  | 9.3.1.5 |  | - |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofIndividualE1ConnectionsToReset | Maximum no. of UE-associated logical E1-connections allowed to reset in one message. Value is 65536. |

#### 9.2.1.2 RESET ACKNOWLEDGE

This message is sent by both the gNB-CU-CP and the gNB-CU-UP as a response to a RESET message.

Direction: gNB-CU-UP → gNB-CU-CP and 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 |
| Transaction ID | M |  | 9.3.1.53 |  | YES | reject |
| **UE-associated logical E1-connection list** |  | *0..1* |  |  | YES | ignore |
| **>UE-associated logical E1-connection Item** |  | *1 .. <maxnoofIndividualE1ConnectionsToReset>* |  |  | EACH | ignore |
| >>gNB-CU-CP UE E1AP ID | O |  | 9.3.1.4 |  | - |  |
| >>gNB-CU-UP UE E1AP ID | O |  | 9.3.1.5 |  | - |  |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxnoofIndividualE1ConnectionsToReset | Maximum no. of UE-associated logical E1-connections allowed to reset in one message. Value is 65536. |

#### 9.2.1.3 ERROR INDICATION

This message is sent by both the gNB-CU-CP and the gNB-CU-UP and is used to indicate that some error has been detected in the node.

Direction: gNB-CU-CP → gNB-CU-UP and 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 | ignore |
| Transaction ID | M |  | 9.3.1.53 | This IE is ignored if received in UE associated signalling message. | YES | reject |
| gNB-CU-CP UE E1AP ID | O |  | 9.3.1.4 |  | YES | ignore |
| gNB-CU-UP UE E1AP ID | O |  | 9.3.1.5 |  | YES | ignore |
| Cause | O |  | 9.3.1.2 |  | YES | ignore |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |
| gNB-CU-CP MBS E1AP ID | O |  | 9.3.1.106 |  | YES | ignore |
| gNB-CU-UP MBS E1AP ID | O |  | 9.3.1.107 |  | YES | ignore |

#### 9.2.1.4 GNB-CU-UP E1 SETUP REQUEST

This message is sent by the gNB-CU-UP to transfer information for a TNL association.

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 |
| Transaction ID | M |  | 9.3.1.53 |  | YES | reject |
| gNB-CU-UP ID | M |  | 9.3.1.15 |  | YES | reject |
| gNB-CU-UP Name | O |  | PrintableString(SIZE(1..150,…)) | Human readable name of the gNB-CU-UP. | YES | ignore |
| CN Support | M |  | ENUMERATED (EPC. 5GC, both, …) |  | YES | reject |
| **Supported PLMNs** |  | *1..<maxnoofSPLMNs>* |  | Supported PLMNs | YES | reject |
| >PLMN Identity | M |  | 9.3.1.7 |  | - | - |
| >Slice Support List | O |  | 9.3.1.8 | Supported S-NSSAIs per PLMN. | - | - |
| >Extended Slice Support List | O |  | 9.3.1.94 | Additional Supported S-NSSAIs per PLMN. | YES | reject |
| >NR CGI Support List | O |  | 9.3.1.36 | Supported cells for gNB CP-UP separation. | - | - |
| >QoS Parameters Support List | O |  | 9.3.1.37 | Supported QoS parameters per PLMN. | - | - |
| >NPN Support Information | O |  | 9.3.1.83 | *NOTE: This IE is not applicable to eNB-CP/eNB-UP and ng-eNB-CU-CP/ng-eNB-CU-UP* | YES | reject |
| >Extended NR CGI Support List | O |  | 9.3.1.97 | Additional supported cells per PLMN. | YES | ignore |
| >ECGI Support List | O |  | 9.3.1.100 | Supported cells for eNB or ng-eNB CP-UP separation. | - | - |
| gNB-CU-UP Capacity | O |  | 9.3.1.56 |  | YES | ignore |
| Transport Network Layer Address Info | O |  | 9.3.2.7 |  | YES | ignore |
| Extended gNB-CU-UP Name | O |  | 9.3.1.95 |  | YES | ignore |
| gNB-CU-UP MBS Support Information | O |  | 9.3.1.110 |  | YES | reject |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofSPLMNs | Maximum no. of Supported PLMN Ids. Value is 12. |

#### 9.2.1.5 GNB-CU-UP E1 SETUP RESPONSE

This message is sent by the gNB-CU-CP to transfer information for a TNL association.

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 |
| Transaction ID | M |  | 9.3.1.53 |  | YES | reject |
| gNB-CU-CP Name | O |  | PrintableString(SIZE(1..150,…)) | Human readable name of the gNB-CU-CP. | YES | ignore |
| Transport Network Layer Address Info | O |  | 9.3.2.7 |  | YES | ignore |
| Extended gNB-CU-CP Name | O |  | 9.3.1.96 |  | YES | ignore |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

#### 9.2.1.6 GNB-CU-UP E1 SETUP FAILURE

This message is sent by the gNB-CU-CP to indicate E1 Setup failure.

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 |
| Transaction ID | M |  | 9.3.1.53 |  | YES | reject |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |
| Time To wait | O |  | 9.3.1.6 |  | YES | ignore |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

#### 9.2.1.7 GNB-CU-CP E1 SETUP REQUEST

This message is sent by the gNB-CU-CP to transfer information for a TNL association.

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 |
| Transaction ID | M |  | 9.3.1.53 |  | YES | reject |
| gNB-CU-CP Name | O |  | PrintableString(SIZE(1..150,…)) | Human readable name of the gNB-CU-CP. | YES | ignore |
| Transport Network Layer Address Info | O |  | 9.3.2.7 |  | YES | ignore |
| Extended gNB-CU-CP Name | O |  | 9.3.1.95 |  | YES | ignore |

#### 9.2.1.8 GNB-CU-CP E1 SETUP RESPONSE

This message is sent by the gNB-CU-UP to transfer information for a TNL association.

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 |
| Transaction ID | M |  | 9.3.1.53 |  | YES | reject |
| gNB-CU-UP ID | M |  | 9.3.1.15 |  | YES | reject |
| gNB-CU-UP Name | O |  | PrintableString(SIZE(1..150,…)) | Human readable name of the gNB-CU-UP. | YES | ignore |
| CN Support | M |  | ENUMERATED (EPC. 5GC, both, …) |  | YES | reject |
| **Supported PLMNs** |  | *1..<maxnoofSPLMNs>* |  | Supported PLMNs | YES | reject |
| >PLMN Identity | M |  | 9.3.1.7 |  | - | - |
| >Slice Support List | O |  | 9.3.1.8 | Supported S-NSSAIs per PLMN. | - | - |
| >Extended Slice Support List | O |  | 9.3.1.94 | Additional Supported S-NSSAIs per PLMN. | YES | reject |
| >NR CGI Support List | O |  | 9.3.1.36 | Supported cells for gNB CP-UP separation. | - | - |
| >QoS Parameters Support List | O |  | 9.3.1.37 | Supported QoS parameters per PLMN. | - | - |
| >NPN Support Information | O |  | 9.3.1.83 | *NOTE: This IE is not applicable to eNB-CP/eNB-UP and ng-eNB-CU-CP/ng-eNB-CU-UP* | YES | reject |
| >Extended NR CGI Support List | O |  | 9.3.1.97 | Additional supported cells per PLMN. | YES | ignore |
| >ECGI Support List | O |  | 9.3.1.100 | Supported cells for eNB or ng-eNB CP-UP separation. | - | - |
| gNB-CU-UP Capacity | O |  | 9.3.1.56 |  | YES | ignore |
| Transport Network Layer Address Info | O |  | 9.3.2.7 |  | YES | ignore |
| Extended gNB-CU-UP Name | O |  | 9.3.1.95 |  | YES | ignore |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofSPLMNs | Maximum no. of Supported PLMN Ids. Value is 12. |

#### 9.2.1.9 GNB-CU-CP E1 SETUP FAILURE

This message is sent by the gNB-CU-UP to indicate E1 Setup failure.

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 |
| Transaction ID | M |  | 9.3.1.53 |  | YES | reject |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |
| Time To wait | O |  | 9.3.1.6 |  | YES | ignore |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

#### 9.2.1.10 GNB-CU-UP CONFIGURATION UPDATE

This message is sent by the gNB-CU-UP to transfer updated information for a TNL association.

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 |
| Transaction ID | M |  | 9.3.1.53 |  | YES | reject |
| gNB-CU-UP ID | O |  | 9.3.1.15 |  | YES | reject |
| gNB-CU-UP Name | O |  | PrintableString(SIZE(1..150,…)) | Human readable name of the gNB-CU-UP. | YES | ignore |
| **Supported PLMNs** |  | *0..<maxnoofSPLMNs>* |  | Supported PLMNs | YES | reject |
| >PLMN Identity | M |  | 9.3.1.7 |  | - | - |
| >Slice Support List | O |  | 9.3.1.8 | Supported S-NSSAIs per PLMN. | - | - |
| >Extended Slice Support List | O |  | 9.3.1.94 | Additional Supported S-NSSAIs per PLMN. | YES | reject |
| >NR CGI Support List | O |  | 9.3.1.36 | Supported cells for gNB CP-UP separation. | - | - |
| >QoS Parameters Support List | O |  | 9.3.1.37 | Supported QoS parameters per PLMN. | - | - |
| >NPN Support Information | O |  | 9.3.1.83 | *NOTE: This IE is not applicable to eNB-CP/eNB-UP and ng-eNB-CU-CP/ng-eNB-CU-UP* | YES | reject |
| >Extended NR CGI Support List | O |  | 9.3.1.97 | Additional supported cells per PLMN. | YES | ignore |
| >ECGI Support List | O |  | 9.3.1.100 | Supported cells for eNB or ng-eNB CP-UP separation. | - | - |
| gNB-CU-UP Capacity | O |  | 9.3.1.56 |  | YES | ignore |
| gNB-CU-UP TNLA To Remove List |  | *0..1* |  |  | YES | reject |
| >gNB-CU-UP TNLA To Remove Item IEs |  | *1..<maxnoofTNLAssociations>* |  |  | - | - |
| >>TNLA Transport Layer Address | M |  | CP Transport Layer Information  9.3.2.2 | Transport Layer Address of the gNB-CU-UP. | - | - |
| >>TNLA Transport Layer Address gNB-CU-CP | O |  | CP Transport Layer Information  9.3.2.2 | Transport Layer Address of the gNB-CU-CP. | - | - |
| Transport Network Layer Address Info | O |  | 9.3.2.7 |  | YES | ignore |
| Extended gNB-CU-UP Name | O |  | 9.3.1.96 |  | YES | ignore |
| gNB-CU-UP MBS Support Information | O |  | 9.3.1.110 |  | YES | reject |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofSPLMNs | Maximum no. of Supported PLMN Ids. Value is 12. |
| maxnoofTNLAssociations | Maximum numbers of TNL Associations between the gNB-CU-UP and the gNB-CU-CP. Value is 32. |

#### 9.2.1.11 GNB-CU-UP CONFIGURATION UPDATE ACKNOWLEDGE

This message is sent by a gNB-CU-CP to a gNB-CU-UP to acknowledge update of information for a TNL association.

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 |
| Transaction ID | M |  | 9.3.1.53 |  | YES | reject |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |
| Transport Network Layer Address Info | O |  | 9.3.2.7 |  | YES | ignore |

#### 9.2.1.12 GNB-CU-UP CONFIGURATION UPDATE FAILURE

This message is sent by the gNB-CU-CP to indicate gNB-CU-UP Configuration Update failure.

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 |
| Transaction ID | M |  | 9.3.1.53 |  | YES | reject |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |
| Time To wait | O |  | 9.3.1.6 |  | YES | ignore |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

#### 9.2.1.13 GNB-CU-CP CONFIGURATION UPDATE

This message is sent by the gNB-CU-CP to transfer updated information for a TNL association.

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 |
| Transaction ID | M |  | 9.3.1.53 |  | YES | reject |
| gNB-CU-CP Name | O |  | PrintableString(SIZE(1..150,…)) | Human readable name of the gNB-CU-CP | YES | ignore |
| **gNB-CU-CP TNLA To Add List** |  | *0..1* |  |  | YES | ignore |
| **>gNB-CU-CP TNLA To Add Item IEs** |  | *1..<maxnoofTNLAssociations>* |  |  | - | - |
| >>TNLA Transport Layer Information | M |  | CP Transport Layer Information  9.3.2.2 | Transport Layer Address of the gNB-CU-CP. | - | - |
| >>TNLA Usage | M |  | ENUMERATED (ue, non-ue, both, …) | Indicates whether the TNLA is only used for UE-associated signalling, or non-UE-associated signalling, or both. For usage of this IE, refer to TS 37.482 [18]. | - | - |
| **gNB-CU-CP TNLA To Remove List** |  | *0..1* |  |  | YES | ignore |
| **>gNB-CU-CP TNLA To Remove Item IEs** |  | *1..<maxnoofTNLAssociations>* |  |  | - | - |
| >>TNLA Transport Layer Address | M |  | CP Transport Layer Information  9.3.2.2 | Transport Layer Address of the gNB-CU-CP. | - | - |
| >>TNLA Transport Layer Address gNB-CU-UP | O |  | CP Transport Layer Information  9.3.2.2 | Transport Layer Address of the gNB-CU-UP. | YES | reject |
| **gNB-CU-CP TNLA To Update List** |  | *0..1* |  |  | YES | ignore |
| **>gNB-CU-CP TNLA To Update Item IEs** |  | *1..<maxnoofTNLAssociations>* |  |  | - | - |
| >>TNLA Transport Layer Address | M |  | CP Transport Layer Address  9.3.2.2 | Transport Layer Address of the gNB-CU-CP. | - | - |
| >>TNLA Usage | O |  | ENUMERATED (ue, non-ue, both, …) | Indicates whether the TNLA is only used for UE-associated signalling, or non-UE-associated signalling, or both. For usage of this IE, refer to TS 37.482 [18]. | - | - |
| Transport Network Layer Address Info | O |  | 9.3.2.7 |  | YES | ignore |
| Extended gNB-CU-CP Name | O |  | 9.3.1.95 |  | YES | ignore |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofTNLAssociations | Maximum numbers of TNL Associations between the gNB-CU-CP and the gNB-CU-UP. Value is 32. |

#### 9.2.1.14 GNB-CU-CP CONFIGURATION UPDATE ACKNOWLEDGE

This message is sent by a gNB-CU-UP to a gNB-CU-CP to acknowledge update of information for a TNL association.

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 |
| Transaction ID | M |  | 9.3.1.53 |  | YES | reject |
| **gNB-CU-CP TNLA Setup List** |  | *0..1* |  |  | YES | ignore |
| **>gNB-CU-CP TNLA Setup Item IEs** |  | *1..<maxnoofTNLAssociations>* |  |  | - | - |
| >>TNLA Transport Layer Address | M |  | CP Transport Layer Information  9.3.2.2 | Transport Layer Address of the gNB-CU-CP | - | - |
| **gNB-CU-CP TNLA Failed to Setup List** |  | *0..1* |  |  | YES | ignore |
| **>gNB-CU-CP TNLA Failed To Setup Item IEs** |  | *1..<maxnoofTNLAssociations>* |  |  | - | - |
| >>TNLA Transport Layer Address | M |  | CP Transport Layer Information  9.3.2.2 | Transport Layer Address of the gNB-CU-CP | - | - |
| >>Cause | M |  | 9.3.1.2 |  |  |  |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |
| Transport Network Layer Address Info | O |  | 9.3.2.7 |  | YES | ignore |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofTNLAssociations | Maximum numbers of TNL Associations between the gNB-CU-CP and the gNB-CU-UP. Value is 32. |

#### 9.2.1.15 GNB-CU-CP CONFIGURATION UPDATE FAILURE

This message is sent by the gNB-CU-UP to indicate gNB-CU-CP Configuration Update failure.

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 |
| Transaction ID | M |  | 9.3.1.53 |  | YES | reject |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |
| Time To wait | O |  | 9.3.1.6 |  | YES | ignore |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

#### 9.2.1.16 E1 RELEASE REQUEST

This message is sent by both the gNB-CU-CP and the gNB-CU-UP and is used to request the release of the E1 interface.

Direction: gNB-CU-CP → gNB-CU-UP and 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 |
| Transaction ID | M |  | 9.3.1.53 |  | YES | reject |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |

#### 9.2.1.17 E1 RELEASE RESPONSE

This message is sent by both the gNB-CU-CP and the gNB-CU-UP as a response to an E1 RELEASE REQUEST message.

Direction: gNB-CU-UP → gNB-CU-CP and 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 |
| Transaction ID | M |  | 9.3.1.53 |  | YES | reject |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

#### 9.2.1.18 GNB-CU-UP STATUS INDICATION

This message is sent by the gNB-CU-UP to indicate to the gNB-CU-CP its status of overload.

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 |
| Transaction ID | M |  | 9.3.1.53 |  | YES | reject |
| gNB-CU-UP Overload Information | M |  | ENUMERATED (overloaded, not-overloaded) |  | YES | reject |

#### 9.2.1.19 RESOURCE STATUS REQUEST

This message is sent by an gNB-CU-CP to gNB-CU-UP to initiate the requested measurement according to the parameters given in the message.

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 |
| Transaction ID | M |  | 9.3.1.53 |  | YES | reject |
| gNB-CU-CP Measurement ID | M |  | INTEGER (1..4095,...) | Allocated by gNB-CU-CP | YES | reject |
| gNB-CU-UP Measurement ID | C-ifRegistrationRequestStop |  | INTEGER (1..4095,...) | Allocated by gNB-CU-UP | YES | ignore |
| Registration Request | M |  | ENUMERATED(start, stop, …) | Type of request for which the resource status is required. | YES | reject |
| Report Characteristics | C-ifRegistrationRequestStart |  | BITSTRING  (SIZE(36)) | Each position in the bitmap indicates measurement object the gNB-CU-UP is requested to report.  First Bit = TNL Available Capacity Ind Periodic,  Second Bit = HW Capacity Ind Periodic.  Other bits shall be ignored by the gNB-CU-UP. | YES | reject |
| Reporting Periodicity | O |  | ENUMERATED (500ms, 1000ms, 2000ms, 5000ms, 10000ms, 20000ms, 30000ms, 40000ms, 50000ms, 60000ms, 70000ms, 80000ms, 90000ms, 100000ms, 110000ms, 120000ms, …) | Periodicity that can be used for reporting. Also used as the averaging window length for all measurement object if supported. | YES | ignore |

|  |  |
| --- | --- |
| Condition | Explanation |
| ifRegistrationRequestStop | This IE shall be present if the *Registration Request* IE is set to the value “stop” |
| ifRegistrationRequestStart | This IE shall be present if the *Registration Request* IE is set to the value "start". |

#### 9.2.1.20 RESOURCE STATUS RESPONSE

This message is sent by the gNB-CU-UP to indicate that the requested measurement, for all the measurement objects included in the measurement is successfully initiated.

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 |
| Transaction ID | M |  | 9.3.1.53 |  | YES | reject |
| gNB-CU-CP Measurement ID | M |  | INTEGER (1..4095,...) | Allocated by gNB-CU-CP | YES | reject |
| gNB-CU-UP Measurement ID | M |  | INTEGER (1..4095,...) | Allocated by gNB-CU-UP | YES | ignore |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

#### 9.2.1.21 RESOURCE STATUS FAILURE

This message is sent by the gNB-CU-UP to indicate that for any of the requested measurement objects the measurement cannot be initiated.

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 |
| Transaction ID | M |  | 9.3.1.53 |  | YES | reject |
| gNB-CU-CP Measurement ID | M |  | INTEGER (1..4095,...) | Allocated by gNB-CU-CP | YES | reject |
| gNB-CU-UP Measurement ID | O |  | INTEGER (1..4095,...) | Allocated by gNB-CU-UP | YES | ignore |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

#### 9.2.1.22 RESOURCE STATUS UPDATE

This message is sent by gNB-CU-UP to gNB-CU-CP to report the results of the requested measurements.

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 | ignore |
| Transaction ID | M |  | 9.3.1.53 |  | YES | reject |
| gNB-CU-CP Measurement ID | M |  | INTEGER (1..4095,...) | Allocated by gNB-CU-CP | YES | reject |
| gNB-CU-UP Measurement ID | M |  | INTEGER (1..4095,...) | Allocated by gNB-CU-UP | YES | ignore |
| TNL Available Capacity Indicator | O |  | 9.3.1.72 |  | YES | ignore |
| HW Capacity Indicator | O |  | 9.3.1.73 |  | YES | ignore |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofSPLMNs | Maximum no. of Supported PLMN Ids. Value is 12. |
| maxnoofSliceItems | Maximum no. of signalled slice support items. Value is 1024. |

### 9.2.2 Bearer Context Management messages

#### 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.  *NOTE: This IE is not applicable to eNB-CP/eNB-UP.* | 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 or by the ng-eNB-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 List  9.3.1.89 |  | 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 |
| MDT Polluted Measurement Indicator | O |  | ENUMERATED (IDC, no-IDC, …) | Indication on whether MDT Measurement affect (e.g. IDC) is undertake or not. | YES | ignore |
| UE Slice Maximum Bit Rate List | O |  | 9.3.1.102 |  | YES | ignore |
| SCG Activation Status | O |  | 9.3.1.105 |  | YES | ignore |
| MT-SDT Information Request | O |  | ENUMERATED (true, …) | Indicates to request the report of MT-SDT Information. | YES | ignore |
| SDT Data Size Threshold | O |  | INTEGER (1.. 192000, ...) | Unit: byte. | 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. |

#### 9.2.2.2 BEARER CONTEXT SETUP RESPONSE

This message is sent by the gNB-CU-UP to confirm the setup of the requested bearer context.

Direction: gNB-CU-UP → gNB-CU-CP

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| gNB-CU-CP UE E1AP ID | M |  | 9.3.1.4 |  | YES | reject |
| gNB-CU-UP UE E1AP ID | M |  | 9.3.1.5 |  | YES | reject |
| CHOICE *System* | M |  |  |  | YES | reject |
| *>E-UTRAN* |  |  |  |  |  |  |
| >>DRB Setup List | M |  | DRB Setup List E-UTRAN  9.3.3.3 |  | YES | reject |
| >>DRB Failed List | O |  | DRB Failed List E-UTRAN  9.3.3.4 |  | YES | reject |
| *>NG-RAN* |  |  |  |  |  |  |
| >>PDU Session Resource Setup List | M |  | 9.3.3.5 |  | YES | reject |
| >>PDU Session Resource Failed List | O |  | 9.3.3.6 |  | YES | reject |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | 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. |

#### 9.2.2.3 BEARER CONTEXT SETUP FAILURE

This message is sent by the gNB-CU-UP to indicate that the setup of the bearer context was unsuccessful.

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 | O |  | 9.3.1.5 |  | YES | ignore |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

#### 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  *NOTE: This IE is not applicable to eNB-CP/eNB-UP*. | 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-UTRAN  9.3.3.8 |  | 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 List  9.3.3.10 |  | 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 |
| MDT Polluted Measurement Indicator | O |  | ENUMERATED (IDC, no-IDC, …) | Indication on whether MDT Measurement affect (e.g. IDC) is undertake or not. | YES | ignore |
| UE Slice Maximum Bit Rate List | O |  | 9.3.1.102 |  | YES | ignore |
| SCG Activation Status | O |  | 9.3.1.105 |  | YES | ignore |
| SDT Continue ROHC | O |  | ENUMERATED (true, …) | Indicates ROHC should be continued for SDT DRBs. This IE corresponds to information provided in the *sdt-DRB-ContinueROHC* contained in the *SDT-Config* IE as defined in TS 38.331 [10]. | YES | reject |
| Management Based MDT PLMN Modification List | O |  | MDT PLMN Modification List  9.3.1.129 |  | YES | ignore |
| Inactivity Information Request | O |  | ENUMERATED (true, …) | Indicates to gNB-CU-UP to report the UE Inactivity Information | YES | ignore |
| MT-SDT Information Request | O |  | ENUMERATED (true, …) | Indicates to request the report of MT-SDT Information. | YES | ignore |
| SDT Data Size Threshold | O |  | INTEGER (1.. 192000, ...) | Unit: byte. | 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. |

#### 9.2.2.5 BEARER CONTEXT MODIFICATION RESPONSE

This message is sent by the gNB-CU-UP to confirm the modification of the requested bearer context.

Direction: gNB-CU-UP → gNB-CU-CP

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| gNB-CU-CP UE E1AP ID | M |  | 9.3.1.4 |  | YES | reject |
| gNB-CU-UP UE E1AP ID | M |  | 9.3.1.5 |  | YES | reject |
| CHOICE *System* | O |  |  |  | YES | ignore |
| *>E-UTRAN* |  |  |  |  |  |  |
| >>DRB Setup List | O |  | DRB Setup Modification List E-UTRAN  9.3.3.13 |  | YES | ignore |
| >>DRB Failed List | O |  | DRB Failed Modification List E-UTRAN  9.3.3.14 |  | YES | ignore |
| >>DRB Modified List | O |  | DRB Modified List E-UTRAN  9.3.3.15 |  | YES | ignore |
| >>DRB Failed To Modify List | O |  | DRB Failed To Modify List E-UTRAN  9.3.3.16 |  | YES | ignore |
| >>Retainability Measurements Information | O |  | 9.3.1.71 | Provides information on all the removed DRB(s), needed for retainability measurements in the gNB-CU-CP | YES | ignore |
| *>NG-RAN* |  |  |  |  |  |  |
| >>PDU Session Resource Setup List | O |  | PDU Session Resource Setup Modification List  9.3.3.17 |  | YES | reject |
| >>PDU Session Resource Failed List | O |  | PDU Session Resource Failed Modification List  9.3.3.18 |  | YES | reject |
| >>PDU Session Resource Modified List | O |  | 9.3.3.19 |  | YES | reject |
| >>PDU Session Resource Failed To Modify List | O |  | 9.3.3.20 |  | YES | reject |
| >>Retainability Measurements Information | O |  | 9.3.1.71 | Provides information on all the removed DRB(s), needed for retainability measurements in the gNB-CU-CP | YES | ignore |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |
| UE Inactivity Information | O |  | INTEGER  (1.. 7200, …) | Indicates the inactive time. The values are expressed in seconds. | 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. |

#### 9.2.2.6 BEARER CONTEXT MODIFICATION FAILURE

This message is sent by the gNB-CU-UP to indicate that the modification of the bearer context was unsuccessful.

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 |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

#### 9.2.2.7 BEARER CONTEXT MODIFICATION REQUIRED

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

Direction: gNB-CU-UP → gNB-CU-CP

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| gNB-CU-CP UE E1AP ID | M |  | 9.3.1.4 |  | YES | reject |
| gNB-CU-UP UE E1AP ID | M |  | 9.3.1.5 |  | YES | reject |
| CHOICE *System* | M |  |  |  | YES | reject |
| *>E-UTRAN* |  |  |  |  |  |  |
| >>DRB To Modify List | O |  | DRB Required To Modify List E-UTRAN  9.3.3.21 |  | YES | reject |
| >>DRB To Remove List | O |  | DRB Required To Remove List  9.3.3.22 |  | YES | reject |
| *>NG-RAN* |  |  |  |  |  |  |
| >>PDU Session Resource Required To Modify List | O |  | PDU Session Resource Required To Modify List  9.3.3.23 |  | YES | reject |
| >>PDU Session Resource To Remove List | O |  | 9.3.3.12 |  | 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. |

#### 9.2.2.8 BEARER CONTEXT MODIFICATION CONFIRM

This message is sent by the gNB-CU-CP to confirm the modification of the requested 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 |
| CHOICE *System* | O |  |  |  | YES | ignore |
| *>E-UTRAN* |  |  |  |  |  |  |
| >>DRB Modified List | O |  | DRB Confirm Modified List E-UTRAN  9.3.3.24 |  | YES | ignore |
| *>NG-RAN* |  |  |  |  |  |  |
| >>PDU Session Resource Modified List | O |  | PDU Session Resource Confirm Modified List  9.3.3.25 |  | YES | Ignore |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | 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. |

#### 9.2.2.9 BEARER CONTEXT RELEASE COMMAND

This message is sent by the gNB-CU-CP to command the gNB-CU-UP to release an UE-associated logical E1 connection.

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 |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |

#### 9.2.2.10 BEARER CONTEXT RELEASE COMPLETE

This message is sent by the gNB-CU-UP to confirm the release of the UE-associated logical E1 connection.

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 |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |
| Retainability Measurements Information | O |  | 9.3.1.71 | Provides information on all the removed DRB(s) and QoS Flow(s), needed for retainability measurements in the gNB-CU-CP | YES | ignore |

#### 9.2.2.11 BEARER CONTEXT RELEASE REQUEST

This message is sent by the gNB-CU-UP to request the release of an UE-associated logical E1 connection.

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 |
| **DRB Status List** |  | *0.. 1* |  |  | YES | ignore |
| **>DRB Status Item** |  | *1..<maxnoofDRBs>* |  |  | - | - |
| >>DRB ID | M |  | 9.3.1.16 |  | - | - |
| >>PDCP DL Count | O |  | PDCP Count  9.3.1.35 | PDCP count for next DL packet to be assigned. | - | - |
| >>PDCP UL Count | O |  | PDCP Count  9.3.1.35 | PDCP count for first un-acknowledged UL packet. | - | - |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |

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

#### 9.2.2.12 BEARER CONTEXT INACTIVITY NOTIFICATION

This message is sent by the gNB-CU-UP to provide information about the UE activity to the gNB-CU-CP.

Direction: gNB-CU-UP → gNB-CU-CP

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| gNB-CU-CP UE E1AP ID | M |  | 9.3.1.4 |  | YES | reject |
| gNB-CU-UP UE E1AP ID | M |  | 9.3.1.5 |  | YES | reject |
| CHOICE Activity Information | M |  |  |  | YES | reject |
| **>DRB Activity List** |  | *1* |  | Used if the *Activity Notification Level* IE is set as “DRB” in BEARER CONTEXT SETUP Request message | YES | reject |
| **>>DRB Activity Item** |  | *1 .. <maxnoofDRBs>* |  |  | - | - |
| >>>DRB ID | M |  | 9.3.1.16 |  | - | - |
| >>>DRB Activity | M |  | ENUMERATED (Active, Not active, …) |  | - | - |
| **>PDU Session Resource Activity List** |  | *1* |  | Used if the *Activity Notification Level* IE is set as “PDU Session” in the BEARER CONTEXT SETUP Request message | YES | reject |
| **>>PDU Session Resource Activity Item** |  | *1 .. <maxnoofPDUSessionResource>* |  |  | - | - |
| >>>PDU Session ID | M |  | 9.3.1.21 |  | - | - |
| >>>PDU Session Resource Activity | M |  | ENUMERATED (Active, Not active, …) |  | - | - |
| >UE Activity | M |  | ENUMERATED (Active, Not active, …) | Used if the *Activity Notification Level* IE is set as “UE” in the BEARER CONTEXT SETUP Request message | YES | reject |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofDRBs | Maximum no. of DRB for a UE, the maximum value is 32. |
| maxnoofPDUSessionResource | Maximum no. of PDU Sessions for a UE. Value is 256. |

#### 9.2.2.13 DL DATA NOTIFICATION

This message is sent by the gNB-CU-UP to provide information about the DL data detection to the gNB-CU-CP.

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 |
| Paging Priority Indicator (PPI) | O |  | 9.3.1.55 |  | YES | ignore |
| **PDU Session To Notify List** | O |  |  |  | YES | ignore |
| **>PDU Session To Notify Item** |  | *1..<maxnoofPDUSessionResource>* |  |  | - | - |
| >>PDU Session ID | M |  | 9.3.1.21 |  | - | - |
| >>QoS Flow List | M |  | 9.3.1.12 |  | - | - |
| MT-SDT Information | O |  | 9.3.1.142 |  | YES | ignore |
| SDT Data Size Threshold Crossed | O |  | ENUMERATED (true, …) | Indicates that the SDT Data Size Threshold is crossed. | YES | ignore |

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

#### 9.2.2.14 DATA USAGE REPORT

This message is sent by the gNB-CU-UP to report data volumes.

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 |
| Data Usage Report List | M |  | 9.3.1.44 |  | YES | ignore |

#### 9.2.2.15 GNB-CU-UP COUNTER CHECK REQUEST

This message is sent by the gNB-CU-UP to request the verification of the value of the PDCP COUNTs associated with the DRBs established in the gNB-CU-UP.

Direction: gNB-CU-UP → gNB-CU-CP.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| gNB-CU-CP UE E1AP ID | M |  | 9.3.1.4 |  | YES | reject |
| gNB-CU-UP UE E1AP ID | M |  | 9.3.1.5 |  | YES | reject |
| CHOICE *System* | M |  |  |  | YES | reject |
| *>E-UTRAN* |  |  |  |  |  |  |
| **>>DRBs Subject to**  **Counter Check List** |  | *1* |  |  | YES | ignore |
| **>>>DRBs Subject to Counter Check Item** |  | *1 .. <maxnoof DRBs>* |  |  | - | - |
| >>>>DRB ID | M |  | 9.3.1.16 |  | - | - |
| >>>>PDCP UL Count | M |  | PDCP Count 9.3.1.35 | Indicates the value of uplink COUNT associated to this DRB, as specified in TS 38.331 [8] for the gNB/ ng-eNB CP-UP separation, or in TS 36.331 [33] for the eNB CP-UP separation. | - | - |
| >>>>PDCP DL Count | M |  | PDCP Count 9.3.1.35 | Indicates the value of downlink COUNT associated to this DRB, as specified in TS 38.331 [8] for the gNB/ ng-eNB CP-UP separation, or in TS 36.331 [33] for the eNB CP-UP separation. | - | - |
| *>NG-RAN* |  |  |  |  |  |  |
| **>>DRBs Subject to Counter Check List** |  | *1* |  |  | YES | ignore |
| **>>>DRBs Subject to Counter Check Item** |  | *1 .. <maxnoof DRBs>* |  |  | - | - |
| >>>>PDU Session ID | M |  | 9.3.1.21 |  | - | - |
| >>>>DRB ID | M |  | 9.3.1.16 |  | - | - |
| >>>>PDCP UL Count | M |  | PDCP Count 9.3.1.35 | Indicates the value of uplink COUNT associated to this DRB, as specified in TS 38.331 [8] for the gNB/ ng-eNB CP-UP separation, or in TS 36.331 [33] for the eNB CP-UP separation. | - | - |
| >>>>PDCP DL Count | M |  | PDCP Count 9.3.1.35 | Indicates the value of downlink COUNT associated to this DRB, as specified in TS 38.331 [8] for the gNB/ ng-eNB CP-UP separation, or in TS 36.331 [33] for the eNB CP-UP separation. | - | - |

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

#### 9.2.2.16 UL DATA NOTIFICATION

This message is sent by the gNB-CU-UP to provide information about the UL data detection to the gNB-CU-CP.

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 |
| **PDU Session To Notify List** |  | *1* |  |  | YES | reject |
| **>PDU Session To Notify Item** |  | *1..<maxnoofPDUSessionResource>* |  |  | - | - |
| >>PDU Session ID | M |  | 9.3.1.21 |  | - | - |
| >>QoS Flow List | M |  | 9.3.1.12 |  | - | - |

#### 9.2.2.17 MR-DC DATA USAGE REPORT

This message is sent by the gNB-CU-UP to report data volumes when the UE is connected to the 5GC.

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 |
| **PDU Session Resource Data Usage List** |  | *1* |  |  | YES | ignore |
| **>PDU Session Resource Data Usage Item** |  | *1 .. <maxnoof PDUsessions>* |  |  | – |  |
| >>PDU Session ID | M |  | 9.3.1.21 |  | – |  |
| >>MR-DC Usage Information | M |  | 9.3.1.63 |  | – |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofPDUsessions | Maximum no. of PDU sessions. Value is 256 |

#### 9.2.2.18 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 or conditional PSCell change or conditional PSCell addition or subsequent CPAC.

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 Count  9.3.1.35 | 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. | - | - |

#### 9.2.2.19 GNB-CU-CP MEASUREMENT RESULTS INFORMATION

This message is sent to the gNB-CU-UP to provide the measurement result received by the gNB-CU-CP.

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 |
| **DRB Measurement Results Information List** |  | *1* |  |  | YES | reject |
| **>DRB Measurement Results Information Item** |  | *1 .. <maxnoofDRBs>* |  |  | EACH | reject |
| >>DRB ID | M |  | 9.3.1.16 |  | - |  |
| >>UL D1 Result | O |  | INTEGER (0 .. 10000,…) | The unit is: 0.1ms | - |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofDRBs | Maximum no. of DRB allowed towards one UE, the maximum value is 64. |

### 9.2.3 Trace Messages

#### 9.2.3.1 TRACE START

This message is sent by the gNB-CU-CP to initiate a trace session for a UE.

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 | ignore |
| 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 |
| Trace Activation | M |  | 9.3.1.68 |  | YES | ignore |

#### 9.2.3.2 DEACTIVATE TRACE

This message is sent by the gNB-CU-CP to deactivate a trace session.

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 | ignore |
| 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 |
| Trace ID | M |  | OCTET STRING (SIZE(8)) | As per Trace ID in *Trace Activation* IE | YES | ignore |

#### 9.2.3.3 CELL TRAFFIC TRACE

This message is sent by the gNB-CU-UP to initiate a trace session for a UE.

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 | ignore |
| 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 |
| Trace ID | M |  | OCTET STRING (SIZE(8)) | The Trace ID IE is composed of the following: Trace Reference defined in TS 32.422 [24] (leftmost 6 octets, with PLMN information coded as in 9.2.3.8), and  Trace Recording Session Reference defined in TS 32.422 [24] (last 2 octets). | YES | ignore |
| Trace Collection Entity IP Address | M |  | Transport Layer Address 9.2.2.1 | For File based Reporting.  Defined in TS 32.422 [24].  Should be ignored if URI is present. | YES | ignore |
| Privacy Indicator | O |  | ENUMERATED (Immediate MDT, Logged MDT, ...) |  | YES | ignore |
| Trace Collection Entity URI | O |  | 9.3.2.8 | For Streaming based Reporting.  Defined in TS 32.422 [24]  Replaces Trace Collection Entity IP Address if present. | YES | ignore |

### 9.2.4 IAB Messages

#### 9.2.4.1 IAB UP TNL ADDRESS UPDATE

This message is sent by the gNB-CU-CP to request the gNB-CU-UP to update the TNL address(es) of the DL F1-U GTP tunnel information.

NOTE: This message is not applicable for eNB CP-UP separation or ng-eNB CP-UP separation.

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 |
| Transaction ID | M |  | 9.3.1.53 |  | YES | reject |
| **DL UP TNL Address To Update List** |  | *0..1* |  |  | YES | reject |
| **> DL UP TNL Address To Update Item IEs** |  | *1..<maxnoofTNLAddresses>* |  |  | - | - |
| >>Old TNL Address | M |  | 9.3.2.4 | The old Transport Layer Address of IAB-DU for DL F1-U GTP tunnel. | - | - |
| >>New TNL Address | M |  | 9.3.2.4 | The new Transport Layer Address of IAB-DU for DL F1-U GTP tunnel. | - | - |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofTNLAddresses | Maximum no. of TNL addresses to be updated in one E1AP procedure. Value is 8. |

#### 9.2.4.2 IAB UP TNL ADDRESS UPDATE ACKNOWLEDGE

This message is sent by the gNB-CU-UP to the gNB-CU-CP to acknowledge the update of TNL address in DL F1-U GTP tunnel information, or provide the updated TNL address(es) of the UL F1-U GTP tunnel information.

NOTE: This message is not applicable for eNB CP-UP separation or ng-eNB CP-UP separation.

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 |
| Transaction ID | M |  | 9.3.1.53 |  | YES | reject |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |
| **UL UP TNL Address to Update List** |  | *0..1* |  |  | YES | ignore |
| **> UL UP TNL Address Updated Item IEs** |  | *1..<maxnoofTNLAddresses>* |  |  | - | - |
| >>Old TNL Address | M |  | 9.3.2.4 | The old Transport Layer Address of CU-UP for UL F1-U GTP tunnel. | - | - |
| >>New TNL Address | M |  | 9.3.2.4 | The new Transport Layer Address of CU-UP for UL F1-U GTP tunnel. | - | - |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofTNLAddresses | Maximum no. of TNL addresses updated in one E1AP procedure. Value is 8. |

#### 9.2.4.3 IAB UP TNL ADDRESS UPDATE FAILURE

This message is sent by the gNB-CU-UP to indicate IAB UP TNL address Update failure.

NOTE: This message is not applicable for eNB CP-UP separation or ng-eNB CP-UP separation.

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 |
| Transaction ID | M |  | 9.3.1.53 |  | YES | reject |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |
| Time To wait | O |  | 9.3.1.6 |  | YES | ignore |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

#### 9.2.4.4 IAB PSK NOTIFICATION

This message is sent by the gNB-CU-CP to the gNB-CU-UP to transfer the security key info to be used for the IKEv2 Pre-shared Secret Key (PSK) authentication to protect the F1-U interface of the IAB-node(s).

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 |
| Transaction ID | M |  | 9.3.1.23 |  | YES | reject |
| IAB-donor-CU-UP PSK Info | M |  | 9.3.1.99 |  | YES | reject |

### 9.2.5 MBS Messages

#### 9.2.5.1 MBS Messages for Broadcast

##### 9.2.5.1.1 BC BEARER CONTEXT SETUP REQUEST

This message is sent by the gNB-CU-CP to request the gNB-CU-UP to setup MBS session resources for a broadcast MBS session.

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 MBS E1AP ID | M |  | 9.3.1.106 |  | YES | reject |
| Global MBS Session ID | M |  | 9.3.1.108 |  | YES | reject |
| BC Bearer Context To Setup | M |  | 9.3.3.26 |  | YES | reject |
| Associated Session ID | O |  | 9.3.3.38 |  | YES | ignore |
| MBS Service Area | O |  | 9.3.3.39 |  | YES | ignore |

##### 9.2.5.1.2 BC BEARER CONTEXT SETUP RESPONSE

This message is sent by the gNB-CU-UP to confirm the setup of the requested MBS session resources for a broadcast MBS session.

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 MBS E1AP ID | M |  | 9.3.1.106 |  | YES | reject |
| gNB-CU-UP MBS E1AP ID | M |  | 9.3.1.107 |  | YES | reject |
| BC Bearer Context To Setup Response | M |  | 9.3.3.27 |  | YES | reject |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

##### 9.2.5.1.3 BC BEARER CONTEXT SETUP FAILURE

This message is sent by the gNB-CU-UP to indicate that the setup of the requested broadcast MBS session resources was unsuccessful.

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 MBS E1AP ID | M |  | 9.3.1.106 |  | YES | reject |
| gNB-CU-UP MBS E1AP ID | O |  | 9.3.1.107 |  | YES | ignore |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

##### 9.2.5.1.4 BC BEARER CONTEXT MODIFICATION REQUEST

This message is sent by the gNB-CU-CP to request the gNB-CU-UP to modify MBS session resources for a broadcast MBS session.

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 MBS E1AP ID | M |  | 9.3.1.106 |  | YES | reject |
| gNB-CU-UP MBS E1AP ID | M |  | 9.3.1.107 |  | YES | reject |
| BC Bearer Context To Modify | M |  | 9.3.3.28 |  | YES | reject |

##### 9.2.5.1.5 BC BEARER CONTEXT MODIFICATION RESPONSE

This message is sent by the gNB-CU-UP to confirm the requested modification of MBS session resources for a broadcast MBS session.

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 MBS E1AP ID | M |  | 9.3.1.106 |  | YES | reject |
| gNB-CU-UP MBS E1AP ID | M |  | 9.3.1.107 |  | YES | reject |
| BC Bearer Context To Modify Response | M |  | 9.3.3.29 |  | YES | reject |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

##### 9.2.5.1.6 BC BEARER CONTEXT MODIFICATION FAILURE

This message is sent by the gNB-CU-UP to indicate that the requested modification of MBS session resources for a broadcast MBS session was unsuccessful.

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 MBS E1AP ID | M |  | 9.3.1.106 |  | YES | reject |
| gNB-CU-UP MBS E1AP ID | M |  | 9.3.1.107 |  | YES | reject |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

##### 9.2.5.1.7 BC BEARER CONTEXT MODIFICATION REQUIRED

This message is sent by the gNB-CU-UP to request the gNB-CU-CP to initiate the modification of MBS session resources for a broadcast MBS session.

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 MBS E1AP ID | M |  | 9.3.1.106 |  | YES | reject |
| gNB-CU-UP MBS E1AP ID | M |  | 9.3.1.107 |  | YES | reject |
| BC Bearer Context To Modify Required | M |  | 9.3.3.30 |  | YES | reject |

##### 9.2.5.1.8 BC BEARER CONTEXT MODIFICATION CONFIRM

This message is sent by the gNB-CU-CP to confirm the requested modification of the MBS session resources of a broadcast MBS session.

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 MBS E1AP ID | M |  | 9.3.1.106 |  | YES | reject |
| gNB-CU-UP MBS E1AP ID | M |  | 9.3.1.107 |  | YES | reject |
| BC Bearer Context To Modify Confirm | M |  | 9.3.3.31 |  | YES | reject |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

##### 9.2.5.1.9 BC BEARER CONTEXT RELEASE COMMAND

This message is sent by the gNB-CU-CP to command the gNB-CU-UP to release MBS session resources for a broadcast MBS session.

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 MBS E1AP ID | M |  | 9.3.1.106 |  | YES | reject |
| gNB-CU-UP MBS E1AP ID | M |  | 9.3.1.107 |  | YES | reject |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |

##### 9.2.5.1.10 BC BEARER CONTEXT RELEASE COMPLETE

This message is sent by the gNB-CU-UP to confirm the release of the MBS session resources for a broadcast MBS session.

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 MBS E1AP ID | M |  | 9.3.1.106 |  | YES | reject |
| gNB-CU-UP MBS E1AP ID | M |  | 9.3.1.107 |  | YES | reject |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

##### 9.2.5.1.11 BC BEARER CONTEXT RELEASE REQUEST

This message is sent by the gNB-CU-UP to request the release of MBS session resources for a broadcast MBS session.

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 MBS E1AP ID | M |  | 9.3.1.106 |  | YES | reject |
| gNB-CU-UP MBS E1AP ID | M |  | 9.3.1.107 |  | YES | reject |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |

#### 9.2.5.2 MBS Messages for Multicast

##### 9.2.5.2.1 MC BEARER CONTEXT SETUP REQUEST

This message is sent by the gNB-CU-CP to request the gNB-CU-UP to setup MBS session resources for a multicast MBS session.

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 MBS E1AP ID | M |  | 9.3.1.106 |  | YES | reject |
| Global MBS Session ID | M |  | 9.3.1.108 |  | YES | reject |
| MC Bearer Context To Setup | M |  | 9.3.3.32 |  | YES | reject |

##### 9.2.5.2.2 MC BEARER CONTEXT SETUP RESPONSE

This message is sent by the gNB-CU-UP to confirm the setup of the requested MBS session resources for a multicast MBS session.

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 MBS E1AP ID | M |  | 9.3.1.106 |  | YES | reject |
| gNB-CU-UP MBS E1AP ID | M |  | 9.3.1.107 |  | YES | reject |
| MC Bearer Context To Setup Response | M |  | 9.3.3.33 |  | YES | reject |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

##### 9.2.5.2.3 MC BEARER CONTEXT SETUP FAILURE

This message is sent by the gNB-CU-UP to indicate that the setup of MBS session resources for a multicast MBS session was unsuccessful.

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 MBS E1AP ID | M |  | 9.3.1.106 |  | YES | reject |
| gNB-CU-UP MBS E1AP ID | O |  | 9.3.1.107 |  | YES | ignore |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

##### 9.2.5.2.4 MC BEARER CONTEXT MODIFICATION REQUEST

This message is sent by the gNB-CU-CP to request the gNB-CU-UP to modify MBS session resources for a multicast MBS session.

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 MBS E1AP ID | M |  | 9.3.1.106 |  | YES | reject |
| gNB-CU-UP MBS E1AP ID | M |  | 9.3.1.107 |  | YES | reject |
| MC Bearer Context To Modify | M |  | 9.3.3.34 |  | YES | reject |

##### 9.2.5.2.5 MC BEARER CONTEXT MODIFICATION RESPONSE

This message is sent by the gNB-CU-UP to confirm the requested modification of MBS session resources for a multicast MBS session.

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 MBS E1AP ID | M |  | 9.3.1.106 |  | YES | reject |
| gNB-CU-UP MBS E1AP ID | M |  | 9.3.1.107 |  | YES | reject |
| MC Bearer Context To Modify Response | M |  | 9.3.3.35 |  | YES | reject |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

##### 9.2.5.2.6 MC BEARER CONTEXT MODIFICATION FAILURE

This message is sent by the gNB-CU-UP to indicate that the requested modification of MBS session resources for a multicast MBS session was unsuccessful.

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 MBS E1AP ID | M |  | 9.3.1.106 |  | YES | reject |
| gNB-CU-UP MBS E1AP ID | M |  | 9.3.1.107 |  | YES | reject |
| MBS Multicast F1-U Context Descriptor | O |  | 9.3.1.125 |  | YES | reject |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

##### 9.2.5.2.7 MC BEARER CONTEXT MODIFICATION REQUIRED

This message is sent by the gNB-CU-UP to request the gNB-CU-CP to initiate the modification MBS session resources for a multicast MBS session.

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 MBS E1AP ID | M |  | 9.3.1.106 |  | YES | reject |
| gNB-CU-UP MBS E1AP ID | M |  | 9.3.1.107 |  | YES | reject |
| MC Bearer Context To Modify Required | M |  | 9.3.3.36 |  | YES | reject |

##### 9.2.5.2.8 MC BEARER CONTEXT MODIFICATION CONFIRM

This message is sent by the gNB-CU-CP to confirm the requested modification of MBS session resources for a multicast MBS session.

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 MBS E1AP ID | M |  | 9.3.1.106 |  | YES | reject |
| gNB-CU-UP MBS E1AP ID | M |  | 9.3.1.107 |  | YES | reject |
| MC Bearer Context To Modify Confirm | M |  | 9.3.3.37 |  | YES | reject |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

##### 9.2.5.2.9 MC BEARER CONTEXT RELEASE COMMAND

This message is sent by the gNB-CU-CP to command the gNB-CU-UP to release MBS session resources for a multicast MBS session.

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 MBS E1AP ID | M |  | 9.3.1.106 |  | YES | reject |
| gNB-CU-UP MBS E1AP ID | M |  | 9.3.1.107 |  | YES | reject |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |

##### 9.2.5.2.10 MC BEARER CONTEXT RELEASE COMPLETE

This message is sent by the gNB-CU-UP to confirm the release of MBS session resources for a multicast MBS session.

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 MBS E1AP ID | M |  | 9.3.1.106 |  | YES | reject |
| gNB-CU-UP MBS E1AP ID | M |  | 9.3.1.107 |  | YES | reject |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

##### 9.2.5.2.11 MC BEARER CONTEXT RELEASE REQUEST

This message is sent by the gNB-CU-UP to request the release of MBS session resources for a multicast MBS session.

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 MBS E1AP ID | M |  | 9.3.1.106 |  | YES | reject |
| gNB-CU-UP MBS E1AP ID | M |  | 9.3.1.107 |  | YES | reject |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |

##### 9.2.5.2.12 MC BEARER NOTIFICATION

This message is sent by the gNB-CU-UP to provide information about the DL data arrival or inactivity of the MC Bearer Context to the gNB-CU-CP.

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 MBS E1AP ID | M |  | 9.3.1.106 |  | YES | reject |
| gNB-CU-UP MBS E1AP ID | M |  | 9.3.1.107 |  | YES | reject |
| CHOICE MBS Session Resource Notification | M |  |  |  | YES | ignore |
| *>DL Data Arrival* |  |  |  |  |  |  |
| >>DL Data Arrival Indication | M |  | ENUMERATED (true, …) |  | YES | ignore |
| >>Paging Priority Indicator (PPI) | O |  | 9.3.1.55 |  | YES | ignore |
| *>MC Bearer Context Inactivity* |  |  |  |  |  |  |
| >>MC Bearer Context Inactivity Indication | M |  | ENUMERATED (true, …) |  | YES | ignore |

## 9.3 Information Element Definitions

### 9.3.1Radio Network Layer Related IEs

#### 9.3.1.1 Message Type

The *Message Type* IE uniquely identifies the message being sent. It is mandatory for all messages.

| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| --- | --- | --- | --- | --- |
| **Message Type** |  |  |  |  |
| >Procedure Code | M |  | INTEGER (0..255) |  |
| >Type of Message | M |  | CHOICE (Initiating Message, Successful Outcome, Unsuccessful Outcome, …) |  |

#### 9.3.1.2 Cause

The purpose of the *Cause* IE is to indicate the reason for a particular event for the E1AP protocol.

| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description |
| --- | --- | --- | --- | --- |
| CHOICE *Cause Group* | M |  |  |  |
| >*Radio Network Layer* |  |  |  |  |
| >>Radio Network Layer Cause | M |  | ENUMERATED (Unspecified,  Unknown or already allocated gNB-CU-CP UE E1AP ID,  Unknown or already allocated gNB-CU-UP UE E1AP ID,  Unknown or inconsistent pair of UE E1AP ID,  Interaction with other procedure,  PDCP Count Wrap Around,  Not supported QCI value,  Not supported 5QI value,  Encryption algorithms not supported,  Integrity protection algorithms not supported,  UP integrity protection not possible,  UP confidentiality protection not possible,  Multiple PDU Session ID Instances,  Unknown PDU Session ID,  Multiple QoS Flow ID Instances,  Unknown QoS Flow ID,  Multiple DRB ID Instances,  Unknown DRB ID,  Invalid QoS combination,  Procedure cancelled,  Normal release,  No radio resources available,  Action desirable for radio reasons,  Resources not available for the slice,  PDCP configuration not supported,  …,  UE DL maximum integrity protected data rate reason,  UP integrity protection failure, Release due to Pre-Emption, RSN not available for the UP, NPN not supported,  Report Characteristics Empty,  Existing Measurement ID,  Measurement Temporarily not Available  Measurement not Supported For The Object,  SCG activation deactivation failure,  SCG deactivation failure due to data transmission, Unknown or already allocated gNB-CU-CP MBS E1AP ID, Unknown or already allocated gNB-CU-UP MBS E1AP ID, Unknown or inconsistent pair of MBS E1AP ID, Unknown or inconsistent MRB ID) |  |
| >Transport Layer |  |  |  |  |
| >>Transport Layer Cause | M |  | ENUMERATED (Unspecified,  Transport Resource Unavailable, …,  Unknown TNL address for IAB) |  |
| >Protocol |  |  |  |  |
| >>Protocol Cause | M |  | ENUMERATED (Transfer Syntax Error, Abstract Syntax Error (Reject), Abstract Syntax Error (Ignore and Notify), Message not Compatible with Receiver State,  Semantic Error,  Abstract Syntax Error (Falsely Constructed Message), Unspecified, …) |  |
| >Misc |  |  |  |  |
| >>Miscellaneous Cause | M |  | ENUMERATED (Control Processing Overload, Not enough User Plane Processing Resources, Hardware Failure, O&M Intervention, Unspecified, …) |  |

The meaning of the different cause values is described in the following table. In general, "not supported" cause values indicate that the related capability is missing. On the other hand, "not available" cause values indicate that the related capability is present, but insufficient resources were available to perform the requested action.

| **Radio Network Layer cause** | **Meaning** |
| --- | --- |
| Unspecified | Sent for radio network layer cause when none of the specified cause values applies. |
| Unknown or already allocated gNB-CU-CP UE E1AP ID | The action failed because the gNB-CU-CP UE E1AP ID is either unknown, or (for a first message received at the gNB-CU) is known and already allocated to an existing context. |
| Unknown or already allocated gNB-CU-UP UE E1AP ID | The action failed because the gNB-CU-UP UE E1AP ID is either unknown, or (for a first message received at the gNB-CU-UP) is known and already allocated to an existing context. |
| Unknown or inconsistent pair of UE E1AP ID | The action failed because both UE E1AP IDs are unknown, or are known but do not define a single UE context. |
| Interaction with other procedure | The action is due to an ongoing interaction with another procedure. |
| PDCP COUNT wrap around | PDCP COUNT approaches the maximum value. |
| Not supported QCI value | The action failed because the requested QCI is not supported. |
| Not supported 5QI value | The action failed because the requested 5QI is not supported. |
| Encryption algorithms not supported | The gNB-CU-UP is unable to support the selected encryption algorithm for the UE. |
| Integrity protection algorithms not supported | The gNB-CU-UP is unable to support the selected integrity protection algorithm for the UE. |
| UP integrity protection not possible | The PDU Session (for 5GC) or E-RAB (for EPC) cannot be accepted according to the required user plane integrity protection policy. |
| UP confidentiality protection not possible | The PDU Session cannot be accepted according to the required user plane confidentiality protection policy |
| Multiple PDU Session ID Instances | The action failed because multiple instances of the same PDU Session had been provided. |
| Unknown PDU Session ID | The action failed because the PDU Session ID is unknown. |
| Multiple QoS Flow ID Instances | The action failed because multiple instances of the same QoS flow had been provided. |
| Unknown QoS Flow ID | The action failed because the QoS Flow ID is unknow. |
| Multiple DRB ID Instances | The action failed because multiple instances of the same DRB had been provided. |
| Unknown DRB ID | The action failed because the DRB ID is unknow. |
| Invalid QoS combination | The action was failed because of invalid QoS combination |
| Procedure cancelled | The sending node cancelled the procedure due to other urgent actions to be performed. |
| Normal release | The action is due to a normal release of the UE (e.g. because of mobility) and does not indicate an error. |
| No radio resources available | The requested node doesn’t have sufficient radio resources available. |
| Action desirable for radio reasons | The reason for requesting the action is radio related. |
| Resources not available for the slice | The requested resources are not available for the slice. |
| PDCP configuration not supported, | The gNB-CU-UP is unable to support the selected PDCP configuration for the UE. |
| UE DL maximum integrity protected data rate reason | The request is not accepted in order to comply with the maximum downlink data rate for integrity protection supported by the UE. |
| UP integrity protection failure | The gNB-CU-UP detects an integrity protection failure in the UL PDU. |
| Release due to Pre-Emption | Release is initiated due to pre-emption. |
| RSN not available for the UP | The redundant user plane resources indicated by RSN are not available. |
| NPN not supported | The action failed because the indicated SNPN is not supported in the node. |
| Report Characteristics Empty | The action failed because there is no measurement object in the report characteristics. |
| Existing Measurement ID | The action failed because the measurement ID is already used. |
| Measurement Temporarily not Available | The gNB-CU-UP can temporarily not provide the requested measurement object. |
| Measurement not Supported For The Object | At least one of the concerned object(s) does not support the requested measurement. |
| SCG activation deactivation failure | The action failed due to rejection of the SCG activation deactivation request. |
| SCG deactivation failure due to data transmission | The SCG deactivation failed due to ongoing or arriving data transmission. |
| Unknown or already allocated gNB-CU-CP MBS E1AP ID | The action failed because the gNB-CU-CP MBS E1AP ID is either unknown, or (for a first message received at the gNB-CU-CP) is known and already allocated to an existing context. |
| Unknown or already allocated gNB-CU-UP MBS E1AP ID | The action failed because the gNB-CU-UP MBS E1AP ID is either unknown, or (for a first message received at the gNB-CU-UP) is known and already allocated to an existing context. |
| Unknown or inconsistent pair of MBS E1AP ID | The action failed because both MBS E1AP IDs are unknown, or are known but do not define a single MBS context. |
| Unknown or inconsistent MRB ID | The action failed because the MRB ID is unknown or inconsistent. |

|  |  |
| --- | --- |
| **Transport Layer cause** | **Meaning** |
| Unspecified | Sent when none of the above cause values applies but still the cause is Transport Network Layer related. |
| Transport Resource Unavailable | The required transport resources are not available. |
| Unknown TNL address for IAB | The action failed because the TNL address is unknown.  This cause value is applicable for IAB only. |

| **Protocol cause** | **Meaning** |
| --- | --- |
| Transfer Syntax Error | The received message included a transfer syntax error. |
| Abstract Syntax Error (Reject) | The received message included an abstract syntax error and the concerning criticality indicated "reject". |
| Abstract Syntax Error (Ignore And Notify) | The received message included an abstract syntax error and the concerning criticality indicated "ignore and notify". |
| Message Not Compatible With Receiver State | The received message was not compatible with the receiver state. |
| Semantic Error | The received message included a semantic error. |
| Abstract Syntax Error (Falsely Constructed Message) | The received message contained IEs or IE groups in wrong order or with too many occurrences. |
| Unspecified | Sent when none of the above cause values applies but still the cause is Protocol related. |

| **Miscellaneous cause** | **Meaning** |
| --- | --- |
| Control Processing Overload | Control processing overload. |
| Not EnoughUser Plane Processing Resources Available | No enough resources are available related to user plane processing. |
| Hardware Failure | Action related to hardware failure. |
| O&M Intervention | The action is due to O&M intervention. |
| Unspecified Failure | Sent when none of the above cause values applies and the cause is not related to any of the categories Radio Network Layer, Transport Network Layer, NAS or Protocol. |

#### 9.3.1.3 Criticality Diagnostics

The *Criticality Diagnostics* IE is sent by the gNB-CU-UP or the gNB-CU-CP when parts of a received message have not been comprehended or were missing, or if the message contained logical errors. When applicable, it contains information about which IEs were not comprehended or were missing. The conditions for inclusion of the *Transaction ID* IE are described in clause 10.

For further details on how to use the *Criticality Diagnostics* IE, (see clause 10).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| Procedure Code | O |  | INTEGER (0..255) | Procedure Code is to be used if Criticality Diagnostics is part of Error Indication procedure, and not within the response message of the same procedure that caused the error. |
| Triggering Message | O |  | ENUMERATED(initiating message, successful outcome, unsuccessful outcome) | The Triggering Message is used only if the Criticality Diagnostics is part of Error Indication procedure. |
| Procedure Criticality | O |  | ENUMERATED(reject, ignore, notify) | This Procedure Criticality is used for reporting the Criticality of the Triggering message (Procedure). |
| Transaction ID | O |  | 9.3.1.53 |  |
| **Information Element Criticality Diagnostics** |  | *0 .. <maxnoof Errors>* |  |  |
| >IE Criticality | M |  | ENUMERATED(reject, ignore, notify) | The IE Criticality is used for reporting the criticality of the triggering IE. The value 'ignore' is not applicable. |
| >IE ID | M |  | INTEGER (0..65535) | The IE ID of the not understood or missing IE. |
| >Type of Error | M |  | ENUMERATED(not understood, missing, …) |  |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxnoofErrors | Maximum no. of IE errors allowed to be reported with a single message. The value for maxnoofErrors is 256. |

#### 9.3.1.4 gNB-CU-CP UE E1AP ID

The gNB-CU-CP UE E1AP ID uniquely identifies the UE association over the E1 interface within the gNB-CU-CP.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| gNB-CU-CP UE E1AP ID | M |  | INTEGER (0 .. 232 -1) |  |

#### 9.3.1.5 gNB-CU-UP UE E1AP ID

The gNB-CU-UP UE E1AP ID uniquely identifies the UE association over the E1 interface within the gNB-CU-UP.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| gNB-CU-UP UE E1AP ID | M |  | INTEGER (0 .. 232 -1) |  |

#### 9.3.1.6 Time To wait

This IE defines the minimum allowed waiting times.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| Time To wait | M |  | ENUMERATED(1s, 2s, 5s, 10s, 20s, 60s) |  |

#### 9.3.1.7 PLMN Identity

This information element indicates the PLMN Identity.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| PLMN Identity | M |  | OCTET STRING (SIZE(3)) | - digits 0 to 9, encoded 0000 to 1001,  - 1111 used as filler digit,  two digits per octet,  - bits 4 to 1 of octet n encoding digit 2n-1  - bits 8 to 5 of octet n encoding digit 2n  -The PLMN identity consists of 3 digits from MCC followed by either  -a filler digit plus 2 digits from MNC (in case of 2 digit MNC) or  -3 digits from MNC (in case of a 3 digit MNC). |

#### 9.3.1.8 Slice Support List

This IE indicates the list of supported slices.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| **Slice Support Item IEs** |  | *1..<maxnoofSliceItems>* |  |  | - | - |
| >S-NSSAI | M |  | 9.3.1.9 |  | - |  |

| **Range bound** | **Explanation** |
| --- | --- |
| maxnoofSliceItems | Maximum no. of signalled slice support items. Value is 1024. |

#### 9.3.1.9 S-NSSAI

This IE indicates the S-NSSAI as defined in TS 23.003 [23].

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| SST | M |  | OCTET STRING (SIZE(1)) |  |
| SD | O |  | OCTET STRING (SIZE(3)) |  |

#### 9.3.1.10 Security Information

This IE provides the information for configuring UP ciphering and/or integrity protection.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Security Algorithm | M |  | 9.3.1.31 |  |
| User Plane Security Keys | M |  | 9.3.1.32 |  |

#### 9.3.1.11 Cell Group Information

This IE provides information about the cell group(s) (i.e., radio leg(s)) that are part of the DRB.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| **Cell Group List** |  | *1* |  |  | - | - |
| **>Cell Group Item** |  | *1..<maxnoofCellGroups>* |  |  | - | - |
| >>Cell Group ID | M |  | INTEGER  (0..3, …) | This IE corresponds to information provided in the *CellGroupId* IE as defined in TS 38.331 [10] (0=MCG, 1=SCG). In this version of the specification, values “2” and “3” are not used.  For E-UTRA Cell Groups, the same encoding is used as for NR Cell Groups.  NOTE: There is no corresponding IE defined in TS 36.331 [21]. | - | - |
| >>UL Configuration | O |  | 9.3.1.33 | Indicates whether the Cell Group is used for UL traffic. | - | - |
| >>DL TX Stop | O |  | ENUMERATED (stop, resume, …) |  | - | - |
| >>RAT Type | O |  | ENUMERATED (E-UTRA, NR, …) | Indicates the RAT. | - | - |
| >>Number of tunnels | O |  | INTEGER  (1..4, …) | Indicates the tunnel number of PDCP duplication for this cell group. | YES | ignore |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxnoofCellGroups | Maximum no. of cell groups for a DRB. Value is 4. |

#### 9.3.1.12 QoS Flow List

This IE includes a list of QoS Flows that are identified by the QoS Flow Identifier.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| **QoS Flow List** |  | *1* |  |  | - | - |
| **>QoS Flow Item** |  | *1..<maxnoofQoSflows>* |  |  | - | - |
| >>QoS Flow Identifier | M |  | 9.3.1.24 |  | - | - |
| >>QoS Flow Mapping Indication | O |  | 9.3.1.60 | Indicates that only the uplink or downlink QoS flow is mapped to the DRB | YES | ignore |
| >>Data Forwarding Source IP Address | O |  | Transport Layer Address  9.3.2.4 | Identifies the TNL address used by the source node for data forwarding. | YES | ignore |
| >>ECN Marking or Congestion Information Reporting Status | O |  | ENUMERATED (active, not active, …) | Indicates whether ECN marking at NG-RAN or ECN marking at UPF or congestion information reporting is active or not active. | YES | ignore |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofQoSFlows | Maximum no. of QoS flows in a PDU Session. Value is 64. |

#### 9.3.1.13 UP Parameters

This IE provides information related to a DRB configured in the gNB-CU-UP.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| **UP Parameters List** |  | *1* |  |  | - | - |
| **>UP Parameters Item** |  | *1..<maxnoofUPParameters>* |  |  | - | - |
| >>UP Transport Layer Information | M |  | 9.3.2.1 |  | - | - |
| >>Cell Group ID | M |  | INTEGER (0..3, …) | This IE corresponds to information provided in the *CellGroupId* IE in TS 38.331 [10] (0=MCG, 1=SCG). In this version of the specification, values “2” and “3” are not used. | - | - |
| >>QoS Mapping Information | O |  | 9.3.1.81 | This IE is only used for IAB. | YES | reject |
| >>Indirect Path Indication | O |  | ENUMERATED(true, …) | This IE is only used for L2 U2N Remote UE | YES | ignore |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxnoofUPParameters | Maximum no. of UP parameters (e.g., GTP tunnels) for a DRB. Value is 8 |

#### 9.3.1.14 NR CGI

The NR Cell Global Identifier (NR CGI) is used to globally identify a cell.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| PLMN Identity | M |  | 9.3.1.7 |  |
| NR Cell Identity | M |  | BIT STRING (SIZE(36)) |  |

#### 9.3.1.15 gNB-CU-UP ID

The gNB-CU-UP ID uniquely identifies the gNB-CU-UP at least within a gNB-CU-CP.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| gNB-CU-UP ID | M |  | INTEGER (0 .. 236-1) |  |

#### 9.3.1.16 DRB ID

This IE uniquely identifies a DRB for a UE.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| DRB ID | M |  | INTEGER (1.. 32, ...) | This IE corresponds to information provided in the *DRB-Identity* IE as defined in TS 38.331 [10] for the gNB/ ng-eNB CP-UP separation, or in TS 36.331 [33] for the eNB CP-UP separation. |

#### 9.3.1.16a MRB ID

This IE identifies an MRB.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| MRB ID | M |  | INTEGER (1.. 512, ...) |  |

#### 9.3.1.17 E-UTRAN QoS

This IE defines the QoS to be applied to a DRB for EN-DC case.

| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| --- | --- | --- | --- | --- | --- | --- |
| QCI | M |  | INTEGER (0..255) | QoS Class Identifier defined in TS 23.401 [11].  Logical range and coding specified in TS 23.203 [12]. | – | – |
| E-UTRAN Allocation and Retention Priority | M |  | 9.3.1.18 | E-UTRAN Allocation and Retention Priority | – | – |
| GBR QoS Information | O |  | 9.3.1.19 | This IE applies to GBR bearers only and is ignored otherwise. | – | – |

#### 9.3.1.18 E-UTRAN Allocation and Retention Priority

This IE specifies the relative importance compared to other E-RABs for allocation and retention of the E-UTRAN Radio Access Bearer.

| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| --- | --- | --- | --- | --- |
| Priority Level | M |  | INTEGER (0..15) | **Desc.:** This IE should be understood as "priority of allocation and retention" (see TS 23.401 [11]).  **Usage:**  Value 15 means "no priority".  Values between 1 and 14 are ordered in decreasing order of priority, i.e. 1 is the highest and 14 the lowest.  Value 0 shall be treated as a logical error if received. |
| Pre-emption Capability | M |  | ENUMERATED(shall not trigger pre-emption, may trigger pre-emption) | **Desc.:** This IE indicates the pre-emption capability of the request on other E-RABs  **Usage:**  The E-RAB shall not pre-empt other E-RABs or, the E-RAB may pre-empt other E-RABs  The Pre-emption Capability indicator applies to the allocation of resources for an E-RAB and as such it provides the trigger to the pre-emption procedures/processes of the eNB. |
| Pre-emption Vulnerability | M |  | ENUMERATED(not pre-emptable, pre-emptable) | **Desc.:** This IE indicates the vulnerability of the E-RAB to pre-emption of other E-RABs.  **Usage**:  The E-RAB shall not be pre-empted by other E-RABs or the E-RAB may be pre-empted by other RABs.  Pre-emption Vulnerability indicator applies for the entire duration of the E-RAB, unless modified, and as such indicates whether the E-RAB is a target of the pre-emption procedures/processes of the eNB. |

#### 9.3.1.19 GBR QoS Information

This IE indicates the maximum and guaranteed bit rates of a GBR E-RAB for downlink and uplink.

| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| --- | --- | --- | --- | --- | --- | --- |
| E-RAB Maximum Bit Rate Downlink | M |  | Bit Rate  9.3.1.20 | Maximum Bit Rate in DL (i.e. from EPC to E-UTRAN) for the bearer.  Details in TS 23.401 [11]. | – | – |
| E-RAB Maximum Bit Rate Uplink | M |  | Bit Rate  9.3.1.20 | Maximum Bit Rate in UL (i.e. from E-UTRAN to EPC) for the bearer.  Details in TS 23.401 [11]. | – | – |
| E-RAB Guaranteed Bit Rate Downlink | M |  | Bit Rate  9.3.1.20 | Guaranteed Bit Rate (provided that there is data to deliver) in DL (i.e. from EPC to E-UTRAN) for the bearer.  Details in TS 23.401 [11]. | – | – |
| E-RAB Guaranteed Bit Rate Uplink | M |  | Bit Rate  9.3.1.20 | Guaranteed Bit Rate (provided that there is data to deliver) in UL (i.e. from E-UTRAN to EPC) for the bearer.  Details in TS 23.401 [11]. | – | – |

#### 9.3.1.20 Bit Rate

This IE indicates the number of bits delivered by NG-RAN/E-UTRAN in UL or to NG-RAN/E-UTRAN in DL within a period of time, divided by the duration of the period. It is used, for example, to indicate the maximum or guaranteed bit rate for a GBR QoS flow or a GBR bearer, or an aggregated maximum bit rate.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| Bit Rate | M |  | INTEGER (0.. 4,000,000,000,000,…) | The unit is: bit/s |

#### 9.3.1.21 PDU Session ID

This IE identifies a PDU Session for a UE. The definition and use of the PDU Session ID is specified in TS 23.501 [20].

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| PDU Session ID | M |  | INTEGER (0 ..255) |  |

#### 9.3.1.22 PDU Session Type

This IE indicates the PDU Session Type as specified in TS 23.501 [20].

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| PDU Session Type | M |  | ENUMERATED (IPv4, IPv6, IPv4v6, ethernet, unstructured, ...) |  |

#### 9.3.1.23 Security Indication

This IE contains the user plane integrity protection indication and confidentiality protection indication which indicates the requirements on UP integrity protection and ciphering for corresponding PDU Session Resources, respectively.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| Integrity Protection Indication | M |  | ENUMERATED (required, preferred, not needed, …) | Indicates whether UP integrity protection shall apply, should apply or shall not apply for the concerned PDU Session Resource for the gNB/ng-eNB CP-UP separation, or for the concerned E-RAB for the eNB CP-UP separation. |
| Confidentiality Protection Indication | M |  | ENUMERATED (required, preferred, not needed, …) | Indicates whether UP ciphering shall apply, should apply or shall not apply for the concerned PDU Session Resource.  NOTE: This IE is not applicable to eNB CP-UP separation. |
| Maximum Integrity Protected Data Rate | C-ifIntegrityProtectionrequiredorpreferred |  | 9.3.1.57 | If present, this is the value received from the CN for the overall UE capability. This IE is ignored when enforcing the maximum IP data rate.  NOTE: This IE is not applicable to eNB CP-UP separation. |

|  |  |
| --- | --- |
| **Condition** | **Explanation** |
| ifIntegrityProtectionrequiredorpreferred | This IE shall be present if the *Integrity Protection Indication* IE within the *Security Indication* IE is set to “required” or “preferred”. |

#### 9.3.1.24 QoS Flow Identifier

This IE identifies a QoS Flow within a PDU Session. Definition and use of the QoS Flow Identifier is specified in TS 23.501 [20].

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| QoS Flow Identifier | M |  | INTEGER (0 ..63) |  |

#### 9.3.1.25 QoS Flow QoS Parameters List

This IE contains a list of QoS Flows including the QoS Flow parameters.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| **QoS Flow List** |  | *1* |  |  | - | - |
| **>QoS Flow Item** |  | *1..<maxnoofQoSFlows>* |  |  | - | - |
| >>QoS Flow Identifier | M |  | 9.3.1.24 |  | - | - |
| >>QoS Flow Level QoS Parameters | M |  | 9.3.1.26 |  | - | - |
| >>QoS Flow Mapping Indication | O |  | 9.3.1.60 | Indicates that only the uplink or downlink QoS flow is mapped to the DRB. For MBS, this IE is associated with an MRB and always set to "dl". | - | - |
| >>Redundant QoS Flow Indicator | O |  | 9.3.1.74 | This IE indicates that this QoS flow is requested for the redundant transmission. | YES | ignore |
| >>TSC Traffic Characteristics | O |  | 9.3.1.75 | Traffic pattern information associated with the QFI. Details in TS 23.501 [20]. | YES | ignore |
| >>ECN Marking or Congestion Information Reporting Request | O |  | 9.3.1.145 |  | YES | ignore |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofQoSFlows | Maximum no. of QoS flows in a PDU Session. Value is 64. |

#### 9.3.1.26 QoS Flow Level QoS Parameters

This IE defines the QoS parameters to be applied to a QoS Flow.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| CHOICE *QoS Characteristics* | M |  |  |  | - |  |
| >*Non-dynamic 5QI* |  |  |  |  |  |  |
| >>Non Dynamic 5QI Descriptor | M |  | 9.3.1.27 |  | - |  |
| >*Dynamic 5QI* |  |  |  |  |  |  |
| >>Dynamic 5QI Descriptor | M |  | 9.3.1.28 |  | - |  |
| NG-RAN Allocation and Retention Priority | M |  | 9.3.1.29 |  | - |  |
| GBR QoS Flow Information | O |  | 9.3.1.30 | This IE shall be present for GBR QoS Flows and is ignored otherwise. | - |  |
| Reflective QoS Attribute | O |  | ENUMERATED (subject to, …) | Details in TS 23.501 [20]. This IE applies to Non-GBR flows only and is ignored otherwise. | - |  |
| Additional QoS Flow Information | O |  | ENUMERATED (more likely, …) | This IE indicates that traffic for this QoS flow is likely to appear more often than traffic for other flows established for the PDU Session. | - |  |
| Paging Priority Index | O |  | INTEGER  (1.. 8, …) | This IE is not used in this version of the specification. | - |  |
| RDI | O |  | ENUMERATED (enabled, …) | Indicates whether Reflective QoS flow to DRB mapping should be applied. | - |  |
| QoS Monitoring Request | O |  | ENUMERATED (UL, DL, Both, …) | Indicates to measure UL, or DL, or both UL/DL delays for the associated QoS flow. | YES | ignore |
| MCG Offered GBR QoS Flow Information | O |  | GBR QoS Flow Information 9.3.1.30 | This IE contains M-Node offered GBR QoS Flow Information. | YES | ignore |
| QoS Monitoring Reporting Frequency | O |  | INTEGER (1..1800, …) | Indicates the Reporting Frequency for RAN part delay for Qos monitoring.  Units: second | YES | ignore |
| QoS Monitoring Disabled | O |  | ENUMERATED (true, ...) | Indicates to stop the QoS monitoring. | YES | ignore |
| Data Forwarding Source IP Address | O |  | Transport Layer Address  9.3.2.4 | Identifies the TNL address used by the source node for data forwarding. | YES | ignore |
| PDU Set QoS Parameters | O |  | 9.3.1.143 |  | YES | ignore |

#### 9.3.1.27 Non Dynamic 5QI Descriptor

This IE indicates the QoS Characteristics for a standardized or pre-configured 5QI for downlink and uplink.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| 5QI | M |  | INTEGER (0..255, …) | This IE contains the standardized or pre-configured 5QI as specified in TS 23.501 [20]. | - | - |
| Priority Level | O |  | 9.3.1.51 | For details see TS 23.501 [20]. When included overrides standardized or pre-configured value. | - | - |
| Averaging Window | O |  | 9.3.1.49 | This IE applies to GBR QoS Flows only. For details see TS 23.501 [20]. When included overrides standardized or pre-configured value. | - | - |
| Maximum Data Burst Volume | O |  | 9.3.1.50 | For details see TS 23.501 [20]. When included overrides standardized or pre-configured value. | - | - |
| CN Packet Delay Budget Downlink | O |  | Extended Packet Delay Budget  9.3.1.79 | Core Network Packet Delay Budget is specified in TS 23.501 [9]. This IE may be present in case of GBR QoS flows and is ignored otherwise. | YES | ignore |
| CN Packet Delay Budget Uplink | O |  | Extended Packet Delay Budget  9.3.1.79 | Core Network Packet Delay Budget is specified in TS 23.501 [9]. This IE may be present in case of GBR QoS flows and is ignored otherwise. | YES | ignore |

#### 9.3.1.28 Dynamic 5QI Descriptor

This IE indicates the QoS Characteristics for a Non-standardised or not pre-configured 5QI for downlink and uplink.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| Priority Level | M |  | 9.3.1.51 | For details see TS 23.501 [20]. | - | - |
| Packet Delay Budget | M |  | 9.3.1.47 | For details see TS 23.501 [20]. This IE is ignored if the *Extended Packet Delay Budget* IE is present. | - | - |
| Packet Error Rate | M |  | 9.3.1.48 | For details see TS 23.501 [20]. | - | - |
| 5QI | O |  | INTEGER (0..255,…) | This IE contains the dynamically assigned 5QI as specified in TS 23.501 [20]. | - | - |
| Delay Critical | C-ifGBRflow |  | ENUMERATED (delay critical, non-delay critical) | For details see TS 23.501 [20]. | - | - |
| Averaging Window | C-ifGBRflow |  | 9.3.1.49 | For details see TS 23.501 [20]. | - | - |
| Maximum Data Burst Volume | O |  | 9.3.1.50 | For details see TS 23.501 [20]. This IE shall be included if the *Delay Critical* IE is set to “delay critical” and is ignored otherwise. | - | - |
| Extended Packet Delay Budget | O |  | Extended Packet Delay Budget  9.3.1.79 | Packet Delay Budget is specified in TS 23.501 [9] | YES | ignore |
| CN Packet Delay Budget Downlink | O |  | Extended Packet Delay Budget  9.3.1.79 | Core Network Packet Delay Budget is specified in TS 23.501 [9]. This IE may be present in case of GBR QoS flows and is ignored otherwise. | YES | ignore |
| CN Packet Delay Budget Uplink | O |  | Extended Packet Delay Budget  9.3.1.79 | Core Network Packet Delay Budget is specified in TS 23.501 [9]. This IE may be present in case of GBR QoS flows and is ignored otherwise. | YES | ignore |

|  |  |
| --- | --- |
| Condition | Explanation |
| ifGBRflow | This IE shall be present if the *GBR QoS Flow Information* IE is present in the *QoS Flow Level QoS Parameters* IE. |

#### 9.3.1.29 NG-RAN Allocation and Retention Priority

This IE specifies the relative importance of a QoS flow compared to other QoS flows for allocation and retention of NG-RAN resources.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| Priority Level | M |  | INTEGER (0..15) | **Desc**.: This IE defines the relative importance of a resource request (see TS 23.501 [20]).  **Usage**: Values are ordered in decreasing order of priority, i.e., with 1 as the highest priority and 15 as the lowest priority. Further usage is defined in TS 23.501 [20]. |
| Pre-emption Capability | M |  | ENUMERATED (shall not trigger pre-emption, may trigger pre-emption) | **Desc.:** This IE indicates the pre-emption capability of the request on other QoS flows.  **Usage**: The QoS flow shall not pre-empt other QoS flows or, the QoS flow may pre-empt other QoS flows.  Specified in TS 23.501 [20]  NOTE: The Pre-emption Capability indicator applies to the allocation of resources for a QoS flow and as such it provides the trigger to the pre-emption procedures/processes of the NG-RAN node. |
| Pre-emption Vulnerability | M |  | ENUMERATED (not pre-emptable, pre-emptable) | **Desc.**: This IE indicates the vulnerability of the QoS flow to pre-emption of other QoS flows.  **Usage**: The QoS flow shall not be pre-empted by other QoS flows or the QoS flow may be pre-empted by other QoS flows. Specified in TS 23.501 [20]  NOTE: The Pre-emption Vulnerability indicator applies for the entire duration of the QoS flow, unless modified and as such indicates whether the QoS flow is a target of the pre-emption procedures/processes of the NG-RAN node. |

#### 9.3.1.30 GBR QoS Flow Information

This IE indicates QoS parameters for a GBR QoS flow for downlink and uplink.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| Maximum Flow Bit Rate Downlink | M |  | Bit Rate  9.3.1.20 | Maximum Bit Rate in DL. Details in TS 23.501 [20]. | - |  |
| Maximum Flow Bit Rate Uplink | M |  | Bit Rate  9.3.1.20 | Maximum Bit Rate in UL. Details in TS 23.501 [20]. | - |  |
| Guaranteed Flow Bit Rate Downlink | M |  | Bit Rate  9.3.1.20 | Guaranteed Bit Rate (provided there is data to deliver) in DL. Details in TS 23.501 [20]. | - |  |
| Guaranteed Flow Bit Rate Uplink | M |  | Bit Rate  9.3.1.20 | Guaranteed Bit Rate (provided there is data to deliver). Details in TS 23.501 [20]. | - |  |
| Maximum Packet Loss Rate Downlink | O |  | Packet Loass Rate  9.3.1.46 | Indicates the maximum rate for lost packets that can be tolerated in the downlink direction. Details in TS 23.501 [20]. | - |  |
| Maximum Packet Loss Rate Uplink | O |  | Packet Loss Rate  9.3.1.46 | Indicates the maximum rate for lost packets that can be tolerated in the uplink direction. Details in TS 23.501 [20]. | - |  |
| Alternative QoS Parameters Set List | O |  | 9.3.1.93 | Indicates alternative sets of QoS Parameters for the QoS flow. | YES |  |

#### 9.3.1.31 Security Algorithm

This IE defines the type of ciphering algorithm and/or integrity protection used for the DRBs.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Ciphering Algorithm | M |  | ENUMERATED (NEA0, 128-NEA1, 128-NEA2, 128-NEA3) | As defined in TS 33.501 [13] for NG-RAN or TS 33.401 [32] for E-UTRAN where the corresponding enumerated value is EEA0, 128-EEA1, 128-EEA2, 128-EEA3. |
| Integrity Protection Algorithm | O |  | ENUMERATED (NIA0, 128-NIA1, 128-NIA2, 128-NIA3) | As defined in TS 33.501 [13] for NG-RAN or TS 33.401 [32] for E-UTRAN where the corresponding enumerated value is EIA0, 128-EIA1, 128-EIA2, 128-EIA3. |

#### 9.3.1.32 User Plane Security Keys

This IE contains the ciphering and/or integrity protection keys generated by the gNB-CU-CP.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Encryption Key | M |  | OCTET STRING | As defined in TS 33.501 [13] for gNB or ng-eNB CP-UP separation, or in TS 33.401 [32] for eNB CP-UP separation. |
| Integrity Protection Key | O |  | OCTET STRING | As defined in TS 33.501 [13] for NG-RAN or TS 33.401 [32] for eNB CP-UP separation.. |

#### 9.3.1.33 UL Configuration

This IE includes the UL configuration for the DRB and the corresponding Cell Groups.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| UL Configuration | M |  | ENUMERATED (no-data, shared, only, ..) | Indicates the UL configuration for a Cell Group that is part of a DRB. “no data” means that the Cell Group is not used for UL data. “shared” means that the Cell Group is used for UL data together with at least another Cell Group. “only” means that only this Cellg Group is used for UL data. |

#### 9.3.1.34 gNB-CU-UP Cell Group Related Configuration

This IE provides information related to a cell group that the gNB-CU-UP is allowed to change.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| **UP Parameters List** |  | *1* |  |  | - | - |
| **>UP Parameters Item** |  | *1..<maxnoofUPParameters>* |  |  | - | - |
| >>Cell Group ID | M |  | INTEGER (0..3, …) | This IE corresponds to information provided in the *CellGroupId* IE as defined in TS 38.331 [10] (0=MCG, 1=SCG). Used to identify the Cell Group to modify. In this version of the specification, values “2” and “3” are not used. | - | - |
| >>UP Transport Layer Information | M |  | 9.3.2.1 |  | - | - |
| >>UL Configuration | O |  | 9.3.1.33 | Indicates whether the Cell Group is used for UL traffic. | - | - |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofUPParameters | Maximum no. of UP parameters (e.g., GTP tunnels) for a DRB. Value is 8. |

#### 9.3.1.35 PDCP Count

This IE include the PDCP Count information.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| >PDCP SN | M |  | INTEGER (0 .. ..2PDCP\_SN\_Size-1) | The PDCP SN Size is provided in the *PDCP Configuration* IE. |
| >HFN | M |  | INTEGER (0 .. 232-PDCP\_SN\_Size-1) | The PDCP SN Size is provided in the *PDCP Configuration* IE. |

#### 9.3.1.35a MBS PDCP COUNT

This IE includes the MBS PDCP Count information.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| MBS PDCP COUNT | M |  | BIT STRING (32) | Corresponds to information provided in the *initialRX-DELIV* contained in the *PDCP-Config* IE and to be taken into account to configure the UE, as specified in TS 38.331 [10]. |

#### 9.3.1.36 NR CGI Support List

This IE indicates the list of supported NR CGIs.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| **NR CGI Support Item IEs** |  | *1..<maxnoofNRCGI>* |  |  |
| >NR CGI | M |  | 9.3.1.14 |  |

| **Range bound** | **Explanation** |
| --- | --- |
| maxnoofNRCGI | Maximum no. of supported NR CGIs. Value is 512. This range may be redefined. |

#### 9.3.1.37 QoS Parameters Support List

This IE indicates the list of supported QoS parameters.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| **E-UTRAN QoS Support List** | O |  |  |  |
| **>E-UTRAN QoS Support Item** |  | *1..<maxnoofEUTRNQOSParameters>* |  |  |
| >>E-UTRAN QoS | M |  | 9.3.1.17 |  |
| **NG-RAN QoS Support List** | O |  |  |  |
| **>NG-RAN QoS Support Item** |  | *1..<maxnoofNGRANQOSParameters>* |  |  |
| >>Non Dynamic 5QI Descriptor | M |  | 9.3.1.27 |  |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxnoofEUTRANQOSParameters | Maximum no. of supported E-UTRAN QoS parameters. Value is 256. This range may be redefined. |
| maxnoofNGRANQOSParameters | Maximum no. of supported NG-RAN QoS parameters. Value is 256. This range may be redefined. |

#### 9.3.1.38 PDCP Configuration

This IE carries the PDCP configuration.

| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| --- | --- | --- | --- | --- | --- | --- |
| PDCP SN UL Size | M |  | PDCP SN Size  9.3.1.61 | Indicates the PDCP SN UL size in bits. Corresponds to information provided in the *pdcp-SN-SizeUL* contained in the *PDCP-Config* IE as defined in TS 38.331 [10] for gNB or ng-eNB CP-UP separation, or in TS 36.331 [33] for eNB CP-UP separation.  Is ignored if received through *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message. | - | - |
| PDCP SN DL Size | M |  | PDCP SN Size  9.3.1.61 | Indicates the PDCP SN DL size in bits. Corresponds to information provided in the *pdcp-SN-SizeDL* contained in the *PDCP-Config* IE in TS 38.331 [10] for gNB or ng-eNB CP-UP separation, or in TS 36.331 [33] for eNB CP-UP separation.  Is ignored if received through *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message. | - | - |
| RLC mode | M |  | ENUMERATED (RLC-TM, RLC-AM, RLC-UM-Bidirectional, RLC-UM-Unidirectional-UL, RLC-UM-Unidirectional-DL, …) | Indicates the RLC mode for the DRB. For more information see *PDCP-Config* IE in TS 38.331 [10] for gNB or ng-eNB CP-UP separation, or in TS 36.331 [33] for eNB CP-UP separation.  Is ignored if received through *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message. | - | - |
| ROHC Parameters | O |  | 9.3.1.40 |  | - | - |
| T-Reordering Timer | O |  | 9.3.1.41 |  | - | - |
| Discard Timer | O |  | 9.3.1.42 | This IE is ignored if the *Discard Timer Extended* IE is present. | - | - |
| UL Data Split Threshold | O |  | 9.3.1.43 |  | - | - |
| PDCP Duplication | O |  | ENUMERATED (True, …) | Indicates whether PDCP duplication is to be configured for the DRB. This IE is ignored when the “*Additional PDCP duplication Information*” IE is present. | - | - |
| PDCP Re-establishment | O |  | ENUMERATED (true,…) | Indicates PDCP entity re-establishment to be triggered as defined in TS 38.323 [17] for gNB or ng-eNB CP-UP separation, or in TS 36.323 [34] for eNB CP-UP separation. | - | - |
| PDCP Data Recovery | O |  | ENUMERATED (true,…) | Indicates PDCP data recovery to be triggered as defined in TS 38.323 [17] for gNB or ng-eNB CP-UP separation, or in TS 36.323 [34] for eNB CP-UP separation. | - | - |
| Duplication Activation | O |  | ENUMERATED (  Active, Inactive, …) | Information on the initial state of DL PDCP duplication | - | - |
| Out Of Order Delivery | O |  | ENUMERATED (true,…) | Indicates whether or not outOfOrderDelivery specified in TS 38.323 [17] is configured. Out of order delivery is configured only when the radio bearer is established for gNB or ng-eNB CP-UP separation, or indicates whether or not rlc-OutOfOrderDelivery in TS 36.323 [34] is configured for eNB CP-UP separation. | - | - |
| PDCP Status Report Indication | O |  | ENUMERATED (downlink, uplink, both, …) | For AM DRB, “downlink” indicates that the PDCP entity is configured to send PDCP status report(s) to the UE, and “uplink” indicates that the UE is configured to send PDCP status report(s), as specified in TS 38.323 [17] for gNB or ng-eNB CP-UP separation, or in TS 36.323 [34] for eNB CP-UP separation. “both” indicates that both “downlink” and “uplink” should be applied. | YES | ignore |
| Additional PDCP duplication Information | O |  | ENUMERATED (three, four, …) | Indicates the number of PDCP duplication configured when it is more than 2 for the DRB | YES | ignore |
| EHC Parameters | O |  | 9.3.1.90 |  | YES | ignore |
| UDC Parameters | O |  | 9.3.1.104 |  | YES | ignore |
| Discard Timer Extended | O |  | 9.3.1.128 |  | YES | reject |

#### 9.3.1.39 SDAP Configuration

This IE carries the SDAP configuration.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| Default DRB | M |  | ENUMERATED (True, False, …) | Indicates whether or not this is the default DRB for the PDU Session Resource. Corresponds to information provided in the *defaultDRB* contained in the *SDAP-Config* IE as defined in TS 38.331 [10]. |
| SDAP Header UL | M |  | ENUMERATED (Present, Absent, …) | Indicates whether or not a SDAP header is present for UL data on this DRB. Corresponds to information provided in the *sdap-HeaderUL* contained in the *SDAP-Config* IE as defined in TS 38.331 [10]. |
| SDAP Header DL | M |  | ENUMERATED (Present, Absent, …) | Indicates whether or not a SDAP header is present for DL data on this DRB. Corresponds to information provided in the *sdap-HeaderDL* contained in the *SDAP-Config* IE as defined in TS 38.331 [10]. |

#### 9.3.1.40 ROHC Parameters

This IE carries the ROCH parameters for header compressions.

| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| --- | --- | --- | --- | --- |
| **Choice ROHC Parameters** | M |  |  | Corresponds to information provided in the *rohc* contained in the*PDCP-Config* IE as defined in TS 38.331 [10] for gNB or ng-eNB CP-UP separation, or in TS 36.331 [33] for eNB CP-UP separation. |
| >ROHC |  |  |  |  |
| >>max CID | M |  | INTEGER (0..16383) | Corresponds to information provided in the *maxCID* contained in the *PDCP-Config* IE as defined in TS 38.331 [10] for gNB or ng-eNB CP-UP separation, or in TS 36.331 [33] for eNB CP-UP separation. |
| >>ROHC Profiles | M |  | INTEGER (0..511) | Bitmap with supported UE profiles, bit 0 (LSB 0) = profile0x0001, bit 1 = profile0x0002, bit 2 = profile0x0003, bit 3 = profile0x0004, bit 4 = profile0x0006, bit 5 = profile0x0101, bit 6 = profile0x0102, bit 7 = profile0x0103, bit 8 = profile0x0104. Corresponds to information provided in the *supportedROHC-Profiles* contained in the *PDCP-Parameters* IE as defined in TS 38.331 [10] for gNB or ng-eNB CP-UP separation, or in TS 36.331 [33] for eNB CP-UP separation. |
| >>Continue ROHC | O |  | ENUMERATED (true, …) | Corresponds to information provided in the *drb-ContinueROHC* contained in the *PDCP-Config* IE as defined inTS 38.331 [10] |
| >uplinkOnlyROHC |  |  |  |  |
| >>max CID | M |  | INTEGER (0..16383) | Corresponds to information provided in the *maxCID* contained in the *PDCP-Config* IE as defined in TS 38.331 [10] for gNB or ng-eNB CP-UP separation, or in TS 36.331 [33] for eNB CP-UP separation. |
| >>ROHC Profiles | M |  | INTEGER (0..511) | Bitmap with supported UE profiles, bit 4 = profile0x0006. Corresponds to information provided in the *supportedROHC-Profiles* contained in the *PDCP-Parameters* IE as defined in TS 38.331 [10] for gNB or ng-eNB CP-UP separation, or in TS 36.331 [33] for eNB CP-UP separation. |
| >>Continue ROHC | O |  | ENUMERATED (true, …) | Corresponds to information provided in the *drb-ContinueROHC* contained in the *PDCP-Config* IE as definedinTS 38.331 [10] |

#### 9.3.1.41 T-Reordering Timer

This IE indicates the t-Reordering timer.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| T-Reordering Timer | M |  | ENUMERATED (0, 1, 2, 4, 5, 8, 10, 15, 20, 30, 40, 50, 60, 80, 100, 120, 140, 160, 180, 200, 220, 240, 260, 280, 300, 500, 750, 1000, 1250, 1500, 1750, 2000, 2250, 2500, 2750, 3000, …) | Indicates the t-Reordering UL timer. The values are expressed in *ms*. Corresponds to information provided in the *t-Reordering* contained in the *PDCP-Config* IE as defined in TS 38.331 [10] for gNB or ng-eNB CP-UP separation, or in TS 36.331 [33] for eNB CP-UP separation. |

#### 9.3.1.42 Discard Timer

This IE indicates PDCP discard timer.

| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| --- | --- | --- | --- | --- |
| Discard Timer |  |  | ENUMERATED (10, 20, 30, 40, 50, 60, 75, 100, 150, 200, 250, 300, 500, 750, 1500, Infinity) | Indicates the PDCP discard timer. The values are expressed in *ms*. Corresponds to information provided in the *discardTimer* contained in the *PDCP-Config* IE as defined in TS 38.331 [10] for gNB or ng-eNB CP-UP separation, or in TS 36.331 [33] for eNB CP-UP separation. |

#### 9.3.1.43 UL Data Split Threshold

This IE indicates UL data split threshold.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| UL Data Split Threshold |  |  | ENUMERATED (0, 100, 200, 400, 800, 1600, 3200, 6400, 12800, 25600, 51200, 102400, 204800, 409600, 819200, 1228800, 1638400, 2457600, 3276800, 4096000, 4915200, 5734400, 6553600, Infinity, …) | Indicates the UL data split threshold. The values are expressed in bytes. Corresponds to information provided in the *ul-DataSplitThreshold* contained in the*PDCP-Config* IE as defined in TS 38.331 [10] for gNB or ng-eNB CP-UP separation, or in TS 36.331 [33] for eNB CP-UP separation. |

#### 9.3.1.44 Data Usage Report List

This IE provides information on the data usage for the UE, e.g., secondary NR RAT in EN-DC as specified in TS 37.340 [19].

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| Data usage report Item |  | 1 .. <maxnoofDRBs> |  |  | - | - |
| >DRB ID | M |  | 9.3.1.16 |  | - | - |
| > RAT Type | M |  | ENUMERATED (E-UTRA, NR, …) | The value E-UTRA is not used in this version of the specification. | - | - |
| >DRB Usage Report List |  | 1 |  |  | - | - |
| >>DRB Usage Report Item |  | 1.. <maxnooftimeperiods> |  |  | - | - |
| >>>Start timestamp | M |  | OCTET STRING (SIZE(4)) | Encoded in the same format as the first four octets of the 64-bit timestamp format as defined in section 6 of IETF RFC 5905 [14]. It indicates the UTC time when the recording of the Data Volume was started. | - | - |
| >>>End timestamp | M |  | OCTET STRING (SIZE(4)) | Encoded in the same format as the first four octets of the 64-bit timestamp format as defined in section 6 of IETF RFC 5905 [14]. It indicates the UTC time when the recording of the Data Volume was ended. | - | - |
| >>>Usage count UL | M |  | INTEGER (0..264-1) | The unit is: octets. | - | - |
| >>>Usage count DL | M |  | INTEGER (0..264-1) | The unit is: octets. | - | - |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofDRBs | Maximum no. of DRBs. Value is 32. |
| Maxnooftimeperiods | Maximum no. of time reporting periods. Value is 2. |

#### 9.3.1.45 Flow Failed List

This IE contains a list of QoS flows with a cause value. It is used for example to indicate failed QoS flow(s) or QoS flow(s) to be released.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| **QoS Flow Item IEs** |  | *1..<maxnoofQoSFlows>* |  |  | - | - |
| >QoS Flow Identifier | M |  | 9.3.1.24 |  | - | - |
| >Cause | M |  | 9.3.1.2 |  | - | - |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofQoSFlows | Maximum no. of QoS flows in a PDU Session. Value is 64. |

#### 9.3.1.46 Packet Loss Rate

This IE indicates the Packet Loss Rate for a QoS Flow.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Packet Loss Rate | M |  | INTEGER (0..1000, …) | Ratio of lost packets per number of packets sent, expressed in tenth of percent. |

#### 9.3.1.47 Packet Delay Budget

This IE indicates the Packet Delay Budget for a QoS Flow.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Packet Delay Budget | M |  | INTEGER (0..1023, …) | Upper bound value for the delay that a packet may experience expressed in unit of 0.5ms. |

#### 9.3.1.48 Packet Error Rate

This IE indicates the Packet Error Rate for a QoS Flow.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Scalar | M |  | INTEGER (0..9, …) | The packet error rate is expressed as Scalar x 10-k where k is the Exponent. |
| Exponent | M |  | INTEGER (0..9, …) |  |

#### 9.3.1.49 Averaging Window

This IE indicates the Averaging Window for a QoS Flow.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Averaging Window | M |  | INTEGER (0..4095, …) | Unit: ms.  The default value is 2000ms. |

#### 9.3.1.50 Maximum Data Burst Volume

This IE indicates the Maximum Data Burst Volume for a QoS Flow and applies to delay critical GBR QoS flows only.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Maximum Data Burst Volume | M |  | INTEGER (0..4095, ..., 4096.. 2000000) | Unit: byte. |

#### 9.3.1.51 Priority Level

This IE indicates the Priority Level for a QoS Flow.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| Priority Level | M |  | INTEGER (0..127, …) | Values ordered in decreasing order of priority i.e. with 1 as the highest priority and 127 as the lowest priority.  The value 0 is not used in this version of the specification. |

#### 9.3.1.52 Security Result

This IE indicates whether the security policy indicated as "preferred" in the *Security Indication* IE is performed or not.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| Integrity Protection Result | M |  | ENUMERATED (performed, not performed, …) | Indicates whether UP integrity protection is performed or not for the concerned PDU Session Resource for the gNB/ng-eNB CP-UP separation, or for the concerned DRB for the eNB CP-UP separation. |
| Confidentiality Protection Result | M |  | ENUMERATED (performed, not performed, …) | Indicates whether UP ciphering is performed or not for the concerned PDU Session Resource.  NOTE: This IE is not applicable to eNB CP-UP separation. |

#### 9.3.1.53 Transaction ID

The *Transaction ID* IE uniquely identifies a procedure among all ongoing parallel procedures of the same type initiated by the same protocol peer. Messages belonging to the same procedure shall use the same Transaction ID. The Transaction ID is determined by the initiating peer of a procedure.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Transaction ID | M |  | INTEGER (0..255, …) |  |

#### 9.3.1.54 Inactivity timer

This IE indicates the inactivity timer.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Inactivity Timer | M |  | INTEGER  (1.. 7200, …) | Indicates the inactivity timer. The values are expressed in *seconds*. |

#### 9.3.1.55 Paging Priority Indicator (PPI)

The Paging Policy Indicator is used for paging policy differentiation (see details in TS 23.501 [20]).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| PPI | M |  | INTEGER  (0.. 7, …) |  |

#### 9.3.1.56 gNB-CU-UP Capacity

This IE indicates the relative processing capacity of an gNB-CU-UP with respect to other gNB-CU-UPs in order to load-balance among different gNB-CU-UPs.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| gNB-CU-UP Capacity | M |  | INTEGER(0..255) |  | - | - |

#### 9.3.1.57 Maximum Integrity Protected Data Rate

ThisIE indicates the maximum aggregate data rate for integrity protected DRBs for a UE as defined in TS 38.300 [8].

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| Maximum IP rate | M |  | ENUMERATED (64kbps, max-UErate, …) | Defines the upper bound of the aggregated data rate of user plane integrity protected data. This limit applies to both UL and DL independently. |

#### 9.3.1.58 PDCP SN Status Information

This IE contains information about PDCP PDU transfer status of a DRB.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| **PDCP Status Transfer UL** |  | *1* |  |  | – |  |
| >Receive Status Of PDCP SDU | O |  | BIT STRING (SIZE(1.. 131072)) | The first bit indicates the status of the SDU after the First Missing UL PDCP SDU.  The Nth bit indicates the status of the UL PDCP SDU in position (N + First Missing SDU Number) modulo (1 + the maximum value of the PDCP-SN).  0: PDCP SDU has not been received.  1: PDCP SDU has been received correctly. | – |  |
| >UL COUNT Value | M |  | PDCP Count  9.3.1.35 | PDCP-SN and Hyper Frame Number of the first missing UL SDU | – |  |
| **PDCP Status Transfer DL** |  | *1* |  |  | – |  |
| >DL COUNT Value | M |  | PDCP Count  9.3.1.35 | PDCP-SN and Hyper Frame Number that the target NG-RAN node (handover) or the NG-RAN node to which the DRB context is transferred (dual connectivity) should assign for the next DL SDU not having an SN yet. | – |  |

#### 9.3.1.59 QoS Flow Mapping List

This IE contains a list of DRBs containing information about the mapped QoS flows.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| **QoS Flow Mapping Item** |  | *1..<maxnoofQoSFlows>* |  |  | – |  |
| >QoS Flow Identifier | M |  | 9.3.1.24 |  | – |  |
| >QoS Flow Mapping Indication | O |  | 9.3.1.60 |  | – |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofQoSFlows | Maximum no. of QoS flows allowed within one PDU Session. Value is 64. |

#### 9.3.1.60 QoS Flow Mapping Indication

This IE is used to indicate whether only the uplink or only the downlink of a QoS flow is mapped to a DRB. For MBS this IE is applied to an MRB.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| QoS Flow Mapping Indication | M |  | ENUMERATED (ul, dl, ...) | Indicates that only the uplink or downlink QoS flow is mapped to the DRB.  If applied to an MRB, the IE is always set to "dl". |

#### 9.3.1.61 PDCP SN Size

This IE carries the PDCP SN Size.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| PDCP SN Size | M |  | ENUMERATED (s-12, s-18, …, s-7, s-15, s-16) | Indicates the PDCP SN size in bits. For more information see *PDCP-Config IE* in TS 38.331 [10] for gNB or ng-eNB CP-UP separation, or in TS 36.331 [33] for eNB CP-UP separation. |

#### 9.3.1.62 Network Instance

This IE provides the network instance to be used by the NG-RAN node when selecting a particular transport network resource as described in TS 23.501 [20].

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| Network Instance | M |  | INTEGER (1..256, …) |  |

#### 9.3.1.63 MR-DC Usage Information

This IE provides information on the data usage for the UE connected to 5GC, e.g., secondary RAT in MR-DC as specified in TS 37.340 [19].

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Data Usage per PDU Session Report | O |  |  |  | - |  |
| >Secondary RAT Type | M |  | ENUMERATED (nR, e-UTRA…) |  |  |  |
| >PDU session Timed Report List | M |  | MR-DC Data Usage Report List  9.3.1.64 |  |  |  |
| **Data Usage per QoS Flow List** | O |  |  |  |  |  |
| **>Data Usage per QoS Flow Item** |  | *1..<maxnoofQoSFlows>* |  |  | – |  |
| >>QoS Flow Indicator | M |  | 9.3.1.24 |  | – |  |
| >>Secondary RAT Type | M |  | ENUMERATED (nR, e-UTRA…) |  | – |  |
| >>QoS Flow Timed Report List | M |  | MR-DC Data Usage Report List  9.3.1.64 |  | – |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofQoSFlows | Maximum no. of QoS flows allowed within one PDU session. Value is 64. |

#### 9.3.1.64 MR-DC Data Usage Report List

This IE provides information on the data usage.

| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| --- | --- | --- | --- | --- |
| **MR-DC Data Usage Report Item** |  | *1.. <maxnooftimeperiods>* |  |  |
| >Start timestamp | M |  | OCTET STRING (SIZE(4)) | UTC time encoded in the same format as the first four octets of the 64-bit timestamp format as defined in section 6 of IETF RFC 5905 [14]. It indicates the start time of the collecting period of the included *Usage Count UL* IE and *Usage Count DL* IE. |
| >End timestamp | M |  | OCTET STRING (SIZE(4)) | UTC time encoded in the same format as the first four octets of the 64-bit timestamp format as defined in section 6 of IETF RFC 5905 [14]. It indicates the end time of the collecting period of the included *Usage Count UL* IE and *Usage Count DL* IE. |
| >Usage count UL | M |  | INTEGER (0..264-1) | The unit is: octets. |
| >Usage count DL | M |  | INTEGER (0..264-1) | The unit is: octets. |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnooftimeperiods | Maximum no. of time reporting periods. Value is 2. |

#### 9.3.1.65 gNB-DU ID

The gNB-DU ID uniquely identifies a gNB-DU at least within a gNB-CU.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| gNB-DU ID | M |  | INTEGER (0 .. 236-1) | The gNB-DU ID is independently configured from cell identifiers, i.e. no connection between gNB-DU ID and cell identifiers. |

#### 9.3.1.66 Common Network Instance

This IE provides the common network instance to be used by the NG-RAN node when selecting a particular transport network resource as described in TS 23.501 [9] in a format common with 5GC.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Common Network Instance | M |  | OCTET STRING | The octets of OCTET STRING are encoded as the Network Instance field of the *Network Instance* IE specified in TS 29.244 [29] |

#### 9.3.1.67 Activity Notification Level

This IE contains information on which level activity notification shall be performed..

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| Activity Notification Level | M |  | ENUMERATED (DRB, PDU Session, UE, …) |  |

#### 9.3.1.68 Trace Activation

This IE defines parameters related to a trace session activation.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| Trace ID | M |  | OCTET STRING (SIZE(8)) | This IE is composed of the following:  Trace Reference defined in TS 32.422 [24] (leftmost 6 octets, with PLMN information encoded as in 9.3.1.7), and  Trace Recording Session Reference defined in TS 32.422 [24] (last 2 octets). | - | - |
| Interfaces To Trace | M |  | BIT STRING (SIZE(8)) | Each position in the bitmap represents an NG-RAN node interface:  first bit = NG-C, second bit = Xn-C, third bit = Uu, fourth bit = F1-C, fifth bit = E1:  other bits reserved for future use. Value '1' indicates 'should be traced'. Value '0' indicates 'should not be traced'. | - | - |
| Trace Depth | M |  | ENUMERATED (minimum, medium, maximum, minimumWithoutVendorSpecificExtension,  mediumWithoutVendorSpecificExtension,  maximumWithoutVendorSpecificExtension, …) | Defined in TS 32.422 [24]. | - | - |
| Trace Collection Entity IP Address | M |  | Transport Layer Address  9.3.2.4 | For File based Reporting.  Defined in TS 32.422 [24].  Should be ignored if URI is present. | - | - |
| Trace Collection Entity URI | O |  | 9.3.2.8 | For Streaming based Reporting.  Defined in TS 32.422 [24]  Replaces Trace Collection Entity IP Address if present. | YES | ignore |
| MDT Configuration | O |  | 9.3.1.85 |  | YES | ignore |

#### 9.3.1.69 Subscriber Profile ID for RAT/Frequency priority

This parameter is used to define local configuration for RRM strategies.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| Subscriber Profile ID for RAT/Frequency priority | M |  | INTEGER (1..256, ...) |  |

#### 9.3.1.70 Additional RRM Policy Index

The *Additional RRM Policy Index* IE is used to provide additional information as specified in TS 36.300 [25].

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Additional RRM Policy Index | M |  | BIT STRING (SIZE(32)) |  |

#### 9.3.1.71 Retainability Measurements Information

This IE contains information on removed DRB(s) and QoS Flow(s) which are needed to perform retainability measurements.

| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| --- | --- | --- | --- | --- | --- | --- |
| **DRB Removed List** |  | *1* |  |  | - |  |
| **>DRB Removed Item** |  | *1..<maxnoofDRBs>* |  |  | - |  |
| >>DRB ID | M |  | 9.3.1.16 |  | - |  |
| >>DRB Released In Session | O |  | ENUMERATED (released in session, not released in session, …) | Indicates if the DRB was “in session” or not (as defined in TS 32.425 [26] and TS 28.552 [22]) when released | - |  |
| >>DRB Accumulated Session Time | O |  | OCTET STRING (SIZE(5)) | Accumulated “in session” time for the DRB, as defined in TS 32.425 [26] and TS 28.552 [22], in milliseconds | - |  |
| **>>QoS Flow Removed List** |  | 0..1 |  |  | - |  |
| **>>>QoS Flow Removed Item** |  | 1..< maxnoofQoSFlows > |  |  | - |  |
| >>>>QoS Flow Identifier | M |  | 9.3.1.24 |  | - |  |
| >>>>QoS Flow Released In Session | O |  | ENUMERATED (released in session, not released in session, …) | Indicates if the QoS Flow was “in session” or not (as defined in TS 28.552 [22]), when released | - |  |
| >>>>QoS Flow Accumulated Session Time | O |  | OCTET STRING (SIZE(5)) | Accumulated “in session” time for the QoS Flow, as defined in TS 28.552 [22], in milliseconds | - |  |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxnoofDRBs | Maximum no. of DRBs for a UE. Value is 32. |
| maxnoofQoSFlows | Maximum no. of QoS flows in a PDU Session. Value is 64. |

#### 9.3.1.72 TNL Available Capacity Indicator

The *TNL Available Capacity Indicator* IE indicates offered and available capacity of the Transport Network.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| DL TNL Offered Capacity | M |  | INTEGER (0.. 16777216,...) | Maximum capacity in kbps |
| DL TNL Available Capacity | M |  | INTEGER (0.. 100,...) | Available capacity. Value 100 corresponds to the offered capacity. |
| UL TNL Offered Capacity | M |  | INTEGER (0.. 16777216,...) | Maximum capacity in kbps |
| UL TNL Available Capacity | M |  | INTEGER (0.. 100,...) | Available capacity. Value 100 corresponds to the offered capacity. |

#### 9.3.1.73 HW Capacity Indicator

The *HW Capacity Indicator* IE indicates offered and available throughput experienced by the gNB-CU-UP.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Offered Throughput | M |  | INTEGER (1.. 16777216,...) | Maximum capacity offered by the gNB-CU-UP in kbps |
| Available Throughput | M |  | INTEGER(0..100, …) | Average available capacity at the gNB-CU-UP. Value 100 corresponds to the offered throughput. |

#### 9.3.1.74 Redundant QoS Flow Indicator

This IE provides the Redundant QoS Flow Indicator for a QoS flow as specified in TS 23.501 [20].

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| Redundant QoS Flow Indicator | M |  | ENUMERATED (true, false) | This IE indicates that this QoS flow is requested for the redundant transmission. Value “true” indicates that redundant transmission is requested for this QoS flow. Value “false” indicates that redundant transmission is requested to be stopped if started. |

#### 9.3.1.75 TSC Traffic Characteristics

This IE provides the traffic characteristics of TSC QoS flows.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| TSC Assistance Information Downlink | O |  | TSC Assistance Information  9.3.1.76 |  |
| TSC Assistance Information Uplink | O |  | TSC Assistance Information  9.3.1.76 |  |

#### 9.3.1.76 TSC Assistance Information

This IE provides the TSC assistance information for a TSC QoS flow in the uplink or downlink (see TS 23.501 [20]).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Periodicity | M |  | 9.3.1.77 |  | - |  |
| Burst Arrival Time | O |  | 9.3.1.78 |  | - |  |
| Survival Time | O |  | 9.3.1.103 |  | YES | ignore |
| N6 Jitter Information | O |  | 9.3.1.144 |  | YES | ignore |

#### 9.3.1.77 Periodicity

This IE indicates the Periodicity of the TSC QoS flow as defined in TS 23.501 [20].

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Periodicity | M |  | INTEGER (0..640000, …) | Periodicity expressed in units of 1 us. |

#### 9.3.1.78 Burst Arrival Time

This IE indicates the Burst Arrival Time of the TSC QoS flow as defined in TS 23.501 [9].

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Burst Arrival Time | M |  | OCTET STRING | Encoded in the same format as the *ReferenceTime* IE as defined in TS 38.331 [10]. The value is provided with 1 us accuracy. |

#### 9.3.1.79 Extended Packet Delay Budget

This IE indicates the Packet Delay Budget for a QoS flow.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Extended Packet Delay Budget | M |  | INTEGER (0..65535, …, 65536..109999) | Upper bound value for the delay that a packet may experience expressed in unit of 0.01ms. |

#### 9.3.1.80 Redundant PDU Session Information

This IE defines Redundancy information to be applied to a PDU Session.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| RSN | M |  | ENUMERATED (v1, v2, …) |  | - | - |
| PDU Session Pair ID | O |  | INTEGER  (0..255, …) | as defined in TS 23.501 [20]. This IE is not used in the response message. If received, the gNB-CU-CP shall ignore it. | YES | ignore |

#### 9.3.1.81 QoS Mapping Information

This IE indicates the DSCP and/or IPv6 Flow Label field(s) of IP packet which is sent through the GTP-U tunnel of a requested DRB. This IE is only used for IAB.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| DSCP | O |  | BIT STRING (SIZE(6)) |  |
| Flow Label | O |  | BIT STRING (SIZE(20)) |  |

#### 9.3.1.82 NID

This IE contains the Network Identifier of an SNPN, as specified in TS 23.501 [20]. The NID is specified in TS 23.003 [23].

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| NID | M |  | BIT STRING (SIZE(44)) |  |

#### 9.3.1.83 NPN Support Information

This IE provides NPN related information.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| CHOICE *NPN Support Information* | M |  |  |  |
| *>NPN Support Information -SNPN* |  |  |  |  |
| >>NID | M |  | 9.3.1.82 | This IE is associated with the PLMN Identity and the Slice Support List contained in the *Supported PLMNs* IE.  Together with the PLMN Identity it identifies the SNPN supported by the gNB-CU-UP. |

#### 9.3.1.84 NPN Context Information

This IE provides bearer context related NPN information.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| CHOICE *NPN Context Information* | M |  |  |  |
| *>SNPN Information* |  |  |  |  |
| >>NID | M |  | 9.3.1.82 | This IE is associated with Serving PLMN information contained in bearer context related E1AP message.  Together with the Serving PLMN identity it identifies the serving SNPN. |

#### 9.3.1.85 MDT Configuration

The IE defines the NR/E-UTRAN MDT configuration parameters.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| MDT Activation | M |  | ENUMERATED (Immediate MDT only, Immediate MDT and Trace,…) |  |
| CHOICE *MDT Mode* | M |  |  |  |
| *>Immediate MDT* |  |  |  |  |
| >>Measurements to Activate | M |  | BITSTRING  (SIZE(8)) | Each position in the bitmap indicates a MDT measurement, as defined in TS 37.320 [27].  Fourth Bit = M4,  Seventh Bit = M6,  Eighth Bit = M7.  Value “1” indicates “activate” and value “0” indicates “do not activate”.  This version of the specification does not use bits 1, bit 2, bit 3, bit 5 and bit 6. |
| >>M4 Configuration | C-ifM4 |  | 9.3.1.86 |  |
| >>M6 Configuration | C-ifM6 |  | 9.3.1.87 |  |
| >>M7 Configuration | C-ifM7 |  | 9.3.1.88 |  |

|  |  |
| --- | --- |
| Condition | Explanation |
| ifM4 | This IE shall be present if the *Measurements to Activate* IE has the fourth bit set to “1”. |
| ifM6 | This IE shall be present if the Measurements to Activate IE has the seventh bit set to “1”. |
| ifM7 | This IE shall be present if the Measurements to Activate IE has the eighth bit set to “1”. |

#### 9.3.1.86 M4 Configuration

This IE defines the parameters for M4 measurement collection.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| M4 Collection Period | M |  | ENUMERATED (ms1024, ms2048, ms5120, ms10240, min1, …) |  | - | - |
| M4 Links to log | M |  | ENUMERATED(uplink, downlink, both-uplink-and-downlink, …) |  | - | - |
| M4 Report Amount | O |  | ENUMERATED (1, 2, 4, 8, 16, 32, 64, infinity, …) | Number of reports. | YES | ignore |

#### 9.3.1.87 M6 Configuration

This IE defines the parameters for M6 measurement collection.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| M6 Report Interval | M |  | ENUMERATED (ms120, ms240, ms480, ms640,ms1024, ms2048, ms5120, ms10240, ms20480, ms40960, min1,min6, min12, min30, …) |  | - | - |
| M6 Links to log | M |  | ENUMERATED(uplink, downlink, both-uplink-and-downlink, …) |  | - | - |
| M6 Report Amount | O |  | ENUMERATED (1, 2, 4, 8, 16, 32, 64, infinity,…) | Number of reports. | YES | ignore |

#### 9.3.1.88 M7 Configuration

This IE defines the parameters for M7 measurement collection.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| M7 Collection Period | M |  | INTEGER (1..60, …) |  | - | - |
| M7 Links to log | M |  | ENUMERATED(uplink, …) |  | - | - |
| M7 Report Amount | O |  | ENUMERATED (1, 2, 4, 8, 16, 32, 64, infinity,…) | Number of reports. | YES | ignore |

#### 9.3.1.89 MDT PLMN List

The purpose of the *MDT PLMN List* IE is to provide the list of PLMN allowed for MDT.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **MDT PLMN List** |  | *1..<maxnoofMDTPLMNs>* |  |  |
| >PLMN Identity | M |  | 9.3.1.7 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMDTPLMNs | Maximum no. of PLMNs in the MDT PLMN list. Value is 16. |

#### 9.3.1.90 EHC Parameters

This IE carries the EHC parameters for ethernet header compression.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| **EHC Common** | M |  |  |  | - | - |
| >EHC-CID-Length | M |  | ENUMERATED { bits7, bits15, … } | Corresponds to information provided in the *ehc-CID-Length* contained in the *PDCP-Config* IE as defined in TS 38.331 [10] for gNB or ng-eNB CP-UP separation, or in TS 36.331 [33] for eNB CP-UP separation. | - | - |
| **EHC Downlink** | O |  |  |  | - | - |
| >drb-ContinueEHC-DL | M |  | ENUMERATED { true, …, false } | Corresponds to information provided in the *drb-ContinueEHC-DL* contained in the *PDCP-Config* IE as defined in TS 38.331 [10] for gNB or ng-eNB CP-UP separation, or in TS 36.331 [33] for eNB CP-UP separation. The value “false” indicates that the PDCP entity resets the downlink EHC header compression protocol during PDCP re-establishment. | - | - |
| >maxCID-EHC-DL | O |  | INTEGER(1..32767, …) | Indicate the maximum number of DL EHC contexts that can be established for the DRB. The total value of maxCID-EHC-DL plus maxCID-EHC-UL (as specified in TS 38.331) across all bearers for the UE should be less than or equal to the value of maxNumberEHC-Contexts parameter as indicated by the UE. | YES | ignore |
| **EHC Uplink** | O |  |  |  | - | - |
| >drb-ContinueEHC-UL | M |  | ENUMERATED { true, …, false } | Corresponds to information provided in the *drb-ContinueEHC-UL* contained in the *PDCP-Config* IE as defined in TS 38.331 [10] for gNB or ng-eNB CP-UP separation, or in TS 36.331 [33] for eNB CP-UP separation. The value “false” indicates that the PDCP entity resets the uplink EHC header compression protocol during PDCP re-establishment. | - | - |

#### 9.3.1.91 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 |

#### 9.3.1.92 Early Forwarding COUNT Information

This IE contains DL COUNT value related to early data forwarding during DAPS Handover or Conditional Handover or conditional PSCell change or conditional PSCell addition or subsequent CPAC.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| CHOICE *Early Forwarding* | M |  |  |  |
| *>First DL COUNT* |  |  |  |  |
| >>FIRST DL COUNT Value | M |  | PDCP Count  9.3.1.35 | 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 Count  9.3.1.35 | PDCP-SN and Hyper frame number for which the target NG-RAN node should discard forwarded DL SDUs associated with lower values. |

#### 9.3.1.93 Alternative QoS Parameters Set List

This IE contains alternative sets of QoS parameters which the NG-RAN node can indicate to be fulfilled when notification control is enabled and it cannot fulfil the requested list of QoS parameters.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| Alternative QoS Parameters Item |  | *1..<maxnoofQoSParaSets>* |  |  |
| >Alternative QoS Parameters Index | M |  | INTEGER (1..8,..) |  |
| >Guaranteed Flow Bit Rate Downlink | O |  | Bit Rate  9.3.1.20 |  |
| >Guaranteed Flow Bit Rate Uplink | O |  | Bit Rate  9.3.1.20 |  |
| >Packet Delay Budget | O |  | 9.3.1.47 |  |
| >Packet Error Rate | O |  | 9.3.1.48 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofQoSParaSets | Maximum no. of alternative sets of QoS Parameters allowed for the QoS under Notification Control. Value is 8. |

#### 9.3.1.94 Extended Slice Support List

This IE indicates a list of supported slices.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| **Slice Support Item IEs** |  | *1..<maxnoofExtSliceItems>* |  |  | - |  |
| >S-NSSAI | M |  | 9.3.1.9 |  | - |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofExtSliceItems | Maximum no. of signalled slice support items. Value is 65535. |

#### 9.3.1.95 Extended gNB-CU-CP Name

This IE provides extended human readable name of the gNB-CU-CP.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| gNB-CU-CP Name Visible | O |  | VisibleString (SIZE(1..150, …)) |  | - |  |
| gNB-CU-CP Name UTF8 | O |  | UTF8String (SIZE(1..150, …)) |  | - |  |

#### 9.3.1.96 Extended gNB-CU-UP Name

This IE provides extended human readable name of the gNB-CU-UP.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| gNB-CU-UP Name Visible | O |  | VisibleString (SIZE(1..150, …)) |  | - |  |
| gNB-CU-UP Name UTF8 | O |  | UTF8String (SIZE(1..150, …)) |  | - |  |

#### 9.3.1.97 Extended NR CGI Support List

This IE indicates the list of supported NR CGIs.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **Extended NR CGI Support Item IEs** |  | 0..<*maxnoofExtNRCGI*> |  |  |
| >NR CGI | M |  | 9.3.1.14 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofExtNRCGI | Maximum no. of extended NR CGIs supported. Value is 16384. |

#### 9.3.1.98 Direct Forwarding Path Availability

This IE indicates whether a direct forwarding path is available.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Direct Forwarding Path Availability | M |  | ENUMERATED (inter-system direct path available, …, intra-system direct path available) |  |

#### 9.3.1.99 IAB-donor-CU-UP PSK Info

This IE contains the IAB-Donor-CU-UP Pre-Shared Key generated by the gNB-CU-CP and IP addresses for IAB-donor-CU-UP and IAB-DU.

| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| --- | --- | --- | --- | --- |
| **IAB-donor-CU-UP PSK Info Item IEs** |  | *1..<* *maxnoofPSKs >* |  |  |
| >IAB-Donor-CU-UP PSK | M |  | OCTET STRING | This IE contains the KIAB-CU-UP as defined in TS 33.501 [13]. |
| >IAB-Donor-CU-UP IP Address | M |  | 9.3.2.4 |  |
| >IAB-DU IP Address | M |  | 9.3.2.4 |  |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxnoofPSKs | Maximum no. of PSKs to be updated in one E1AP procedure. Value is 256. |

#### 9.3.1.100 ECGI Support List

This IE indicates the list of supported ECGIs.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **ECGI Support Item IEs** |  | 1..<maxnoofECGI> |  |  |
| >ECGI | M |  | 9.3.1.101 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofECGI | Maximum no. of supported ECGIs. Value is 512. This range may be redefined. |

#### 9.3.1.101 ECGI

The E-UTRAN Cell Global Identifier (ECGI) is used to globally identify a cell.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| PLMN Identity | M |  | 9.3.1.7 |  |
| E-UTRAN Cell Identity | M |  | BIT STRING (SIZE(28)) |  |

#### 9.3.1.102 UE Slice Maximum Bit Rate List

This IE contains the UE Slice Maximum Bit Rate List as specified in TS 23.501 [20].

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| **UE Slice Maximum Bit Rate Item** |  | *1..< maxnoofSMBRValues>* |  |  |
| >S-NSSAI | M |  | 9.3.1.9 |  |
| >UE Slice Maximum Bit Rate Downlink | M |  | Bit Rate  9.3.1.20 | This IE indicates the UE-Slice-MBR as specified in TS 23.501 [9] in the downlink direction. |

|  |  |
| --- | --- |
| Range bound | Explanation |
| *maxnoofSMBRValues*maxnoofAllowedS-NSSAIs | Maximum no. of SLICE MAXIMUM BIT RATE values for a UE. Value is 8Maximum no. of allowed S-NSSAI. Value is 8. |

#### 9.3.1.103 Survival Time

This IE indicates the Survival Time of the TSC QoS flow as defined in TS 23.501 [20].

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| Survival Time | M |  | INTEGER (0.. 1920000, …) | Survival Time expressed in units of 1 us. |

#### 9.3.1.104 UDC Parameters

This IE carries the UDC parameters for uplink data compression.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| Buffer Size | M |  | ENUMERATED (kbyte2, kbyte4, kbyte8, …) | Indicates the buffer size applied for UDC. Corresponds to information provided in the *bufferSize* contained in the *PDCP-Config* IE as defined in TS 38.331 [10] for gNB or ng-eNB CP-UP separation, or in TS 36.331 [33] for eNB CP-UP separation. | - |  |
| Dictionary | O |  | ENUMERATED (sip-SDP, operator, …) | Indicates which pre-defined dictionary is used for UDC. Corresponds to information provided in the *dictionary* contained in the *PDCP-Config* IE as defined in TS 38.331 [10] for gNB or ng-eNB CP-UP separation, or in TS 36.331 [33] for eNB CP-UP separation. | - |  |
| Continue UDC | O |  | ENUMERATED (true, …) | Corresponds to information provided in the *drb-ContinueUDC* contained in the *PDCP-Config* IE as defined in TS 38.331 [10]. | - |  |
| Version ID | O |  | INTEGER (0..15) | Indicates the version ID for Operator Defined Dictionary. Corresponds to information provided in *versionOfDictionary* contained in the *PDCP-Parameters* IE as defined in TS38.331[10]. | YES | ignore |

#### 9.3.1.105 SCG Activation Status

The *SCG Activation Status* IE indicates the status of SCG resources.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description |
| SCG Activation Status | M |  | ENUMERATED (SCG activated, SCG deactivated, ...) |  |

#### 9.3.1.106 gNB-CU-CP MBS E1AP ID

The gNB-CU-CP UE E1AP ID uniquely identifies the MBS association over the E1 interface within the gNB-CU-CP.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| gNB-CU-CP MBS E1AP ID | M |  | INTEGER (0 .. 224 -1) |  |

#### 9.3.1.107 gNB-CU-UP MBS E1AP ID

The gNB-CU-UP UE E1AP ID uniquely identifies the MBS association over the E1 interface within the gNB-CU-UP.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| gNB-CU-UP MBS E1AP ID | M |  | INTEGER (0 .. 216 -1) |  |

#### 9.3.1.108 Global MBS Session ID

This IE indicates the TMGI uniquely identifies an MBS session.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| TMGI | M |  | OCTET STRING (SIZE(6)) | Encoded as defined in TS 23.003. |
| NID | O |  | 9.3.1.82 | Defined in TS 23.003 [23]. |

#### 9.3.1.109 DU Cell Reference

This IE indicates the index of an NR CGI within a DU.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| DU Cell Index | M |  | INTEGER (1..512) | To support per cell F1-U tunnels and being able to refer to it. |
| NR CGI | M |  | 9.3.1.14 |  |

#### 9.3.1.110 gNB-CU-UP MBS Support Information

This IE includes MBS related support information for the E1 Setup procedure.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| **MBS Support Information To Add List** |  | *0..1* |  |  |
| **>MBS Support Information To Add Item** |  | *1..<maxnoofMBSSessionIDs>* |  |  |
| >>Global MBS Session ID | M |  | 9.3.1.108 |  |
| **MBS Support Information To Remove List** |  | *0..1* |  |  |
| **>MBS Support Information To Remove Item** |  | *1..<maxnoofMBSSessionIDs>* |  |  |
| >>Global MBS Session ID | M |  | 9.3.1.108 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMBSSessionIDs | Maximum no. of MBS Session IDs. Value is 512. |

#### 9.3.1.111 MBS Area Session ID

This IE indicates an MBS Area Session.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| MBS Area Session ID | M |  | INTEGER (0 .. 65535, …) |  |

#### 9.3.1.112 BC Bearer Context NG-U TNL Info at 5GC

This IE contains TNL information for an MBS Session as provided by the 5GC for shared NG-U multicast transport. It may also contain per Area Session ID NG-U TNL information.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| CHOICE *MBS Session Type* |  |  |  |  |
| *>location independent* |  |  |  |  |
| >>MBS NG-U Information at 5GC | M |  | 9.3.1.113 |  |
| *>location dependent* |  |  |  |  |
| **>>Location dependent MBS NG-U Information at 5GC** |  | *1..<maxnoofMBSAreaSessionIDs>* |  |  |
| >>>MBS Area Session ID | M |  | 9.3.1.111 |  |
| >>MBS NG-U Information at 5GC | M |  | 9.3.1.113 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMBSAreaSessionIDs | Maximum no. of MBS Area Session IDs. Value is 256. |

#### 9.3.1.113 MBS NG-U Information at 5GC

This IE contains TNL information for a single shared NG-U tunnel as provided by the 5GC.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| CHOICE *MBS NG-U Transport* |  |  |  |  |
| *>multicast* |  |  |  |  |
| >IP Multicast Address | M |  | Transport Layer Address  9.3.2.4 |  |
| >IP Source Address | M |  | Transport Layer Address  9.3.2.4 |  |
| >GTP DL TEID | M |  | GTP-TEID  9.3.2.3 |  |

#### 9.3.1.114 BC MRB Setup Configuration

This IE contains MRB configuration information for a BC Bearer Context Context.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| **BC MRB To Setup List** |  | *1..<maxnoofMRBs>* |  |  |
| >MRB ID | M |  | 9.3.1.16a |  |
| >MBS PDCP Configuration | M |  | PDCP Configuration  9.3.1.38 |  |
| >MBS QoS Flows Information To Be Setup | M |  | QoS Flow QoS Parameters List  9.3.1.25 |  |
| >MRB QoS | O |  | QoS Flow Level QoS Parameters 9.3.1.26 | Indicates the MRB QoS when more than one QoS Flow is mapped to the MRB. |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxnoofMRBs | Maximum no. of MRBs for one MBS Session. Value is 32. |

#### 9.3.1.115 Requested Action for Available Shared NG-U Termination

This IE provides information about the requested gNB-CU-UP’s action with regards to a potentially available shared NG-U termination.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Requested Action for Available Shared NG-U Termination | M |  | ENUMERATED (apply available configuration,  apply requested configuration,  ..., apply available configuration if same as requested) |  |

#### 9.3.1.116 BC Bearer Context NG-U TNL Info at NG-RAN

This IE contains NG-RAN NG-U TNL information for an MBS Session for both, shared NG-U unicast transport. It may also contain per Area Session ID NG-U TNL information.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| CHOICE *MBS Session Type* | M |  |  |  |
| *>location independent* |  |  |  |  |
| >>MBS NG-U Information at NG-RAN | M |  | 9.3.1.117 |  |
| *>location dependent* |  |  |  |  |
| **>>Location dependent MBS NG-U Information at NG-RAN** |  | *1..<maxnoofMBSAreaSessionIDs>* |  |  |
| >>>MBS Area Session ID | M |  | 9.3.1.111 |  |
| >>MBS NG-U Information at NG-RAN | M |  | 9.3.1.117 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMBSAreaSessionIDs | Maximum no. of MBS Area Session IDs. Value is 256. |

#### 9.3.1.117 MBS NG-U Information at NG-RAN

This IE contains NG-RAN TNL information for a single shared NG-U tunnel.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| CHOICE *MBS NG-U Transport* | M |  |  |  |
| *>unicast* |  |  |  |  |
| >>Shared NG-U DL Transport Layer Information | M |  | UP Transport Layer Information  9.3.2.1 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMBSAreaSessionIDs | Maximum no. of MBS Area Session IDs. Value is 256. |

#### 9.3.1.118 BC Bearer Context F1-U TNL Info at CU

This IE contains gNB-CU UP F1-U TNL information for an MBS Session. It may also contain per Area Session ID F1-U TNL information.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| CHOICE *MBS Session Type* | M |  |  |  |
| *>location independent* |  |  |  |  |
| >>MBS F1-U Information at CU | M |  | UP Transport Layer Information  9.3.2.1 |  |
| *>location dependent* |  |  |  |  |
| **>>Location dependent MBS F1-U Information at CU** |  | *1..<maxnoofMBSAreaSessionIDs>* |  |  |
| >>>MBS Area Session ID | M |  | 9.3.1.111 |  |
| >>MBS F1-U Information at CU | M |  | UP Transport Layer Information  9.3.2.1 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMBSAreaSessionIDs | Maximum no. of MBS Area Session IDs. Value is 256. |

#### 9.3.1.119 BC Bearer Context F1-U TNL Info at DU

This IE contains CU F1-U TNL information for an MBS Session. It may also contain per Area Session ID F1-U TNL information.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| CHOICE *MBS Session Type* | M |  |  |  |
| *>location independent* |  |  |  |  |
| >>MBS F1-U Information at DU | M |  | UP Transport Layer Information  9.3.2.1 |  |
| *>location dependent* |  |  |  |  |
| **>>Location dependent MBS F1-U Information at DU** |  | *1..<maxnoofMBSAreaSessionIDs>* |  |  |
| >>>MBS Area Session ID | M |  | 9.3.1.111 |  |
| >>MBS F1-U Information at DU | M |  | UP Transport Layer Information  9.3.2.1 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMBSAreaSessionIDs | Maximum no. of MBS Area Session IDs. Value is 256. |

#### 9.3.1.120 MC MRB Setup Configuration

This IE contains MRB configuration information for a MC Bearer Context Context.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| **MC MRB To Setup List** |  | *1..<maxnoofMRBs>* |  |  |
| >MRB ID | M |  | 9.3.1.16a |  |
| >MBS PDCP Configuration | M |  | PDCP Configuration  9.3.1.38 |  |
| >MBS QoS Flows Information To Be Setup | M |  | QoS Flow QoS Parameters List  9.3.1.25 |  |
| >MRB QoS | O |  | QoS Flow Level QoS Parameters 9.3.1.26 | Indicates the MRB QoS when more than one QoS Flow is mapped to the MRB. |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMRBs | Maximum no. of MRBs for one MBS Session. Value is 32. |

#### 9.3.1.121 MC Bearer Context NG-U TNL Info at NG-RAN

This IE contains NG-RAN NG-U TNL information for an MBS Session for both, shared NG-U unicast transport. It may also contain per Area Session ID NG-U TNL information.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| CHOICE *MBS Session Type* | M |  |  |  |
| *>location independent* |  |  |  |  |
| >>MBS NG-U Information at NG-RAN | M |  | 9.3.1.117 |  |
| *>location dependent* |  |  |  |  |
| **>>Location dependent MBS NG-U Information at NG-RAN** |  | *1..<maxnoofMBSAreaSessionIDs>* |  |  |
| >>>MBS Area Session ID | M |  | 9.3.1.111 |  |
| >>>MBS NG-U Information at NG-RAN | M |  | 9.3.1.117 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMBSAreaSessionIDs | Maximum no. of MBS Area Session IDs. Value is 256. |

#### 9.3.1.122 MC Bearer Context NG-U TNL Info at 5GC

This IE contains TNL information for a multicast MBS Session as provided by the 5GC for shared NG-U multicast transport. It may also contain an MBS Area Session ID.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| MBS NG-U Information at 5GC | M |  | 9.3.1.113 |  |
| MBS Area Session ID | O |  | 9.3.1.111 | For a location dependent multicast MBS Session |

#### 9.3.1.123 MC Bearer Context NG-U TNL Info at NG-RAN Request

This IE is used to request NG-U TNL information from the gNB-CU-UP, if not yet available at gNB-CU-CP and may contain an MBS Area Session ID.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| NG-RAN NG-U TNL requested. | M |  | ENUMERATED (requested, ...) |  |
| MBS Area Session ID | O |  | 9.3.1.111 |  |

#### 9.3.1.124 MC Bearer Context F1-U TNL Info at DU

This IE contains DU F1-U TNL information for a multicast MBS Session. It may also contain per Area Session ID F1-U TNL information.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| MBS F1-U Information at DU | M |  | UP Transport Layer Information  9.3.2.1 |  |
| MBS Multicast F1-U Context Descriptor | M |  | 9.3.1.125 | To support per DU, per cell or per MBS Area Session F1-U tunnels and being able to refer to it. |

#### 9.3.1.125 MBS Multicast F1-U Context Descriptor

This IE contains a reference to a Multicast F1-U Context and may contain an MBS Area Session ID and an indication to setup a Multicast F1-U Context for ptp retransmissions.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| Multicast F1-U Context ReferenceE1 | M |  | 9.3.1.139 |  |
| MC F1-U Context usage | M |  | ENUMERATED (ptm,  ptp,  ptp retransmission,  ptp forwarding, ...) | "ptm" indicates that the Multicast F1-U Context is setup for ptm transmissions; decided by the DU.  "ptp" indicates that the Multicast F1-U Context is setup for ptp transmissions; decided by the DU.  "ptp retransmission" indicates that the Multicast F1-U Context is setup for ptp retransmissions (based on PDCP Status Report); requested by the CU  "ptp forwarding" indicates that the Multicast F1-U Context is setup for transmitting from a defined MBS Progress Information status onwards; requested by the CU. |
| MBS Area Session ID | O |  | 9.3.1.111 | To support per MBS Area Session F1-U tunnels and being able to refer to it. |

#### 9.3.1.126 Void

Void.

#### 9.3.1.127 MC Bearer Context NG-U TNL Info at NG-RAN Modify Response

This IE contains NG-RAN NG-U TNL information for an MBS Session for both, shared NG-U multicast and unicast transport. It may also contain per Area Session ID NG-U TNL information.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| MBS NG-U Information at NG-RAN | M |  | 9.3.1.117 |  |
| MBS Area Session ID | O |  | 9.3.1.111 |  |

#### 9.3.1.128 Discard Timer Extended

This IE indicates the extended PDCP discard timer.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Discard Timer Extended | M |  | ENUMERATED (0.5, 1, 2, 4, 6, 8, …, 2000) | Indicates the PDCP discard timer. The values are expressed in *ms*. Corresponds to information provided in the *DiscardTimerExt-r16* or the *DiscardTimerExt2-r17* contained in the *PDCP-Config* IE as defined in TS 38.331 [10]. |

#### 9.3.1.129 MDT PLMN Modification List

The purpose of the *MDT PLMN List Modification* IE is to provide the modified list of PLMN allowed for MDT.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **MDT PLMN Modification List** |  | *0..<maxnoofMDTPLMNs>* |  | An empty list indicates there is no PLMN allowed for MDT. |
| >PLMN Identity | M |  | 9.3.1.7 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMDTPLMNs | Maximum no. of PLMNs in the MDT PLMN list. Value is 16. |

#### 9.3.1.130 MRB Progress Information

This IE contains the MRB progress information.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| CHOICE *MRB Progress Information SNs* | M |  |  |  |
| *>12bits* |  |  |  |  |
| >>PDCP SN Length 12 | M |  | INTEGER (0..4095) |  |
| *>18bits* |  |  |  |  |
| >>PDCP SN Length 18 | M |  | INTEGER (0..262143) |  |
| MRB Progress Information Type | M |  | 9.3.1.131 |  |

#### 9.3.1.131 MRB Progress Information Type

This IE contains the MRB progress information.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| MRB Progress Information Type | M |  | ENUMERATED (oldest available, last delivered, ...) |  |

#### 9.3.1.132 MC Forwarding Resource ID

This IE provides the means to identify a MC forwarding resource. It is uniquely allocated for a MC Bearer Context.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| MC Forwarding Resource ID | M |  | OCTET STRING (SIZE(2)) |  |

#### 9.3.1.133 MBS Session Associated Information

This IE provides the means to establish a MC MBS session level forwarding resource to support handover to a gNB not supporting NR MBS.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| **Associated QoS Flow Information List** |  | *1..<maxnoofQoSflows>* |  |  |
| >MBS QoS Flow Identifier | M |  | QoS Flow Identifier  9.3.1.24 |  |
| >Associated Unicast QoS Flow Identifier | M |  | QoS Flow Identifier  9.3.1.24 |  |
| MBS Session Forwarding Address | M |  | UP Transport Layer Information  9.3.2.1 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofQoSFlows | Maximum no. of QoS flows in a PDU Session. Value is 64. |

#### 9.3.1.134 MC Forwarding Resource Request

This IE is used by the gNB-CU-CP for request from the gNB-CU-UP information from the peer node regarding a MC Forwarding Resource.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| MC Forwarding Resource ID | M |  | 9.3.1.132 |  |
| MBS Area Session ID | O |  | 9.3.1.111 |  |
| **MRB Forwarding Resource Request List** |  | *0..<maxnoofMRBs>* |  |  |
| >MRB ID | M |  | 9.3.1.16a |  |
| >MRB Progress Information Type | O |  | 9.3.1.131 | Requests MRB Progress Information of the indicated type from the peer node |
| >MRB Forwarding Address Request | O |  | ENUMERATED (request, ...) |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMRBs | Maximum no. of MRBs for one MBS Session. Value is 32. |

#### 9.3.1.135 MC Forwarding Resource Indication

This IE is used by the gNB-CU-CP for indicate to the gNB-CU-UP information from the peer node regarding MC Forwarding Resources.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| MC Forwarding Resource ID | M |  | 9.3.1.132 |  |
| **MRB Forwarding Indication List** |  | *0..<maxnoofMRBs>* |  |  |
| >MRB ID | M |  | 9.3.1.16a |  |
| >MRB Progress Information | O |  | 9.3.1.130 | Provides MRB Progress Information from the peer node. |
| >MRB Forwarding Address | O |  | UP Transport Layer Information  9.3.2.1 |  |
| MBS Session Associated Information | O |  | 9.3.1.133 |  |

#### 9.3.1.136 MC Forwarding Resource Response

This IE is used by the gNB-CU-UP to response to requests from the gNB-CU-CP regarding a MC Forwarding Resource at the gNB-CU-UP.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| MC Forwarding Resource ID | M |  | 9.3.1.132 |  |
| **MRB Forwarding Indication List** |  | *0..<maxnoofMRBs>* |  |  |
| >MRB ID | M |  | 9.3.1.16a |  |
| >MRB Progress Information | O |  | 9.3.1.130 |  |
| >MRB Forwarding Address | O |  | UP Transport Layer Information  9.3.2.1 |  |

#### 9.3.1.137 MC Forwarding Resource Release

This IE is used by the gNB-CU-CP to release a MC Forwarding Resource at the gNB-CU-UP.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| MC Forwarding Resource ID | M |  | 9.3.1.132 |  |

#### 9.3.1.138 MC Forwarding Resource Release Indication

This IE is used by the gNB-CU-UP to indicate the release of a MC Forwarding Resource to the gNB-CU-CP.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| MC Forwarding Resource ID | M |  | 9.3.1.132 |  |

#### 9.3.1.139 Multicast F1-U Context ReferenceE1

This IE contains a reference to a Multicast F1-U Context used within an MBS-associated logical E1-connection.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Multicast F1-U Context ReferenceE1 | M |  | OCTET STRING (SIZE(4)) | This value is allocated to uniquely denote an Multicast F1-U Context within an MBS-associated logical E1-connection. |

#### 9.3.1.140 MBS Session Associated Information Non-Support-to-Support

This IE contains the UE ID, PDU session ID and QFIs associated to a given MBS session, used in handover from non-MBS-supporting RAN node to MBS-supporting RAN node to eliminate packet duplication.

NOTE: This IE is only applicable for deployments deriving the PDCP COUNT values by means of a DL MBS QFI Sequence Number provided on NG-U and requires the appropriate associated PDU Session and MBS session resources to be provided by the same logical gNB-CU-UP.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| UE Reference ID | M |  | gNB-CU-CP UE E1AP ID 9.3.1.4 |  |
| PDU Session ID | M |  | 9.3.1.21 |  |
| Associated QoS Flow Information List | M |  | MBS Session Associated Information List 9.3.1.141 |  |

#### 9.3.1.141 MBS Session Associated Information List

This IE provides the association between MBS QoS flows and unicast QoS flows.

NOTE: This IE is only applicable for deployments deriving the PDCP COUNT values by means of a DL MBS QFI Sequence Number provided on NG-U and requires the appropriate associated PDU Session and MBS session resources to be provided by the same logical gNB-CU-UP.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **MBS Session Association Information Item** |  | *1..<maxnoofQoSflows>* |  |  |
| >MBS QoS Flow Identifier | M |  | QoS Flow Identifier  9.3.1.24 |  |
| >Associated Unicast QoS Flow Identifier | M |  | QoS Flow Identifier  9.3.1.24 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofQoSFlows | Maximum no. of QoS flows in a PDU Session. Value is 64. |

#### 9.3.1.142 MT-SDT Information

This IE provides the assistant information for MT-SDT.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description |
| MT-SDT Data Size | M |  | INTEGER (1..96000,…) | Indicates the total data size for all SDT bearers. Unit: byte. Corresponds to the SDAP SDU size of the received DL data. |

#### 9.3.1.143 PDU Set QoS Parameters

This IE defines PDU Set QoS parameters to be applied to a QoS flow.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| PDU Set Delay Budget | O |  | Extended Packet Delay Budget  9.3.1.79 | The PDU Set Delay Budget is specified in TS 23.501 [20]. |
| PDU Set Error Rate | O |  | Packet Error Rate  9.3.1.48 | The PDU Set Error Rate is specified in TS 23.501 [20]. |
| PDU Set Integrated Handling Information | O |  | ENUMERATED (true, false, …) | The PDU Set Integrated Handling Information is specified in TS 23.501 [20]. |

#### 9.3.1.144 N6 Jitter Information

This IE defines the jitter information associated with the Periodicity in downlink.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| N6 Jitter Lower Bound | M |  | INTEGER (-127.. 127, …) | Indicates the lower bound of the N6 jitter. The unit is: 0.5ms. |
| N6 Jitter Upper Bound | M |  | INTEGER (-127.. 127, …) | Indicates the upper bound of the N6 jitter. The unit is: 0.5ms. |

#### 9.3.1.145 ECN Marking or Congestion Information Reporting Request

This IE indicates the gNB-CU-UP to perform ECN marking or to report information for ECN marking or to report congestion information for a QoS flow.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| CHOICE *ECN Marking or Congestion Information Request* | M |  |  |  |
| *>ECN Marking at RAN* |  |  |  |  |
| >>ECN Marking at NG-RAN Request | M |  | ENUMERATED (ul, dl, both, stop, …) |  |
| *>ECN Marking at UPF* |  |  |  |  |
| >>ECN Marking at UPF Request | M |  | ENUMERATED (ul, dl, both, stop, …) |  |
| *>Congestion Information* |  |  |  |  |
| >>Congestion Information Request | M |  | ENUMERATED (ul, dl, both, stop, …) |  |

### 9.3.2 Transport Network Layer Related IEs

#### 9.3.2.1 UP Transport Layer Information

The *UP Transport Layer Information* IE identifies an transport bearer associated to a DRB. It contains a Transport Layer Address and a GTP Tunnel Endpoint Identifier. The Transport Layer Address is an IP address to be used for the user plane transport.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| CHOICE *Transport Layer Information* | M |  |  |  |
| >*GTP Tunnel* |  |  |  |  |
| >>Transport Layer Address | M |  | 9.3.2.4 |  |
| >>GTP-TEID | M |  | 9.3.2.3 |  |

#### 9.3.2.2 CP Transport Layer Information

This IE is used to provide the E1 control plane transport layer information associated with an gNB-CU-CP and gNB-CU-UP pair.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| CHOICE *CP Transport Layer Information* |  |  |  |  |  |  |
| >*Endpoint-IP-address* |  |  |  |  | - | - |
| >> Endpoint IP address | M |  | Transport Layer Address  9.3.2.4 |  | - | - |
| >Endpoint-IP-address-and-port |  |  |  |  | YES | reject |
| >>Endpoint IP address | M |  | Transport Layer Address  9.3.2.4 |  | - | - |
| >>Port Number | M |  | BIT STRING (SIZE(16)) |  | - | - |

#### 9.3.2.3 GTP-TEID

The *GTP-TEID* IE is the GTP Tunnel Endpoint Identifier to be used for the user plane transport.

| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| --- | --- | --- | --- | --- |
| GTP-TEID | M |  | OCTET STRING (SIZE(4)) | For details and range, see TS 29.281 [15]. |

#### 9.3.2.4 Transport Layer Address

This *Transport Layer Address* IE is an IP address.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| Transport Layer Address | M |  | BIT STRING (SIZE(1..160, …)) | The Radio Network Layer is not supposed to interpret the address information. It should pass it to the Transport Layer for interpretation.  For details, see TS 38.414 [16]. |

#### 9.3.2.5 Data Forwarding Information Request

This IE offers the possibility for the gNB-CU-CP to request data forwarding addresses to the gNB-CU-UP. It also offers the possibility for the gNB-CU-CP to provide a list of QoS flows subject to PDU Session level or DRB level data forwarding to the gNB to which DRBs or QoS flows have been offloaded.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| Data Forwarding Request | M |  | ENUMERATED (UL, DL, both, …) |  |
| QoS Flows forwarded on the forwarding tunnel(s) | O |  | QoS Flow Mapping List  9.3.1.59 | This IE contains information for which QoS flows forwarded data packets are sent on:  - either the PDU Session forwarding tunnel (UL and DL)  - or the DRB forwarding tunnel (UL and DL). |

#### 9.3.2.6 Data Forwarding Information

This IE provides the data forwarding information when performing handover or data offloading.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| UL Data Forwarding | O |  | UP Transport Layer Information  9.3.2.1 |  | - | - |
| DL Data Forwarding | O |  | UP Transport Layer Information  9.3.2.1 |  | - | - |
| Data Forwarding to NG-RAN QoS Flow Information List |  | *0..1* |  | Providing QoS flows accepted for data forwarding to the source gNB-CU-UP. | YES | ignore |
| >Data Forwarding to NG-RAN QoS Flow Information List Item |  | *1..<maxnoofQoSflows>* |  |  | - | - |
| >>QoS Flow Identifier | M |  | QoS Flow Identifier  9.3.1.24 |  | - | - |
| PDU Set based Handling Indicator | O |  | ENUMERATED (supported, …) | Indicates the support of PDU Set based QoS handling. | YES | ignore |

#### 9.3.2.7 Transport Network Layer Address Info

This IE is used for signalling TNL address information.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| **Transport UP Layer Addresses Info to Add List** |  | 0..1 |  |  |
| **>Transport UP Layer Addresses Info to Add Item** |  | *1..<maxnoofTLAs>* |  |  |
| >>IPsec Transport Layer Address | M |  | Transport Layer Address  9.3.2.4 | Transport Network Layer address for IPsec endpoint. |
| **>>GTP Transport Layer Addresses To Add List** |  | *0..1* |  |  |
| **>>>GTP Transport Layer Addresses To Add Item** |  | *1..<maxnoofGTPTLAs>* |  |  |
| >>>>GTP Transport Layer Address Info | M |  | Transport Layer Address  9.3.2.4 | GTP Transport Layer Addresses for GTP end-points. |
| **Transport UP Layer Addresses Info to Remove List** |  | *0..1* |  |  |
| **>Transport UP Layer Addresses Info to Remove Item** |  | *1..<maxnoofTLAs>* |  |  |
| >>IPsec Transport Layer Address | M |  | Transport Layer Address  9.3.2.4 | Transport Network Layer address for IPsec endpoint. |
| **>>GTP Transport Layer Addresses To Remove List** |  | *0..1* |  |  |
| **>>>GTP Transport Layer Addresses To Remove Item** |  | *1..<maxnoofGTPTLAs>* |  |  |
| >>>>GTP Transport Layer Address Info | M |  | Transport Layer Address  9.3.2.4 | GTP Transport Layer Addresses for GTP end-points. |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofTLAs | Maximum no. of Transport Layer Addresses in the message. Value is 16. |
| maxnoofGTPTLAs | Maximum no. of GTP Transport Layer Addresses for a GTP end-point in the message. Value is 16. |

#### 9.3.2.8 URI

This IE is defined to contain a URI address.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| **URI** | M |  | VisibleString | String representing URI (Uniform Resource Identifier) |

### 9.3.3Container and List IE definitions

#### 9.3.3.1 DRB To Setup List E-UTRAN

This IE contains DRB related information used at Bearer Context Setup Request in E-UTRAN

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| **DRB To Setup Item E-UTRAN** |  | *1..<maxnoofDRBs>* |  |  | - | - |
| >DRB ID | M |  | 9.3.1.16 |  | - | - |
| >PDCP Configuration | M |  | 9.3.1.38 |  | - | - |
| >E-UTRAN QoS | M |  | 9.3.1.17 |  | - | - |
| >S1 UL UP Transport Layer Information | M |  | UP Transport Layer Information  9.3.2.1 |  | - | - |
| >Data Forwarding Information Request | O |  | 9.3.2.5 | Requesting forwarding info from the target gNB-CU-UP. | - | - |
| >Cell Group Information | M |  | 9.3.1.11 |  | - | - |
| >DL UP Parameters | O |  | UP Parameters  9.3.1.13 |  | - | - |
| >DRB Inactivity Timer | O |  | Inactivity Timer  9.3.1.54 | Included if the Activity Notification Level is set to DRB. | - | - |
| >Existing Allocated S1 DL UP Transport Layer Information | O |  | UP Transport Layer Information  9.3.2.1 | This IE is not used in this version of the specification. | - | - |
| >Data Forwarding Source IP Address | O |  | Transport Layer Address  9.3.2.4 | Identifies the TNL address used by the source node for data forwarding. | YES | ignore |
| >Security Indication | O |  | 9.3.1.23 |  | YES | reject |

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

#### 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 Rate  9.3.1.20 | 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 Information  9.3.2.1 |  | - | - |
| >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 Information  9.3.2.1 |  | - | - |
| >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 List  9.3.1.25 |  | - | - |
| >>>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 |
| >>>SpecialTriggeringPurpose | O |  | ENUMERATED (indirect-data-forwarding, …) |  | YES | ignore |
| >Redundant NG UL UP Transport Layer Information | O |  | UP Transport Layer Information  9.3.2.1 |  | YES | ignore |
| >Redundant Common Network Instance | O |  | Common Network Instance  9.3.1.66 |  | YES | ignore |
| >Redundant PDU Session Information | O |  | 9.3.1.80 |  | YES | ignore |
| >SpecialTriggeringPurpose | O |  | ENUMERATED (indirect-data-forwarding, …) |  | 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. |

#### 9.3.3.3 DRB Setup List E-UTRAN

This IE contains setup DRB related information at Bearer Context Setup Response in E-UTRAN

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| **DRB Setup Item E-UTRAN** |  | *1..<maxnoofDRBs>* |  |  | - | - |
| >DRB ID | M |  | 9.3.1.16 |  | - | - |
| >S1 DL UP Transport Layer Information | M |  | UP Transport Layer Information  9.3.2.1 |  | - | - |
| >Data Forwarding Information Response | O |  | Data Forwarding Information  9.3.2.6 | Providing forwarding info from the target gNB-CU-UP. | - | - |
| >UL UP Parameters | M |  | UP Parameters  9.3.1.13 |  | - | - |
| >S1 DL UP Unchanged | O |  | ENUMERATED (True, …) | This IE is not used in this version of the specification. | - | - |
| >Data Forwarding Source IP Address | O |  | Transport Layer Address  9.3.2.4 | Identifies the TNL address used by the source node for data forwarding. | YES | ignore |
| >Security Result | O |  | 9.3.1.52 |  | YES | ignore |

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

#### 9.3.3.4 DRB Failed List E-UTRAN

This IE contains failed to setup DRB related information at Bearer Context Setup Response in E-UTRAN

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **DRB Failed Item E-UTRAN** |  | *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. |

#### 9.3.3.5 PDU Session Resource Setup List

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

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| **PDU Session Resource Setup Item** |  | *1..<maxnoofPDUSessionResource>* |  |  | - | - |
| >PDU Session ID | M |  | 9.3.1.21 |  | - | - |
| >Security Result | O |  | 9.3.1.52 |  | - | - |
| >NG DL UP Transport Layer Information | M |  | UP Transport Layer Information  9.3.2.1 |  | - | - |
| >PDU Session Data Forwarding Information Response | O |  | Data Forwarding Information  9.3.2.6 | Providing forwarding info from the target gNB-CU-UP. | - | - |
| >NG DL UP Unchanged | O |  | ENUMERATED (True, …) |  | - | - |
| **>DRB Setup List** |  | *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 | Providing forwarding info from the target gNB-CU-UP. | - | - |
| >>>UL UP Parameters | M |  | UP Parameters 9.3.1.13 |  | - | - |
| >>>Flow Setup List | M |  | QoS Flow List  9.3.1.12 |  | - | - |
| >>>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 |  | - | - |
| >Redundant NG DL UP Transport Layer Information | O |  | UP Transport Layer Information  9.3.2.1 |  | YES | ignore |
| >Used Redundant PDU Session Information | O |  | 9.3.1.80 |  | 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. |

#### 9.3.3.6 PDU Session Resource Failed List

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **PDU Session Resource Failed Item** |  | *1..<maxnoofPDUSessionResource>* |  |  |
| >PDU Session ID | M |  | 9.3.1.21 |  |
| >Cause | M |  | 9.3.1.2 |  |

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

#### 9.3.3.7 DRB To Setup Modification List E-UTRAN

This IE contains DRB to setup related information used at Bearer Context Modification Request in E-UTRAN

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| **DRB To Setup Modification Item E-UTRAN** |  | *1..<maxnoofDRBs>* |  |  | - | - |
| >DRB ID | M |  | 9.3.1.16 |  | - | - |
| >PDCP Configuration | M |  | 9.3.1.38 |  | - | - |
| >E-UTRAN QoS | M |  | 9.3.1.17 |  | - | - |
| >S1 UL UP Transport Layer Information | M |  | UP Transport Layer Information  9.3.2.1 |  | - | - |
| >Data Forwarding Information Request | O |  | 9.3.2.5 | Requesting forwarding info from the target gNB-CU-UP. | - | - |
| >Cell Group Information | M |  | 9.3.1.11 |  | - | - |
| >DL UP Parameters | O |  | UP Parameters  9.3.1.13 |  | - | - |
| >DRB Inactivity Timer | O |  | Inactivity Timer  9.3.1.54 | Included if the Activity Notification Level is set to DRB. | - | - |
| >Security Indication | O |  | 9.3.1.23 |  | YES | reject |
| >Data Forwarding Source IP Address | O |  | Transport Layer Address  9.3.2.4 | Identifies the TNL address used by the source node for data forwarding. | YES | ignore |

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

#### 9.3.3.8 DRB To Modify List E-UTRAN

This IE contains DRB to modify related information used at Bearer Context Modification Request in E-UTRAN

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| **DRB To Modify Item E-UTRAN** |  | *1..<maxnoofDRBs>* |  |  |
| >DRB ID | M |  | 9.3.1.16 |  |
| >PDCP Configuration | O |  | 9.3.1.38 |  |
| >E-UTRAN QoS | O |  | 9.3.1.17 |  |
| >S1 UL UP Transport Layer Information | O |  | UP Transport Layer Information  9.3.2.1 |  |
| >Data Forwarding Information | O |  | 9.3.2.6 | Providing forwarding info 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 | Providing SN Status information 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 |  |
| >DRB Inactivity Timer | O |  | Inactivity Timer  9.3.1.54 | Included if the Activity Notification Level is set to DRB. |

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

#### 9.3.3.9 DRB To Remove List E-UTRAN

This IE contains DRB to remove related information used at Bearer Context Modification Request in E-UTRAN

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **DRB To Remove Item E-UTRAN** |  | *1..<maxnoofDRBs>* |  |  |
| >DRB ID | M |  | 9.3.1.16 |  |

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

#### 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 Information  9.3.2.1 |  | - | - |
| >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 List  9.3.1.25 |  | - | - |
| >>>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 |
| >>>SpecialTriggeringPurpose | O |  | ENUMERATED (indirect-data-forwarding, …) |  | YES | ignore |
| >Redundant NG UL UP Transport Layer Information | O |  | UP Transport Layer Information  9.3.2.1 |  | YES | ignore |
| >Redundant Common Network Instance | O |  | Common Network Instance  9.3.1.66 |  | YES | ignore |
| >SpecialTriggeringPurpose | O |  | ENUMERATED (indirect-data-forwarding, …) |  | 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 Information  9.3.2.1 |  | - | - |
| >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 List  9.3.1.25 |  | - | - |
| >>>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 |
| >>>DAPS Request Information | O |  | 9.3.1.91 | This IE is not used in this version of the specification | 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, …) | 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 List  9.3.1.25 | 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 List 9.3.1.12 | 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 |
| >>>PDCP COUNT Reset | O |  | ENUMERATED (True, …) | Used for intra-gNB-CU-UP HO with full configuration | 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 Information  9.3.2.1 |  | YES | ignore |
| >Redundant Common Network Instance | O |  | Common Network Instance  9.3.1.66 |  | 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 Identifier  9.3.1.24 |  | - | - |
| >Security Indication Modify | O |  | Security Indication  9.3.1.23 |  | YES | ignore |
| >Secondary PDU Session Data Forwarding Information | O |  | Data Forwarding Information  9.3.2.6 | Providing secondary forwarding information to the source gNB-CU-UP in case of split PDU session. | 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. |
| 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. |

#### 9.3.3.12 PDU Session Resource To Remove List

This IE contains PDU session resource to remove related information

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| **PDU Session Resource To Remove Item** |  | *1..<maxnoofPDUSessionResource>* |  |  | - | - |
| >PDU Session ID | M |  | 9.3.1.21 |  | - | - |
| >Cause | O |  | 9.3.1.2 |  | YES | ignore |

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

#### 9.3.3.13 DRB Setup Modification List E-UTRAN

This IE contains setup DRB related information at Bearer Context Modification Response in E-UTRAN

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| **DRB Setup Modification Item E-UTRAN** |  | *1..<maxnoofDRBs>* |  |  | - | - |
| >DRB ID | M |  | 9.3.1.16 |  | - | - |
| >S1 DL UP Transport Layer Information | M |  | UP Transport Layer Information  9.3.2.1 |  | - | - |
| >Data Forwarding Information Response | O |  | 9.3.2.6 | Provides forwarding information from the target gNB-CU-UP. | - | - |
| >UL UP Parameters | M |  | UP Parameters  9.3.1.13 |  | - | - |
| >Security Result | O |  | 9.3.1.52 |  | YES | ignore |
| >Data Forwarding Source IP Address | O |  | Transport Layer Address  9.3.2.4 | Identifies the TNL address used by the source node for data forwarding. | YES | ignore |

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

#### 9.3.3.14 DRB Failed Modification List E-UTRAN

This IE contains failed to setup DRB related information at Bearer Context Modification Response in E-UTRAN

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **DRB Failed Modification Item E-UTRAN** |  | *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. |

#### 9.3.3.15 DRB Modified List E-UTRAN

This IE contains modified DRB related information at Bearer Context Modification Response in E-UTRAN

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **DRB Modified Item E-UTRAN** |  | *1..<maxnoofDRBs>* |  |  |
| >DRB ID | M |  | 9.3.1.16 |  |
| >S1 DL UP Transport Layer Information | O |  | UP Transport Layer Information 9.3.2.1 |  |
| >PDCP SN Status Information | O |  | 9.3.1.58 | Provides the PDCP SN Status from the source gNB-CU-UP. |
| >UL UP Parameters | O |  | UP Parameters  9.3.1.13 | Carries the UL UP parameters. |

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

#### 9.3.3.16 DRB Failed To Modify List E-UTRAN

This IE contains failed to modify DRB related information at Bearer Context Modification Response in E-UTRAN

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **DRB Failed To Modify Item E-UTRAN** |  | *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. |

#### 9.3.3.17 PDU Session Resource Setup Modification List

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

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| **PDU Session Resource Setup Modification Item** |  | *1..<maxnoofPDUSessionResource>* |  |  | - | - |
| >PDU Session ID | M |  | 9.3.1.21 |  | - | - |
| >Security Result | O |  | 9.3.1.52 |  | - | - |
| >NG DL UP Transport Layer Information | M |  | UP Transport Layer Information  9.3.2.1 |  | - | - |
| >PDU Session Data Forwarding Information Response | O |  | Data Forwarding Information  9.3.2.6 | Provides forwarding information from the target gNB-CU-UP. | - | - |
| **>DRB Setup List** |  | *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 | Provides forwarding information from the target gNB-CU-UP. | - | - |
| >>>UL UP Parameters | M |  | UP Parameters  9.3.1.13 |  | - | - |
| >>>Flow Setup List | M |  | QoS Flow List  9.3.1.12 |  | - | - |
| >>>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 |  | - | - |
| >Redundant NG DL UP Transport Layer Information | O |  | UP Transport Layer Information  9.3.2.1 |  | 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. |

#### 9.3.3.18 PDU Session Resource Failed Modification List

This IE contains failed to setup 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 Failed Modification Item** |  | *1..<maxnoofPDUSessionResource>* |  |  |
| >PDU Session ID | M |  | 9.3.1.21 |  |
| >Cause | M |  | 9.3.1.2 |  |

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

#### 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 | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| **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 Information  9.3.2.6 |  | - |  |
| **>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 Parameters  9.3.1.13 |  | - |  |
| >>>Flow Setup List | M |  | QoS Flow List  9.3.1.12 |  | - |  |
| >>>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 List  9.3.1.12 |  | - |  |
| >>>Flow Failed List | O |  | Flow Failed List  9.3.1.45 |  | - |  |
| >>>Early Forwarding COUNT Information | O |  | 9.3.1.92 | Provides early data forwarding information from the source gNB-CU-UP. | - |  |
| >>> Old QoS Flow List - UL End Marker expected | O |  | QoS Flow List  9.3.1.12 | Indicates the QoS flow(s) for which the gNB-CU-UP has not yet received SDAP end markers after the gNB-CU-CP reconfigured those QoS flow(s) to another DRB. | Yes | ignore |
| **>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 |  | - | - |
| >Redundant NG DL UP Transport Layer Information | O |  | UP Transport Layer Information  9.3.2.1 |  | 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. |

#### 9.3.3.20 PDU Session Resource Failed To Modify List

This IE contains failed to modify 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 Failed To Modify Item** |  | *1..<maxnoofPDUSessionResource>* |  |  |
| >PDU Session ID | M |  | 9.3.1.21 |  |
| >Cause | M |  | 9.3.1.2 |  |

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

#### 9.3.3.21 DRB Required To Modify List E-UTRAN

This IE contains DRB to modify related information used at Bearer Context Modification Required in E-UTRAN

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **DRB Required To Modify Item E-UTRAN** |  | *1..<maxnoofDRBs>* |  |  |
| >DRB ID | M |  | 9.3.1.16 |  |
| >S1 DL UP Transport Layer Information | O |  | UP Transport Layer Information  9.3.2.1 |  |
| >gNB-CU-UP Cell Group Related Configuration | O |  | 9.3.1.34 |  |
| >Cause | O |  | 9.3.1.2 |  |

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

#### 9.3.3.22 DRB Required To Remove List E-UTRAN

This IE contains DRB to remove related information used at Bearer Context Modification Required in E-UTRAN

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **DRB Required To Remove Item E-UTRAN** |  | *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. |

#### 9.3.3.23 PDU Session Resource Required To Modify List

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

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| **PDU Session Resource Required To Modify 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 |  | - | - |
| **>DRB To Modify List** |  | *0.. 1* |  |  | - | - |
| **>>DRB To Modify Item** |  | *1..<maxnoofDRBs>* |  |  | - | - |
| >>>DRB ID | M |  | 9.3.1.16 |  | - | - |
| >>>gNB-CU-UP Cell Group Related Configuration | O |  | 9.3.1.34 |  | - | - |
| >>>Flow To Remove | O |  | QoS Flow List  9.3.1.12 |  | - | - |
| >>>Cause | O |  | 9.3.1.2 |  | - | - |
| **>DRB To Remove List** |  | *0.. 1* |  |  | - | - |
| **>>DRB To Remove Item** |  | *1..<maxnoofDRBs>* |  |  | - | - |
| >>>DRB ID | M |  | 9.3.1.16 |  | - | - |
| >>>Cause | M |  | 9.3.1.2 |  | - | - |
| >Redundant NG DL UP Transport Layer Information | O |  | UP Transport Layer Information  9.3.2.1 |  | 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. |

#### 9.3.3.24 DRB Confirm Modified List E-UTRAN

This IE contains modified DRB related information at Bearer Context Modification Confirm in E-UTRAN

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| **DRB Confirm Modified Item E-UTRAN** |  | *1..<maxnoofDRBs>* |  |  |
| >DRB ID | M |  | 9.3.1.16 |  |
| >Cell Group Information | O |  | 9.3.1.11 | Included if the gNB-CU-CP was unable to change cell group related information as requested in the *gNB-CU-UP Cell Group Related Configuration* IE (e.g., UL Configuration). |

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

#### 9.3.3.25 PDU Session Resource Confirm Modified List

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 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 |  |
| **>DRB Modified List** |  | *0.. 1* |  |  |
| **>>DRB Modified Item** |  | *1..<maxnoofDRBs>* |  |  |
| >>>DRB ID | M |  | 9.3.1.16 |  |
| >>>Cell Group Information | O |  | 9.3.1.11 | Included if the gNB-CU-CP was unable to change cell group related information as requested in the *gNB-CU-UP Cell Group Related Configuration* IE (e.g., UL Configuration). |

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

#### 9.3.3.26 BC Bearer Context To Setup

This IE contains MBS session resource related information used to request BC Bearer Context Context Setup.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| S-NSSAI | M |  | 9.3.1.9 |  |
| BC Bearer Context NG-U TNL Info at 5GC | O |  | 9.3.1.112 |  |
| BC MRB To Setup List | M |  | BC MRB Setup Configuration  9.3.1.114 |  |
| Requested Action for Available Shared NG-U Termination | O |  | 9.3.1.115 |  |

#### 9.3.3.27 BC Bearer Context To Setup Response

This IE contains MBS session resource related information used to confirm BC Bearer Context Setup.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| BC Bearer Context NG-U TNL Info at NG-RAN | O |  | 9.3.1.116 |  |
| **BC MRB Setup Response List** |  | *1..<maxnoofMRBs>* |  |  |
| >MRB ID | M |  | 9.3.1.16a |  |
| >MBS QoS Flow Setup List | M |  | QoS Flow List  9.3.1.12 |  |
| >MBS QoS Flow Failed List | O |  | Flow Failed List  9.3.1.45 |  |
| >BC Bearer Context F1-U TNL Info at CU | M |  | 9.3.1.118 |  |
| **BC MRB Failed List** |  | *0..<maxnoofMRBs>* |  |  |
| >MRB ID | M |  | 9.3.1.16a |  |
| >Cause | M |  | 9.3.1.2 |  |
| Available BC MRB Configuration | O |  | BC MRB Setup Configuration  9.3.1.114 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMRBs | Maximum no. of MRBs for one MBS Session. Value is 32. |

#### 9.3.3.28 BC Bearer Context To Modify

This IE contains MBS session resource related information used to request BC Bearer Context Modification.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| BC Bearer Context NG-U TNL Info at 5GC To Setup or Modify | O |  | BC Bearer Context NG-U TNL Info at 5GC  9.3.1.112 |  | - |  |
| BC MRB To Setup List | O |  | BC MRB Setup Configuration  9.3.1.114 |  | - |  |
| **BC MRB To Modify List** |  | *0..<maxnoofMRBs>* |  |  | - |  |
| >MRB ID | M |  | 9.3.1.16a |  | - |  |
| >BC Bearer Context F1-U TNL Info at DU | O |  | 9.3.1.119 |  | - |  |
| >MBS PDCP Configuration | O |  | PDCP Configuration  9.3.1.38 |  | - |  |
| >MBS QoS Flows Information To Be Setup | O |  | QoS Flow QoS Parameters List  9.3.1.25 |  | - |  |
| >MRB QoS | O |  | QoS Flow Level QoS Parameters 9.3.1.26 | Indicates the MRB QoS when more than one QoS Flow is mapped to the MRB. | - |  |
| **BC MRB To Remove List** |  | *0..<maxnoofMRBs>* |  |  | - |  |
| >MRB ID | M |  | 9.3.1.16a |  | - |  |
| F1-U tunnel Not Established | O |  | ENUMERATED (true, ...) | Indicates to not establish F1-U tunnel for this MBS broadcast session. | YES | ignore |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMRBs | Maximum no. of MRBs for one MBS Session. Value is 32. |

#### 9.3.3.29 BC Bearer Context To Modify Response

This IE contains MBS session resource related information used to confirm a BC Bearer Context Modification.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| BC Bearer Context NG-U TNL Info at NG-RAN | O |  | 9.3.1.116 |  |
| **BC MRB Setup or Modify Response List** |  | *1..<maxnoofMRBs>* |  |  |
| >MRB ID | M |  | 9.3.1.16a |  |
| >MBS QoS Flow Setup List | O |  | QoS Flow List  9.3.1.12 |  |
| >MBS QoS Flow Failed List | O |  | Flow Failed List  9.3.1.45 |  |
| >BC Bearer Context F1-U TNL Info at CU | O |  | 9.3.1.118 |  |
| **BC MRB Failed List** |  | *0..<maxnoofMRBs>* |  |  |
| >MRB ID | M |  | 9.3.1.16a |  |
| >Cause | M |  | 9.3.1.2 |  |
| Available BC MRB Configuration | O |  | BC MRB Setup Configuration  9.3.1.114 | In case the shared MBS NG-U termination had a different MRB Configuration applied. |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMRBs | Maximum no. of MRBs for one MBS Session. Value is 32. |

#### 9.3.3.30 BC Bearer Context To Modify Required

This IE contains MBS session resource related information used to request BC Bearer Context Modification.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **BC MRB To Remove List Required** |  | *0..<maxnoofMRBs>* |  |  |
| >MRB ID | M |  | 9.3.1.16a |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMRBs | Maximum no. of MRBs for one MBS Session. Value is 32. |

#### 9.3.3.31 BC Bearer Context To Modify Confirm

This IE contains MBS session resource related information used to confirm a BC Bearer Context Modification.

NOTE: In the current version of this specification, this IE does not contain any information.

#### 9.3.3.32 MC Bearer Context To Setup

This IE contains MBS session resource related information used to request MC Bearer Context Context Setup.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| S-NSSAI | M |  | 9.3.1.9 |  | - | - |
| MC MRB To Setup List | O |  | MC MRB Setup Configuration  9.3.1.120 |  | - | - |
| Requested Action for Available Shared NG-U Termination | O |  | 9.3.1.115 |  | - | - |
| MBS Session Associated Information Non-Support-to-Support | O |  | 9.3.1.140 |  | YES | ignore |
| MBS Area Session ID | O |  | 9.3.1.111 |  | YES | ignore |
| MC Bearer Context Inactivity Timer | O |  | Inactivity Timer  9.3.1.54 |  | YES | ignore |
| MC Bearer Context Status Change | O |  | ENUMERATED (Suspend, Resume, …) |  | YES | ignore |

#### 9.3.3.33 MC Bearer Context To Setup Response

This IE contains MBS session resource related information used to confirm MC Bearer Context Context Setup.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| MC Bearer Context NG-U TNL Info at NG-RAN | O |  | 9.3.1.121 |  |
| **MC MRB Setup Response List** |  | *0..<maxnoofMRBs>* |  |  |
| >MRB ID | M |  | 9.3.1.16a |  |
| >MBS QoS Flow Setup List | M |  | QoS Flow List  9.3.1.12 |  |
| >MBS QoS Flow Failed List | O |  | Flow Failed List  9.3.1.45 |  |
| >MBS PDCP COUNT | O |  | 9.3.1.35a |  |
| **MC MRB Failed List** |  | *0..<maxnoofMRBs>* |  |  |
| >MRB ID | M |  | 9.3.1.16a |  |
| >Cause | M |  | 9.3.1.2 |  |
| Available MC MRB Configuration | O |  | MC MRB Setup Configuration  9.3.1.120 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMRBs | Maximum no. of MRBs for one MBS Session. Value is 32. |

#### 9.3.3.34 MC Bearer Context To Modify

This IE contains MBS session resource related information used to request a modification of a multicast MC Bearer Context.

| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| --- | --- | --- | --- | --- | --- | --- |
| MC Bearer Context NG-U TNL Info at 5GC | O |  | 9.3.1.122 |  | - |  |
| MC Bearer Context NG-U TNL Info at NG-RAN Request | O |  | 9.3.1.123 | To request NG-U TNL information from the gNB-CU-UP, if not yet available at gNB-CU-CP | - |  |
| MBS Multicast F1-U Context Descriptor | C-ifSetupOrRemove |  | 9.3.1.125 |  | - |  |
| Requested Action for Available Shared NG-U Termination | O |  | 9.3.1.115 |  | - |  |
| **MC MRB To Setup or Modify List** |  | *0..<maxnoofMRBs>* |  |  | - |  |
| >MRB ID | M |  | 9.3.1.16a |  | - |  |
| >MC Bearer Context F1-U TNL Info at DU | O |  | 9.3.1.124 |  | - |  |
| >MBS PDCP Configuration | O |  | PDCP Configuration  9.3.1.38 |  | - |  |
| >MBS QoS Flows Information To Be Setup | O |  | QoS Flow QoS Parameters List  9.3.1.25 |  | - |  |
| >MRB QoS | O |  | QoS Flow Level QoS Parameters 9.3.1.26 | Indicates the MRB QoS when more than one QoS Flow is mapped to the MRB. | - |  |
| >MBS PDCP COUNT Request | O |  | ENUMERATED (true, ...) | Indicates that the MBS PDCP COUNT is requested. | - |  |
| **MC MRB To Remove List** |  | *0..<maxnoofMRBs>* |  |  | - |  |
| >MRB ID | M |  | 9.3.1.16a |  | - |  |
| MC Forwarding Resource Request | O |  | 9.3.1.134 | Requests MC Forwarding Resource related information for the peer node | YES | ignore |
| MC Forwarding Resource Indication | O |  | 9.3.1.135 | Provides MC Forwarding Resource related information from the peer node | YES | ignore |
| MC Forwarding Resouce Release | O |  | 9.3.1.137 | Requests the release of the MC Forwarding Resource | YES | ignore |
| MBS Session Associated Information Non-Support-to-Support | O |  | 9.3.1.140 |  | YES | ignore |
| MC Bearer Context Inactivity Timer | O |  | Inactivity Timer  9.3.1.54 |  | YES | ignore |
| MC Bearer Context Status Change | O |  | ENUMERATED (Suspend, Resume, …) |  | YES | ignore |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMRBs | Maximum no. of MRBs for one MBS Session. Value is 32. |

|  |  |
| --- | --- |
| Condition | Explanation |
| ifSetupOrRemove | This IE shall be present if either the *MC MRB To Setup or Modify List* IE or the *MC MRB To Remove List* IE or both IEs are included. |

#### 9.3.3.35 MC Bearer Context To Modify Response

This IE contains MBS session resource related information used to confirm a MC Bearer Context Modification.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| MC Bearer Context NG-U TNL Info at NG-RAN Modify Response | O |  | 9.3.1.127 |  | - |  |
| MBS Multicast F1-U Context Descriptor | C-ifSetupOrFailed |  | 9.3.1.125 |  | - |  |
| **MC MRB Setup or Modify Response List** |  | *0..<maxnoofMRBs>* |  |  | - |  |
| >MRB ID | M |  | 9.3.1.16a |  | - |  |
| >MBS QoS Flow Setup List | O |  | QoS Flow List  9.3.1.12 |  | - |  |
| >MBS QoS Flow Failed List | O |  | Flow Failed List  9.3.1.45 |  | - |  |
| >MC Bearer Context F1-U TNL Info at CU | O |  | UP Transport Layer Information  9.3.2.1 |  | - |  |
| >MBS PDCP COUNT | O |  | 9.3.1.35a |  | - |  |
| **MC MRB Failed List** |  | *0..<maxnoofMRBs>* |  |  | - |  |
| >MRB ID | M |  | 9.3.1.16a |  | - |  |
| >Cause | M |  | 9.3.1.2 |  | - |  |
| Available MC MRB Configuration | O |  | MC MRB Setup Configuration  9.3.1.120 | In case the shared MBS NG-U termination had a different MRB Configuration applied. | - |  |
| MC Forwarding Resource Response | O |  | 9.3.1.136 | Provides MC Forwarding Resource related information destined to the peer node | YES | ignore |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMRBs | Maximum no. of MRBs for one MBS Session. Value is 32. |

|  |  |
| --- | --- |
| Condition | Explanation |
| ifSetupOrFailed | This IE shall be present if either the *MC MRB Setup or Modify Response List* IE or the *MC MRB Failed List*IE or both IEs are included. |

#### 9.3.3.36 MC Bearer Context To Modify Required

This IE contains MBS session resource related information used to request MC Bearer Context Modification.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| MBS Multicast F1-U Context Descriptor | C-ifRemoved |  | 9.3.1.125 |  | - |  |
| **MC MRB To Remove List Required** |  | *0..<maxnoofMRBs>* |  |  | - |  |
| >MRB ID | M |  | 9.3.1.16a |  | - |  |
| **MC MRB To Modify List Required** |  | *0..<maxnoofMRBs>* |  |  | - |  |
| >MRB ID | M |  | 9.3.1.16a |  | - |  |
| > MBS PDCP COUNT | O |  | 9.3.1.35a |  | - |  |
| MC Forwarding Resource Release Indication | O |  | 9.3.1.138 | Indicates the release of an MC Forwarding Resource | YES | ignore |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMRBs | Maximum no. of MRBs for one MBS Session. Value is 32. |

|  |  |
| --- | --- |
| Condition | Explanation |
| ifRemove | This IE shall be present if either the *MC MRB To Remove List Required* IE is included. |

#### 9.3.3.37 MC Bearer Context To Modify Confirm

This IE contains MBS session resource related information used to confirm a MC Bearer Context Modification.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| MBS Multicast F1-U Context Descriptor | O |  | 9.3.1.125 |  |
| **MC MRB Modify List Required** |  | *0..<maxnoofMRBs>* |  |  |
| >MRB ID | M |  | 9.3.1.16a |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMRBs | Maximum no. of MRBs for one MBS Session. Value is 32. |

#### 9.3.3.38 Associated Session ID

This IE is used to associate MBS Session IDs providing identical user data.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Associated Session ID | M |  | OCTET STRING | Coded as *AssociatedSessionId* defined in TS 29.571 [35]. The gNB-CU-UP does not interpret the content of the Associated Session ID IE. |

#### 9.3.3.39 MBS Service Area

This IE contains the MBS service area.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| CHOICE Session Type | M |  |  |  |
| *>location dependent* |  |  |  |  |
| **>>MBS Service Area Information Location Dependent List** |  | *1..maxnoofMBSServiceArea Information* |  |  |
| >>>MBS Area Session ID | M |  | 9.3.1.111 |  |
| >>>MBS Service Area Information | M |  | 9.3.3.40 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMBSServiceAreaInformation | Maximum no. of MBS Service Area Information elements in the MBS Service Area Information Location Dependent List IE. Value is 256 |

#### 9.3.3.40 MBS Service Area information

This IE contains MBS service area information.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| **MBS Service Area Cell List** |  | *0..<maxnoofCellsforMBS>* |  |  |
| *>*NR CGI | M |  | 9.3.1.14 |  |
| **MBS Service Area TAI List** |  | *0..<maxnoofTAIforMBS>* |  |  |
| >PLMN-Identity | M |  | 9.3.1.7 |  |
| >5GS TAC | M |  | 9.3.3.41 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofCellsforMBS | Maximum no. of cells allowed within one MBS Service Area. Value is 512. |
| maxnoofTAIforMBS | Maximum no. of TAs allowed within one MBS Service Area. Value is 512. |

#### 9.3.3.41 5GS TAC

This information element is used to identify Tracking Area Code.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| 5GS TAC | M |  | OCTET STRING (SIZE (3)) |  |

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

### 9.4.1 General

E1AP ASN.1 definition conforms to ITU-T Rec. X.691 [7], ITU-T Rec. X.680 [8] and ITU-T Rec. X.681 [9].

The ASN.1 definition specifies the structure and content of E1AP messages. E1AP messages can contain any IEs specified in the object set definitions for that message without the order or number of occurrence being restricted by ASN.1. However, for this version of the standard, a sending entity shall construct an E1AP message according to the PDU definitions module and with the following additional rules:

- IEs shall be ordered (in an IE container) in the order they appear in object set definitions.

- Object set definitions specify how many times IEs may appear. An IE shall appear exactly once if the presence field in an object has value "mandatory". An IE may appear at most once if the presence field in an object has value "optional" or "conditional". If in a tabular format there is multiplicity specified for an IE (i.e., an IE list) then in the corresponding ASN.1 definition the list definition is separated into two parts. The first part defines an IE container list where the list elements reside. The second part defines list elements. The IE container list appears as an IE of its own. For this version of the standard an IE container list may contain only one kind of list elements.

NOTE: In the above “IE” means an IE in the object set with an explicit ID. If one IE needs to appear more than once in one object set, then the different occurrences will have different IE IDs.

If an E1AP message that is not constructed as defined above is received, this shall be considered as Abstract Syntax Error, and the message shall be handled as defined for Abstract Syntax Error in clause 10.

### 9.4.2 Usage of private message mechanism for non-standard use

The private message mechanism for non-standard use may be used:

- for special operator- (and/or vendor) specific features considered not to be part of the basic functionality, i.e., the functionality required for a complete and high-quality specification in order to guarantee multivendor interoperability;

- by vendors for research purposes, e.g., to implement and evaluate new algorithms/features before such features are proposed for standardisation.

The private message mechanism shall not be used for basic functionality. Such functionality shall be standardised.

### 9.4.3 Elementary Procedure Definitions

-- ASN1START

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

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-- 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,

BCBearerContextSetupRequest,

BCBearerContextSetupResponse,

BCBearerContextSetupFailure,

BCBearerContextModificationRequest,

BCBearerContextModificationResponse,

BCBearerContextModificationFailure,

BCBearerContextModificationRequired,

BCBearerContextModificationConfirm,

BCBearerContextReleaseCommand,

BCBearerContextReleaseComplete,

BCBearerContextReleaseRequest,

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,

MCBearerContextSetupRequest,

MCBearerContextSetupResponse,

MCBearerContextSetupFailure,

MCBearerContextModificationRequest,

MCBearerContextModificationResponse,

MCBearerContextModificationFailure,

MCBearerContextModificationRequired,

MCBearerContextModificationConfirm,

MCBearerNotification,

MCBearerContextReleaseCommand,

MCBearerContextReleaseComplete,

MCBearerContextReleaseRequest,

MRDC-DataUsageReport,

DeactivateTrace,

TraceStart,

PrivateMessage,

ResourceStatusRequest,

ResourceStatusResponse,

ResourceStatusFailure,

ResourceStatusUpdate,

IAB-UPTNLAddressUpdate,

IAB-UPTNLAddressUpdateAcknowledge,

IAB-UPTNLAddressUpdateFailure,

CellTrafficTrace,

EarlyForwardingSNTransfer,

GNB-CU-CPMeasurementResultsInformation,

IABPSKNotification

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-privateMessage,

id-resourceStatusReportingInitiation,

id-resourceStatusReporting,

id-iAB-UPTNLAddressUpdate,

id-CellTrafficTrace,

id-earlyForwardingSNTransfer,

id-gNB-CU-CPMeasurementResultsInformation,

id-iABPSKNotification,

id-BCBearerContextSetup,

id-BCBearerContextModification,

id-BCBearerContextModificationRequired,

id-BCBearerContextRelease,

id-BCBearerContextReleaseRequest,

id-MCBearerContextSetup,

id-MCBearerContextModification,

id-MCBearerContextModificationRequired,

id-MCBearerNotification,

id-MCBearerContextRelease,

id-MCBearerContextReleaseRequest

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 |

resourceStatusReportingInitiation |

iAB-UPTNLAddressUpdate |

bCBearerContextSetup |

bCBearerContextModification |

bCBearerContextModificationRequired |

bCBearerContextRelease |

mCBearerContextSetup |

mCBearerContextModification |

mCBearerContextModificationRequired |

mCBearerContextRelease ,

...

}

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 |

cellTrafficTrace |

resourceStatusReporting |

earlyForwardingSNTransfer |

gNB-CU-CPMeasurementResultsInformation |

iABPSKNotification |

bCBearerContextReleaseRequest |

mCBearerContextReleaseRequest |

mCBearerNotification ,

...

}

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

--

-- 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

}

gNB-CU-CPMeasurementResultsInformation E1AP-ELEMENTARY-PROCEDURE ::= {

INITIATING MESSAGE GNB-CU-CPMeasurementResultsInformation

PROCEDURE CODE id-gNB-CU-CPMeasurementResultsInformation

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

}

resourceStatusReportingInitiation E1AP-ELEMENTARY-PROCEDURE ::= {

INITIATING MESSAGE ResourceStatusRequest

SUCCESSFUL OUTCOME ResourceStatusResponse

UNSUCCESSFUL OUTCOME ResourceStatusFailure

PROCEDURE CODE id-resourceStatusReportingInitiation

CRITICALITY reject

}

resourceStatusReporting E1AP-ELEMENTARY-PROCEDURE ::= {

INITIATING MESSAGE ResourceStatusUpdate

PROCEDURE CODE id-resourceStatusReporting

CRITICALITY ignore

}

iAB-UPTNLAddressUpdate E1AP-ELEMENTARY-PROCEDURE ::= {

INITIATING MESSAGE IAB-UPTNLAddressUpdate

SUCCESSFUL OUTCOME IAB-UPTNLAddressUpdateAcknowledge

UNSUCCESSFUL OUTCOME IAB-UPTNLAddressUpdateFailure

PROCEDURE CODE id-iAB-UPTNLAddressUpdate

CRITICALITY reject

}

cellTrafficTrace E1AP-ELEMENTARY-PROCEDURE ::={

INITIATING MESSAGE CellTrafficTrace

PROCEDURE CODE id-CellTrafficTrace

CRITICALITY ignore

}

earlyForwardingSNTransfer E1AP-ELEMENTARY-PROCEDURE ::= {

INITIATING MESSAGE EarlyForwardingSNTransfer

PROCEDURE CODE id-earlyForwardingSNTransfer

CRITICALITY ignore

}

iABPSKNotification E1AP-ELEMENTARY-PROCEDURE ::= {

INITIATING MESSAGE IABPSKNotification

PROCEDURE CODE id-iABPSKNotification

CRITICALITY reject

}

bCBearerContextSetup E1AP-ELEMENTARY-PROCEDURE ::= {

INITIATING MESSAGE BCBearerContextSetupRequest

SUCCESSFUL OUTCOME BCBearerContextSetupResponse

UNSUCCESSFUL OUTCOME BCBearerContextSetupFailure

PROCEDURE CODE id-BCBearerContextSetup

CRITICALITY reject

}

bCBearerContextModification E1AP-ELEMENTARY-PROCEDURE ::= {

INITIATING MESSAGE BCBearerContextModificationRequest

SUCCESSFUL OUTCOME BCBearerContextModificationResponse

UNSUCCESSFUL OUTCOME BCBearerContextModificationFailure

PROCEDURE CODE id-BCBearerContextModification

CRITICALITY reject

}

bCBearerContextModificationRequired E1AP-ELEMENTARY-PROCEDURE ::= {

INITIATING MESSAGE BCBearerContextModificationRequired

SUCCESSFUL OUTCOME BCBearerContextModificationConfirm

PROCEDURE CODE id-BCBearerContextModificationRequired

CRITICALITY reject

}

bCBearerContextRelease E1AP-ELEMENTARY-PROCEDURE ::= {

INITIATING MESSAGE BCBearerContextReleaseCommand

SUCCESSFUL OUTCOME BCBearerContextReleaseComplete

PROCEDURE CODE id-BCBearerContextRelease

CRITICALITY reject

}

bCBearerContextReleaseRequest E1AP-ELEMENTARY-PROCEDURE ::= {

INITIATING MESSAGE BCBearerContextReleaseRequest

PROCEDURE CODE id-BCBearerContextReleaseRequest

CRITICALITY reject

}

mCBearerContextSetup E1AP-ELEMENTARY-PROCEDURE ::= {

INITIATING MESSAGE MCBearerContextSetupRequest

SUCCESSFUL OUTCOME MCBearerContextSetupResponse

UNSUCCESSFUL OUTCOME MCBearerContextSetupFailure

PROCEDURE CODE id-MCBearerContextSetup

CRITICALITY reject

}

mCBearerContextModification E1AP-ELEMENTARY-PROCEDURE ::= {

INITIATING MESSAGE MCBearerContextModificationRequest

SUCCESSFUL OUTCOME MCBearerContextModificationResponse

UNSUCCESSFUL OUTCOME MCBearerContextModificationFailure

PROCEDURE CODE id-MCBearerContextModification

CRITICALITY reject

}

mCBearerContextModificationRequired E1AP-ELEMENTARY-PROCEDURE ::= {

INITIATING MESSAGE MCBearerContextModificationRequired

SUCCESSFUL OUTCOME MCBearerContextModificationConfirm

PROCEDURE CODE id-MCBearerContextModificationRequired

CRITICALITY reject

}

mCBearerNotification E1AP-ELEMENTARY-PROCEDURE ::= {

INITIATING MESSAGE MCBearerNotification

PROCEDURE CODE id-MCBearerNotification

CRITICALITY reject

}

mCBearerContextRelease E1AP-ELEMENTARY-PROCEDURE ::= {

INITIATING MESSAGE MCBearerContextReleaseCommand

SUCCESSFUL OUTCOME MCBearerContextReleaseComplete

PROCEDURE CODE id-MCBearerContextRelease

CRITICALITY reject

}

mCBearerContextReleaseRequest E1AP-ELEMENTARY-PROCEDURE ::= {

INITIATING MESSAGE MCBearerContextReleaseRequest

PROCEDURE CODE id-MCBearerContextReleaseRequest

CRITICALITY reject

}

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

AssociatedSessionID,

Cause,

CriticalityDiagnostics,

GNB-CU-CP-MBS-E1AP-ID,

GNB-CU-UP-MBS-E1AP-ID,

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,

IAB-Donor-CU-UPPSKInfo-Item,

ECGI-Support-List,

MDTPollutedMeasurementIndicator,

UESliceMaximumBitRateList,

SCGActivationStatus,

GlobalMBSSessionID,

BCBearerContextToSetup,

BCBearerContextToSetupResponse,

BCBearerContextToModify,

BCBearerContextToModifyResponse,

BCBearerContextToModifyRequired,

BCBearerContextToModifyConfirm,

MCBearerContextToSetup,

MCBearerContextToSetupResponse,

MCBearerContextToModify,

MCBearerContextToModifyResponse,

MCBearerContextToModifyRequired,

MCBearerContextToModifyConfirm,

MBSMulticastF1UContextDescriptor,

MBS-ServiceArea,

GNB-CU-UP-MBS-Support-Info,

SDTContinueROHC,

MDTPLMNModificationList,

InactivityInformationRequest,

UEInactivityInformation,

MBSSessionResourceNotification,

MT-SDT-Information,

MT-SDT-Information-Request,

SDT-data-size-threshold,

SDT-data-size-threshold-Crossed

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-AssociatedSessionID,

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-IAB-Donor-CU-UPPSKInfo,

id-ECGI-Support-List,

id-MDTPollutedMeasurementIndicator,

id-UESliceMaximumBitRateList,

id-SCGActivationStatus,

id-GNB-CU-CP-MBS-E1AP-ID,

id-GNB-CU-UP-MBS-E1AP-ID,

id-GlobalMBSSessionID,

id-BCBearerContextToSetup,

id-BCBearerContextToSetupResponse,

id-BCBearerContextToModify,

id-BCBearerContextToModifyResponse,

id-BCBearerContextToModifyRequired,

id-BCBearerContextToModifyConfirm,

id-MCBearerContextToSetup,

id-MCBearerContextToSetupResponse,

id-MCBearerContextToModify,

id-MCBearerContextToModifyResponse,

id-MCBearerContextToModifyRequired,

id-MCBearerContextToModifyConfirm,

id-MBSMulticastF1UContextDescriptor,

id-gNB-CU-UP-MBS-Support-Info,

id-SDTContinueROHC,

id-ManagementBasedMDTPLMNModificationList,

id-MBS-ServiceArea,

id-InactivityInformationRequest,

id-UEInactivityInformation,

id-MBSSessionResourceNotification,

id-MT-SDT-Information,

id-MT-SDT-Information-Request,

id-SDT-data-size-threshold,

id-SDT-data-size-threshold-Crossed,

maxnoofErrors,

maxnoofSPLMNs,

maxnoofDRBs,

maxnoofTNLAssociations,

maxnoofIndividualE1ConnectionsToReset,

maxnoofTNLAddresses,

maxnoofPSKs

FROM E1AP-Constants;

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

--

-- RESET

--

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

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

--

-- Reset

--

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

Reset ::= SEQUENCE {

protocolIEs ProtocolIE-Container { {ResetIEs} },

...

}

ResetIEs E1AP-PROTOCOL-IES ::= {

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

{ ID id-Cause CRITICALITY ignore TYPE Cause PRESENCE mandatory }|

{ ID id-ResetType CRITICALITY reject TYPE ResetType PRESENCE mandatory },

...

}

ResetType ::= CHOICE {

e1-Interface ResetAll,

partOfE1-Interface UE-associatedLogicalE1-ConnectionListRes,

choice-extension ProtocolIE-SingleContainer {{ResetType-ExtIEs}}

}

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

...

}

ResetAll ::= ENUMERATED {

reset-all,

...

}

UE-associatedLogicalE1-ConnectionListRes ::= SEQUENCE (SIZE(1.. maxnoofIndividualE1ConnectionsToReset)) OF ProtocolIE-SingleContainer { { UE-associatedLogicalE1-ConnectionItemRes } }

UE-associatedLogicalE1-ConnectionItemRes E1AP-PROTOCOL-IES ::= {

{ ID id-UE-associatedLogicalE1-ConnectionItem CRITICALITY reject TYPE UE-associatedLogicalE1-ConnectionItem PRESENCE mandatory},

...

}

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

--

-- Reset Acknowledge

--

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

ResetAcknowledge ::= SEQUENCE {

protocolIEs ProtocolIE-Container { {ResetAcknowledgeIEs} },

...

}

ResetAcknowledgeIEs E1AP-PROTOCOL-IES ::= {

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

{ ID id-UE-associatedLogicalE1-ConnectionListResAck CRITICALITY ignore TYPE UE-associatedLogicalE1-ConnectionListResAck PRESENCE optional }|

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

...

}

UE-associatedLogicalE1-ConnectionListResAck ::= SEQUENCE (SIZE(1.. maxnoofIndividualE1ConnectionsToReset)) OF ProtocolIE-SingleContainer { { UE-associatedLogicalE1-ConnectionItemResAck } }

UE-associatedLogicalE1-ConnectionItemResAck E1AP-PROTOCOL-IES ::= {

{ ID id-UE-associatedLogicalE1-ConnectionItem CRITICALITY ignore TYPE UE-associatedLogicalE1-ConnectionItem PRESENCE mandatory },

...

}

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

--

-- ERROR INDICATION

--

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

ErrorIndication ::= SEQUENCE {

protocolIEs ProtocolIE-Container {{ErrorIndication-IEs}},

...

}

ErrorIndication-IEs E1AP-PROTOCOL-IES ::= {

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

{ ID id-gNB-CU-CP-UE-E1AP-ID CRITICALITY ignore TYPE GNB-CU-CP-UE-E1AP-ID PRESENCE optional}|

{ ID id-gNB-CU-UP-UE-E1AP-ID CRITICALITY ignore TYPE GNB-CU-UP-UE-E1AP-ID PRESENCE optional}|

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

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

{ ID id-GNB-CU-CP-MBS-E1AP-ID CRITICALITY ignore TYPE GNB-CU-CP-MBS-E1AP-ID PRESENCE optional}|

{ ID id-GNB-CU-UP-MBS-E1AP-ID CRITICALITY ignore TYPE GNB-CU-UP-MBS-E1AP-ID PRESENCE optional},

...

}

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

--

-- GNB-CU-UP E1 SETUP

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

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

--

-- GNB-CU-UP E1 Setup Request

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

GNB-CU-UP-E1SetupRequest ::= SEQUENCE {

protocolIEs ProtocolIE-Container { {GNB-CU-UP-E1SetupRequestIEs} },

...

}

GNB-CU-UP-E1SetupRequestIEs E1AP-PROTOCOL-IES ::= {

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

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

{ ID id-gNB-CU-UP-Name CRITICALITY ignore TYPE GNB-CU-UP-Name PRESENCE optional }|

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

{ ID id-SupportedPLMNs CRITICALITY reject TYPE SupportedPLMNs-List PRESENCE mandatory }|

{ ID id-gNB-CU-UP-Capacity CRITICALITY ignore TYPE GNB-CU-UP-Capacity PRESENCE optional }|

{ ID id-Transport-Layer-Address-Info CRITICALITY ignore TYPE Transport-Layer-Address-Info PRESENCE optional }|

{ ID id-Extended-GNB-CU-UP-Name CRITICALITY ignore TYPE Extended-GNB-CU-UP-Name PRESENCE optional }|

{ ID id-gNB-CU-UP-MBS-Support-Info CRITICALITY reject TYPE GNB-CU-UP-MBS-Support-Info PRESENCE optional },

...

}

SupportedPLMNs-List ::= SEQUENCE (SIZE (1..maxnoofSPLMNs)) OF SupportedPLMNs-Item

SupportedPLMNs-Item ::= SEQUENCE {

pLMN-Identity PLMN-Identity,

slice-Support-List Slice-Support-List OPTIONAL,

nR-CGI-Support-List NR-CGI-Support-List OPTIONAL,

qoS-Parameters-Support-List QoS-Parameters-Support-List OPTIONAL,

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

...

}

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

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

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

{ ID id-Extended-NR-CGI-Support-List CRITICALITY ignore EXTENSION Extended-NR-CGI-Support-List PRESENCE optional}|

{ ID id-ECGI-Support-List CRITICALITY ignore EXTENSION ECGI-Support-List PRESENCE optional},

...

}

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

--

-- GNB-CU-UP E1 Setup Response

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

GNB-CU-UP-E1SetupResponse ::= SEQUENCE {

protocolIEs ProtocolIE-Container { {GNB-CU-UP-E1SetupResponseIEs} },

...

}

GNB-CU-UP-E1SetupResponseIEs E1AP-PROTOCOL-IES ::= {

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

{ ID id-gNB-CU-CP-Name CRITICALITY ignore TYPE GNB-CU-CP-Name PRESENCE optional }|

{ ID id-Transport-Layer-Address-Info CRITICALITY ignore TYPE Transport-Layer-Address-Info PRESENCE optional }|

{ ID id-Extended-GNB-CU-CP-Name CRITICALITY ignore TYPE Extended-GNB-CU-CP-Name PRESENCE optional }|

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

...

}

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

--

-- GNB-CU-UP E1 Setup Failure

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

GNB-CU-UP-E1SetupFailure ::= SEQUENCE {

protocolIEs ProtocolIE-Container { {GNB-CU-UP-E1SetupFailureIEs} },

...

}

GNB-CU-UP-E1SetupFailureIEs E1AP-PROTOCOL-IES ::= {

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

{ ID id-Cause CRITICALITY ignore TYPE Cause PRESENCE mandatory }|

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

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

...

}

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

--

-- GNB-CU-CP E1 SETUP

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

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

--

-- GNB-CU-CP E1 Setup Request

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

GNB-CU-CP-E1SetupRequest ::= SEQUENCE {

protocolIEs ProtocolIE-Container { {GNB-CU-CP-E1SetupRequestIEs} },

...

}

GNB-CU-CP-E1SetupRequestIEs E1AP-PROTOCOL-IES ::= {

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

{ ID id-gNB-CU-CP-Name CRITICALITY ignore TYPE GNB-CU-CP-Name PRESENCE optional }|

{ ID id-Transport-Layer-Address-Info CRITICALITY ignore TYPE Transport-Layer-Address-Info PRESENCE optional }|

{ ID id-Extended-GNB-CU-CP-Name CRITICALITY ignore TYPE Extended-GNB-CU-CP-Name PRESENCE optional },

...

}

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

--

-- GNB-CU-CP E1 Setup Response

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

GNB-CU-CP-E1SetupResponse ::= SEQUENCE {

protocolIEs ProtocolIE-Container { {GNB-CU-CP-E1SetupResponseIEs} },

...

}

GNB-CU-CP-E1SetupResponseIEs E1AP-PROTOCOL-IES ::= {

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

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

{ ID id-gNB-CU-UP-Name CRITICALITY ignore TYPE GNB-CU-UP-Name PRESENCE optional }|

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

{ ID id-SupportedPLMNs CRITICALITY reject TYPE SupportedPLMNs-List PRESENCE mandatory }|

{ ID id-gNB-CU-UP-Capacity CRITICALITY ignore TYPE GNB-CU-UP-Capacity PRESENCE optional }|

{ ID id-Transport-Layer-Address-Info CRITICALITY ignore TYPE Transport-Layer-Address-Info PRESENCE optional }|

{ ID id-Extended-GNB-CU-UP-Name CRITICALITY ignore TYPE Extended-GNB-CU-UP-Name PRESENCE optional }|

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

...

}

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

--

-- GNB-CU-CP E1 Setup Failure

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

GNB-CU-CP-E1SetupFailure ::= SEQUENCE {

protocolIEs ProtocolIE-Container { {GNB-CU-CP-E1SetupFailureIEs} },

...

}

GNB-CU-CP-E1SetupFailureIEs E1AP-PROTOCOL-IES ::= {

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

{ ID id-Cause CRITICALITY ignore TYPE Cause PRESENCE mandatory }|

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

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

...

}

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

--

-- GNB-CU-UP CONFIGURATION UPDATE

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

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

--

-- GNB-CU-UP Configuration Update

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

GNB-CU-UP-ConfigurationUpdate ::= SEQUENCE {

protocolIEs ProtocolIE-Container { {GNB-CU-UP-ConfigurationUpdateIEs} },

...

}

GNB-CU-UP-ConfigurationUpdateIEs E1AP-PROTOCOL-IES ::= {

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

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

{ ID id-gNB-CU-UP-Name CRITICALITY ignore TYPE GNB-CU-UP-Name PRESENCE optional }|

{ ID id-SupportedPLMNs CRITICALITY reject TYPE SupportedPLMNs-List PRESENCE optional }|

{ ID id-gNB-CU-UP-Capacity CRITICALITY ignore TYPE GNB-CU-UP-Capacity PRESENCE optional }|

{ ID id-GNB-CU-UP-TNLA-To-Remove-List CRITICALITY reject TYPE GNB-CU-UP-TNLA-To-Remove-List PRESENCE optional }|

{ ID id-Transport-Layer-Address-Info CRITICALITY ignore TYPE Transport-Layer-Address-Info PRESENCE optional }|

{ ID id-Extended-GNB-CU-UP-Name CRITICALITY ignore TYPE Extended-GNB-CU-UP-Name PRESENCE optional }|

{ ID id-gNB-CU-UP-MBS-Support-Info CRITICALITY reject TYPE GNB-CU-UP-MBS-Support-Info PRESENCE optional },

...

}

GNB-CU-UP-TNLA-To-Remove-List ::= SEQUENCE (SIZE(1.. maxnoofTNLAssociations)) OF GNB-CU-UP-TNLA-To-Remove-Item

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

--

-- GNB-CU-UP Configuration Update Acknowledge

--

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

GNB-CU-UP-ConfigurationUpdateAcknowledge ::= SEQUENCE {

protocolIEs ProtocolIE-Container { {GNB-CU-UP-ConfigurationUpdateAcknowledgeIEs} },

...

}

GNB-CU-UP-ConfigurationUpdateAcknowledgeIEs E1AP-PROTOCOL-IES ::= {

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

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

{ ID id-Transport-Layer-Address-Info CRITICALITY ignore TYPE Transport-Layer-Address-Info PRESENCE optional },

...

}

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

--

-- GNB-CU-UP Configuration Update Failure

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

GNB-CU-UP-ConfigurationUpdateFailure ::= SEQUENCE {

protocolIEs ProtocolIE-Container { {GNB-CU-UP-ConfigurationUpdateFailureIEs} },

...

}

GNB-CU-UP-ConfigurationUpdateFailureIEs E1AP-PROTOCOL-IES ::= {

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

{ ID id-Cause CRITICALITY ignore TYPE Cause PRESENCE mandatory }|

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

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

...

}

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

--

-- GNB-CU-CP CONFIGURATION UPDATE

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

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

--

-- GNB-CU-CP Configuration Update

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

GNB-CU-CP-ConfigurationUpdate ::= SEQUENCE {

protocolIEs ProtocolIE-Container { {GNB-CU-CP-ConfigurationUpdateIEs} },

...

}

GNB-CU-CP-ConfigurationUpdateIEs E1AP-PROTOCOL-IES ::= {

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

{ ID id-gNB-CU-CP-Name CRITICALITY ignore TYPE GNB-CU-CP-Name PRESENCE optional }|

{ ID id-GNB-CU-CP-TNLA-To-Add-List CRITICALITY ignore TYPE GNB-CU-CP-TNLA-To-Add-List PRESENCE optional }|

{ ID id-GNB-CU-CP-TNLA-To-Remove-List CRITICALITY ignore TYPE GNB-CU-CP-TNLA-To-Remove-List PRESENCE optional }|

{ ID id-GNB-CU-CP-TNLA-To-Update-List CRITICALITY ignore TYPE GNB-CU-CP-TNLA-To-Update-List PRESENCE optional }|

{ ID id-Transport-Layer-Address-Info CRITICALITY ignore TYPE Transport-Layer-Address-Info PRESENCE optional }|

{ ID id-Extended-GNB-CU-CP-Name CRITICALITY ignore TYPE Extended-GNB-CU-CP-Name PRESENCE optional },

...

}

GNB-CU-CP-TNLA-To-Add-List ::= SEQUENCE (SIZE(1.. maxnoofTNLAssociations)) OF GNB-CU-CP-TNLA-To-Add-Item

GNB-CU-CP-TNLA-To-Remove-List ::= SEQUENCE (SIZE(1.. maxnoofTNLAssociations)) OF GNB-CU-CP-TNLA-To-Remove-Item

GNB-CU-CP-TNLA-To-Update-List ::= SEQUENCE (SIZE(1.. maxnoofTNLAssociations)) OF GNB-CU-CP-TNLA-To-Update-Item

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

--

-- GNB-CU-CP Configuration Update Acknowledge

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

GNB-CU-CP-ConfigurationUpdateAcknowledge ::= SEQUENCE {

protocolIEs ProtocolIE-Container { {GNB-CU-CP-ConfigurationUpdateAcknowledgeIEs} },

...

}

GNB-CU-CP-ConfigurationUpdateAcknowledgeIEs E1AP-PROTOCOL-IES ::= {

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

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

{ ID id-GNB-CU-CP-TNLA-Setup-List CRITICALITY ignore TYPE GNB-CU-CP-TNLA-Setup-List PRESENCE optional }|

{ ID id-GNB-CU-CP-TNLA-Failed-To-Setup-List CRITICALITY ignore TYPE GNB-CU-CP-TNLA-Failed-To-Setup-List PRESENCE optional }|

{ ID id-Transport-Layer-Address-Info CRITICALITY ignore TYPE Transport-Layer-Address-Info PRESENCE optional },

...

}

GNB-CU-CP-TNLA-Setup-List ::= SEQUENCE (SIZE(1.. maxnoofTNLAssociations)) OF GNB-CU-CP-TNLA-Setup-Item

GNB-CU-CP-TNLA-Failed-To-Setup-List ::= SEQUENCE (SIZE(1.. maxnoofTNLAssociations)) OF GNB-CU-CP-TNLA-Failed-To-Setup-Item

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

--

-- GNB-CU-CP Configuration Update Failure

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

GNB-CU-CP-ConfigurationUpdateFailure ::= SEQUENCE {

protocolIEs ProtocolIE-Container { {GNB-CU-CP-ConfigurationUpdateFailureIEs} },

...

}

GNB-CU-CP-ConfigurationUpdateFailureIEs E1AP-PROTOCOL-IES ::= {

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

{ ID id-Cause CRITICALITY ignore TYPE Cause PRESENCE mandatory }|

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

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

...

}

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

--

-- E1 RELEASE

--

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

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

--

-- E1 Release Request

--

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

E1ReleaseRequest ::= SEQUENCE {

protocolIEs ProtocolIE-Container { {E1ReleaseRequestIEs} },

...

}

E1ReleaseRequestIEs E1AP-PROTOCOL-IES ::= {

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

{ ID id-Cause CRITICALITY ignore TYPE Cause PRESENCE mandatory },

...

}

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

--

-- E1 Release Response

--

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

E1ReleaseResponse ::= SEQUENCE {

protocolIEs ProtocolIE-Container { {E1ReleaseResponseIEs} },

...

}

E1ReleaseResponseIEs E1AP-PROTOCOL-IES ::= {

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

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

...

}

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

--

-- BEARER CONTEXT SETUP

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

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

--

-- 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-NPNContextInfo CRITICALITY reject TYPE NPNContextInfo PRESENCE optional}|

{ ID id-ManagementBasedMDTPLMNList CRITICALITY ignore TYPE MDTPLMNList PRESENCE optional}|

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

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

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

{ ID id-gNB-CU-UP-UE-E1AP-ID CRITICALITY ignore TYPE GNB-CU-UP-UE-E1AP-ID PRESENCE optional }|

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

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

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

{ ID id-MT-SDT-Information-Request CRITICALITY ignore TYPE MT-SDT-Information-Request PRESENCE optional }|

{ ID id-SDT-data-size-threshold CRITICALITY ignore TYPE SDT-data-size-threshold 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 },

...

}

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

--

-- Bearer Context Setup Response

--

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

BearerContextSetupResponse ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { BearerContextSetupResponseIEs} },

...

}

BearerContextSetupResponseIEs 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-System-BearerContextSetupResponse CRITICALITY ignore TYPE System-BearerContextSetupResponse PRESENCE mandatory }|

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

...

}

System-BearerContextSetupResponse::= CHOICE {

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

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

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

}

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

...

}

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

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

{ ID id-DRB-Failed-List-EUTRAN CRITICALITY ignore TYPE DRB-Failed-List-EUTRAN PRESENCE optional },

...

}

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

{ ID id-PDU-Session-Resource-Setup-List CRITICALITY ignore TYPE PDU-Session-Resource-Setup-List PRESENCE mandatory }|

{ ID id-PDU-Session-Resource-Failed-List CRITICALITY ignore TYPE PDU-Session-Resource-Failed-List PRESENCE optional },

...

}

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

--

-- Bearer Context Setup Failure

--

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

BearerContextSetupFailure ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { BearerContextSetupFailureIEs} },

...

}

BearerContextSetupFailureIEs 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 ignore TYPE GNB-CU-UP-UE-E1AP-ID PRESENCE optional }|

{ ID id-Cause CRITICALITY ignore TYPE Cause PRESENCE mandatory }|

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

...

}

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

--

-- BEARER CONTEXT MODIFICATION

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

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

--

-- Bearer Context Modification Request

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

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-MDTPollutedMeasurementIndicator CRITICALITY ignore TYPE MDTPollutedMeasurementIndicator PRESENCE optional }|

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

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

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

{ ID id-ManagementBasedMDTPLMNModificationList CRITICALITY ignore TYPE MDTPLMNModificationList PRESENCE optional}|

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

{ ID id-MT-SDT-Information-Request CRITICALITY ignore TYPE MT-SDT-Information-Request PRESENCE optional }|

{ ID id-SDT-data-size-threshold CRITICALITY ignore TYPE SDT-data-size-threshold PRESENCE optional },

...

}

System-BearerContextModificationRequest ::= CHOICE {

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

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

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

}

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

...

}

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

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

{ ID id-DRB-To-Modify-List-EUTRAN CRITICALITY reject TYPE DRB-To-Modify-List-EUTRAN PRESENCE optional }|

{ ID id-DRB-To-Remove-List-EUTRAN CRITICALITY reject TYPE DRB-To-Remove-List-EUTRAN PRESENCE optional }|

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

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

...

}

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

{ ID id-PDU-Session-Resource-To-Setup-Mod-List CRITICALITY reject TYPE PDU-Session-Resource-To-Setup-Mod-List PRESENCE optional }|

{ ID id-PDU-Session-Resource-To-Modify-List CRITICALITY reject TYPE PDU-Session-Resource-To-Modify-List PRESENCE optional }|

{ ID id-PDU-Session-Resource-To-Remove-List CRITICALITY reject TYPE PDU-Session-Resource-To-Remove-List PRESENCE optional },

...

}

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

--

-- Bearer Context Modification Response

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

BearerContextModificationResponse ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { BearerContextModificationResponseIEs} },

...

}

BearerContextModificationResponseIEs 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-System-BearerContextModificationResponse CRITICALITY ignore TYPE System-BearerContextModificationResponse PRESENCE optional }|

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

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

...

}

System-BearerContextModificationResponse ::= CHOICE {

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

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

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

}

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

...

}

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

{ ID id-DRB-Setup-Mod-List-EUTRAN CRITICALITY ignore TYPE DRB-Setup-Mod-List-EUTRAN PRESENCE optional }|

{ ID id-DRB-Failed-Mod-List-EUTRAN CRITICALITY ignore TYPE DRB-Failed-Mod-List-EUTRAN PRESENCE optional }|

{ ID id-DRB-Modified-List-EUTRAN CRITICALITY ignore TYPE DRB-Modified-List-EUTRAN PRESENCE optional }|

{ ID id-DRB-Failed-To-Modify-List-EUTRAN CRITICALITY ignore TYPE DRB-Failed-To-Modify-List-EUTRAN PRESENCE optional }|

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

...

}

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

{ ID id-PDU-Session-Resource-Setup-Mod-List CRITICALITY reject TYPE PDU-Session-Resource-Setup-Mod-List PRESENCE optional }|

{ ID id-PDU-Session-Resource-Failed-Mod-List CRITICALITY reject TYPE PDU-Session-Resource-Failed-Mod-List PRESENCE optional }|

{ ID id-PDU-Session-Resource-Modified-List CRITICALITY reject TYPE PDU-Session-Resource-Modified-List PRESENCE optional }|

{ ID id-PDU-Session-Resource-Failed-To-Modify-List CRITICALITY reject TYPE PDU-Session-Resource-Failed-To-Modify-List PRESENCE optional }|

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

...

}

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

--

-- Bearer Context Modification Failure

--

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

BearerContextModificationFailure ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { BearerContextModificationFailureIEs} },

...

}

BearerContextModificationFailureIEs 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-Cause CRITICALITY ignore TYPE Cause PRESENCE mandatory }|

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

...

}

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

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-- BEARER CONTEXT MODIFICATION REQUIRED

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

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

--

-- Bearer Context Modification Required

--

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

BearerContextModificationRequired ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { BearerContextModificationRequiredIEs} },

...

}

BearerContextModificationRequiredIEs 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-System-BearerContextModificationRequired CRITICALITY reject TYPE System-BearerContextModificationRequired PRESENCE mandatory },

...

}

System-BearerContextModificationRequired ::= CHOICE {

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

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

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

}

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

...

}

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

{ ID id-DRB-Required-To-Modify-List-EUTRAN CRITICALITY reject TYPE DRB-Required-To-Modify-List-EUTRAN PRESENCE optional }|

{ ID id-DRB-Required-To-Remove-List-EUTRAN CRITICALITY reject TYPE DRB-Required-To-Remove-List-EUTRAN PRESENCE optional },

...

}

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

{ ID id-PDU-Session-Resource-Required-To-Modify-List CRITICALITY reject TYPE PDU-Session-Resource-Required-To-Modify-List PRESENCE optional }|

{ ID id-PDU-Session-Resource-To-Remove-List CRITICALITY reject TYPE PDU-Session-Resource-To-Remove-List PRESENCE optional },

...

}

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

--

-- Bearer Context Modification Confirm

--

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

BearerContextModificationConfirm ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { BearerContextModificationConfirmIEs} },

...

}

BearerContextModificationConfirmIEs 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-System-BearerContextModificationConfirm CRITICALITY ignore TYPE System-BearerContextModificationConfirm PRESENCE optional }|

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

...

}

System-BearerContextModificationConfirm ::= CHOICE {

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

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

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

}

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

...

}

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

{ ID id-DRB-Confirm-Modified-List-EUTRAN CRITICALITY ignore TYPE DRB-Confirm-Modified-List-EUTRAN PRESENCE optional },

...

}

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

{ ID id-PDU-Session-Resource-Confirm-Modified-List CRITICALITY ignore TYPE PDU-Session-Resource-Confirm-Modified-List PRESENCE optional },

...

}

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

--

-- BEARER CONTEXT RELEASE

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

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

--

-- Bearer Context Release Command

--

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

BearerContextReleaseCommand ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { BearerContextReleaseCommandIEs} },

...

}

BearerContextReleaseCommandIEs 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-Cause CRITICALITY ignore TYPE Cause PRESENCE mandatory },

...

}

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

--

-- Bearer Context Release Complete

--

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

BearerContextReleaseComplete ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { BearerContextReleaseCompleteIEs} },

...

}

BearerContextReleaseCompleteIEs 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-CriticalityDiagnostics CRITICALITY ignore TYPE CriticalityDiagnostics PRESENCE optional }|

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

...

}

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

--

-- BEARER CONTEXT RELEASE REQUEST

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

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--

-- Bearer Context Release Request

--

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

BearerContextReleaseRequest ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { BearerContextReleaseRequestIEs} },

...

}

BearerContextReleaseRequestIEs 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-DRB-Status-List CRITICALITY ignore TYPE DRB-Status-List PRESENCE optional }|

{ ID id-Cause CRITICALITY ignore TYPE Cause PRESENCE mandatory },

...

}

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

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

--

-- BEARER CONTEXT INACTIVITY NOTIFICATION

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

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

--

-- Bearer Context Inactivity Notification

--

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

BearerContextInactivityNotification ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { BearerContextInactivityNotificationIEs } },

...

}

BearerContextInactivityNotificationIEs 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-ActivityInformation CRITICALITY reject TYPE ActivityInformation PRESENCE mandatory },

...

}

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

--

-- DL DATA NOTIFICATION

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

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

--

-- DL Data Notification

--

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

DLDataNotification ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { DLDataNotificationIEs } },

...

}

DLDataNotificationIEs 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-PPI CRITICALITY ignore TYPE PPI PRESENCE optional }|

{ ID id-PDU-Session-To-Notify-List CRITICALITY ignore TYPE PDU-Session-To-Notify-List PRESENCE optional }|

{ ID id-MT-SDT-Information CRITICALITY ignore TYPE MT-SDT-Information PRESENCE optional }|

{ ID id-SDT-data-size-threshold-Crossed CRITICALITY ignore TYPE SDT-data-size-threshold-Crossed PRESENCE optional },

...

}

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

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

--

-- UL Data Notification

--

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

ULDataNotification ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { ULDataNotificationIEs } },

...

}

ULDataNotificationIEs 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-PDU-Session-To-Notify-List CRITICALITY reject TYPE PDU-Session-To-Notify-List PRESENCE mandatory },

...

}

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

--

-- DATA USAGE REPORT

--

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

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

--

-- Data Usage Report

--

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

DataUsageReport ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { DataUsageReportIEs } },

...

}

DataUsageReportIEs 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-Data-Usage-Report-List CRITICALITY ignore TYPE Data-Usage-Report-List PRESENCE mandatory },

...

}

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

--

-- GNB-CU-UP COUNTER CHECK

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

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

--

-- gNB-CU-UP Counter Check Request

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

GNB-CU-UP-CounterCheckRequest ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { GNB-CU-UP-CounterCheckRequestIEs } },

...

}

GNB-CU-UP-CounterCheckRequestIEs 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-System-GNB-CU-UP-CounterCheckRequest CRITICALITY reject TYPE System-GNB-CU-UP-CounterCheckRequest PRESENCE mandatory },

...

}

System-GNB-CU-UP-CounterCheckRequest ::= CHOICE {

e-UTRAN-GNB-CU-UP-CounterCheckRequest ProtocolIE-Container {{EUTRAN-GNB-CU-UP-CounterCheckRequest}},

nG-RAN-GNB-CU-UP-CounterCheckRequest ProtocolIE-Container {{NG-RAN-GNB-CU-UP-CounterCheckRequest}},

choice-extension ProtocolIE-SingleContainer {{System-GNB-CU-UP-CounterCheckRequest-ExtIEs}}

}

System-GNB-CU-UP-CounterCheckRequest-ExtIEs E1AP-PROTOCOL-IES::= {

...

}

EUTRAN-GNB-CU-UP-CounterCheckRequest E1AP-PROTOCOL-IES ::= {

{ ID id-DRBs-Subject-To-Counter-Check-List-EUTRAN CRITICALITY ignore TYPE DRBs-Subject-To-Counter-Check-List-EUTRAN PRESENCE mandatory },

...

}

NG-RAN-GNB-CU-UP-CounterCheckRequest E1AP-PROTOCOL-IES ::= {

{ ID id-DRBs-Subject-To-Counter-Check-List-NG-RAN CRITICALITY ignore TYPE DRBs-Subject-To-Counter-Check-List-NG-RAN PRESENCE mandatory },

...

}

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

--

-- gNB-CU-UP STATUS INDICATION ELEMENTARY PROCEDURE

--

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

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

--

-- gNB-CU-UP Status Indication

--

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

GNB-CU-UP-StatusIndication ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { GNB-CU-UP-StatusIndicationIEs} },

...

}

GNB-CU-UP-StatusIndicationIEs E1AP-PROTOCOL-IES ::= {

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

{ ID id-GNB-CU-UP-OverloadInformation CRITICALITY reject TYPE GNB-CU-UP-OverloadInformation PRESENCE mandatory },

...

}

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

--

-- gNB-CU-CP MEASUREMENT RESULTS INFORMATION

--

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

GNB-CU-CPMeasurementResultsInformation ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { GNB-CU-CPMeasurementResultsInformationIEs } },

...

}

GNB-CU-CPMeasurementResultsInformationIEs 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-DRB-Measurement-Results-Information-List CRITICALITY ignore TYPE DRB-Measurement-Results-Information-List PRESENCE mandatory},

...

}

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

--

-- MR-DC DATA USAGE REPORT

--

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

MRDC-DataUsageReport ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { MRDC-DataUsageReportIEs } },

...

}

MRDC-DataUsageReportIEs 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-PDU-Session-Resource-Data-Usage-List CRITICALITY ignore TYPE PDU-Session-Resource-Data-Usage-List PRESENCE mandatory},

...

}

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

--

-- TRACE ELEMENTARY PROCEDURES

--

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

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

--

-- TRACE START

--

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

TraceStart ::= SEQUENCE {

protocolIEs ProtocolIE-Container { {TraceStartIEs} },

...

}

TraceStartIEs 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-TraceActivation CRITICALITY ignore TYPE TraceActivation PRESENCE mandatory },

...

}

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

--

-- DEACTIVATE TRACE

--

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

DeactivateTrace ::= SEQUENCE {

protocolIEs ProtocolIE-Container { {DeactivateTraceIEs} },

...

}

DeactivateTraceIEs 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-TraceID CRITICALITY ignore TYPE TraceID PRESENCE mandatory },

...

}

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

--

-- CELL TRAFFIC TRACE

--

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

CellTrafficTrace ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { CellTrafficTraceIEs } },

...

}

CellTrafficTraceIEs 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-TraceID CRITICALITY ignore TYPE TraceID PRESENCE mandatory}|

{ID id-TraceCollectionEntityIPAddress CRITICALITY ignore TYPE TransportLayerAddress PRESENCE mandatory }|

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

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

...

}

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

--

-- PRIVATE MESSAGE

--

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

PrivateMessage ::= SEQUENCE {

privateIEs PrivateIE-Container {{PrivateMessage-IEs}},

...

}

PrivateMessage-IEs E1AP-PRIVATE-IES ::= {

...

}

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

--

-- RESOURCE STATUS REQUEST

--

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

ResourceStatusRequest ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { ResourceStatusRequestIEs } },

...

}

ResourceStatusRequestIEs E1AP-PROTOCOL-IES ::= {

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

{ ID id-gNB-CU-CP-Measurement-ID CRITICALITY reject TYPE INTEGER (1..4095, ...) PRESENCE mandatory}|

{ ID id-gNB-CU-UP-Measurement-ID CRITICALITY ignore TYPE INTEGER (1..4095, ...) PRESENCE optional}|

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

{ ID id-ReportCharacteristics CRITICALITY reject TYPE ReportCharacteristics PRESENCE conditional}|

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

...

}

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

--

-- RESOURCE STATUS RESPONSE

--

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

ResourceStatusResponse ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { ResourceStatusResponseIEs } },

...

}

ResourceStatusResponseIEs E1AP-PROTOCOL-IES ::= {

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

{ ID id-gNB-CU-CP-Measurement-ID CRITICALITY reject TYPE INTEGER (1..4095, ...) PRESENCE mandatory}|

{ ID id-gNB-CU-UP-Measurement-ID CRITICALITY ignore TYPE INTEGER (1..4095, ...) PRESENCE mandatory}|

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

...

}

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

--

-- RESOURCE STATUS FAILURE

--

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

ResourceStatusFailure ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { ResourceStatusFailureIEs } },

...

}

ResourceStatusFailureIEs E1AP-PROTOCOL-IES ::= {

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

{ ID id-gNB-CU-CP-Measurement-ID CRITICALITY reject TYPE INTEGER (1..4095, ...) PRESENCE mandatory}|

{ ID id-gNB-CU-UP-Measurement-ID CRITICALITY ignore TYPE INTEGER (1..4095, ...) PRESENCE optional}|

{ ID id-Cause CRITICALITY ignore TYPE Cause PRESENCE mandatory}|

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

...

}

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

--

-- RESOURCE STATUS UPDATE

--

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

ResourceStatusUpdate ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { ResourceStatusUpdateIEs } },

...

}

ResourceStatusUpdateIEs E1AP-PROTOCOL-IES ::= {

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

{ ID id-gNB-CU-CP-Measurement-ID CRITICALITY reject TYPE INTEGER (1..4095, ...) PRESENCE mandatory}|

{ ID id-gNB-CU-UP-Measurement-ID CRITICALITY ignore TYPE INTEGER (1..4095, ...) PRESENCE mandatory}|

{ ID id-TNL-AvailableCapacityIndicator CRITICALITY ignore TYPE TNL-AvailableCapacityIndicator PRESENCE optional}|

{ ID id-HW-CapacityIndicator CRITICALITY ignore TYPE HW-CapacityIndicator PRESENCE optional},

...

}

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

--

-- IAB UP TNL ADDRESS UPDATE

--

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

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

--

-- IAB UP TNL Address Update

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

IAB-UPTNLAddressUpdate ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { IAB-UPTNLAddressUpdateIEs} },

...

}

IAB-UPTNLAddressUpdateIEs E1AP-PROTOCOL-IES ::= {

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

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

...

}

DLUPTNLAddressToUpdateList ::= SEQUENCE (SIZE(1.. maxnoofTNLAddresses)) OF DLUPTNLAddressToUpdateItem

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

--

-- IAB UP TNL Address Update Acknowledge

--

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

IAB-UPTNLAddressUpdateAcknowledge ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { IAB-UPTNLAddressUpdateAcknowledgeIEs} },

...

}

IAB-UPTNLAddressUpdateAcknowledgeIEs E1AP-PROTOCOL-IES ::= {

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

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

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

...

}

ULUPTNLAddressToUpdateList ::= SEQUENCE (SIZE(1.. maxnoofTNLAddresses)) OF ULUPTNLAddressToUpdateItem

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

--

-- IAB UP TNL Address Update Failure

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

IAB-UPTNLAddressUpdateFailure ::= SEQUENCE {

protocolIEs ProtocolIE-Container { {IAB-UPTNLAddressUpdateFailureIEs} },

...

}

IAB-UPTNLAddressUpdateFailureIEs E1AP-PROTOCOL-IES ::= {

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

{ ID id-Cause CRITICALITY ignore TYPE Cause PRESENCE mandatory }|

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

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

...

}

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

--

-- EARLY FORWARDING SN TRANSFER

--

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

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

--

-- Early Forwarding SN Transfer

--

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

EarlyForwardingSNTransfer ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { EarlyForwardingSNTransferIEs } },

...

}

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 },

...

}

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

--

-- IAB PSK NOTIFICATION

--

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

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

--

-- IAB PSK Notification

--

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

IABPSKNotification ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { IABPSKNotificationIEs } },

...

}

IABPSKNotificationIEs E1AP-PROTOCOL-IES ::= {

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

{ ID id-IAB-Donor-CU-UPPSKInfo CRITICALITY reject TYPE IAB-Donor-CU-UPPSKInfo PRESENCE mandatory },

...

}

IAB-Donor-CU-UPPSKInfo ::= SEQUENCE (SIZE(1.. maxnoofPSKs)) OF IAB-Donor-CU-UPPSKInfo-Item

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

--

-- BC BEARER CONTEXT SETUP

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

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

--

-- BC BEARER CONTEXT SETUP REQUEST

--

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

BCBearerContextSetupRequest ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { BCBearerContextSetupRequestIEs } },

...

}

BCBearerContextSetupRequestIEs E1AP-PROTOCOL-IES ::= {

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

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

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

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

{ ID id-MBS-ServiceArea CRITICALITY ignore TYPE MBS-ServiceArea PRESENCE optional },

...

}

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

--

-- BC BEARER CONTEXT SETUP RESPONSE

--

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

BCBearerContextSetupResponse ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { BCBearerContextSetupResponseIEs } },

...

}

BCBearerContextSetupResponseIEs E1AP-PROTOCOL-IES ::= {

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

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

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

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

...

}

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

--

-- BC BEARER CONTEXT SETUP FAILURE

--

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

BCBearerContextSetupFailure ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { BCBearerContextSetupFailureIEs } },

...

}

BCBearerContextSetupFailureIEs E1AP-PROTOCOL-IES ::= {

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

{ ID id-GNB-CU-UP-MBS-E1AP-ID CRITICALITY ignore TYPE GNB-CU-UP-MBS-E1AP-ID PRESENCE optional }|

{ ID id-Cause CRITICALITY ignore TYPE Cause PRESENCE mandatory }|

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

...

}

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

--

-- BC BEARER CONTEXT MODIFICATION

--

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

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

--

-- BC BEARER CONTEXT MODIFICATION REQUEST

--

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

BCBearerContextModificationRequest ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { BCBearerContextModificationRequestIEs } },

...

}

BCBearerContextModificationRequestIEs E1AP-PROTOCOL-IES ::= {

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

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

{ ID id-BCBearerContextToModify CRITICALITY reject TYPE BCBearerContextToModify PRESENCE mandatory },

...

}

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

--

-- BC BEARER CONTEXT MODIFICATION RESPONSE

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

BCBearerContextModificationResponse ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { BCBearerContextModificationResponseIEs } },

...

}

BCBearerContextModificationResponseIEs E1AP-PROTOCOL-IES ::= {

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

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

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

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

...

}

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

--

-- BC BEARER CONTEXT MODIFICATION FAILURE

--

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

BCBearerContextModificationFailure ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { BCBearerContextModificationFailureIEs } },

...

}

BCBearerContextModificationFailureIEs E1AP-PROTOCOL-IES ::= {

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

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

{ ID id-Cause CRITICALITY ignore TYPE Cause PRESENCE mandatory }|

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

...

}

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

--

-- BC BEARER CONTEXT MODIFICATION REQUIRED

--

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

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

--

-- BC BEARER CONTEXT MODIFICATION REQUIRED

--

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

BCBearerContextModificationRequired ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { BCBearerContextModificationRequiredIEs } },

...

}

BCBearerContextModificationRequiredIEs E1AP-PROTOCOL-IES ::= {

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

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

{ ID id-BCBearerContextToModifyRequired CRITICALITY reject TYPE BCBearerContextToModifyRequired PRESENCE mandatory },

...

}

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

--

-- BC BEARER CONTEXT MODIFICATION CONFIRM

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

BCBearerContextModificationConfirm ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { BCBearerContextModificationConfirmIEs } },

...

}

BCBearerContextModificationConfirmIEs E1AP-PROTOCOL-IES ::= {

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

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

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

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

...

}

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

--

-- BC BEARER CONTEXT RELEASE

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

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

--

-- BC BEARER CONTEXT RELEASE COMMAND

--

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

BCBearerContextReleaseCommand ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { BCBearerContextReleaseCommandIEs } },

...

}

BCBearerContextReleaseCommandIEs E1AP-PROTOCOL-IES ::= {

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

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

{ ID id-Cause CRITICALITY ignore TYPE Cause PRESENCE mandatory },

...

}

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

--

-- BC BEARER CONTEXT RELEASE COMPLETE

--

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

BCBearerContextReleaseComplete ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { BCBearerContextReleaseCompleteIEs } },

...

}

BCBearerContextReleaseCompleteIEs E1AP-PROTOCOL-IES ::= {

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

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

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

...

}

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

--

-- BC BEARER CONTEXT RELEASE REQUEST

--

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

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

--

-- BC BEARER CONTEXT RELEASE REQUEST

--

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

BCBearerContextReleaseRequest ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { BCBearerContextReleaseRequestIEs } },

...

}

BCBearerContextReleaseRequestIEs E1AP-PROTOCOL-IES ::= {

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

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

{ ID id-Cause CRITICALITY ignore TYPE Cause PRESENCE mandatory },

...

}

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

--

-- MC BEARER CONTEXT SETUP

--

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

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

--

-- MC BEARER CONTEXT SETUP REQUEST

--

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

MCBearerContextSetupRequest ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { MCBearerContextSetupRequestIEs } },

...

}

MCBearerContextSetupRequestIEs E1AP-PROTOCOL-IES ::= {

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

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

{ ID id-MCBearerContextToSetup CRITICALITY reject TYPE MCBearerContextToSetup PRESENCE mandatory },

...

}

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

--

-- MC BEARER CONTEXT SETUP RESPONSE

--

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

MCBearerContextSetupResponse ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { MCBearerContextSetupResponseIEs } },

...

}

MCBearerContextSetupResponseIEs E1AP-PROTOCOL-IES ::= {

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

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

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

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

...

}

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

--

-- MC BEARER CONTEXT SETUP FAILURE

--

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

MCBearerContextSetupFailure ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { MCBearerContextSetupFailureIEs } },

...

}

MCBearerContextSetupFailureIEs E1AP-PROTOCOL-IES ::= {

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

{ ID id-GNB-CU-UP-MBS-E1AP-ID CRITICALITY ignore TYPE GNB-CU-UP-MBS-E1AP-ID PRESENCE optional }|

{ ID id-Cause CRITICALITY ignore TYPE Cause PRESENCE mandatory }|

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

...

}

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

--

-- MC BEARER CONTEXT MODIFICATION

--

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

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

--

-- MC BEARER CONTEXT MODIFICATION REQUEST

--

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

MCBearerContextModificationRequest ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { MCBearerContextModificationRequestIEs } },

...

}

MCBearerContextModificationRequestIEs E1AP-PROTOCOL-IES ::= {

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

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

{ ID id-MCBearerContextToModify CRITICALITY reject TYPE MCBearerContextToModify PRESENCE mandatory },

...

}

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

--

-- MC BEARER CONTEXT MODIFICATION RESPONSE

--

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

MCBearerContextModificationResponse ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { MCBearerContextModificationResponseIEs } },

...

}

MCBearerContextModificationResponseIEs E1AP-PROTOCOL-IES ::= {

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

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

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

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

...

}

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

--

-- MC BEARER CONTEXT MODIFICATION FAILURE

--

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

MCBearerContextModificationFailure ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { MCBearerContextModificationFailureIEs } },

...

}

MCBearerContextModificationFailureIEs E1AP-PROTOCOL-IES ::= {

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

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

{ ID id-MBSMulticastF1UContextDescriptor CRITICALITY reject TYPE MBSMulticastF1UContextDescriptor PRESENCE optional }|

{ ID id-Cause CRITICALITY ignore TYPE Cause PRESENCE mandatory }|

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

...

}

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

--

-- MC BEARER CONTEXT MODIFICATION REQUIRED

--

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

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

--

-- MC BEARER CONTEXT MODIFICATION REQUIRED

--

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

MCBearerContextModificationRequired ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { MCBearerContextModificationRequiredIEs } },

...

}

MCBearerContextModificationRequiredIEs E1AP-PROTOCOL-IES ::= {

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

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

{ ID id-MCBearerContextToModifyRequired CRITICALITY reject TYPE MCBearerContextToModifyRequired PRESENCE mandatory },

...

}

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

--

-- MC BEARER CONTEXT MODIFICATION CONFIRM

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

MCBearerContextModificationConfirm ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { MCBearerContextModificationConfirmIEs } },

...

}

MCBearerContextModificationConfirmIEs E1AP-PROTOCOL-IES ::= {

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

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

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

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

...

}

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

--

-- MC BEARER CONTEXT RELEASE

--

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

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

--

-- MC BEARER CONTEXT RELEASE COMMAND

--

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

MCBearerContextReleaseCommand ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { MCBearerContextReleaseCommandIEs } },

...

}

MCBearerContextReleaseCommandIEs E1AP-PROTOCOL-IES ::= {

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

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

{ ID id-Cause CRITICALITY ignore TYPE Cause PRESENCE mandatory },

...

}

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

--

-- MC BEARER CONTEXT RELEASE COMPLETE

--

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

MCBearerContextReleaseComplete ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { MCBearerContextReleaseCompleteIEs } },

...

}

MCBearerContextReleaseCompleteIEs E1AP-PROTOCOL-IES ::= {

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

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

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

...

}

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

--

-- MC BEARER CONTEXT RELEASE REQUEST

--

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

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

--

-- MC BEARER CONTEXT RELEASE REQUEST

--

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

MCBearerContextReleaseRequest ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { MCBearerContextReleaseRequestIEs } },

...

}

MCBearerContextReleaseRequestIEs E1AP-PROTOCOL-IES ::= {

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

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

{ ID id-Cause CRITICALITY ignore TYPE Cause PRESENCE mandatory },

...

}

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

--

-- MC BEARER NOTIFICATION

--

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

MCBearerNotification ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { MCBearerNotificationIEs } },

...

}

MCBearerNotificationIEs E1AP-PROTOCOL-IES ::= {

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

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

{ ID id-MBSSessionResourceNotification CRITICALITY ignore TYPE MBSSessionResourceNotification PRESENCE mandatory },

...

}

END

-- ASN1STOP

### 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-SecurityIndicationModify,

id-DataForwardingSourceIPAddress,

id-M4ReportAmount,

id-M6ReportAmount,

id-M7ReportAmount,

id-PDUSession-PairID,

id-SurvivalTime,

id-UDC-Parameters,

id-SecurityIndication,

id-SecurityResult,

id-SDTindicatorSetup,

id-SDTindicatorMod,

id-DiscardTimerExtended,

id-MCForwardingResourceRequest,

id-MCForwardingResourceIndication,

id-MCForwardingResourceResponse,

id-MCForwardingResourceRelease,

id-MCForwardingResourceReleaseIndication,

id-PDCP-COUNT-Reset,

id-MBSSessionAssociatedInfoNonSupportToSupport,

id-VersionID,

id-MBSAreaSessionID,

id-Secondary-PDU-Session-Data-Forwarding-Information,

id-MBSSessionResourceNotification,

id-MCBearerContextInactivityTimer,

id-MCBearerContextStatusChange,

id-SpecialTriggeringPurpose,

id-F1UTunnelNotEstablished,

id-PDUSetQoSParameters,

id-N6JitterInformation,

id-ECNMarkingorCongestionInformationReportingRequest,

id-ECNMarkingorCongestionInformationReportingStatus,

id-PDUSetbasedHandlingIndicator,

id-IndirectPathIndication,

maxnoofMBSAreaSessionIDs,

maxnoofSharedNG-UTerminations,

maxnoofMRBs,

maxnoofMBSSessionIDs,

maxnoofQoSParaSets,

maxnoofErrors,

maxnoofSliceItems,

maxnoofEUTRANQOSParameters,

maxnoofNGRANQOSParameters,

maxnoofDRBs,

maxnoofPDUSessionResource,

maxnoofQoSFlows,

maxnoofUPParameters,

maxnoofCellGroups,

maxnooftimeperiods,

maxnoofNRCGI,

maxnoofTLAs,

maxnoofGTPTLAs,

maxnoofSPLMNs,

maxnoofMDTPLMNs,

maxnoofExtSliceItems,

maxnoofDataForwardingTunneltoE-UTRAN,

maxnoofExtNRCGI,

maxnoofECGI,

maxnoofSMBRValues,

maxnoofCellsforMBS,

maxnoofTAIforMBS,

maxnoofMBSServiceAreaInformation

FROM E1AP-Constants

Criticality,

ProcedureCode,

ProtocolIE-ID,

TriggeringMessage

FROM E1AP-CommonDataTypes

ProtocolExtensionContainer{},

ProtocolIE-SingleContainer{},

E1AP-PROTOCOL-EXTENSION,

E1AP-PROTOCOL-IES

FROM E1AP-Containers;

-- A

ActivityInformation ::= CHOICE {

dRB-Activity-List DRB-Activity-List,

pDU-Session-Resource-Activity-List PDU-Session-Resource-Activity-List,

uE-Activity UE-Activity,

choice-extension ProtocolIE-SingleContainer {{ActivityInformation-ExtIEs}}

}

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

...

}

ActivityNotificationLevel ::= ENUMERATED {

drb,

pdu-session,

ue,

...

}

AdditionalHandoverInfo ::= ENUMERATED {

discard-pdpc-SN,

...

}

AdditionalPDCPduplicationInformation ::= ENUMERATED {

three,

four,

...

}

AdditionalRRMPriorityIndex ::= BIT STRING (SIZE(32))

AveragingWindow ::= INTEGER (0..4095, ...)

AlternativeQoSParaSetList ::= SEQUENCE (SIZE(1..maxnoofQoSParaSets)) OF AlternativeQoSParaSetItem

AlternativeQoSParaSetItem ::= SEQUENCE {

alternativeQoSParameterIndex INTEGER(1..8,...),

guaranteedFlowBitRateDL BitRate OPTIONAL,

guaranteedFlowBitRateUL BitRate OPTIONAL,

packetDelayBudget PacketDelayBudget OPTIONAL,

packetErrorRate PacketErrorRate OPTIONAL,

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

...

}

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

...

}

AssociatedSessionID ::= OCTET STRING

-- B

-- BCBearerContextToSetup

BCBearerContextToSetup ::= SEQUENCE {

snssai SNSSAI,

bcBearerContextNGU-TNLInfoat5GC BCBearerContextNGU-TNLInfoat5GC OPTIONAL,

bcMRBToSetupList BCMRBSetupConfiguration,

requestedAction RequestedAction4AvailNGUTermination OPTIONAL,

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

...

}

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

...

}

BCBearerContextNGU-TNLInfoat5GC::= CHOICE {

locationindependent MBSNGUInformationAt5GC,

locationdependent LocationDependentMBSNGUInformationAt5GC,

choice-extension ProtocolIE-SingleContainer {{BCBearerContextNGU-TNLInfoat5GC-ExtIEs}}

}

BCBearerContextNGU-TNLInfoat5GC-ExtIEs E1AP-PROTOCOL-IES ::= {

...

}

BCMRBSetupConfiguration ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF BCMRBSetupConfiguration-Item

BCMRBSetupConfiguration-Item ::= SEQUENCE {

mrb-ID MRB-ID,

mbs-pdcp-config PDCP-Configuration,

qoS-Flow-QoS-Parameter-List QoS-Flow-QoS-Parameter-List,

qoSFlowLevelQoSParameters QoSFlowLevelQoSParameters OPTIONAL,

iE-Extensions ProtocolExtensionContainer { {BCMRBSetupConfiguration-Item-ExtIEs} } OPTIONAL,

...

}

BCMRBSetupConfiguration-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

-- BCBearerContextToSetupResponse

BCBearerContextToSetupResponse ::= SEQUENCE {

bcBearerContextNGU-TNLInfoatNGRAN BCBearerContextNGU-TNLInfoatNGRAN OPTIONAL,

bcMRBSetupResponseList BCMRBSetupResponseList,

bcMRBFailedList BCMRBFailedList OPTIONAL,

availableBCMRBConfig BCMRBSetupConfiguration OPTIONAL,

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

...

}

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

...

}

BCBearerContextNGU-TNLInfoatNGRAN::= CHOICE {

locationindependent MBSNGUInformationAtNGRAN,

locationdependent LocationDependentMBSNGUInformationAtNGRAN,

choice-extension ProtocolIE-SingleContainer {{BCBearerContextNGU-TNLInfoatNGRAN-ExtIEs}}

}

BCBearerContextNGU-TNLInfoatNGRAN-ExtIEs E1AP-PROTOCOL-IES ::= {

...

}

BCMRBSetupResponseList ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF BCMRBSetupResponseList-Item

BCMRBSetupResponseList-Item ::= SEQUENCE {

mrb-ID MRB-ID,

qosflow-setup QoS-Flow-List,

qosflow-failed QoS-Flow-Failed-List OPTIONAL,

bcBearerContextF1U-TNLInfoatCU BCBearerContextF1U-TNLInfoatCU,

iE-Extensions ProtocolExtensionContainer { {BCMRBSetupResponseList-Item-ExtIEs} } OPTIONAL,

...

}

BCMRBSetupResponseList-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

BCBearerContextF1U-TNLInfoatCU ::= CHOICE {

locationindependent MBSF1UInformationAtCU,

locationdependent LocationDependentMBSF1UInformationAtCU,

choice-extension ProtocolIE-SingleContainer {{BCBearerContextF1U-TNLInfoatCU-ExtIEs}}

}

BCBearerContextF1U-TNLInfoatCU-ExtIEs E1AP-PROTOCOL-IES ::= {

...

}

BCMRBFailedList ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF BCMRBFailedList-Item

BCMRBFailedList-Item ::= SEQUENCE {

mrb-ID MRB-ID,

cause Cause,

iE-Extensions ProtocolExtensionContainer { {BCMRBFailedList-Item-ExtIEs} } OPTIONAL,

...

}

BCMRBFailedList-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

-- BCBearerContextToModify

BCBearerContextToModify ::= SEQUENCE {

bcBearerContextNGU-TNLInfoat5GC BCBearerContextNGU-TNLInfoat5GC OPTIONAL,

bcMRBToSetupList BCMRBSetupConfiguration OPTIONAL,

bcMRBToModifyList BCMRBModifyConfiguration OPTIONAL,

bcMRBToRemoveList BCMRBRemoveConfiguration OPTIONAL,

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

...

}

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

{ ID id-F1UTunnelNotEstablished CRITICALITY ignore EXTENSION F1UTunnelNotEstablished PRESENCE optional},

...

}

BCMRBModifyConfiguration ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF BCMRBModifyConfiguration-Item

BCMRBModifyConfiguration-Item ::= SEQUENCE {

mrb-ID MRB-ID,

bcBearerContextF1U-TNLInfoatDU BCBearerContextF1U-TNLInfoatDU OPTIONAL,

mbs-pdcp-config PDCP-Configuration OPTIONAL,

qoS-Flow-QoS-Parameter-List QoS-Flow-QoS-Parameter-List OPTIONAL,

qoSFlowLevelQoSParameters QoSFlowLevelQoSParameters OPTIONAL,

iE-Extensions ProtocolExtensionContainer { {BCMRBModifyConfiguration-Item-ExtIEs} } OPTIONAL,

...

}

BCMRBModifyConfiguration-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

BCBearerContextF1U-TNLInfoatDU ::= CHOICE {

locationindependent MBSF1UInformationAtDU,

locationdependent LocationDependentMBSF1UInformationAtDU,

choice-extension ProtocolIE-SingleContainer {{BCBearerContextF1U-TNLInfoatDU-ExtIEs}}

}

BCBearerContextF1U-TNLInfoatDU-ExtIEs E1AP-PROTOCOL-IES ::= {

...

}

BCMRBRemoveConfiguration ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF MRB-ID

-- BCBearerContextToModifyResponse

BCBearerContextToModifyResponse ::= SEQUENCE {

bcBearerContextNGU-TNLInfoatNGRAN BCBearerContextNGU-TNLInfoatNGRAN OPTIONAL,

bcMRBSetupModifyResponseList BCMRBSetupModifyResponseList,

bcMRBFailedList BCMRBFailedList OPTIONAL,

availableBCMRBConfig BCMRBSetupConfiguration OPTIONAL,

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

...

}

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

...

}

BCMRBSetupModifyResponseList ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF BCMRBSetupModifyResponseList-Item

BCMRBSetupModifyResponseList-Item ::= SEQUENCE {

mrb-ID MRB-ID,

qosflow-setup QoS-Flow-List OPTIONAL,

qosflow-failed QoS-Flow-Failed-List OPTIONAL,

bcBearerContextF1U-TNLInfoatCU BCBearerContextF1U-TNLInfoatCU OPTIONAL,

iE-Extensions ProtocolExtensionContainer { {BCMRBSetupModifyResponseList-Item-ExtIEs} } OPTIONAL,

...

}

BCMRBSetupModifyResponseList-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

-- BCBearerContextToModifyRequired

BCBearerContextToModifyRequired ::= SEQUENCE {

bcMRBToRemoveList BCMRBRemoveConfiguration OPTIONAL,

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

...

}

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

...

}

-- BCBearerContextToModifyConfirm

BCBearerContextToModifyConfirm ::= SEQUENCE {

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

...

}

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

...

}

BearerContextStatusChange ::= ENUMERATED {

suspend,

resume,

... ,

resumeforSDT

}

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

BufferSize ::= ENUMERATED {

kbyte2,

kbyte4,

kbyte8,

...

}

-- C

Cause ::= CHOICE {

radioNetwork CauseRadioNetwork,

transport CauseTransport,

protocol CauseProtocol,

misc CauseMisc,

choice-extension ProtocolIE-SingleContainer {{Cause-ExtIEs}}

}

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

...

}

CauseMisc ::= ENUMERATED {

control-processing-overload,

not-enough-user-plane-processing-resources,

hardware-failure,

om-intervention,

unspecified,

...

}

CauseProtocol ::= ENUMERATED {

transfer-syntax-error,

abstract-syntax-error-reject,

abstract-syntax-error-ignore-and-notify,

message-not-compatible-with-receiver-state,

semantic-error,

abstract-syntax-error-falsely-constructed-message,

unspecified,

...

}

CauseRadioNetwork ::= ENUMERATED {

unspecified,

unknown-or-already-allocated-gnb-cu-cp-ue-e1ap-id,

unknown-or-already-allocated-gnb-cu-up-ue-e1ap-id,

unknown-or-inconsistent-pair-of-ue-e1ap-id,

interaction-with-other-procedure,

pPDCP-Count-wrap-around,

not-supported-QCI-value,

not-supported-5QI-value,

encryption-algorithms-not-supported,

integrity-protection-algorithms-not-supported,

uP-integrity-protection-not-possible,

uP-confidentiality-protection-not-possible,

multiple-PDU-Session-ID-Instances,

unknown-PDU-Session-ID,

multiple-QoS-Flow-ID-Instances,

unknown-QoS-Flow-ID,

multiple-DRB-ID-Instances,

unknown-DRB-ID,

invalid-QoS-combination,

procedure-cancelled,

normal-release,

no-radio-resources-available,

action-desirable-for-radio-reasons,

resources-not-available-for-the-slice,

pDCP-configuration-not-supported,

...,

ue-dl-max-IP-data-rate-reason,

uP-integrity-protection-failure,

release-due-to-pre-emption,

rsn-not-available-for-the-up,

nPN-not-supported,

report-characteristic-empty,

existing-measurement-ID,

measurement-temporarily-not-available,

measurement-not-supported-for-the-object,

scg-activation-deactivation-failure,

scg-deactivation-failure-due-to-data-transmission,

unknown-or-already-allocated-gNB-CU-CP-MBS-E1AP-ID,

unknown-or-already-allocated-gNB-CU-UP-MBS-E1AP-ID,

unknown-or-inconsistent-pair-of-MBS-E1AP-ID,

unknown-or-inconsistent-MRB-ID

}

CauseTransport ::= ENUMERATED {

unspecified,

transport-resource-unavailable,

...,

unknown-TNL-address-for-IAB

}

Cell-Group-Information ::= SEQUENCE (SIZE(1.. maxnoofCellGroups)) OF Cell-Group-Information-Item

Cell-Group-Information-Item ::= SEQUENCE {

cell-Group-ID Cell-Group-ID,

uL-Configuration UL-Configuration OPTIONAL,

dL-TX-Stop DL-TX-Stop OPTIONAL,

rAT-Type RAT-Type OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { Cell-Group-Information-Item-ExtIEs } } OPTIONAL,

...

}

Cell-Group-Information-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

{ ID id-Number-of-tunnels CRITICALITY ignore EXTENSION Number-of-tunnels PRESENCE optional},

...

}

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

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

Number-of-tunnels ::= INTEGER (1..4, ...)

CipheringAlgorithm ::= ENUMERATED {

nEA0,

c-128-NEA1,

c-128-NEA2,

c-128-NEA3,

...

}

CNSupport ::= ENUMERATED {

c-epc,

c-5gc,

both,

...

}

CommonNetworkInstance ::= OCTET STRING

ConfidentialityProtectionIndication ::= ENUMERATED {

required,

preferred,

not-needed,

...

}

ConfidentialityProtectionResult ::= ENUMERATED {

performed,

not-performed,

...

}

CP-TNL-Information ::= CHOICE {

endpoint-IP-Address TransportLayerAddress,

choice-extension ProtocolIE-SingleContainer {{CP-TNL-Information-ExtIEs}}

}

CP-TNL-Information-ExtIEs E1AP-PROTOCOL-IES ::= {

{ ID id-endpoint-IP-Address-and-Port CRITICALITY reject TYPE Endpoint-IP-address-and-port PRESENCE mandatory},

...

}

CriticalityDiagnostics ::= SEQUENCE {

procedureCode ProcedureCode OPTIONAL,

triggeringMessage TriggeringMessage OPTIONAL,

procedureCriticality Criticality OPTIONAL,

transactionID TransactionID OPTIONAL,

iEsCriticalityDiagnostics CriticalityDiagnostics-IE-List OPTIONAL,

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

...

}

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

...

}

CriticalityDiagnostics-IE-List ::= SEQUENCE (SIZE (1..maxnoofErrors)) OF

SEQUENCE {

iECriticality Criticality,

iE-ID ProtocolIE-ID,

typeOfError TypeOfError,

iE-Extensions ProtocolExtensionContainer { {CriticalityDiagnostics-IE-List-ExtIEs} } OPTIONAL,

...

}

CriticalityDiagnostics-IE-List-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

-- 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}|

{ID id-PDUSetbasedHandlingIndicator CRITICALITY ignore EXTENSION PDUSetbasedHandlingIndicator 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,

...

}

Dictionary ::= ENUMERATED {

sip-SDP,

operator,

...

}

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}

DiscardTimerExtended ::= ENUMERATED {ms0dot5, ms1, ms2, ms4, ms6, ms8,..., ms2000}

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 ::= {

{ID id-DataForwardingSourceIPAddress CRITICALITY ignore EXTENSION TransportLayerAddress PRESENCE optional}|

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

...

}

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 ::= {

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

{ID id-DataForwardingSourceIPAddress CRITICALITY ignore EXTENSION TransportLayerAddress PRESENCE optional},

...

}

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}|

{ID id-PDCP-COUNT-Reset CRITICALITY reject EXTENSION PDCP-COUNT-Reset 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 ::= {

{ID id-DataForwardingSourceIPAddress CRITICALITY ignore EXTENSION TransportLayerAddress PRESENCE optional}|

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

...

}

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 ::= {

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

{ID id-DataForwardingSourceIPAddress CRITICALITY ignore EXTENSION TransportLayerAddress PRESENCE optional},

...

}

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}|

{ID id-SpecialTriggeringPurpose CRITICALITY ignore EXTENSION SpecialTriggeringPurpose 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}|

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

...

}

DRB-Usage-Report-List ::= SEQUENCE (SIZE(1..maxnooftimeperiods)) OF DRB-Usage-Report-Item

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

startTimeStamp OCTET STRING (SIZE(4)),

endTimeStamp OCTET STRING (SIZE(4)),

usageCountUL INTEGER (0..18446744073709551615),

usageCountDL INTEGER (0..18446744073709551615),

iE-Extensions ProtocolExtensionContainer { { DRB-Usage-Report-Item-ExtIEs} } OPTIONAL,

...

}

DRB-Usage-Report-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

Duplication-Activation ::= ENUMERATED {

active,

inactive,

...

}

Dynamic5QIDescriptor ::= SEQUENCE {

qoSPriorityLevel QoSPriorityLevel,

packetDelayBudget PacketDelayBudget,

packetErrorRate PacketErrorRate,

fiveQI INTEGER (0..255, ...) OPTIONAL,

delayCritical ENUMERATED {delay-critical, non-delay-critical} OPTIONAL,

averagingWindow AveragingWindow OPTIONAL,

maxDataBurstVolume MaxDataBurstVolume OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { Dynamic5QIDescriptor-ExtIEs } } OPTIONAL

}

Dynamic5QIDescriptor-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

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

{ ID id-CNPacketDelayBudgetDownlink CRITICALITY ignore EXTENSION ExtendedPacketDelayBudget PRESENCE optional }|

{ ID id-CNPacketDelayBudgetUplink CRITICALITY ignore EXTENSION ExtendedPacketDelayBudget PRESENCE optional },

...

}

DataDiscardRequired ::= ENUMERATED {

required,

...

}

-- E

EarlyDataForwardingIndicator ::= ENUMERATED {stop, ...}

EarlyForwardingCOUNTInfo ::= CHOICE {

firstDLCount FirstDLCount,

dLDiscardingCount DLDiscarding,

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

}

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

...

}

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

ECNMarkingorCongestionInformationReportingRequest ::= CHOICE {

eCNMarkingatNGRAN ENUMERATED { ul, dl, both, stop, ...},

eCNMarkingatUPF ENUMERATED { ul, dl, both, stop, ...},

congestionInformation ENUMERATED { ul, dl, both, stop, ...},

choice-extension ProtocolIE-SingleContainer {{ECNMarkingorCongestionInformationReportingRequest-ExtIEs}}

}

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

...

}

ECNMarkingorCongestionInformationReportingStatus ::= ENUMERATED { active, not-active, ...}

EHC-Common-Parameters ::= SEQUENCE {

ehc-CID-Length ENUMERATED { bits7, bits15, ...},

iE-Extensions ProtocolExtensionContainer { { EHC-Common-Parameters-ExtIEs } } OPTIONAL

}

EHC-Common-Parameters-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

EHC-Downlink-Parameters ::= SEQUENCE {

drb-ContinueEHC-DL ENUMERATED {true, ..., false},

iE-Extensions ProtocolExtensionContainer { { EHC-Downlink-Parameters-ExtIEs } } OPTIONAL

}

EHC-Downlink-Parameters-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

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

...

}

EHC-Uplink-Parameters ::= SEQUENCE {

drb-ContinueEHC-UL ENUMERATED {true, ... , false},

iE-Extensions ProtocolExtensionContainer { { EHC-Uplink-Parameters-ExtIEs } } OPTIONAL

}

EHC-Uplink-Parameters-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

EHC-Parameters ::= SEQUENCE {

ehc-Common EHC-Common-Parameters,

ehc-Downlink EHC-Downlink-Parameters OPTIONAL,

ehc-Uplink EHC-Uplink-Parameters OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { EHC-Parameters-ExtIEs } } OPTIONAL

}

EHC-Parameters-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

EncryptionKey ::= OCTET STRING

Endpoint-IP-address-and-port::= SEQUENCE {

endpoint-IP-Address TransportLayerAddress,

portNumber PortNumber,

iE-Extensions ProtocolExtensionContainer { { Endpoint-IP-address-and-port-ExtIEs} } OPTIONAL

}

Endpoint-IP-address-and-port-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

EUTRANAllocationAndRetentionPriority ::= SEQUENCE {

priorityLevel PriorityLevel,

pre-emptionCapability Pre-emptionCapability,

pre-emptionVulnerability Pre-emptionVulnerability,

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

...

}

ExtendedPacketDelayBudget ::= INTEGER (1..65535, ..., 65536..109999)

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

...

}

E-UTRAN-Cell-Identity ::= BIT STRING (SIZE(28))

ECGI ::= SEQUENCE {

pLMN-Identity PLMN-Identity,

eUTRAN-Cell-Identity E-UTRAN-Cell-Identity,

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

}

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

...

}

ECGI-Support-List ::= SEQUENCE (SIZE(1.. maxnoofECGI)) OF ECGI-Support-Item

ECGI-Support-Item ::= SEQUENCE {

eCGI ECGI,

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

}

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

...

}

EUTRAN-QoS-Support-List ::= SEQUENCE (SIZE(1.. maxnoofEUTRANQOSParameters)) OF EUTRAN-QoS-Support-Item

EUTRAN-QoS-Support-Item ::= SEQUENCE {

eUTRAN-QoS EUTRAN-QoS,

iE-Extensions ProtocolExtensionContainer { { EUTRAN-QoS-Support-Item-ExtIEs } } OPTIONAL

}

EUTRAN-QoS-Support-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

EUTRAN-QoS ::= SEQUENCE {

qCI QCI,

eUTRANallocationAndRetentionPriority EUTRANAllocationAndRetentionPriority,

gbrQosInformation GBR-QosInformation OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { EUTRAN-QoS-ExtIEs } } OPTIONAL,

...

}

EUTRAN-QoS-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

ExtendedSliceSupportList ::= SEQUENCE (SIZE(1.. maxnoofExtSliceItems)) OF Slice-Support-Item

-- F

FirstDLCount ::= SEQUENCE {

firstDLCountVal PDCP-Count,

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

}

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

...

}

FiveGS-TAC ::= OCTET STRING (SIZE(3))

-- G

GlobalMBSSessionID ::= SEQUENCE {

tmgi OCTET STRING (SIZE(6)),

nid NID OPTIONAL,

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

...

}

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

...

}

GNB-CU-CP-Name ::= PrintableString(SIZE(1..150,...))

Extended-GNB-CU-CP-Name ::= SEQUENCE {

gNB-CU-CP-NameVisibleString GNB-CU-CP-NameVisibleString OPTIONAL,

gNB-CU-CP-NameUTF8String GNB-CU-CP-NameUTF8String OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { Extended-GNB-CU-CP-Name-ExtIEs } } OPTIONAL,

...

}

Extended-GNB-CU-CP-Name-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

GNB-CU-CP-MBS-E1AP-ID ::= INTEGER (0..16777215)

GNB-CU-CP-NameVisibleString ::= VisibleString(SIZE(1..150,...))

GNB-CU-CP-NameUTF8String ::= UTF8String(SIZE(1..150,...))

GNB-CU-CP-UE-E1AP-ID ::= INTEGER (0..4294967295)

GNB-CU-UP-Capacity ::= INTEGER (0..255)

GNB-CU-UP-CellGroupRelatedConfiguration ::= SEQUENCE (SIZE(1.. maxnoofUPParameters)) OF GNB-CU-UP-CellGroupRelatedConfiguration-Item

GNB-CU-UP-CellGroupRelatedConfiguration-Item ::= SEQUENCE {

cell-Group-ID Cell-Group-ID,

uP-TNL-Information UP-TNL-Information,

uL-Configuration UL-Configuration OPTIONAL,

iE-Extensions ProtocolExtensionContainer { {GNB-CU-UP-CellGroupRelatedConfiguration-Item-ExtIEs } } OPTIONAL

}

GNB-CU-UP-CellGroupRelatedConfiguration-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

GNB-CU-UP-ID ::= INTEGER (0..68719476735)

GNB-CU-UP-MBS-Support-Info ::= SEQUENCE {

mbs-Support-Info-ToAdd-List MBS-Support-Info-ToAdd-List OPTIONAL,

mbs-Support-Info-ToRemove-List MBS-Support-Info-ToRemove-List OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { GNB-CU-UP-MBS-Support-Info-ExtIEs } } OPTIONAL,

...

}

GNB-CU-UP-MBS-Support-Info-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

GNB-CU-UP-Name ::= PrintableString(SIZE(1..150,...))

Extended-GNB-CU-UP-Name ::= SEQUENCE {

gNB-CU-UP-NameVisibleString GNB-CU-UP-NameVisibleString OPTIONAL,

gNB-CU-UP-NameUTF8String GNB-CU-UP-NameUTF8String OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { Extended-GNB-CU-UP-Name-ExtIEs } } OPTIONAL,

...

}

Extended-GNB-CU-UP-Name-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

GNB-CU-UP-MBS-E1AP-ID ::= INTEGER (0..65535)

GNB-CU-UP-NameVisibleString ::= VisibleString(SIZE(1..150,...))

GNB-CU-UP-NameUTF8String ::= UTF8String(SIZE(1..150,...))

GNB-CU-UP-UE-E1AP-ID ::= INTEGER (0..4294967295)

GNB-CU-CP-TNLA-Setup-Item::= SEQUENCE {

tNLAssociationTransportLayerAddress CP-TNL-Information,

iE-Extensions ProtocolExtensionContainer { { GNB-CU-CP-TNLA-Setup-Item-ExtIEs} } OPTIONAL,

...

}

GNB-CU-CP-TNLA-Setup-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

GNB-CU-CP-TNLA-Failed-To-Setup-Item ::= SEQUENCE {

tNLAssociationTransportLayerAddress CP-TNL-Information,

cause Cause,

iE-Extensions ProtocolExtensionContainer { { GNB-CU-CP-TNLA-Failed-To-Setup-Item-ExtIEs} } OPTIONAL

}

GNB-CU-CP-TNLA-Failed-To-Setup-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

GNB-CU-CP-TNLA-To-Add-Item ::= SEQUENCE {

tNLAssociationTransportLayerAddress CP-TNL-Information,

tNLAssociationUsage TNLAssociationUsage,

iE-Extensions ProtocolExtensionContainer { { GNB-CU-CP-TNLA-To-Add-Item-ExtIEs} } OPTIONAL

}

GNB-CU-CP-TNLA-To-Add-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

GNB-CU-CP-TNLA-To-Remove-Item::= SEQUENCE {

tNLAssociationTransportLayerAddress CP-TNL-Information,

iE-Extensions ProtocolExtensionContainer { { GNB-CU-CP-TNLA-To-Remove-Item-ExtIEs} } OPTIONAL

}

GNB-CU-CP-TNLA-To-Remove-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

{ID id-TNLAssociationTransportLayerAddressgNBCUUP CRITICALITY reject EXTENSION CP-TNL-Information PRESENCE optional},

...

}

GNB-CU-CP-TNLA-To-Update-Item::= SEQUENCE {

tNLAssociationTransportLayerAddress CP-TNL-Information,

tNLAssociationUsage TNLAssociationUsage OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { GNB-CU-CP-TNLA-To-Update-Item-ExtIEs} } OPTIONAL

}

GNB-CU-CP-TNLA-To-Update-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

GNB-CU-UP-TNLA-To-Remove-Item::= SEQUENCE {

tNLAssociationTransportLayerAddress CP-TNL-Information,

tNLAssociationTransportLayerAddressgNBCUCP CP-TNL-Information OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { GNB-CU-UP-TNLA-To-Remove-Item-ExtIEs} } OPTIONAL

}

GNB-CU-UP-TNLA-To-Remove-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

GBR-QosInformation ::= SEQUENCE {

e-RAB-MaximumBitrateDL BitRate,

e-RAB-MaximumBitrateUL BitRate,

e-RAB-GuaranteedBitrateDL BitRate,

e-RAB-GuaranteedBitrateUL BitRate,

iE-Extensions ProtocolExtensionContainer { { GBR-QosInformation-ExtIEs} } OPTIONAL,

...

}

GBR-QosInformation-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

GBR-QoSFlowInformation::= SEQUENCE {

maxFlowBitRateDownlink BitRate,

maxFlowBitRateUplink BitRate,

guaranteedFlowBitRateDownlink BitRate,

guaranteedFlowBitRateUplink BitRate,

maxPacketLossRateDownlink MaxPacketLossRate OPTIONAL,

maxPacketLossRateUplink MaxPacketLossRate OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { GBR-QosFlowInformation-ExtIEs} } OPTIONAL,

...

}

GBR-QosFlowInformation-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

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

...

}

GTP-TEID ::= OCTET STRING (SIZE (4))

GTPTLAs ::= SEQUENCE (SIZE(1.. maxnoofGTPTLAs)) OF GTPTLA-Item

GTPTLA-Item ::= SEQUENCE {

gTPTransportLayerAddresses TransportLayerAddress,

iE-Extensions ProtocolExtensionContainer { { GTPTLA-Item-ExtIEs } } OPTIONAL,

...

}

GTPTLA-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

GTPTunnel ::= SEQUENCE {

transportLayerAddress TransportLayerAddress,

gTP-TEID GTP-TEID,

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

...

}

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

...

}

GNB-CU-UP-OverloadInformation ::= ENUMERATED {overloaded, not-overloaded}

GNB-DU-ID ::= INTEGER (0..68719476735)

-- H

HFN ::= INTEGER (0..4294967295)

HW-CapacityIndicator ::= SEQUENCE {

offeredThroughput INTEGER (1..16777216, ...),

availableThroughput INTEGER (0..100, ...),

iE-Extensions ProtocolExtensionContainer { { HW-CapacityIndicator-ExtIEs } } OPTIONAL,

...

}

HW-CapacityIndicator-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

-- I

IndirectPathIndication ::= ENUMERATED {

true,

...

}

IgnoreMappingRuleIndication ::= ENUMERATED {

true,

...

}

IntegrityProtectionIndication ::= ENUMERATED {

required,

preferred,

not-needed,

...

}

IntegrityProtectionAlgorithm ::= ENUMERATED {

nIA0,

i-128-NIA1,

i-128-NIA2,

i-128-NIA3,

...

}

IntegrityProtectionKey ::= OCTET STRING

IntegrityProtectionResult ::= ENUMERATED {

performed,

not-performed,

...

}

Inactivity-Timer ::= INTEGER (1..7200, ...)

InterfacesToTrace ::= BIT STRING (SIZE(8))

ImmediateMDT ::= SEQUENCE {

measurementsToActivate MeasurementsToActivate,

measurementFour M4Configuration OPTIONAL,

measurementSix M6Configuration OPTIONAL,

measurementSeven M7Configuration OPTIONAL,

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

...

}

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

...

}

IAB-Donor-CU-UPPSKInfo-Item ::= SEQUENCE {

iAB-donor-CU-UPPSK IAB-donor-CU-UPPSK,

iAB-donor-CU-UPIPAddress TransportLayerAddress,

iAB-DUIPAddress TransportLayerAddress,

iE-Extensions ProtocolExtensionContainer { { IAB-donor-CU-UPPSKInfoItemExtIEs } } OPTIONAL,

...

}

IAB-donor-CU-UPPSKInfoItemExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

IAB-donor-CU-UPPSK ::= OCTET STRING

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

-- J

-- K

-- L

Links-to-log ::= ENUMERATED {

uplink,

downlink,

both-uplink-and-downlink,

...

}

LocationDependentMBSNGUInformationAt5GC ::= SEQUENCE (SIZE(1..maxnoofMBSAreaSessionIDs)) OF LocationDependentMBSNGUInformationAt5GC-Item

LocationDependentMBSNGUInformationAt5GC-Item ::= SEQUENCE {

mbsAreaSession-ID MBSAreaSessionID,

mbsNGUInformationAt5GC MBSNGUInformationAt5GC,

iE-Extensions ProtocolExtensionContainer { { LocationDependentMBSNGUInformationAt5GC-Item-ExtIEs } } OPTIONAL,

...

}

LocationDependentMBSNGUInformationAt5GC-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

LocationDependentMBSF1UInformationAtCU ::= SEQUENCE (SIZE(1..maxnoofMBSAreaSessionIDs)) OF LocationDependentMBSF1UInformationAtCU-Item

LocationDependentMBSF1UInformationAtCU-Item ::= SEQUENCE {

mbsAreaSession-ID MBSAreaSessionID,

mbs-f1u-info-at-CU UP-TNL-Information,

iE-Extensions ProtocolExtensionContainer { { LocationDependentMBSF1UInformationAtCU-Item-ExtIEs } } OPTIONAL,

...

}

LocationDependentMBSF1UInformationAtCU-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

LocationDependentMBSF1UInformationAtDU ::= SEQUENCE (SIZE(1..maxnoofMBSAreaSessionIDs)) OF LocationDependentMBSF1UInformationAtDU-Item

LocationDependentMBSF1UInformationAtDU-Item ::= SEQUENCE {

mbsAreaSession-ID MBSAreaSessionID,

mbs-f1u-info-at-DU UP-TNL-Information,

iE-Extensions ProtocolExtensionContainer { { LocationDependentMBSF1UInformationAtDU-Item-ExtIEs } } OPTIONAL,

...

}

LocationDependentMBSF1UInformationAtDU-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

LocationDependentMBSNGUInformationAtNGRAN ::= SEQUENCE (SIZE(1..maxnoofMBSAreaSessionIDs)) OF LocationDependentMBSNGUInformationAtNGRAN-Item

LocationDependentMBSNGUInformationAtNGRAN-Item ::= SEQUENCE {

mbsAreaSession-ID MBSAreaSessionID,

mbsNGUInformationAtNGRAN MBSNGUInformationAtNGRAN,

iE-Extensions ProtocolExtensionContainer { { LocationDependentMBSNGUInformationAtNGRAN-Item-ExtIEs } } OPTIONAL,

...

}

LocationDependentMBSNGUInformationAtNGRAN-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

-- M

MaxDataBurstVolume ::= INTEGER (0..4095, ..., 4096.. 2000000)

MaximumIPdatarate ::= SEQUENCE {

maxIPrate MaxIPrate,

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

...

}

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

...

}

MaxIPrate ::= ENUMERATED {

bitrate64kbs,

max-UErate,

...

}

MaxPacketLossRate ::= INTEGER (0..1000, ...)

MaxCIDEHCDL ::= INTEGER (1..32767, ...)

MBSAreaSessionID ::= INTEGER (0..65535, ...)

MBSF1UInformationAtCU ::= SEQUENCE {

mbs-f1u-info-at-CU UP-TNL-Information,

iE-Extensions ProtocolExtensionContainer { { MBSF1UInformationAtCU-ExtIEs } } OPTIONAL,

...

}

MBSF1UInformationAtCU-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

MBSF1UInformationAtDU ::= SEQUENCE {

mbs-f1u-info-at-DU UP-TNL-Information,

iE-Extensions ProtocolExtensionContainer { { MBSF1UInformationAtDU-ExtIEs } } OPTIONAL,

...

}

MBSF1UInformationAtDU-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

MBSNGUInformationAt5GC ::= CHOICE {

multicast MBSNGUInformationAt5GC-Multicast,

choice-extension ProtocolIE-SingleContainer {{MBSNGUInformationAt5GC-ExtIEs}}

}

MBSNGUInformationAt5GC-ExtIEs E1AP-PROTOCOL-IES ::= {

...

}

MBSNGUInformationAt5GC-Multicast ::= SEQUENCE {

ipmcAddress TransportLayerAddress,

ipsourceAddress TransportLayerAddress,

gtpDLTEID GTP-TEID,

iE-Extensions ProtocolExtensionContainer { {MBSNGUInformationAt5GC-Multicast-ExtIEs} } OPTIONAL,

...

}

MBSNGUInformationAt5GC-Multicast-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

MBSNGUInformationAtNGRAN ::= CHOICE {

unicast UP-TNL-Information,

choice-extension ProtocolIE-SingleContainer {{MBSNGUInformationAtNGRAN-ExtIEs}}

}

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

...

}

MBSSessionAssociatedInfoNonSupportToSupport ::= SEQUENCE {

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

pDU-Session-ID PDU-Session-ID,

associatedQoSFlowInformationList MBSSessionAssociatedInformationList,

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

...

}

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

...

}

MBSSessionAssociatedInformation ::= SEQUENCE {

mbsSessionAssociatedInformationList MBSSessionAssociatedInformationList,

mbsSessionForwardingAddress UP-TNL-Information,

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

...

}

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

...

}

MBSSessionAssociatedInformationList ::= SEQUENCE (SIZE(1.. maxnoofQoSFlows)) OF MBSSessionAssociatedInformation-Item

MBSSessionAssociatedInformation-Item ::= SEQUENCE {

mbs-QoS-Flow-Identifier QoS-Flow-Identifier,

associated-unicast-QoS-Flow-Identifier QoS-Flow-Identifier,

iE-Extensions ProtocolExtensionContainer { { MBSSessionAssociatedInformation-Item-ExtIEs } } OPTIONAL,

...

}

MBSSessionAssociatedInformation-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

MBS-Support-Info-ToAdd-List ::= SEQUENCE (SIZE(1..maxnoofMBSSessionIDs)) OF MBS-Support-Info-ToAdd-Item

MBS-Support-Info-ToAdd-Item ::= SEQUENCE {

globalMBSSessionID GlobalMBSSessionID,

iE-Extensions ProtocolExtensionContainer { { MBS-Support-Info-ToAdd-Item-ExtIEs} } OPTIONAL,

...

}

MBS-Support-Info-ToAdd-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

MBS-Support-Info-ToRemove-List ::= SEQUENCE (SIZE(1..maxnoofMBSSessionIDs)) OF MBS-Support-Info-ToRemove-Item

MBSSessionResourceNotification ::= CHOICE {

mbs-DL-Data-Arrival MBS-DL-Data-Arrival,

inactivity MCBearerContext-Inactivity,

choice-extension ProtocolIE-SingleContainer {{ MBSSessionResourceNotification-ExtIEs}}

}

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

...

}

MBS-DL-Data-Arrival ::= SEQUENCE {

dlDataArrival ENUMERATED {true, ...},

ppi PPI OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { MBS-DL-Data-Arrival-ExtIEs} } OPTIONAL,

...

}

MBS-DL-Data-Arrival-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

MCBearerContext-Inactivity ::= SEQUENCE {

mcBearerContext-Inactivity-Indication ENUMERATED {true, ...},

iE-Extensions ProtocolExtensionContainer { {MCBearerContext-Inactivity-ExtIEs} } OPTIONAL,

...

}

MCBearerContext-Inactivity-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

MBS-Support-Info-ToRemove-Item ::= SEQUENCE {

globalMBSSessionID GlobalMBSSessionID,

iE-Extensions ProtocolExtensionContainer { { MBS-Support-Info-ToRemove-Item-ExtIEs} } OPTIONAL,

...

}

MBS-Support-Info-ToRemove-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

-- MCBearerContextToSetup

MCBearerContextToSetup ::= SEQUENCE {

snssai SNSSAI,

mcMRBToSetupList MCMRBSetupConfiguration OPTIONAL,

requestedAction RequestedAction4AvailNGUTermination OPTIONAL,

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

...

}

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

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

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

{ID id-MCBearerContextInactivityTimer CRITICALITY ignore EXTENSION Inactivity-Timer PRESENCE optional}|

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

...

}

MCMRBSetupConfiguration ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF MCMRBSetupConfiguration-Item

MCMRBSetupConfiguration-Item ::= SEQUENCE {

mrb-ID MRB-ID,

mbs-pdcp-config PDCP-Configuration,

qoS-Flow-QoS-Parameter-List QoS-Flow-QoS-Parameter-List,

qoSFlowLevelQoSParameters QoSFlowLevelQoSParameters OPTIONAL,

iE-Extensions ProtocolExtensionContainer { {MCMRBSetupConfiguration-Item-ExtIEs} } OPTIONAL,

...

}

MCMRBSetupConfiguration-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

MCBearerContextStatusChange ::= ENUMERATED {suspend, resume, ...}

-- MCBearerContextToSetupResponse

MCBearerContextToSetupResponse ::= SEQUENCE {

mcBearerContextNGU-TNLInfoatNGRAN MCBearerContextNGU-TNLInfoatNGRAN OPTIONAL,

mcMRBSetupResponseList MCMRBSetupResponseList OPTIONAL,

mcMRBFailedList MCMRBFailedList OPTIONAL,

availableMCMRBConfig MCMRBSetupConfiguration OPTIONAL,

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

...

}

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

...

}

MCBearerContextNGU-TNLInfoatNGRAN::= CHOICE {

locationindependent MBSNGUInformationAtNGRAN,

locationdependent LocationDependentMBSNGUInformationAtNGRAN,

choice-extension ProtocolIE-SingleContainer {{MCBearerContextNGU-TNLInfoatNGRAN-ExtIEs}}

}

MCBearerContextNGU-TNLInfoatNGRAN-ExtIEs E1AP-PROTOCOL-IES ::= {

...

}

MCMRBSetupResponseList ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF MCMRBSetupResponseList-Item

MCMRBSetupResponseList-Item ::= SEQUENCE {

mrb-ID MRB-ID,

qosflow-setup QoS-Flow-List,

qosflow-failed QoS-Flow-Failed-List OPTIONAL,

mBS-PDCP-COUNT MBS-PDCP-COUNT OPTIONAL,

iE-Extensions ProtocolExtensionContainer { {MCMRBSetupResponseList-Item-ExtIEs} } OPTIONAL,

...

}

MCMRBSetupResponseList-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

MBS-PDCP-COUNT ::= BIT STRING (SIZE (32))

MCMRBFailedList ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF MCMRBFailedList-Item

MCMRBFailedList-Item ::= SEQUENCE {

mrb-ID MRB-ID,

cause Cause,

iE-Extensions ProtocolExtensionContainer { {MCMRBFailedList-Item-ExtIEs} } OPTIONAL,

...

}

MCMRBFailedList-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

-- MCBearerContextToModify

MCBearerContextToModify ::= SEQUENCE {

mcBearerContextNGUTNLInfoat5GC MCBearerContextNGUTNLInfoat5GC OPTIONAL,

mcBearerContextNGUTnlInfoatNGRANRequest MCBearerContextNGUTnlInfoatNGRANRequest OPTIONAL,

mbsMulticastF1UContextDescriptor MBSMulticastF1UContextDescriptor OPTIONAL,

-- This IE shall be present if either the *MC MRB To Setup or Modify List* IE or the *MC MRB To Remove List* IE or both IEs are included.

requestedAction RequestedAction4AvailNGUTermination OPTIONAL,

mcMRBToSetupModifyList MCMRBSetupModifyConfiguration OPTIONAL,

mcMRBToRemoveList MCMRBRemoveConfiguration OPTIONAL,

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

...

}

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

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

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

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

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

{ID id-MCBearerContextInactivityTimer CRITICALITY ignore EXTENSION Inactivity-Timer PRESENCE optional}|

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

...

}

MCBearerContextNGUTNLInfoat5GC ::= SEQUENCE {

mbsNGUInformationAt5GC MBSNGUInformationAt5GC,

mbsAreaSession-ID MBSAreaSessionID OPTIONAL,

iE-Extensions ProtocolExtensionContainer { {MCBearerContextNGUTNLInfoat5GC-ExtIEs} } OPTIONAL,

...

}

MCBearerContextNGUTNLInfoat5GC-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

MCBearerContextNGUTnlInfoatNGRANRequest ::= SEQUENCE {

ngRANNGUTNLRequested ENUMERATED {requested, ...},

mbsAreaSession-ID MBSAreaSessionID OPTIONAL,

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

...

}

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

...

}

MCMRBSetupModifyConfiguration ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF MCMRBSetupModifyConfiguration-Item

MCMRBSetupModifyConfiguration-Item ::= SEQUENCE {

mrb-ID MRB-ID,

f1uTNLatDU MCBearerContextF1UTNLInfoatDU OPTIONAL,

mbs-pdcp-config PDCP-Configuration OPTIONAL,

qoS-Flow-QoS-Parameter-List QoS-Flow-QoS-Parameter-List OPTIONAL,

mrbQoS QoSFlowLevelQoSParameters OPTIONAL,

mbs-PDCP-COUNT-Req MBS-PDCP-COUNT-Req OPTIONAL,

iE-Extensions ProtocolExtensionContainer { {MCMRBSetupModifyConfiguration-Item-ExtIEs} } OPTIONAL,

...

}

MCMRBSetupModifyConfiguration-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

MCBearerContextF1UTNLInfoatDU ::= SEQUENCE {

mbsF1UInfoatDU UP-TNL-Information,

mbsMulticastF1UContextDescriptor MBSMulticastF1UContextDescriptor,

iE-Extensions ProtocolExtensionContainer { {MCBearerContextF1UTNLInfoatDU-ExtIEs} } OPTIONAL,

...

}

MCBearerContextF1UTNLInfoatDU-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

MulticastF1UContextReferenceE1 ::= OCTET STRING (SIZE(4))

MBSMulticastF1UContextDescriptor ::= SEQUENCE {

multicastF1UContextReferenceE1 MulticastF1UContextReferenceE1,

mc-F1UCtxtusage ENUMERATED {ptm, ptp, ptp-retransmission, ptp-forwarding, ...},

mbsAreaSession MBSAreaSessionID OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { MBSMulticastF1UContextDescriptor-ExtIEs } } OPTIONAL,

...

}

MBSMulticastF1UContextDescriptor-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

MCMRBRemoveConfiguration ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF MRB-ID

MBS-PDCP-COUNT-Req ::= ENUMERATED {true, ... }

-- MCBearerContextToModifyResponse

MCBearerContextToModifyResponse ::= SEQUENCE {

mcBearerContextNGU-TNLInfoatNGRANModifyResponse MCBearerContextNGU-TNLInfoatNGRANModifyResponse OPTIONAL,

mbsMulticastF1UContextDescriptor MBSMulticastF1UContextDescriptor OPTIONAL,

-- This IE shall be present if either the *MC MRB Setup or Modify Response List* IE or the *MC MRB Failed List*IE or both IEs are included.

mcMRBModifySetupResponseList MCMRBSetupModifyResponseList OPTIONAL,

mcMRBFailedList MCMRBFailedList OPTIONAL,

availableMCMRBConfig MCMRBSetupConfiguration OPTIONAL,

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

...

}

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

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

...

}

MCBearerContextNGU-TNLInfoatNGRANModifyResponse ::= SEQUENCE {

mbs-NGU-InfoatNGRAN MBSNGUInformationAtNGRAN,

mbsAreaSession MBSAreaSessionID OPTIONAL,

iE-Extensions ProtocolExtensionContainer { {MCBearerContextNGU-TNLInfoatNGRANModifyResponse-ExtIEs} } OPTIONAL,

...

}

MCBearerContextNGU-TNLInfoatNGRANModifyResponse-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

MCMRBSetupModifyResponseList ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF MCMRBSetupModifyResponseList-Item

MCMRBSetupModifyResponseList-Item ::= SEQUENCE {

mrb-ID MRB-ID,

qosflow-setup QoS-Flow-List OPTIONAL,

qosflow-failed QoS-Flow-Failed-List OPTIONAL,

mcBearerContextF1UTNLInfoatCU UP-TNL-Information OPTIONAL,

mBS-PDCP-COUNT MBS-PDCP-COUNT OPTIONAL,

iE-Extensions ProtocolExtensionContainer { {MCMRBSetupModifyResponseList-Item-ExtIEs} } OPTIONAL,

...

}

MCMRBSetupModifyResponseList-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

-- MCBearerContextToModifyRequired

MCBearerContextToModifyRequired ::= SEQUENCE {

mbsMulticastF1UContextDescriptor MBSMulticastF1UContextDescriptor OPTIONAL,

-- This IE shall be present if either the *MC MRB To Remove List Required* IE is included.

mcMRBToRemoveRequiredList MCMRBRemoveConfiguration OPTIONAL,

mcMRBToModifyRequiredList MCMRBModifyRequiredConfiguration OPTIONAL,

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

...

}

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

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

...

}

MCMRBModifyRequiredConfiguration ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF MCMRBModifyRequiredConfiguration-Item

MCMRBModifyRequiredConfiguration-Item ::= SEQUENCE {

mrb-ID MRB-ID,

mBS-PDCP-COUNT MBS-PDCP-COUNT OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { MCMRBModifyRequiredConfiguration-Item-ExtIEs} } OPTIONAL,

...

}

MCMRBModifyRequiredConfiguration-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

-- MCBearerContextToModifyConfirm

MCBearerContextToModifyConfirm ::= SEQUENCE {

mbsMulticastF1UContextDescriptor MBSMulticastF1UContextDescriptor OPTIONAL,

mcMRBModifyConfirmList MCMRBModifyConfirmList OPTIONAL,

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

...

}

MCMRBModifyConfirmList ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF MCMRBModifyConfirmList-Item

MCMRBModifyConfirmList-Item ::= SEQUENCE {

mrb-ID MRB-ID,

iE-Extensions ProtocolExtensionContainer { { MCMRBModifyConfirmList-Item-ExtIEs} } OPTIONAL,

...

}

MCMRBModifyConfirmList-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

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

...

}

-- MCForwardingResourceRequest

MCForwardingResourceRequest ::= SEQUENCE {

mcForwardingResourceID MCForwardingResourceID,

mbsAreaSession-ID MBSAreaSessionID OPTIONAL,

mrbForwardingResourceRequestList MRBForwardingResourceRequestList OPTIONAL,

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

...

}

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

...

}

MRBForwardingResourceRequestList ::= SEQUENCE (SIZE(1.. maxnoofQoSFlows)) OF MRBForwardingResourceRequest-Item

MRBForwardingResourceRequest-Item ::= SEQUENCE {

mrb-ID MRB-ID,

mrbProgressRequestType MRB-ProgressInformationType OPTIONAL,

mrbForwardingAddressRequest ENUMERATED {request, ...} OPTIONAL,

iE-Extensions ProtocolExtensionContainer { {MRBForwardingResourceRequest-Item-ExtIEs} } OPTIONAL,

...

}

MRBForwardingResourceRequest-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

-- MCForwardingResourceIndication

MCForwardingResourceIndication ::= SEQUENCE {

mcForwardingResourceID MCForwardingResourceID,

mrbForwardingResourceIndicationList MRBForwardingResourceIndicationList OPTIONAL,

mbsSessionAssociatedInformation MBSSessionAssociatedInformation OPTIONAL,

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

...

}

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

...

}

MRBForwardingResourceIndicationList ::= SEQUENCE (SIZE(1.. maxnoofQoSFlows)) OF MRBForwardingResourceIndication-Item

MRBForwardingResourceIndication-Item ::= SEQUENCE {

mrb-ID MRB-ID,

mrb-ProgressInformation MRB-ProgressInformation OPTIONAL,

mrbForwardingAddress UP-TNL-Information OPTIONAL,

iE-Extensions ProtocolExtensionContainer { {MRBForwardingResourceIndication-Item-ExtIEs} } OPTIONAL,

...

}

MRBForwardingResourceIndication-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

-- MCForwardingResourceResponse

MCForwardingResourceResponse ::= SEQUENCE {

mcForwardingResourceID MCForwardingResourceID,

mrbForwardingResourceResponseList MRBForwardingResourceResponseList OPTIONAL,

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

...

}

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

...

}

MRBForwardingResourceResponseList ::= SEQUENCE (SIZE(1.. maxnoofQoSFlows)) OF MRBForwardingResourceResponse-Item

MRBForwardingResourceResponse-Item ::= SEQUENCE {

mrb-ID MRB-ID,

mrb-ProgressInformation MRB-ProgressInformation OPTIONAL,

mrbForwardingAddress UP-TNL-Information OPTIONAL,

iE-Extensions ProtocolExtensionContainer { {MRBForwardingResourceResponse-Item-ExtIEs} } OPTIONAL,

...

}

MRBForwardingResourceResponse-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

-- MCForwardingResourceRelease

MCForwardingResourceRelease ::= SEQUENCE {

mcForwardingResourceID MCForwardingResourceID,

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

...

}

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

...

}

-- MCForwardingResourceReleaseIndication

MCForwardingResourceReleaseIndication ::= SEQUENCE {

mcForwardingResourceID MCForwardingResourceID,

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

...

}

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

...

}

MCForwardingResourceID ::= OCTET STRING (SIZE(2))

MDTPollutedMeasurementIndicator ::= ENUMERATED {

iDC,

no-IDC,

...

}

MRB-ID ::= INTEGER (1..512, ...)

MRB-ProgressInformation ::= SEQUENCE {

mrb-ProgressInformationSNs MRB-ProgressInformationSNs,

mrb-ProgressInformationType MRB-ProgressInformationType,

iE-Extensions ProtocolExtensionContainer { {MRB-ProgressInformation-ExtIEs} } OPTIONAL,

...

}

MRB-ProgressInformation-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

MRB-ProgressInformationSNs ::= CHOICE {

pdcp-SN12 INTEGER (0..4095),

pdcp-SN18 INTEGER (0..262143),

choice-extension ProtocolIE-SingleContainer { { MRB-ProgressInformationSNs-ExtIEs} }

}

MRB-ProgressInformationSNs-ExtIEs E1AP-PROTOCOL-IES ::= {

...

}

MRB-ProgressInformationType ::= ENUMERATED {oldest-available, last-delivered, ...}

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

startTimeStamp OCTET STRING (SIZE(4)),

endTimeStamp OCTET STRING (SIZE(4)),

usageCountUL INTEGER (0..18446744073709551615),

usageCountDL INTEGER (0..18446744073709551615),

iE-Extensions ProtocolExtensionContainer { { MRDC-Data-Usage-Report-Item-ExtIEs} } OPTIONAL,

...

}

MRDC-Data-Usage-Report-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

MRDC-Usage-Information ::= SEQUENCE {

data-Usage-per-PDU-Session-Report Data-Usage-per-PDU-Session-Report OPTIONAL,

data-Usage-per-QoS-Flow-List Data-Usage-per-QoS-Flow-List OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { MRDC-Usage-Information-ExtIEs} } OPTIONAL,

...

}

MRDC-Usage-Information-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

M4Configuration ::= SEQUENCE {

m4period M4period,

m4-links-to-log Links-to-log,

iE-Extensions ProtocolExtensionContainer { { M4Configuration-ExtIEs} } OPTIONAL,

...

}

M4Configuration-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

{ ID id-M4ReportAmount CRITICALITY ignore EXTENSION M4ReportAmount PRESENCE optional },

...

}

M4period ::= ENUMERATED {ms1024, ms2048, ms5120, ms10240, min1, ... }

M4ReportAmount ::= ENUMERATED { r1, r2, r4, r8, r16, r32, r64, infinity, ... }

M6Configuration ::= SEQUENCE {

m6report-Interval M6report-Interval,

m6-links-to-log Links-to-log,

iE-Extensions ProtocolExtensionContainer { { M6Configuration-ExtIEs} } OPTIONAL,

...

}

M6Configuration-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

{ ID id-M6ReportAmount CRITICALITY ignore EXTENSION M6ReportAmount PRESENCE optional },

...

}

M6ReportAmount ::= ENUMERATED { r1, r2, r4, r8, r16, r32, r64, infinity, ... }

M6report-Interval ::= ENUMERATED { ms120, ms240, ms480, ms640, ms1024, ms2048, ms5120, ms10240, ms20480 ,ms40960, min1, min6, min12, min30, ... }

M7Configuration ::= SEQUENCE {

m7period M7period,

m7-links-to-log Links-to-log,

iE-Extensions ProtocolExtensionContainer { { M7Configuration-ExtIEs} } OPTIONAL,

...

}

M7Configuration-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

{ ID id-M7ReportAmount CRITICALITY ignore EXTENSION M7ReportAmount PRESENCE optional },

...

}

M7period ::= INTEGER(1..60, ...)

M7ReportAmount ::= ENUMERATED { r1, r2, r4, r8, r16, r32, r64, infinity, ... }

MDT-Activation ::= ENUMERATED {

immediate-MDT-only,

immediate-MDT-and-Trace,

...

}

MDT-Configuration ::= SEQUENCE {

mdt-Activation MDT-Activation,

mDTMode MDTMode,

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

...

}

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

...

}

MDTMode ::= CHOICE {

immediateMDT ImmediateMDT,

choice-extension ProtocolIE-SingleContainer {{MDTMode-ExtIEs}}

}

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

...

}

MeasurementsToActivate ::= BIT STRING (SIZE (8))

MDTPLMNList ::= SEQUENCE (SIZE(1..maxnoofMDTPLMNs)) OF PLMN-Identity

MDTPLMNModificationList ::= SEQUENCE (SIZE(0..maxnoofMDTPLMNs)) OF PLMN-Identity

MT-SDT-Information ::= SEQUENCE {

mT-SDT-Data-Size MT-SDT-Data-Size,

iE-Extensions ProtocolExtensionContainer { {MT-SDT-Information-ExtIEs} } OPTIONAL

}

MT-SDT-Information-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

MT-SDT-Information-Request ::= ENUMERATED {true, ...}

MT-SDT-Data-Size::= INTEGER (1..96000, ...)

MBS-ServiceArea ::= CHOICE {

locationdependent MBS-ServiceAreaInformationList,

choice-Extensions ProtocolIE-SingleContainer { {MBSServiceArea-ExtIEs} }

}

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

...

}

MBS-ServiceAreaInformation ::= SEQUENCE {

mBS-ServiceAreaCellList MBS-ServiceAreaCellList OPTIONAL,

mBS-ServiceAreaTAIList MBS-ServiceAreaTAIList OPTIONAL,

iE-Extensions ProtocolExtensionContainer { {MBS-ServiceAreaInformation-ExtIEs} } OPTIONAL,

...

}

MBS-ServiceAreaInformation-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

MBS-ServiceAreaCellList ::= SEQUENCE (SIZE(1.. maxnoofCellsforMBS)) OF NR-CGI

MBS-ServiceAreaTAIList ::= SEQUENCE (SIZE(1.. maxnoofTAIforMBS)) OF MBS-ServiceAreaTAIList-Item

MBS-ServiceAreaTAIList-Item ::= SEQUENCE {

plmn-ID PLMN-Identity,

five5-TAC FiveGS-TAC,

iE-Extensions ProtocolExtensionContainer { {MBS-ServiceAreaTAIList-Item-ExtIEs} } OPTIONAL,

...

}

MBS-ServiceAreaTAIList-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

MBS-ServiceAreaInformationList ::= SEQUENCE (SIZE(1..maxnoofMBSServiceAreaInformation)) OF MBS-ServiceAreaInformationItem

MBS-ServiceAreaInformationItem ::= SEQUENCE {

mBS-AreaSessionID MBSAreaSessionID,

mBS-ServiceAreaInformation MBS-ServiceAreaInformation,

iE-Extensions ProtocolExtensionContainer { { MBS-ServiceAreaInformationItem-ExtIEs} } OPTIONAL,

...

}

MBS-ServiceAreaInformationItem-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

-- N

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

New-UL-TNL-Information-Required::= ENUMERATED {

required,

...

}

NGRANAllocationAndRetentionPriority ::= SEQUENCE {

priorityLevel PriorityLevel,

pre-emptionCapability Pre-emptionCapability,

pre-emptionVulnerability Pre-emptionVulnerability,

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

}

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

...

}

NG-RAN-QoS-Support-List ::= SEQUENCE (SIZE(1.. maxnoofNGRANQOSParameters)) OF NG-RAN-QoS-Support-Item

NG-RAN-QoS-Support-Item ::= SEQUENCE {

non-Dynamic5QIDescriptor Non-Dynamic5QIDescriptor,

iE-Extensions ProtocolExtensionContainer { { NG-RAN-QoS-Support-Item-ExtIEs } } OPTIONAL

}

NG-RAN-QoS-Support-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

NID ::= BIT STRING (SIZE (44))

Non-Dynamic5QIDescriptor ::= SEQUENCE {

fiveQI INTEGER (0..255, ...),

qoSPriorityLevel QoSPriorityLevel OPTIONAL,

averagingWindow AveragingWindow OPTIONAL,

maxDataBurstVolume MaxDataBurstVolume OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { Non-Dynamic5QIDescriptor-ExtIEs } } OPTIONAL

}

Non-Dynamic5QIDescriptor-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

{ ID id-CNPacketDelayBudgetDownlink CRITICALITY ignore EXTENSION ExtendedPacketDelayBudget PRESENCE optional }|

{ ID id-CNPacketDelayBudgetUplink CRITICALITY ignore EXTENSION ExtendedPacketDelayBudget PRESENCE optional },

...

}

NPNSupportInfo ::= CHOICE {

sNPN NPNSupportInfo-SNPN,

choice-extension ProtocolIE-SingleContainer {{NPNSupportInfo-ExtIEs}}

}

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

...

}

NPNSupportInfo-SNPN ::= SEQUENCE {

nID NID,

iE-Extensions ProtocolExtensionContainer { { NPNSupportInfo-SNPN-ExtIEs } } OPTIONAL

}

NPNSupportInfo-SNPN-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

NPNContextInfo ::= CHOICE {

sNPN NPNContextInfo-SNPN,

choice-extension ProtocolIE-SingleContainer {{NPNContextInfo-ExtIEs}}

}

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

...

}

NPNContextInfo-SNPN ::= SEQUENCE {

nID NID,

iE-Extensions ProtocolExtensionContainer { {NPNContextInfo-SNPN-ExtIEs } } OPTIONAL

}

NPNContextInfo-SNPN-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

NR-Cell-Identity ::= BIT STRING (SIZE(36))

NR-CGI ::= SEQUENCE {

pLMN-Identity PLMN-Identity,

nR-Cell-Identity NR-Cell-Identity,

iE-Extensions ProtocolExtensionContainer { { NR-CGI-ExtIEs } } OPTIONAL

}

NR-CGI-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

NR-CGI-Support-List ::= SEQUENCE (SIZE(1.. maxnoofNRCGI)) OF NR-CGI-Support-Item

NR-CGI-Support-Item ::= SEQUENCE {

nR-CGI NR-CGI,

iE-Extensions ProtocolExtensionContainer { { NR-CGI-Support-Item-ExtIEs } } OPTIONAL

}

NR-CGI-Support-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

Extended-NR-CGI-Support-List ::= SEQUENCE (SIZE(1.. maxnoofExtNRCGI)) OF Extended-NR-CGI-Support-Item

Extended-NR-CGI-Support-Item ::= SEQUENCE {

nR-CGI NR-CGI,

iE-Extensions ProtocolExtensionContainer { { Extended-NR-CGI-Support-Item-ExtIEs } } OPTIONAL

}

Extended-NR-CGI-Support-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

N6JitterInformation ::= SEQUENCE {

n6JitterLowerBound INTEGER (-127..127),

n6JitterUpperBound INTEGER (-127..127),

iE-Extensions ProtocolExtensionContainer { { N6JitterInformationExtIEs } } OPTIONAL,

...

}

N6JitterInformationExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

-- O

OutOfOrderDelivery ::= ENUMERATED {

true,

...

}

-- P

PacketDelayBudget ::= INTEGER (0..1023, ...)

PacketErrorRate ::= SEQUENCE {

pER-Scalar PER-Scalar,

pER-Exponent PER-Exponent,

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

...

}

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

...

}

PER-Scalar ::= INTEGER (0..9, ...)

PER-Exponent ::= INTEGER (0..9, ...)

PDCP-Configuration ::= SEQUENCE {

pDCP-SN-Size-UL PDCP-SN-Size,

pDCP-SN-Size-DL PDCP-SN-Size,

rLC-Mode RLC-Mode,

rOHC-Parameters ROHC-Parameters OPTIONAL,

t-ReorderingTimer T-ReorderingTimer OPTIONAL,

discardTimer DiscardTimer OPTIONAL,

uLDataSplitThreshold ULDataSplitThreshold OPTIONAL,

pDCP-Duplication PDCP-Duplication OPTIONAL,

pDCP-Reestablishment PDCP-Reestablishment OPTIONAL,

pDCP-DataRecovery PDCP-DataRecovery OPTIONAL,

duplication-Activation Duplication-Activation OPTIONAL,

outOfOrderDelivery OutOfOrderDelivery OPTIONAL,

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

...

}

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

{ID id-PDCP-StatusReportIndication CRITICALITY ignore EXTENSION PDCP-StatusReportIndication PRESENCE optional}|

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

{ ID id-EHC-Parameters CRITICALITY ignore EXTENSION EHC-Parameters PRESENCE optional}|

{ ID id-UDC-Parameters CRITICALITY ignore EXTENSION UDC-Parameters PRESENCE optional}|

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

...

}

PDCP-COUNT-Reset ::= ENUMERATED {

true,

...

}

PDCP-Count ::= SEQUENCE {

pDCP-SN PDCP-SN,

hFN HFN,

iE-Extensions ProtocolExtensionContainer { { PDCP-Count-ExtIEs } } OPTIONAL,

...

}

PDCP-Count-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

PDCP-SN-Status-Request ::= ENUMERATED {

requested,

...

}

PDCP-DataRecovery ::= ENUMERATED {

true,

...

}

PDCP-Duplication ::= ENUMERATED {

true,

...

}

PDCP-Reestablishment ::= ENUMERATED {

true,

...

}

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

PDU-Session-Resource-Data-Usage-Item ::= SEQUENCE {

pDU-Session-ID PDU-Session-ID,

mRDC-Usage-Information MRDC-Usage-Information,

iE-Extensions ProtocolExtensionContainer { { PDU-Session-Resource-Data-Usage-Item-ExtIEs } } OPTIONAL,

...

}

PDU-Session-Resource-Data-Usage-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

PDCP-SN ::= INTEGER (0..262143)

PDCP-SN-Size ::= ENUMERATED {

s-12,

s-18,

...,

s-7,

s-15,

s-16

}

PDCP-SN-Status-Information ::= SEQUENCE {

pdcpStatusTransfer-UL DRBBStatusTransfer,

pdcpStatusTransfer-DL PDCP-Count,

iE-Extension ProtocolExtensionContainer { { PDCP-SN-Status-Information-ExtIEs} } OPTIONAL,

...

}

PDCP-StatusReportIndication ::= ENUMERATED {

downlink,

uplink,

both,

...

}

PDCP-SN-Status-Information-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

DRBBStatusTransfer ::= SEQUENCE {

receiveStatusofPDCPSDU BIT STRING (SIZE(1..131072)) OPTIONAL,

countValue PDCP-Count,

iE-Extension ProtocolExtensionContainer { {DRBBStatusTransfer-ExtIEs} } OPTIONAL,

...

}

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

...

}

PDU-Session-ID ::= INTEGER (0..255)

PDUSession-PairID ::= INTEGER (0..255, ...)

PDU-Session-Resource-Activity ::= ENUMERATED {

active,

not-active,

...

}

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

PDU-Session-Resource-Activity-Item ::= SEQUENCE {

pDU-Session-ID PDU-Session-ID,

pDU-Session-Resource-Activity PDU-Session-Resource-Activity,

iE-Extensions ProtocolExtensionContainer { { PDU-Session-Resource-Activity-ItemExtIEs } } OPTIONAL,

...

}

PDU-Session-Resource-Activity-ItemExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

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

PDU-Session-Resource-Confirm-Modified-Item ::= SEQUENCE {

pDU-Session-ID PDU-Session-ID,

dRB-Confirm-Modified-List-NG-RAN DRB-Confirm-Modified-List-NG-RAN OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { PDU-Session-Resource-Confirm-Modified-Item-ExtIEs } } OPTIONAL,

...

}

PDU-Session-Resource-Confirm-Modified-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

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

PDU-Session-Resource-Failed-Item ::= SEQUENCE {

pDU-Session-ID PDU-Session-ID,

cause Cause,

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

...

}

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

...

}

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

PDU-Session-Resource-Failed-Mod-Item ::= SEQUENCE {

pDU-Session-ID PDU-Session-ID,

cause Cause,

iE-Extensions ProtocolExtensionContainer { { PDU-Session-Resource-Failed-Mod-Item-ExtIEs } } OPTIONAL,

...

}

PDU-Session-Resource-Failed-Mod-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

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

PDU-Session-Resource-Failed-To-Modify-Item ::= SEQUENCE {

pDU-Session-ID PDU-Session-ID,

cause Cause,

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

...

}

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

...

}

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

PDU-Session-Resource-Modified-Item ::= SEQUENCE {

pDU-Session-ID PDU-Session-ID,

nG-DL-UP-TNL-Information UP-TNL-Information OPTIONAL,

securityResult SecurityResult OPTIONAL,

pDU-Session-Data-Forwarding-Information-Response Data-Forwarding-Information OPTIONAL,

dRB-Setup-List-NG-RAN DRB-Setup-List-NG-RAN OPTIONAL,

dRB-Failed-List-NG-RAN DRB-Failed-List-NG-RAN OPTIONAL,

dRB-Modified-List-NG-RAN DRB-Modified-List-NG-RAN OPTIONAL,

dRB-Failed-To-Modify-List-NG-RAN DRB-Failed-To-Modify-List-NG-RAN OPTIONAL,

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

...

}

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

{ ID id-redundant-nG-DL-UP-TNL-Information CRITICALITY ignore EXTENSION UP-TNL-Information PRESENCE optional },

...

}

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

PDU-Session-Resource-Required-To-Modify-Item ::= SEQUENCE {

pDU-Session-ID PDU-Session-ID,

nG-DL-UP-TNL-Information UP-TNL-Information OPTIONAL,

dRB-Required-To-Modify-List-NG-RAN DRB-Required-To-Modify-List-NG-RAN OPTIONAL,

dRB-Required-To-Remove-List-NG-RAN DRB-Required-To-Remove-List-NG-RAN OPTIONAL,

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

...

}

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

{ ID id-redundant-nG-DL-UP-TNL-Information CRITICALITY ignore EXTENSION UP-TNL-Information PRESENCE optional },

...

}

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

PDU-Session-Resource-Setup-Item ::= SEQUENCE {

pDU-Session-ID PDU-Session-ID,

securityResult SecurityResult OPTIONAL,

nG-DL-UP-TNL-Information UP-TNL-Information,

pDU-Session-Data-Forwarding-Information-Response Data-Forwarding-Information OPTIONAL,

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

dRB-Setup-List-NG-RAN DRB-Setup-List-NG-RAN,

dRB-Failed-List-NG-RAN DRB-Failed-List-NG-RAN OPTIONAL,

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

...

}

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

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

{ ID id-RedundantPDUSessionInformation-used CRITICALITY ignore EXTENSION RedundantPDUSessionInformation PRESENCE optional },

...

}

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

PDU-Session-Resource-Setup-Mod-Item ::= SEQUENCE {

pDU-Session-ID PDU-Session-ID,

securityResult SecurityResult OPTIONAL,

nG-DL-UP-TNL-Information UP-TNL-Information,

pDU-Session-Data-Forwarding-Information-Response Data-Forwarding-Information OPTIONAL,

dRB-Setup-Mod-List-NG-RAN DRB-Setup-Mod-List-NG-RAN,

dRB-Failed-Mod-List-NG-RAN DRB-Failed-Mod-List-NG-RAN OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { PDU-Session-Resource-Setup-Mod-Item-ExtIEs } } OPTIONAL,

...

}

PDU-Session-Resource-Setup-Mod-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

{ ID id-redundant-nG-DL-UP-TNL-Information CRITICALITY ignore EXTENSION UP-TNL-Information PRESENCE optional },

...

}

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

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

pDU-Session-ID PDU-Session-ID,

securityIndication SecurityIndication OPTIONAL,

pDU-Session-Resource-DL-AMBR BitRate OPTIONAL,

nG-UL-UP-TNL-Information UP-TNL-Information OPTIONAL,

pDU-Session-Data-Forwarding-Information-Request Data-Forwarding-Information-Request OPTIONAL,

pDU-Session-Data-Forwarding-Information Data-Forwarding-Information OPTIONAL,

pDU-Session-Inactivity-Timer Inactivity-Timer OPTIONAL,

networkInstance NetworkInstance OPTIONAL,

dRB-To-Setup-List-NG-RAN DRB-To-Setup-List-NG-RAN OPTIONAL,

dRB-To-Modify-List-NG-RAN DRB-To-Modify-List-NG-RAN OPTIONAL,

dRB-To-Remove-List-NG-RAN DRB-To-Remove-List-NG-RAN OPTIONAL,

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

...

}

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

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

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

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

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

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

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

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

...

}

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

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

pDU-Session-ID PDU-Session-ID,

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

...

}

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

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

...

}

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

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

pDU-Session-ID PDU-Session-ID,

pDU-Session-Type PDU-Session-Type,

sNSSAI SNSSAI,

securityIndication SecurityIndication,

pDU-Session-Resource-DL-AMBR BitRate OPTIONAL,

nG-UL-UP-TNL-Information UP-TNL-Information,

pDU-Session-Data-Forwarding-Information-Request Data-Forwarding-Information-Request OPTIONAL,

pDU-Session-Inactivity-Timer Inactivity-Timer OPTIONAL,

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

networkInstance NetworkInstance OPTIONAL,

dRB-To-Setup-List-NG-RAN DRB-To-Setup-List-NG-RAN,

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

...

}

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

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

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

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

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

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

...

}

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

PDU-Session-Resource-To-Setup-Mod-Item ::= SEQUENCE {

pDU-Session-ID PDU-Session-ID,

pDU-Session-Type PDU-Session-Type,

sNSSAI SNSSAI,

securityIndication SecurityIndication,

pDU-Session-Resource-AMBR BitRate OPTIONAL,

nG-UL-UP-TNL-Information UP-TNL-Information,

pDU-Session-Data-Forwarding-Information-Request Data-Forwarding-Information-Request OPTIONAL,

pDU-Session-Inactivity-Timer Inactivity-Timer OPTIONAL,

dRB-To-Setup-Mod-List-NG-RAN DRB-To-Setup-Mod-List-NG-RAN,

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

...

}

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

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

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

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

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

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

...

}

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

PDU-Session-To-Notify-Item ::= SEQUENCE {

pDU-Session-ID PDU-Session-ID,

qoS-Flow-List QoS-Flow-List,

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

...

}

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

...

}

PDU-Session-Type ::= ENUMERATED {

ipv4,

ipv6,

ipv4v6,

ethernet,

unstructured,

...

}

PDUSetbasedHandlingIndicator ::= ENUMERATED {supported, ...}

PLMN-Identity ::= OCTET STRING (SIZE(3))

PortNumber ::= BIT STRING (SIZE(16))

PPI ::= INTEGER (0..7, ...)

PriorityLevel ::= INTEGER { spare (0), highest (1), lowest (14), no-priority (15) } (0..15)

Pre-emptionCapability ::= ENUMERATED {

shall-not-trigger-pre-emption,

may-trigger-pre-emption

}

Pre-emptionVulnerability ::= ENUMERATED {

not-pre-emptable,

pre-emptable

}

PrivacyIndicator ::= ENUMERATED {

immediate-MDT,

logged-MDT,

...

}

PDUSetQoSParameters ::= SEQUENCE {

pduSetDelayBudget ExtendedPacketDelayBudget OPTIONAL,

pduSetErrorRate PacketErrorRate OPTIONAL,

pduSetIntegratedHandlingInformation ENUMERATED {true, false, ...} OPTIONAL,

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

}

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

...

}

-- Q

QCI ::= INTEGER (0..255)

QoS-Characteristics ::= CHOICE {

non-Dynamic-5QI Non-Dynamic5QIDescriptor,

dynamic-5QI Dynamic5QIDescriptor,

choice-extension ProtocolIE-SingleContainer {{QoS-Characteristics-ExtIEs}}

}

QoS-Characteristics-ExtIEs E1AP-PROTOCOL-IES ::= {

...

}

QoS-Flow-Identifier ::= INTEGER (0..63)

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

QoS-Flow-Item ::= SEQUENCE {

qoS-Flow-Identifier QoS-Flow-Identifier,

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

...

}

QoS-Flow-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

{ID id-QoSFlowMappingIndication CRITICALITY ignore EXTENSION QoS-Flow-Mapping-Indication PRESENCE optional}|

{ID id-DataForwardingSourceIPAddress CRITICALITY ignore EXTENSION TransportLayerAddress PRESENCE optional}|

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

...

}

QoS-Flow-Failed-List ::= SEQUENCE (SIZE(1.. maxnoofQoSFlows)) OF QoS-Flow-Failed-Item

QoS-Flow-Failed-Item ::= SEQUENCE {

qoS-Flow-Identifier QoS-Flow-Identifier,

cause Cause,

iE-Extensions ProtocolExtensionContainer { { QoS-Flow-Failed-Item-ExtIEs } } OPTIONAL,

...

}

QoS-Flow-Failed-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

QoS-Flow-Mapping-List ::= SEQUENCE (SIZE(1.. maxnoofQoSFlows)) OF QoS-Flow-Mapping-Item

QoS-Flow-Mapping-Item ::= SEQUENCE {

qoS-Flow-Identifier QoS-Flow-Identifier,

qoSFlowMappingIndication QoS-Flow-Mapping-Indication OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { QoS-Flow-Mapping-Item-ExtIEs } } OPTIONAL,

...

}

QoS-Flow-Mapping-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

QoS-Flow-Mapping-Indication ::= ENUMERATED {ul, dl, ...}

QoS-Flows-DRB-Remapping ::= ENUMERATED {update, source-configuration, ...}

QoS-Parameters-Support-List ::= SEQUENCE {

eUTRAN-QoS-Support-List EUTRAN-QoS-Support-List OPTIONAL,

nG-RAN-QoS-Support-List NG-RAN-QoS-Support-List OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { QoS-Parameters-Support-List-ItemExtIEs} } OPTIONAL,

...

}

QoS-Parameters-Support-List-ItemExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

QoSPriorityLevel ::= INTEGER (0..127, ...)

QoS-Flow-QoS-Parameter-List ::= SEQUENCE (SIZE(1.. maxnoofQoSFlows)) OF QoS-Flow-QoS-Parameter-Item

QoS-Flow-QoS-Parameter-Item ::= SEQUENCE {

qoS-Flow-Identifier QoS-Flow-Identifier,

qoSFlowLevelQoSParameters QoSFlowLevelQoSParameters,

qoSFlowMappingIndication QoS-Flow-Mapping-Indication OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { QoS-Flow-QoS-Parameter-Item-ExtIEs } } OPTIONAL,

...

}

QoS-Flow-QoS-Parameter-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

{ID id-RedundantQosFlowIndicator CRITICALITY ignore EXTENSION RedundantQoSFlowIndicator PRESENCE optional}|

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

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

...

}

QoSFlowLevelQoSParameters ::= SEQUENCE {

qoS-Characteristics QoS-Characteristics,

nGRANallocationRetentionPriority NGRANAllocationAndRetentionPriority,

gBR-QoS-Flow-Information GBR-QoSFlowInformation OPTIONAL,

reflective-QoS-Attribute ENUMERATED {subject-to, ...} OPTIONAL,

additional-QoS-Information ENUMERATED {more-likely, ...} OPTIONAL,

paging-Policy-Index INTEGER (1..8, ...) OPTIONAL,

-- The paging-Policy-Index IE is not used in this version of the specification.

reflective-QoS-Indicator ENUMERATED {enabled, ...} OPTIONAL,

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

}

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

{ID id-QoSMonitoringRequest CRITICALITY ignore EXTENSION QosMonitoringRequest PRESENCE optional}|

{ID id-MCG-OfferedGBRQoSFlowInfo CRITICALITY ignore EXTENSION GBR-QoSFlowInformation PRESENCE optional}|

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

{ID id-QoSMonitoringDisabled CRITICALITY ignore EXTENSION QosMonitoringDisabled PRESENCE optional}|

{ID id-DataForwardingSourceIPAddress CRITICALITY ignore EXTENSION TransportLayerAddress PRESENCE optional}|

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

...

}

QosMonitoringRequest ::= ENUMERATED {ul, dl, both}

QosMonitoringReportingFrequency ::= INTEGER (1..1800, ...)

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

QoS-Flow-Removed-Item ::= SEQUENCE {

qoS-Flow-Identifier QoS-Flow-Identifier,

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

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

iE-Extensions ProtocolExtensionContainer { { QoS-Flow-Removed-Item-ExtIEs } } OPTIONAL,

...

}

QoS-Flow-Removed-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

QoS-Flows-to-be-forwarded-List ::= SEQUENCE (SIZE(1.. maxnoofQoSFlows)) OF QoS-Flows-to-be-forwarded-Item

QoS-Flows-to-be-forwarded-Item ::= SEQUENCE {

qoS-Flow-Identifier QoS-Flow-Identifier,

iE-Extensions ProtocolExtensionContainer { { QoS-Flows-to-be-forwarded-Item-ExtIEs } } OPTIONAL,

...

}

QoS-Flows-to-be-forwarded-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

QoS-Mapping-Information ::= SEQUENCE {

dscp BIT STRING (SIZE(6)) OPTIONAL,

flow-label BIT STRING (SIZE(20)) OPTIONAL,

...

}

DataForwardingtoNG-RANQoSFlowInformationList ::= SEQUENCE (SIZE(1.. maxnoofQoSFlows)) OF DataForwardingtoNG-RANQoSFlowInformationList-Item

DataForwardingtoNG-RANQoSFlowInformationList-Item ::= SEQUENCE {

qoS-Flow-Identifier QoS-Flow-Identifier,

iE-Extensions ProtocolExtensionContainer { { DataForwardingtoNG-RANQoSFlowInformationList-Item-ExtIEs} } OPTIONAL,

...

}

DataForwardingtoNG-RANQoSFlowInformationList-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

-- R

RANUEID ::= OCTET STRING (SIZE (8))

RAT-Type ::= ENUMERATED {

e-UTRA,

nR,

...

}

RedundantQoSFlowIndicator::= ENUMERATED {true,false}

RedundantPDUSessionInformation ::= SEQUENCE {

rSN RSN,

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

...

}

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

{ID id-PDUSession-PairID CRITICALITY ignore EXTENSION PDUSession-PairID PRESENCE optional },

...

}

RSN ::= ENUMERATED {v1, v2, ...}

RetainabilityMeasurementsInfo ::= SEQUENCE (SIZE(1.. maxnoofDRBs)) OF DRB-Removed-Item

RegistrationRequest ::= ENUMERATED {

start,

stop,

...

}

ReportCharacteristics ::= BIT STRING (SIZE(36))

ReportingPeriodicity ::= ENUMERATED {

ms500, ms1000, ms2000, ms5000, ms10000, ms20000, ms30000, ms40000, ms50000, ms60000, ms70000, ms80000, ms90000, ms100000, ms110000, ms120000,

...

}

RequestedAction4AvailNGUTermination ::= ENUMERATED {

apply-available-configuration,

apply-requested-configuration,

...,

apply-available-configuration-if-same-as-requested

}

RLC-Mode ::= ENUMERATED {

rlc-tm,

rlc-am,

rlc-um-bidirectional,

rlc-um-unidirectional-ul,

rlc-um-unidirectional-dl,

...

}

ROHC-Parameters ::= CHOICE {

rOHC ROHC,

uPlinkOnlyROHC UplinkOnlyROHC,

choice-Extension ProtocolIE-SingleContainer { { ROHC-Parameters-ExtIEs} }

}

ROHC-Parameters-ExtIEs E1AP-PROTOCOL-IES ::= {

...

}

ROHC ::= SEQUENCE {

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

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

continueROHC ENUMERATED {true, ...} OPTIONAL,

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

}

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

...

}

-- S

SDT-data-size-threshold ::= INTEGER (1.. 192000, ...)

SDT-data-size-threshold-Crossed ::= ENUMERATED {true, ...}

SCGActivationStatus ::= ENUMERATED { scg-activated, scg-deactivated, ...}

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,

...

}

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

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

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

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

SurvivalTime ::= INTEGER (0..1920000, ...)

SpecialTriggeringPurpose    ::= ENUMERATED  {

indirect-data-forwarding,

...

}

F1UTunnelNotEstablished::= ENUMERATED {

true,

...

}

-- T

TimeToWait ::= ENUMERATED {v1s, v2s, v5s, v10s, v20s, v60s, ...}

TNLAssociationUsage ::= ENUMERATED {

ue,

non-ue,

both,

...

}

TNL-AvailableCapacityIndicator ::= SEQUENCE {

dL-TNL-OfferedCapacity INTEGER (0..16777216, ...),

dL-TNL-AvailableCapacity INTEGER (0..100, ...),

uL-TNL-OfferedCapacity INTEGER (0..16777216, ...),

uL-TNL-AvailableCapacity INTEGER (0..100, ...),

iE-Extensions ProtocolExtensionContainer { { TNL-AvailableCapacityIndicator-ExtIEs } } OPTIONAL,

...

}

TNL-AvailableCapacityIndicator-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

TSCTrafficCharacteristics ::= SEQUENCE {

tSCTrafficCharacteristicsUL TSCTrafficInformation OPTIONAL,

tSCTrafficCharacteristicsDL TSCTrafficInformation OPTIONAL,

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

}

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

...

}

TSCTrafficInformation ::= SEQUENCE {

periodicity Periodicity,

burstArrivalTime BurstArrivalTime OPTIONAL,

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

}

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

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

{ID id-N6JitterInformation CRITICALITY ignore EXTENSION N6JitterInformation PRESENCE optional},

...

}

Periodicity ::= INTEGER (1..640000, ...)

BurstArrivalTime ::= OCTET STRING

TraceActivation ::= SEQUENCE {

traceID TraceID,

interfacesToTrace InterfacesToTrace,

traceDepth TraceDepth,

traceCollectionEntityIPAddress TransportLayerAddress,

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

...

}

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

{ ID id-MDTConfiguration CRITICALITY ignore EXTENSION MDT-Configuration PRESENCE optional }|

{ ID id-TraceCollectionEntityURI CRITICALITY ignore EXTENSION URIaddress PRESENCE optional},

...

}

TraceDepth ::= ENUMERATED {

minimum,

medium,

maximum,

minimumWithoutVendorSpecificExtension,

mediumWithoutVendorSpecificExtension,

maximumWithoutVendorSpecificExtension,

...

}

TraceID ::= OCTET STRING (SIZE(8))

TransportLayerAddress ::= BIT STRING (SIZE(1..160, ...))

TransactionID ::= INTEGER (0..255, ...)

T-Reordering ::= ENUMERATED {ms0, ms1, ms2, ms4, ms5, ms8, ms10, ms15, ms20, ms30, ms40, ms50, ms60, ms80, ms100, ms120, ms140, ms160, ms180, ms200, ms220, ms240, ms260, ms280, ms300, ms500, ms750, ms1000, ms1250, ms1500, ms1750, ms2000, ms2250, ms2500, ms2750, ms3000, ...}

T-ReorderingTimer ::= SEQUENCE {

t-Reordering T-Reordering,

iE-Extensions ProtocolExtensionContainer { { T-ReorderingTimer-ExtIEs } } OPTIONAL,

...

}

T-ReorderingTimer-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

TypeOfError ::= ENUMERATED {

not-understood,

missing,

...

}

Transport-Layer-Address-Info ::= SEQUENCE {

transport-UP-Layer-Addresses-Info-To-Add-List Transport-UP-Layer-Addresses-Info-To-Add-List OPTIONAL,

transport-UP-Layer-Addresses-Info-To-Remove-List Transport-UP-Layer-Addresses-Info-To-Remove-List OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { Transport-Layer-Address-Info-ExtIEs} } OPTIONAL,

...

}

Transport-Layer-Address-Info-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

Transport-UP-Layer-Addresses-Info-To-Add-List ::= SEQUENCE (SIZE(1.. maxnoofTLAs)) OF Transport-UP-Layer-Addresses-Info-To-Add-Item

Transport-UP-Layer-Addresses-Info-To-Add-Item ::= SEQUENCE {

iP-SecTransportLayerAddress TransportLayerAddress,

gTPTransportLayerAddressesToAdd GTPTLAs OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { Transport-UP-Layer-Addresses-Info-To-Add-ItemExtIEs } } OPTIONAL,

...

}

Transport-UP-Layer-Addresses-Info-To-Add-ItemExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

Transport-UP-Layer-Addresses-Info-To-Remove-List ::= SEQUENCE (SIZE(1.. maxnoofTLAs)) OF Transport-UP-Layer-Addresses-Info-To-Remove-Item

Transport-UP-Layer-Addresses-Info-To-Remove-Item ::= SEQUENCE {

iP-SecTransportLayerAddress TransportLayerAddress,

gTPTransportLayerAddressesToRemove GTPTLAs OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { Transport-UP-Layer-Addresses-Info-To-Remove-ItemExtIEs } } OPTIONAL,

...

}

Transport-UP-Layer-Addresses-Info-To-Remove-ItemExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

-- U

UDC-Parameters ::= SEQUENCE {

bufferSize BufferSize,

dictionary Dictionary OPTIONAL,

continueUDC ENUMERATED {true, ...} OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { UDC-Parameters-ExtIEs } } OPTIONAL

}

UDC-Parameters-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

{ ID id-VersionID CRITICALITY ignore EXTENSION INTEGER (0..15) PRESENCE optional},

...

}

UE-Activity ::= ENUMERATED {

active,

not-active,

...

}

UE-associatedLogicalE1-ConnectionItem ::= SEQUENCE {

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

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

iE-Extensions ProtocolExtensionContainer { { UE-associatedLogicalE1-ConnectionItemExtIEs} } OPTIONAL,

...

}

UE-associatedLogicalE1-ConnectionItemExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

UESliceMaximumBitRateList ::= SEQUENCE (SIZE(1.. maxnoofSMBRValues)) OF UESliceMaximumBitRateItem

UESliceMaximumBitRateItem ::= SEQUENCE {

sNSSAI SNSSAI,

uESliceMaximumBitRateDL BitRate,

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

...

}

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

...

}

UL-Configuration ::= ENUMERATED {

no-data,

shared,

only,

...

}

ULUPTNLAddressToUpdateItem ::= SEQUENCE {

oldTNLAdress TransportLayerAddress,

newTNLAdress TransportLayerAddress,

iE-Extensions ProtocolExtensionContainer { { ULUPTNLAddressToUpdateItemExtIEs } } OPTIONAL,

...

}

ULUPTNLAddressToUpdateItemExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

ULDataSplitThreshold ::= ENUMERATED {b0, b100, b200, b400, b800, b1600, b3200, b6400, b12800, b25600, b51200, b102400, b204800, b409600, b819200, b1228800, b1638400, b2457600, b3276800, b4096000, b4915200, b5734400, b6553600, infinity, ...}

UP-Parameters ::= SEQUENCE (SIZE(1.. maxnoofUPParameters)) OF UP-Parameters-Item

UP-Parameters-Item ::= SEQUENCE {

uP-TNL-Information UP-TNL-Information,

cell-Group-ID Cell-Group-ID,

iE-Extensions ProtocolExtensionContainer { { UP-Parameters-Item-ExtIEs } } OPTIONAL,

...

}

UP-Parameters-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

{ID id-QoS-Mapping-Information CRITICALITY reject EXTENSION QoS-Mapping-Information PRESENCE optional}|

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

...

}

UPSecuritykey ::= SEQUENCE {

encryptionKey EncryptionKey,

integrityProtectionKey IntegrityProtectionKey OPTIONAL,

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

...

}

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

...

}

UP-TNL-Information ::= CHOICE {

gTPTunnel GTPTunnel,

choice-extension ProtocolIE-SingleContainer {{UP-TNL-Information-ExtIEs}}

}

UP-TNL-Information-ExtIEs E1AP-PROTOCOL-IES ::= {

...

}

UplinkOnlyROHC ::= SEQUENCE {

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

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

continueROHC ENUMERATED {true, ...} OPTIONAL,

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

}

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

...

}

URIaddress ::= VisibleString

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

-- V

-- W

-- X

-- Y

-- Z

END

-- ASN1STOP

### 9.4.6 Common Definitions

-- ASN1START

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

--

-- Common definitions

--

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

E1AP-CommonDataTypes {

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

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

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

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

--

-- Extension constants

--

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

maxPrivateIEs INTEGER ::= 65535

maxProtocolExtensions INTEGER ::= 65535

maxProtocolIEs INTEGER ::= 65535

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

--

-- Common Data Types

--

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

Criticality ::= ENUMERATED { reject, ignore, notify }

Presence ::= ENUMERATED { optional, conditional, mandatory }

PrivateIE-ID ::= CHOICE {

local INTEGER (0.. maxPrivateIEs),

global OBJECT IDENTIFIER

}

ProcedureCode ::= INTEGER (0..255)

ProtocolExtensionID ::= INTEGER (0..maxProtocolExtensions)

ProtocolIE-ID ::= INTEGER (0..maxProtocolIEs)

TriggeringMessage ::= ENUMERATED { initiating-message, successful-outcome, unsuccessful-outcome}

END

-- ASN1STOP

### 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-resourceStatusReportingInitiation ProcedureCode ::= 22

id-resourceStatusReporting ProcedureCode ::= 23

id-iAB-UPTNLAddressUpdate ProcedureCode ::= 24

id-CellTrafficTrace ProcedureCode ::= 25

id-earlyForwardingSNTransfer ProcedureCode ::= 26

id-gNB-CU-CPMeasurementResultsInformation ProcedureCode ::= 27

id-iABPSKNotification ProcedureCode ::= 28

id-BCBearerContextSetup ProcedureCode ::= 29

id-BCBearerContextModification ProcedureCode ::= 30

id-BCBearerContextModificationRequired ProcedureCode ::= 31

id-BCBearerContextRelease ProcedureCode ::= 32

id-BCBearerContextReleaseRequest ProcedureCode ::= 33

id-MCBearerContextSetup ProcedureCode ::= 34

id-MCBearerContextModification ProcedureCode ::= 35

id-MCBearerContextModificationRequired ProcedureCode ::= 36

id-MCBearerContextRelease ProcedureCode ::= 37

id-MCBearerContextReleaseRequest ProcedureCode ::= 38

id-MCBearerNotification ProcedureCode ::= 39

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

--

-- 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

maxnoofTNLAddresses INTEGER ::= 8

maxnoofMDTPLMNs INTEGER ::= 16

maxnoofQoSParaSets INTEGER ::= 8

maxnoofExtSliceItems INTEGER ::= 65535

maxnoofDataForwardingTunneltoE-UTRAN INTEGER ::= 256

maxnoofExtNRCGI INTEGER ::= 16384

maxnoofPSKs INTEGER ::= 256

maxnoofECGI INTEGER ::= 512

maxnoofSMBRValues INTEGER ::= 8

maxnoofMBSAreaSessionIDs INTEGER ::= 256

maxnoofSharedNG-UTerminations INTEGER ::= 8

maxnoofMRBs INTEGER ::= 32

maxnoofMBSSessionIDs INTEGER ::= 512

maxnoofCellsforMBS INTEGER ::= 512

maxnoofTAIforMBS INTEGER ::= 512

maxnoofMBSServiceAreaInformation INTEGER ::= 256

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

--

-- 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-QoSFlowsDRBRemapping ProtocolIE-ID ::= 141

id-DataForwardingSourceIPAddress ProtocolIE-ID ::= 142

id-SecurityIndicationModify ProtocolIE-ID ::= 143

id-IAB-Donor-CU-UPPSKInfo ProtocolIE-ID ::= 144

id-ECGI-Support-List ProtocolIE-ID ::= 145

id-MDTPollutedMeasurementIndicator ProtocolIE-ID ::= 146

id-M4ReportAmount ProtocolIE-ID ::= 147

id-M6ReportAmount ProtocolIE-ID ::= 148

id-M7ReportAmount ProtocolIE-ID ::= 149

id-UESliceMaximumBitRateList ProtocolIE-ID ::= 150

id-PDUSession-PairID ProtocolIE-ID ::= 151

id-SurvivalTime ProtocolIE-ID ::= 152

id-UDC-Parameters ProtocolIE-ID ::= 153

id-SCGActivationStatus ProtocolIE-ID ::= 154

id-GNB-CU-CP-MBS-E1AP-ID ProtocolIE-ID ::= 155

id-GNB-CU-UP-MBS-E1AP-ID ProtocolIE-ID ::= 156

id-GlobalMBSSessionID ProtocolIE-ID ::= 157

id-BCBearerContextToSetup ProtocolIE-ID ::= 158

id-BCBearerContextToSetupResponse ProtocolIE-ID ::= 159

id-BCBearerContextToModify ProtocolIE-ID ::= 160

id-BCBearerContextToModifyResponse ProtocolIE-ID ::= 161

id-BCBearerContextToModifyRequired ProtocolIE-ID ::= 162

id-BCBearerContextToModifyConfirm ProtocolIE-ID ::= 163

id-MCBearerContextToSetup ProtocolIE-ID ::= 164

id-MCBearerContextToSetupResponse ProtocolIE-ID ::= 165

id-MCBearerContextToModify ProtocolIE-ID ::= 166

id-MCBearerContextToModifyResponse ProtocolIE-ID ::= 167

id-MCBearerContextToModifyRequired ProtocolIE-ID ::= 168

id-MCBearerContextToModifyConfirm ProtocolIE-ID ::= 169

id-MBSMulticastF1UContextDescriptor ProtocolIE-ID ::= 170

id-gNB-CU-UP-MBS-Support-Info ProtocolIE-ID ::= 171

id-SecurityIndication ProtocolIE-ID ::= 172

id-SecurityResult ProtocolIE-ID ::= 173

id-SDTContinueROHC ProtocolIE-ID ::= 174

id-SDTindicatorSetup ProtocolIE-ID ::= 175

id-SDTindicatorMod ProtocolIE-ID ::= 176

id-DiscardTimerExtended ProtocolIE-ID ::= 177

id-ManagementBasedMDTPLMNModificationList ProtocolIE-ID ::= 178

id-MCForwardingResourceRequest ProtocolIE-ID ::= 179

id-MCForwardingResourceIndication ProtocolIE-ID ::= 180

id-MCForwardingResourceResponse ProtocolIE-ID ::= 181

id-MCForwardingResourceRelease ProtocolIE-ID ::= 182

id-MCForwardingResourceReleaseIndication ProtocolIE-ID ::= 183

id-PDCP-COUNT-Reset ProtocolIE-ID ::= 184

id-MBSSessionAssociatedInfoNonSupportToSupport ProtocolIE-ID ::= 185

id-VersionID ProtocolIE-ID ::= 186

id-InactivityInformationRequest ProtocolIE-ID ::= 187

id-UEInactivityInformation ProtocolIE-ID ::= 188

id-MBSAreaSessionID ProtocolIE-ID ::= 189

id-Secondary-PDU-Session-Data-Forwarding-Information ProtocolIE-ID ::= 190

id-MBSSessionResourceNotification ProtocolIE-ID ::= 191

id-MCBearerContextInactivityTimer ProtocolIE-ID ::= 192

id-MCBearerContextStatusChange ProtocolIE-ID ::= 193

id-MT-SDT-Information ProtocolIE-ID ::= 194

id-MT-SDT-Information-Request ProtocolIE-ID ::= 195

id-SDT-data-size-threshold ProtocolIE-ID ::= 196

id-SDT-data-size-threshold-Crossed ProtocolIE-ID ::= 197

id-SpecialTriggeringPurpose ProtocolIE-ID ::= 198

id-AssociatedSessionID ProtocolIE-ID ::= 199

id-MBS-ServiceArea ProtocolIE-ID ::= 200

id-PDUSetQoSParameters ProtocolIE-ID ::= 201

id-N6JitterInformation ProtocolIE-ID ::= 202

id-ECNMarkingorCongestionInformationReportingRequest ProtocolIE-ID ::= 203

id-ECNMarkingorCongestionInformationReportingStatus ProtocolIE-ID ::= 204

id-PDUSetbasedHandlingIndicator ProtocolIE-ID ::= 205

id-IndirectPathIndication ProtocolIE-ID ::= 206

id-F1UtunnelNotEstablished ProtocolIE-ID ::= 207

END

-- ASN1STOP

### 9.4.8 Container Definitions

-- ASN1START

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

--

-- Container definitions

--

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

E1AP-Containers {

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

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

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

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

--

-- IE parameter types from other modules.

--

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

IMPORTS

maxPrivateIEs,

maxProtocolExtensions,

maxProtocolIEs,

Criticality,

Presence,

PrivateIE-ID,

ProtocolIE-ID

FROM E1AP-CommonDataTypes;

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

--

-- Class Definition for Protocol IEs

--

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

E1AP-PROTOCOL-IES ::= CLASS {

&id ProtocolIE-ID UNIQUE,

&criticality Criticality,

&Value,

&presence Presence

}

WITH SYNTAX {

ID &id

CRITICALITY &criticality

TYPE &Value

PRESENCE &presence

}

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

--

-- Class Definition for Protocol Extensions

--

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

E1AP-PROTOCOL-EXTENSION ::= CLASS {

&id ProtocolIE-ID UNIQUE,

&criticality Criticality,

&Extension,

&presence Presence

}

WITH SYNTAX {

ID &id

CRITICALITY &criticality

EXTENSION &Extension

PRESENCE &presence

}

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

--

-- Class Definition for Private IEs

--

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

E1AP-PRIVATE-IES ::= CLASS {

&id PrivateIE-ID,

&criticality Criticality,

&Value,

&presence Presence

}

WITH SYNTAX {

ID &id

CRITICALITY &criticality

TYPE &Value

PRESENCE &presence

}

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

--

-- Container for Protocol IEs

--

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

ProtocolIE-Container { E1AP-PROTOCOL-IES : IEsSetParam} ::=

SEQUENCE (SIZE (0..maxProtocolIEs)) OF

ProtocolIE-Field {{IEsSetParam}}

ProtocolIE-SingleContainer { E1AP-PROTOCOL-IES : IEsSetParam} ::=

ProtocolIE-Field {{IEsSetParam}}

ProtocolIE-Field { E1AP-PROTOCOL-IES : IEsSetParam} ::= SEQUENCE {

id E1AP-PROTOCOL-IES.&id ({IEsSetParam}),

criticality E1AP-PROTOCOL-IES.&criticality ({IEsSetParam}{@id}),

value E1AP-PROTOCOL-IES.&Value ({IEsSetParam}{@id})

}

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

--

-- Container Lists for Protocol IE Containers

--

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

ProtocolIE-ContainerList {INTEGER : lowerBound, INTEGER : upperBound, E1AP-PROTOCOL-IES : IEsSetParam} ::=

SEQUENCE (SIZE (lowerBound..upperBound)) OF

ProtocolIE-Container {{IEsSetParam}}

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

--

-- Container for Protocol Extensions

--

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

ProtocolExtensionContainer { E1AP-PROTOCOL-EXTENSION : ExtensionSetParam} ::=

SEQUENCE (SIZE (1..maxProtocolExtensions)) OF

ProtocolExtensionField {{ExtensionSetParam}}

ProtocolExtensionField { E1AP-PROTOCOL-EXTENSION : ExtensionSetParam} ::= SEQUENCE {

id E1AP-PROTOCOL-EXTENSION.&id ({ExtensionSetParam}),

criticality E1AP-PROTOCOL-EXTENSION.&criticality ({ExtensionSetParam}{@id}),

extensionValue E1AP-PROTOCOL-EXTENSION.&Extension ({ExtensionSetParam}{@id})

}

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

--

-- Container for Private IEs

--

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

PrivateIE-Container { E1AP-PRIVATE-IES : IEsSetParam} ::=

SEQUENCE (SIZE (1..maxPrivateIEs)) OF

PrivateIE-Field {{IEsSetParam}}

PrivateIE-Field { E1AP-PRIVATE-IES : IEsSetParam} ::= SEQUENCE {

id E1AP-PRIVATE-IES.&id ({IEsSetParam}),

criticality E1AP-PRIVATE-IES.&criticality ({IEsSetParam}{@id}),

value E1AP-PRIVATE-IES.&Value ({IEsSetParam}{@id})

}

END

-- ASN1STOP

9.5 Message Transfer Syntax

E1AP shall use the ASN.1 Basic Packed Encoding Rules (BASIC-PER) Aligned Variant as transfer syntax, as specified in ITU-T Recommendation X.691 [7].

9.6 Timers

# 10 Handling of unknown, unforeseen and erroneous protocol data

Section 10 of TS 38.413 [6] is applicable for the purposes of the present document, with the following additions for non-UE-associated procedures:

- In case of Abstract Syntax Error, when reporting the *Criticality Diagnostics* IE for not comprehended IE/IEgroups or missing IE/IE groups, the *Transaction ID* IE shall also be included;

- In case of Logical Error, when reporting the *Criticality Diagnostics* IE, the *Transaction ID* IE shall also be included;

- In case of Logical Error in a response message of a Class 1 procedure, or failure to comprehend *Transaction ID* IE from a received message, the procedure shall be considered as unsuccessfully terminated or not terminated (e.g., transaction ID unknown in response message), and local error handling shall be initiated.

Annex A (informative):  
Change History

| Change history | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Date | Meeting | TDoc | CR | Rev | Cat | Subject/Comment | New version |
| 2022-01 | R3#114b-e | R3-221121 | - | - | - | Text transferred from TS 38.463 v16.8.0 with no changes. Capture LTE\_NR\_arch\_evo\_enh-Core endorsed BL CRs and agreed TPs | 0.0.1 |
| 2022-02 | R3#115-e | R3-221645 | - | - | - | Submitted to RAN3#115-e | 0.1.0 |
| 2022-02 | R3#115-e | R3-222578 | - | - | - | Change the date of specification release | 0.1.1 |
| 2022-03 | RAN#95-e | RP-220798 | - | - | - | Version submitted for approval in RAN#95-e | 1.0.0 |
| 2022-03 | RAN#95-e | RP-220851 | - | - | - | Agreed Rel-16/17 CRs from other WIs are merged.  Including REL-16 38.463 changes of:R3-221223 of RP-220276,R3-221253 of RP-220278,R3-220836 of RP-220277,R3-221707 of RP-220282,R3-222108 of RP-220279,R3-222844 of RP-220279.  and REL-17 38.463 changes of: R3-221516 of RP-220218,R3-221550 of RP-220221,R3-221598 of RP-220232,R3-221617 of RP-220294,R3-222541 of RP-220223,R3-222613 of RP-220234, R3-222906 of RP-220218,R3-222930 of RP-220224,RP-220927,R3-222986 of RP-220233. | 1.1.0 |
| 2022-03 | RAN#95-e |  |  |  |  | Promotion to Release 17 without technical change | 17.0.0 |
| 2022-06 | RAN#96 | RP-221138 | 0001 | 1 | F | Correction of UDC in CP-UP Split architecture | 17.1.0 |
| 2022-06 | RAN#96 | RP-221132 | 0002 | 2 | F | Extended PDCP Discard Timer over E1 interface | 17.1.0 |
| 2022-06 | RAN#96 | RP-221154 | 0004 | 1 | A | Correction on EHC parameters | 17.1.0 |
| 2022-06 | RAN#96 | RP-221140 | 0005 | 1 | F | Correction on enhanced eNB architecture evolution | 17.1.0 |
| 2022-06 | RAN#96 | RP-221134 | 0007 | 1 | F | Correction on configuration of initial value of HFN and reference SN | 17.1.0 |
| 2022-06 | RAN#96 | RP-221150 | 0008 | 1 | A | Dynamic ACL over E1 CR 37.483 | 17.1.0 |
| 2022-06 | RAN#96 | RP-221134 | 0009 | 1 | F | MBS E1AP corrections | 17.1.0 |
| 2022-06 | RAN#96 | RP-221149 | 0010 | 2 | A | Correction on IAB PSK generation | 17.1.0 |
| 2022-06 | RAN#96 | RP-221134 | 0013 | 3 | F | Correction of MBS shared NG-U termination | 17.1.0 |
| 2022-06 | RAN#96 | RP-221145 | 0014 | 1 | D | E1AP Rapporteur Corrections | 17.1.0 |
| 2022-06 | RAN#96 | RP-221134 | 0015 | 1 | F | Correction on NR MBS in E1AP | 17.1.0 |
| 2022-06 | RAN#96 | RP-221141 | 0016 | 1 | F | Correction on update management based MDT user consent | 17.1.0 |
| 2022-06 | RAN#96 | RP-221134 | 0019 | - | F | NR MBS E1AP asn.1 correction | 17.1.0 |
| 2022-06 | RAN#96 | RP-221135 | 0020 | 1 | F | Correction for E1AP on SCG (de)activation | 17.1.0 |
| 2022-09 | RAN#97-e | RP-222201 | 0027 | 1 | A | Correction on Missing Criticality Diagnostics over E1AP | 17.2.0 |
| 2022-09 | RAN#97-e | RP-222188 | 0030 | 1 | F | Correction of shared CU UP codepoints | 17.2.0 |
| 2022-09 | RAN#97-e | RP-222188 | 0031 | 1 | F | Further Corrections for NR MBS | 17.2.0 |
| 2022-09 | RAN#97-e | RP-222188 | 0032 | - | F | E1AP ASN.1 correction on MCBearerContextToModify | 17.2.0 |
| 2022-09 | RAN#97-e | RP-222188 | 0034 | 1 | F | Introduction of MBS specific cause values | 17.2.0 |
| 2022-09 | RAN#97-e | RP-222188 | 0035 | 1 | F | Correction on Maximum number of MRBs | 17.2.0 |
| 2022-09 | RAN#97-e | RP-222188 | 0037 | 2 | F | Correction for the MBS multicast data forwarding | 17.2.0 |
| 2022-09 | RAN#97-e | RP-222188 | 0038 | 1 | F | Corrections for the establishment of F1-U ptp retransmission tunnels | 17.2.0 |
| 2022-12 | RAN#98 | RP-222891 | 0026 | 4 | A | PDCP COUNT reset in CU-UP for inter-gNB-DU Handover | 17.3.0 |
| 2022-12 | RAN#98 | RP-222882 | 0042 | 3 | F | Clarification on initialRX-DELIV over E1AP | 17.3.0 |
| 2022-12 | RAN#98 | RP-222882 | 0043 | 2 | F | Correction on non-MBS-supporting to MBS-supporting handover on TS 37.483 | 17.3.0 |
| 2022-12 | RAN#98 | RP-222882 | 0046 | 1 | F | MC Bearer Context Setup without MBS QoS flow information available | 17.3.0 |
| 2023-03 | RAN#99 | RP-230583 | 0049 | - | F | Correction on providing MBS Session Associated Information | 17.4.0 |
| 2023-03 | RAN#99 | RP-230595 | 0050 | - | A | Mandatory extension container in E1AP Resource Status Update | 17.4.0 |
| 2023-03 | RAN#99 | RP-230594 | 0051 | 1 | F | E1AP corrections of references to RRC | 17.4.0 |
| 2023-06 | RAN#100 | RP-231081 | 0055 | 1 | A | Alignment of the tabular and ASN.1 definitions for the Resource Status Update | 17.5.0 |
| 2023-06 | RAN#100 | RP-231075 | 0056 | 1 | A | Corrections on TNL association addition, update and removal (E1) | 17.5.0 |
| 2023-06 | RAN#100 | RP-231073 | 0057 | 1 | F | Correction of Burst Arrival Time semantics description | 17.5.0 |
| 2023-06 | RAN#100 | RP-231074 | 0058 | 1 | F | Correction on NG-U tunnel aspect for MBS session | 17.5.0 |
| 2023-06 | RAN#100 | RP-231075 | 0059 | 2 | F | Correction of Priority Level | 17.5.0 |
| 2023-06 | RAN#100 | RP-231068 | 0060 | 2 | F | Correction of RAT type in Data Usage Report List for Rel-17 | 17.5.0 |
| 2023-06 | RAN#100 | RP-231081 | 0061 | 2 | A | Correction on RESOURCE STATUS FAILURE message over E1 in Rel-17 | 17.5.0 |
| 2023-06 | RAN#100 | RP-231084 | 0062 | 2 | F | Correction of Extended Packet Delay Budget | 17.5.0 |
| 2023-06 | RAN#100 | RP-231070 | 0063 | 2 | A | Correction of Paging Priority Indicator in QoS Flow Level QoS Parameters | 17.5.0 |
| 2023-06 | RAN#100 | RP-231082 | 0064 | 4 | F | Correction to UDC Parameters in E1AP | 17.5.0 |
| 2023-06 | RAN#100 | RP-231074 | 0065 | 0 | F | Correction of MRB Setup Configuration over E1 | 17.5.0 |
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| 2023-09 | RAN#101 | RP-231897 | 0073 | 0 | F | Correction on MBS Session Forwarding Address | 17.6.0 |
| 2023-12 | RAN#102 | RP-233849 | 0079 | 3 | F | Correction on Temp no data and DL data arrival for Activate Multicast Session | 17.7.0 |
| 2023-12 | RAN#102 | RP-233847 | 0089 | 1 | A | Correction on Resource Status Request | 17.7.0 |
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| 2023-12 | RAN#102 | RP-233852 | 0096 | 1 | F | Correction on Bearer Context Status Change | 17.7.0 |
| 2023-12 | RAN#102 | RP-233819 | 0054 | 9 | B | Introduction of MT-SDT | 18.0.0 |
| 2023-12 | RAN#102 | RP-233844 | 0086 | 2 | F | Correction of Transport Addresses | 18.0.0 |
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| 2023-12 | RAN#102 | RP-233830 | 0078 | 4 | B | Introducing enhancement for NR XR | 18.0.0 |
| 2023-12 | RAN#102 | RP-233823 | 0088 | 3 | B | Support of NR SL relay enhancements | 18.0.0 |
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